

Material Specifications

**MATERIAL
SPECIFICATION
MANUAL**

Created Date: 01/25/05 (JJS)
Last Revised Date: 04/20/23 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Suppliers and contractors working with Pinellas County shall actively follow this published material specification manual. Pinellas County reserves the right to terminate product approvals without notice based upon poor performance, inadequate support or failure to meet specifications.

If you have additional questions, or want to request a review of a specific product for possible inclusion into the Material Specification Manual, please contact: Dennis Simpson, P.E. at 727-464-3588.

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Last Revised Date: 08/01/22 (JJP)



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- A 4 PVC Pipe – 2" SDR 21
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- A 6 PVC Pipe – AWWA C900 – 4" Thru 12" – Potable Water
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Section C: Joint Restraints

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- C 1.1 Joint Restraints – Bell & Spigot Joint – New & In-Service Installations – AWWA C900 PVC Pipe
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- C 2 Joint Restraints – Multiple Wedge Style Mechanical Joint – AWWA C900 PVC Pipe
- C 2.1 Joint Restraints – Multiple Wedge Style Mechanical Joint/Split Gland – Existing Installations Only – AWWA C900 PVC Pipe
- C 3 Joint Restraints – Flange Adapter – AWWA C900 PVC Pipe
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- C 4.2 Joint Restraints – Multiple Wedge Style Mid Span Joint – New & Existing Installations – DI Pipe
- C 4.3 Joint Restraints – Multiple Wedge Style Mechanical Joint – DI Pipe
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Section D: Valves And Accessories

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- D 2 Valves – Resilient Seat – 2" (FIPT X FIPT)
- D 2.1 Valves – AWWA C509 – Resilient Seat – 4" Thru 12" (MJ X MJ)
- D 2.1.1 Valves – AWWA C515 – Resilient Seat – 4" Thru 12" (MJ X MJ)
- D 2.2 Tap Valves – AWWA C509 – Resilient Seat – 4" Thru 12" (FLG X MJ)
- D 2.2.1 Tap Valves – AWWA C515 – Resilient Seat – 4" Thru 12" (FLG X MJ)
- D 2.3 OS&Y Valves – Resilient Seat – 3" Thru 12" (FLG X FLG)
- D 2.4 Valves – Resilient Seat – 4" Thru 12" (FLG X FLG)
- D 2.5 Valves – Resilient Seat – 14" Thru 36" (MJ X MJ)
- D 2.6 Valves – Eccentric Plug – 4" Thru 6" (FLG X FLG)
- D 3 Check Valves – Resilient Seat – Potable Water – 4" Thru 12" (FLG X FLG)
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- D 4.2 Swing Check Valves – Resilient Seat – Sanitary Sewer – 4" Thru 12" (FLG X FLG)
- D 5 Combination Air Valves – Stainless Steel – Sanitary Sewer – 2" Thru 12"
- D 5.1 Combination Air Valves – Stainless Steel – Sanitary Sewer – 12" and Larger
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- D 6.1 Air Release Valves – Stainless Steel – Sanitary Sewer
- D 7 Air Release Valves – (UL/FM) Potable & Reclaimed Water
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Section E: Fire Hydrants

- E 1 Fire Hydrants

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- F 2.1 Service Saddles – Brass Alloy – Stainless Steel Straps – CI, DI & PVC
- F 2.2 Service Saddles – Ductile Iron – Stainless Steel Straps – CI, DI & PVC
- F 2.3 Service Saddles – Ductile Iron – Stainless Steel Straps – HDPE
- F 2.4 Service Saddles – Brass Alloy – Hinged Type – 2" IPS – HDPE
- F 3 Tapping Sleeves – Flange Connection – Fabricated Steel, Epoxy Coated – 4" Thru 24"
- F 3.1 Tapping Sleeves – Mechanical Joint Connection – Fabricated Steel, Epoxy Coated – 4" Thru 24"
- F 4 Tapping Sleeves – Flange Connection – Fabricated Stainless Steel – 4" Thru 12"
- F 4.1 Tapping Sleeves – Mechanical Joint Connection – Fabricated Stainless Steel – 4" Thru 12"
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- F 6 Sewer Service Saddles – Ductile Iron – Stainless Steel Straps – Non-Pressure
- F 6.1 Sewer Service Lateral Connection Hub – Non-Pressure

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- G 1 Corporation Stops – Ground Key/Plug (CC X CTS)
- G 2 Corporation Stops – Ground Key/Plug (CC X FIPT)
- G 3 Corporation Stops – Ball (MIPT X CTS)
- G 4 Corporation Stops – Ball (MIPT X FIPT)
- G 5 Brass Service Line Fittings & Accessories (CTS O.D.)
- G 6 Brass Service Line Fittings – Steel Pipe Adapters (IPS O.D.)
- G 6.1 Brass Service Line Fittings – PVC Pipe Adapters (IPS O.D.)
- G 6.2 Brass Service Line Fittings – 2" HDPE Pipe Adapters (IPS O.D.)
- G 7 Brass Service Valves (FIPT X FIPT)
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- G 10 Meter Couplings – 3/4" Thru 1"
- G 10.1 Meter Couplings & Bushings – 1-1/2" Thru 2"
- G 10.2 Meter Bushings – 3/4" Thru 1"
- G 11 Meter Resetters – 5/8" X 3/4" Meter
- G 11.1 Meter Resetters – 1" Meter
- G 12 Insert Stiffeners – Stainless Steel
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- H 1.1 Pipe Adapters – Concrete Manhole Adapters – 4" Thru 12"
- H 1.2 Pipe Adapters – Concrete Manhole Adapters – 8" and Larger
- H 1.3 Pipe Adapters – Concrete Manhole Boot Connectors
- H 2 Repair Clamps – Ductile Iron Lugs
- H 3 Repair Clamps – Stainless Steel
- H 4 Repair Clamps – Collar Leak
- H 5 Repair Clamps – Full Seal
- H 6 Repair Clamps – Bell Joint Leak – CI, DI, & PVC
- H 7 Repair Sleeves/Couplings – Restrained – CI, DI, PVC, & HDPE – 4" Thru 12"
- H 7.1 Repair Sleeves/Couplings – Non-Restrained – Transition – 2" Thru 12"

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- I 1 Valve Boxes – Round Head
- I 2 Valve Box – Fixed Risers – Round Head
- I 3 Valve Box – Locking Lid – Round Head
- I 4 Valve Boxes – Square Head
- I 5 Valve Box – Fixed Risers – Square Head
- I 6 Meter Box – Cast Iron
- I 7 Manhole Castings – Service Clean-out Ring & Cover
- I 8.1 Manhole Castings – Standard Ring & Cover – 22-3/8" Clear Opening
- I 8.2 Manhole Castings – Standard Ring & Cover – 22" (Min.) Clear Opening
- I 9 Manhole Castings – Double Ring & Cover – 35" Clear Opening
- I 9.1 Manhole Castings – Double Ring & Cover – 48" Clear Opening
- I 10.1 Manhole Castings – Hinged Type Ring & Cover – 33-1/2"
- I 10.2 Manhole Castings – Hinged Type Ring & Cover - 34"
- I 11 Manhole Adjustment Rings
- I 12 Access Covers – Aluminum
- I 12.1 Access Covers – AASHTO HS-20 – Aluminum

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- J 1 1" Reclaimed Water Service Box – Non-metered Residential – Green Space
- J 2 5/8" X 3/4" Water Meter Box, 11" X 21" X 12" – Green Space
- J 2.1 5/8" X 3/4" Water Meter Box, 11" X 21" X 12" – Parking Area
- J 3 1" Water Meter Box, 13" X 24" X 12" – Green Space
- J 3.1 1" Water Meter Box, 13" X 24" X 12" – Parking Area
- J 4 Water Meter & Backflow Prevention Combination Meter Box, 11" X 32" X 12" – Green Space
- J 4.1 Water Meter & Backflow Prevention Combination Meter Box, 11" X 32" X 12" – Parking Area
- J 5 Water Meter & Backflow Prevention Combination Meter Box, 17" X 30" X 12" – Green Space
- J 5.1 Water Meter & Backflow Prevention Combination Meter Box, 17" X 30" X 12" – Parking Area
- J 6 Potable & Reclaimed Water Blow-off Box Lid – Parking Area
- J 7 Lid Details – J 2, J 2.1, J 3, J 3.1, J 4, J 4.1, J 5, J 5.1
- J 8 Box Details – J 2, J 3, J 4, J 5

Section K: Miscellaneous

- K 1 Casing Spacers/Insulators – HDPE
- K 2 Casing Spacers/Insulators – Stainless Steel
- K 3 V-Bio Enhanced Polyethylene Encasement
- K 4 Manhole Insert – Stainless Steel
- K 5 Pipe Saddle Support – Adjustable – Valve Vaults
- K 6 Cam-Lok Coupling Adapters & Dust Caps
- K 7 Cylindrical Wall Seals & Line Sleeves
- K 8 Metal Detectable Underground Warning Tape
- K 9 Manhole Casting Adjustment Rings – HDPE
- K 9.1 Manhole Casting Adjustment Rings – EPS
- K 10 Manhole Internal Chimney Seal
- K 11 Pipe Casing End Seals
- K 12 Sanitary Sewer Inside Drop Bowls
- K 13 Flange Isolating Gasket Kits

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- L 1 Tracer Wire – Copper
- L 1.1 Tracer Wire – Copper-Clad Steel
- L 2 Direct Bury Splice Kits

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- M 1 Manhole Coatings
- M 2 Metal Appurtenance Coatings
- M 3 Metal Appurtenance Primers – Fast Drying
- M 4 Metal Appurtenance Primers – Rust Inhibitive
- M 5 Grout – Chemically Activated Acrylic Gel
- M 5.1 Grout – Chemically Activated Acrylamide Gel
- M 5.2 Grout – Water Activated Polymer Solution – Foam
- M 6 Pipe Joint/Gasket Lubricants
- M 7 PTFE “Teflon” Thread Sealant Tape
- M 8 Flexible Joint Sealants
- M 8.1 Flexible Butyl Joint Sealants
- M 9 Vinyl/PVC Adhesive Tape
- M 9.1 Polyethylene Adhesive Tape
- M 10 Polyurethane Adhesive Sealant/Caulk
- M 11 Protecto 401 Touch-up Kit

Section N: Concrete

- N 1 Concrete – Pre-cast Thrust Blocks
- N 2 Cement – Calcium Aluminate
- N 3 Cement – Calcium Aluminate Lining System – Sanitary Sewer
- N 4 Cement – Hydraulic Cement
- N 5 Concrete – High Early Strength Concrete Mix

Section O: Structures

- O 1 Fiberglass Manholes – Sanitary Sewer
- O 2 Fiberglass Manhole Liners – Sanitary Sewer
- O 3 Fiberglass Wetwell Liners – Sanitary Sewer
- O 4 Polypropylene and/or Fiberglass Reinforced Plastic Concrete Protective Liners – Sanitary Sewer
- O 4.1 Polypropylene/Fiberglass Reinforced Plastic Manhole Base Liners – Sanitary Sewer
- O 5 High Density Polyethylene Concrete Protective Liners – Sanitary Sewer
- O 6 Geopolymer Liner System – Sanitary Sewer
- O 7 Multi-Component Urethane/Epoxy, Polyurea Liner System – Sanitary Sewer
- O 8 Polymorphic Resin Liner System – Sanitary Sewer

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**SECTION A:
PIPE**

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Section A: Pipe

- A 1 PVC Pipe – Schedule 40
- A 2 PVC Pipe – Schedule 80
- A 3 Polyethylene Pipe – Service Tubing
- A 3.1 Polyethylene Pipe – 2" Tubing – Potable Water
- A 3.2 High Density Polyethylene Pipe (HDPE)
- A 3.3 High Density Polyethylene Pipe (HDPE) – Gravity Sanitary Sewer
- A 4 PVC Pipe – 2" SDR 21
- A 4.1 PVC Pipe – Restrained Joint Pipe & Fittings – 2" SDR 17
- A 5 PVC Pipe – ASTM D3034 – 4" Thru 15" – Gravity Sanitary Sewer
- A 6 PVC Pipe – AWWA C900 – 4" Thru 12" – Potable Water
- A 6.1 PVC Pipe – AWWA C900 – 4" Thru 12" – Sanitary Sewer & Reclaimed Water
- A 6.2 PVC Pipe – Restrained Joint Pipe & Couplings – AWWA C900 – 4" Thru 12" – Potable Water, Sanitary Sewer & Reclaimed Water
- A 6.3 PVC Pipe – AWWA C900/C905 – 14" Thru 24" – Potable Water, Sanitary Sewer & Reclaimed Water
- A 6.4 PVC Pipe – Fusible – AWWA C900 – 4" Thru 12" – Potable Water
- A 6.4.1 PVC Pipe – Fusible – AWWA C900 – 4" Thru 12" – Sanitary Sewer & Reclaimed Water
- A 6.4.2 PVC Pipe – Fusible – AWWA C900/C905 – 14" Thru 36" – Potable Water
- A 6.4.3 PVC Pipe – Fusible – AWWA C900/C905 – 14" Thru 36" – Sanitary Sewer & Reclaimed Water
- A 7 PVCO Pipe – AWWA C909 – 6" Thru 12" – Potable Water
- A 8 Ductile Iron Pipe – Push-On Joint – 4" Thru 36"
- A 8.1 Ductile Iron Pipe – Flange Joint – Minimum Class 53
- A 8.2 Ductile Iron Pipe – Push-On Restrained Joint – TR Flex – 4" Thru 36"
- A 8.3 Ductile Iron Pipe – Push-On Restrained Joint – Flex-Ring – 4" Thru 36"
- A 9 Galvanized Pipe

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A 1 – PVC PIPE – SCHEDULE 40:

SPECIFICATION/MATERIAL:

Pipe shall meet/exceed the following performance specifications:

- Schedule 40 Polyvinyl Chloride (PVC) pipe.
- Shall conform to ASTM D1785 or latest revision thereof.
- Pipe shall be made from clean, new NSF approved Type 1, Grade 1 PVC.

CONNECTION:

- Plain end X plain end.
- Plain end X solvent weld bell.

COLOR-CODE:

- White.....Potable Water.
- Blue.....Potable Water.
- Purple.....Reclaimed Water.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or “NSF-pw”.

DIMENSIONS:

- Twenty foot (20') standard joint length.

RESTRICTIONS:

- Use of this product is limited to:
 - Customer side of meter
 - Irrigation systems
 - Service casings



MANUFACTURER:

- CHARLOTTE PIPE AND FOUNDRY
- DIAMOND PLASTICS
- JM EAGLE
- WESTLAKE PIPE & FITTINGS (NAPCO)
- NATIONAL PIPE & PLASTICS

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A 2 – PVC PIPE – SCHEDULE 80:

SPECIFICATION/MATERIAL:

Schedule 80 Polyvinyl Chloride (PVC) Pipe shall meet/exceed the following performance specifications:

- ASTM D1785, dimensional requirements, minimum burst and sustained pressure requirements, maximum operating pressure, and test procedures for determining pipe quality with respect to workmanship and materials .
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or "NSF-pw".
- ASTM D1784, manufactured from compounds with Cell Classification 12454 (Type 1, Grade 1 material).

CONNECTION:

- Plain end X plain end
- Plain end X solvent weld bell

COLOR-CODE:

- Blue.....Potable Water
- Green.....Sanitary Sewer
- Purple.....Reclaimed Water
- White.....All Services
- Gray.....All Services

DIMENSIONS:

- Twenty foot (20') standard joint length

SIZES:

- Three-quarter inch (3/4")
- One inch (1")
- One & one-half inch (1-1/2")
- Two inch (2")

RESTRICTIONS:

- Solvent cement weld pipe will NOT be accepted in a pressurized application on the county side of the meter.



MANUFACTURER:

- CHARLOTTE PIPE AND FOUNDRY
- NATIONAL PIPE & PLASTIC

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A 3 – POLYETHYLENE PIPE – SERVICE TUBING:

SPECIFICATION/MATERIAL:

PE4710 High Density Polyethylene, HDPE, tubing shall meet/exceed the following performance specifications:

- PE4710 Resin listed in Plastic Pipe Institute TR4
- Cell classification per ASTM D3350 = 445574C/E.
- ASTM D2737 dimensional standard, Copper Tubing Size (CTS) controlled outside diameter.
- AWWA C901
- Manufacturer shall be listed with the Plastic Pipe Institute as meeting the recipe and mixing requirements for pipe in this classification.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or "NSF-pw".

PRESSURE RATING:

- 250 psi operating pressure @ 73.4 F

COLOR-CODE:

- Blue.....Potable Water
- Purple.....Reclaimed Water

DIMENSIONS:

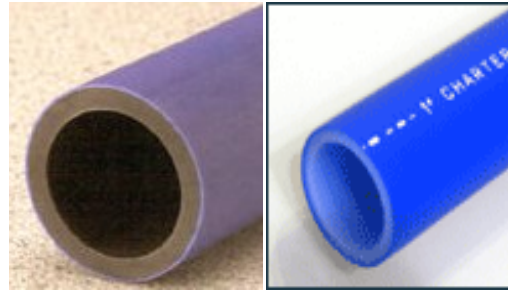
- Copper tubing size O.D. (CTS)
- DR 9

SIZES:

- Three-quarter inch (3/4"), (**Potable Water Only**)
- One inch (1")
- One & one-half inch (1-1/2")
- Two inch (2")

RESTRICTIONS:

- Use of this product is limited to:
 - Service lines



MANUFACTURER/PRODUCT(S):

- **CHARTER PLASTICS - BLUE ICE, LAVENDER ICE**
- **ENDOT - ENDOPURE, ENDOCORE RWT**
- **ADS - POLYFLEX**

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A 3.1 – POLYETHYLENE PIPE – 2" TUBING – POTABLE WATER:

SPECIFICATION/MATERIAL:

PE4710 High Density Polyethylene, HDPE, tubing shall meet/exceed the following performance specifications:

- PE4710 Resin listed in Plastic Pipe Institute TR4
- Cell classification per ASTM D3350 = 445574C/E
- ASTM D3035 dimensional standard, Iron Pipe Size (IPS) controlled outside diameter.
- AWWA C901
- Manufacturer shall be listed with the Plastic Pipe Institute as meeting the recipe and mixing requirements for pipe in this classification.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or "NSF-pw".

PRESSURE RATING:

- 250 psi operating pressure @ 73.4 F

COLOR-CODE:

- Blue.....Potable Water
- Black w/ min. three (3) evenly-spaced blue stripes....Potable Water

DIMENSIONS:

- Iron pipe size O.D. (IPS/IPSOD)
- DR 9

SIZES:

- Two inch (2")

RESTRICTIONS:

- Use of this product is limited to:
 - Two inch (2") water mains only



MANUFACTURER/PRODUCT(S):

- CHARTER PLASTICS - BLUE STRIPE PIPE
- ENDOT - ENDOPURE/BLUE WITH CLEAR CORE

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A 3.2 – HIGH DENSITY POLYETHYLENE PIPE (HDPE):

SPECIFICATION/MATERIAL:

PE4710 High Density Polyethylene, HDPE, pipe shall meet/exceed the following performance specifications:

- PE4710 Resin listed in Plastic Pipe Institute TR4.
- Cell classification per ASTM D3350 = 445574C/E
- ASTM F714, minimum wall values.
- AWWA C906.
- Manufacturer shall be listed with the Plastic Pipe Institute as meeting the recipe and mixing requirements for pipe in this classification.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or "NSF-pw".

COLOR-CODE:

- Blue.....Potable Water.
- Purple.....Reclaimed Water.
- Green.....Sanitary Sewer.

DIMENSIONS:

- Ductile iron pipe size O.D. (DIPS/DIOD)
- DR 9, DR 11.

PRESSURE RATING:

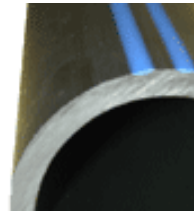
- 200 psi operating pressure @ 73.4 F for DR 11.
- 250 psi operating pressure @ 73.4 F for DR 9.

RESTRICTIONS:

- Compression type connections are not acceptable in new installations.
- Pipe joints shall be butt fusion.
- No electrofusion coupling joints will be accepted.
- Flange or mechanical joint adapters shall be used for pipe and fitting transitions.

FIRE MAIN PRESSURE RATING & REQUIREMENTS:

- Dimension Ratio (DR) 9, pressure class 250 for fire mains.
- Factory Mutual Approved (FM) pipe.



MANUFACTURER/PRODUCT(S):

- CHARTER PLASTICS - STRIPE PIPE
- CP CHEMICAL/PERFORMANCE PIPE - DRISCO- PLEX 4000
- JM EAGLE

Created Date: 02/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 3.3 – HIGH DENSITY POLYETHYLENE PIPE (HDPE) – GRAVITY SANITARY SEWER:

SPECIFICATION/MATERIAL:

PE4710 High Density Polyethylene, HDPE, pipe shall meet/exceed the following performance specifications:

- PE4710 Resin listed in Plastic Pipe Institute TR4.
- Cell classification per ASTM D3350 = 445574C/E
- ASTM F714, minimum wall values.
- AWWA C906.
- Manufacturer shall be listed with the Plastic Pipe Institute as meeting the recipe and mixing requirements for pipe in this classification.
- Shall be colored gray. Gray pipe is especially suited for TV inspection; its high light reflectivity allows for excellent viewing.

COLOR-CODE:

- Gray w/ Green Stripe....Gravity Sanitary Sewer.

DIMENSIONS:

- Ductile Iron Pipe Size O.D. (DIPS/DIOD)
- DR 11, DR 17.

PRESSURE RATING:

- 200 psi operating pressure @ 73.4 F for DR 11.
- 125 psi operating pressure @ 73.4 F for DR 17.

RESTRICTIONS:

- Use of this product is limited to:
 - Gravity sanitary sewer mains.



MANUFACTURER/PRODUCT(S):

- CP CHEMICAL/PERFORMANCE PIPE - DRISCO-
PLEX 4700
- JM EAGLE

Created Date: 01/25/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 4 – PVC PIPE – 2" SDR 21:

SPECIFICATION/MATERIAL:

Two inch (2") SDR 21 Polyvinyl Chloride (PVC) Pipe shall meet/exceed the following performance specifications:

- ASTM D2241 or latest revision thereof.
- ASTM D1784, manufactured from compounds with cell classification 12454.
- Push-on integral bell type supplied with elastomeric gaskets installed.
- Joints per ASTM D3139 testing requirements.
- Gaskets per ASTM F477.
- Pipe shall be clean and ends shall be tarped during shipment.
- Standard Dimension Ratio (SDR) 21.
- No solvent cement weld pipe or fittings will be accepted.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or "NSF-pw".

PRESSURE RATING:

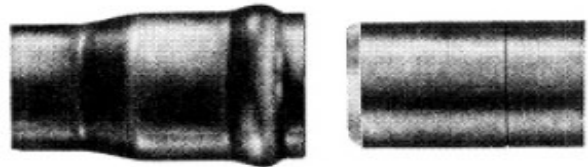
- 200 psi operating pressure @ 73.4 F

COLOR-CODE:

- Blue.....Potable Water
- Purple.....Reclaimed Water
- Green.....Sanitary Sewer

DIMENSIONS:

- Iron Pipe Size O.D. (IPS/IPSOD)
- Twenty foot (20') standard joint length



MANUFACTURER:

- DIAMOND PLASTICS
- JM EAGLE
- WESTLAKE PIPE & FITTINGS (NAPCO)
- NATIONAL PIPE & PLASTICS

Created Date: 12/04/04 (JJS)
Last Revised Date: 04/20/23 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 4.1 – PVC PIPE – RESTRAINED JOINT PIPE & FITTINGS – 2" SDR 17:

SPECIFICATION/MATERIAL:

Two inch (2") SDR 17 Polyvinyl Chloride (PVC) Pipe shall meet/exceed the following performance specifications:

- ASTM D2241 for PVC, pressure rated pipe (SDR Series) or latest revision thereof.
- ASTM D1784, manufactured from compounds with cell classification 12454.
- Joined using separate couplings or integral bell that have built in sealing gaskets (O-rings) and restraining grooves.
- Joints per ASTM D3139 testing requirements.
- Gaskets per ASTM F477.
- Restraining spline shall be manufactured from Nylon 101.
- Pipe shall be clean and ends shall be tarped during shipment.
- Standard Dimension Ratio (SDR) 17.
- Fittings shall be PVC push-on joint and installed with joint restrainers.
- No solvent cement weld pipe or fittings will be accepted.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or "NSF-pw".

PRESSURE RATING:

- 250 psi operating pressure @ 73.4 Degrees F
- Minimum wall thickness of 0.140"

COLOR-CODE:

- Blue.....Potable Water
- Purple.....Reclaimed Water
- Green.....Sanitary Sewer
- Fittings can be yellow or match service type

DIMENSIONS:

- Iron Pipe Size O.D. (IPS/IPSOD)
- Twenty foot (20') standard joint length



MANUFACTURER/PRODUCT(S):

- WESTLAKE PIPE & FITTINGS (NAPCO) - CERTA-LOK W/ YELOMINE

Created Date: 12/04/04 (JJS)
Last Revised Date: 04/20/23 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 5 – PVC PIPE – ASTM D3034 – 4” THRU 15” – GRAVITY SANITARY SEWER:

SPECIFICATION/MATERIAL:

Pipe shall meet/exceed the following performance specifications:

- Polyvinyl chloride sewer pipe shall conform to ASTM D3034.
- Cell classification 12454/12364 as defined under ASTM D1784.
- Push-on integral bell type supplied with an elastomeric gasket installed.
- Joint per ASTM D3212 sewer plastic pipe using elastomeric gaskets.
- Gasket per ASTM F477 for joining plastic pipe.
- No solvent cement weld pipe or fittings will be accepted.
- Affidavit of compliance to this specification shall be available upon request.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in sanitary sewer.

COLOR-CODE:

- Green....Sanitary Sewer

DIMENSIONS:

- SDR 26, Heavy wall.
- SDR 35, Standard wall, minimum requirement.
- Thirteen foot (13') standard joint length.



MANUFACTURER:

- DIAMOND PLASTICS
- HAWK PLASTICS
- JM EAGLE
- WESTLAKE PIPE & FITTINGS (NAPCO)
- NATIONAL PIPE & PLASTICS

Created Date: 01/25/05 (JJS)
Last Revised Date: 04/20/23 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 6 – PVC PIPE – AWWA C900 – 4" THRU 12" – POTABLE WATER:

SPECIFICATION/MATERIAL:

AWWA C900 Polyvinyl Chloride (PVC)
Pipe shall meet/exceed the following performance specifications:

- ASTM D1784, manufactured from compounds with cell classification 12454.
- Push-on integral bell type joints per ASTM D3139 testing requirements, supplied with elastomeric gaskets installed.
- Gaskets per ASTM F477.
- Pipe shall be clean and ends shall be tarped during shipment.
- No solvent cement weld pipe or fittings will be accepted.
- Affidavit of compliance to this specification shall be available upon request.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or "NSF-pw".

COLOR-CODE:

- Blue.....Potable Water

DIMENSIONS:

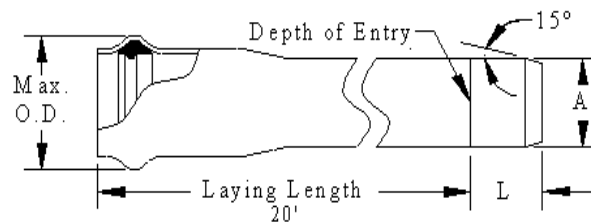
- Ductile iron pipe size O.D. (DIPS/DIOD)
- DR 14, DR 18
- Twenty foot (20') standard joint length

PRESSURE RATING:

- 235 psi operating pressure @ 73 F for DR 18.
- 305 psi operating pressure @ 73 F for DR 14.

FIRE MAIN PRESSURE RATING & REQUIREMENTS:

- Dimension Ratio (DR) 14, pressure class 250 for fire mains.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) required on DR 14 pipe.
- No solvent cement weld pipe or fittings will be accepted.



MANUFACTURER/PRODUCT(S):

- **DIAMOND PLASTICS**
- **JM EAGLE - BLUE BRUTE**
- **WESTLAKE PIPE & FITTINGS (NAPCO)**
- **NATIONAL PIPE & PLASTICS**

Created Date: 12/04/04 (JJS)
Last Revised Date: 04/20/23 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 6.1 – PVC PIPE – AWWA C900 – 4” THRU 12” – SANITARY SEWER & RECLAIMED WATER:

SPECIFICATION/MATERIAL:

AWWA C900 Polyvinyl Chloride (PVC)
Pipe shall meet/exceed the following performance specifications:

- ASTM D1784, manufactured from compounds with cell classification 12454.
- Push-on integral bell type joints per ASTM D3139 testing requirements, supplied with an elastomeric gasket installed.
- Gaskets per ASTM F477
- Pigment stabilizers and ultraviolet inhibitors shall be used to prevent fading for a period of six (6) months after delivery.
- Pipe shall be clean and ends shall be tarped during shipment.
- No solvent cement weld pipe or fittings will be accepted.
- Affidavit of compliance to this specification shall be available upon request.

COLOR-CODE:

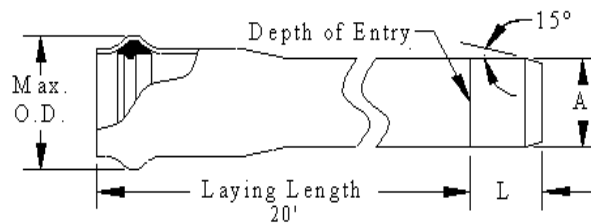
- Green.....Sanitary Sewer
- Purple.....Reclaimed Water

DIMENSIONS:

- Ductile iron pipe size O.D. (DIPS/DIOD)
- DR 14, DR 18
- Twenty foot (20') standard joint length
- Thirteen foot (13') joints acceptable for sewer only

PRESSURE RATING:

- 235 psi operating pressure @ 73 F for DR 18.
- 305 psi operating pressure @ 73 F for DR 14.



MANUFACTURER/PRODUCT(S):

- DIAMOND PLASTICS
- JM EAGLE - BLUE BRUTE
- WESTLAKE PIPE & FITTINGS (NAPCO)
- NATIONAL PIPE & PLASTICS

Created Date: 12/04/04 (JJS)
Last Revised Date: 04/20/23 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 6.2 – PVC PIPE – RESTRAINED JOINT PIPE & COUPLINGS – AWWA C900 – 4" THRU 12" – POTABLE WATER, SANITARY SEWER & RECLAIMED WATER:

SPECIFICATION/MATERIAL:

AWWA C900 Pipe shall meet/exceed the following performance specifications:

- ASTM D1784, manufactured from compounds with cell classification 12454.
- Joined using separate couplings that have built in sealing gaskets (O-rings) and restraining grooves.
- Shall be joined using high-strength flexible plastic splines inserted into mating precision-machine grooves, which align when the pipe is fully inserted, providing a full 360° restraint with evenly distributed loading.
- Joints per ASTM D3139 testing requirements.
- Gaskets per ASTM F477.
- Pipe shall be clean and ends shall be tarped during shipment.
- No solvent cement weld pipe or fittings will be accepted.
- Affidavit of compliance to this specification shall be available upon request.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or "NSF-pw" for all blue pipe (potable water installation).

COLOR-CODE:

- Blue.....Potable Water
- Green.....Sanitary Sewer
- Purple.....Reclaimed Water

DIMENSIONS:

- Ductile iron pipe size O.D. (DIPS/DIOD) DR 14, DR 18.
- Twenty foot (20') standard joint length.

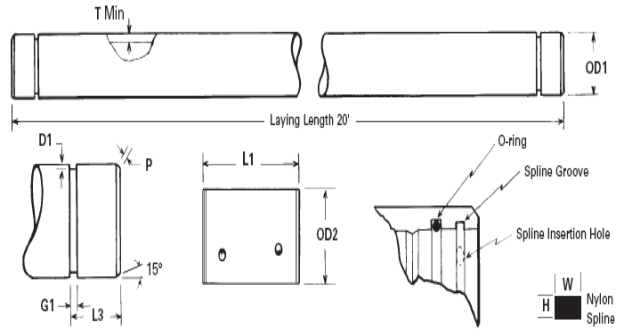
PRESSURE RATING:

- 235 psi operating pressure @ 73 F for DR 18.
- 305 psi operating pressure @ 73 F for DR 14.

FIRE MAIN PRESSURE RATING & REQUIREMENTS:

- Dimension Ratio (DR) 14, pressure class 250 for fire mains.

- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) required on DR 14 pipe.



MANUFACTURER/PRODUCT(S):

- WESTLAKE PIPE & FITTINGS (NAPCO) - CERTA-LOK

Created Date: 12/04/04 (JJS)
Last Revised Date: 04/20/23 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 6.3 – PVC PIPE – AWWA C900/C905 – 14” THRU 24” – POTABLE WATER, SANITARY SEWER & RECLAIMED WATER:

SPECIFICATION/MATERIAL:

AWWA C900/C905 Polyvinyl Chloride (PVC) Pipe shall meet/exceed the following performance specifications:

- ASTM D1784, manufactured from compounds with cell classification 12454.
- Push-on integral bell type joints per ASTM D3139 testing requirements, supplied with elastomeric gaskets installed.
- Gaskets per ASTM F477.
- Pipe shall be clean and ends shall be tarped during shipment.
- No solvent cement weld pipe or fittings will be accepted.
- Affidavit of compliance to this specification shall be available upon request.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or "NSF-pw".

COLOR-CODE:

- Blue.....Potable Water
- Green.....Sanitary Sewer
- Purple.....Reclaimed Water

DIMENSIONS:

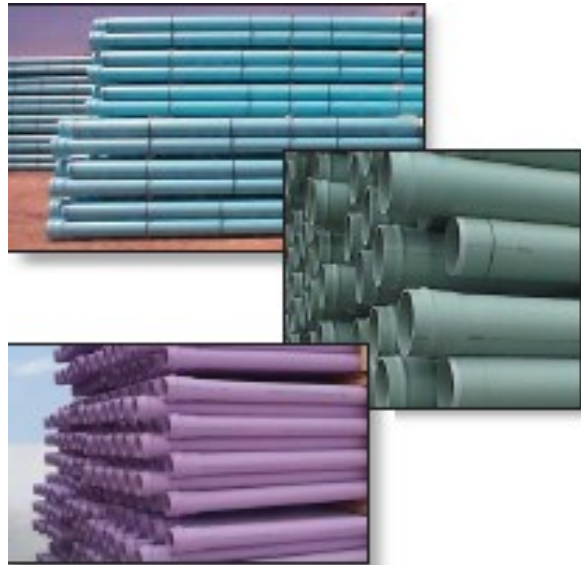
- Ductile iron pipe size O.D. (DIPS/DIOD)
- DR 25, DR 18
- Twenty foot (20') standard joint length.

PRESSURE RATING:

- 165 psi operating pressure @ 73.4 F for DR 25.
- 235 psi operating pressure @ 73.4 F for DR 18.

RESTRICTIONS:

- Use of this material shall be approved by the Director of Engineering prior to project design.



MANUFACTURER/PRODUCT(S):

- **DIAMOND PLASTICS - TRANS-21**
- **JM EAGLE - BIG BLUE (C905)/BLUE BRUTE**
- **WESTLAKE PIPE & FITTINGS (NAPCO)**
- **NATIONAL PIPE & PLASTICS**

Created Date: 06/21/05 (JJS)
Last Revised Date: 04/20/23 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 6.4 – PVC PIPE – FUSIBLE – AWWA C900 – 4” THRU 12” – POTABLE WATER:

SPECIFICATION/MATERIAL:

Fusible AWWA C900 Polyvinyl Chloride (PVC)
Pipe shall meet/exceed the following performance specifications:

- ASTM D1784, manufactured from compounds with cell classification 12454.
- Manufacturer shall be listed with the Plastic Pipe Institute (PPI) as meeting the recipe and mixing requirements for pipe in this classification.
- Extruded with a unique formulation, for fusible pipe, that meets all requirements of PPI TR-2 “PPI PVC Range Composition Listing of Qualified Ingredients”.
- Pipe shall be clean and ends shall be tarped during shipment.
- Pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer.
- Fusible pipe shall be joined per the manufacturer’s recommendation.
- Installation shall not exceed manufacturer’s bending radius and safe pulling force.
- No solvent cement weld pipe or fittings will be accepted.
- Affidavit of compliance to this specification shall be available upon request.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61 or “NSF-pw”.

COLOR-CODE:

- Blue.....Potable Water

DIMENSIONS:

- Ductile iron pipe size O.D. (DIPS/DIOD)
- DR 14, DR 18
- 20', 30' or 40' standard joint length.

PRESSURE RATING:

- 235 psi operating pressure @ 73 F for DR 18.
- 305 psi operating pressure @ 73 F for DR 14.



MANUFACTURER:

- AEGION/UNDERGROUND SOLUTIONS

Created Date: 06/08/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 6.4.1 – PVC PIPE – FUSIBLE – AWWA C900 – 4” THRU 12” – SANITARY SEWER & RECLAIMED WATER:

SPECIFICATION/MATERIAL:

Fusible AWWA C900 Polyvinyl Chloride (PVC)

Pipe shall meet/exceed the following performance specifications:

- ASTM D1784, manufactured from compounds with cell classification 12454.
- Manufacturer shall be listed with the Plastic Pipe Institute (PPI) as meeting the recipe and mixing requirements for pipe in this classification.
- Extruded with a unique formulation, for fusible pipe, that meets all requirements of PPI TR-2 “PPI PVC Range Composition Listing of Qualified Ingredients”.
- Pipe shall be clean and ends shall be tarped during shipment.
- Pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer.
- Fusible pipe shall be joined per the manufacturer's recommendation.
- Installation shall not exceed manufacturer's bending radius and safe pulling force.
- No solvent cement weld pipe or fittings will be accepted.
- Affidavit of compliance to this specification shall be available upon request.

COLOR-CODE:

- Purple.....Reclaimed Water
- Green.....Sanitary Sewer

DIMENSIONS:

- Ductile iron pipe size O.D. (DIPS/DIOD)
- DR 14, DR 18
- 20', 30' or 40' standard joint length.

PRESSURE RATING:

- 235 psi operating pressure @ 73 F for DR 18.
- 305 psi operating pressure @ 73 F for DR 14.



MANUFACTURER:

- AEGION/UNDERGROUND SOLUTIONS

Created Date: 06/08/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 6.4.2 – PVC PIPE – FUSIBLE – AWWA C900/C905 – 14” THRU 36” – POTABLE WATER:

SPECIFICATION/MATERIAL:

Fusible AWWA C900/C905 Polyvinyl Chloride (PVC) Pipe shall meet/exceed the following performance specifications:

- ASTM D1784, manufactured from compounds with cell classification 12454.
- Manufacturer shall be listed with the Plastic Pipe Institute (PPI) as meeting the recipe and mixing requirements for pipe in this classification.
- Extruded with a unique formulation, for fusible pipe, that meets all requirements of PPI TR-2 “PPI PVC Range Composition Listing of Qualified Ingredients”.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61 or NSF-pw.
- Pipe shall be clean and ends shall be tarped during shipment.
- Pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer.
- Fusible pipe shall be joined per the manufacturer's recommendation.
- Installation shall not exceed manufacturer's bending radius and safe pulling force.
- No solvent cement weld pipe or fittings will be accepted.
- Affidavit of compliance to this specification shall be available upon request.

COLOR-CODE:

- Blue.....Potable Water

DIMENSIONS:

- Ductile iron pipe size O.D. (DIPS/DIOD)
- DR 14, DR 18, DR 21, DR 25
- 20', 30' or 40' standard joint length.

PRESSURE RATING:

- 165 psi operating pressure @ 73 F for DR 25.
- 200 psi operating pressure @ 73 F for DR 21.
- 235 psi operating pressure @ 73 F for DR 18.
- 305 psi operating pressure @ 73 F for DR 14.



MANUFACTURER:

- AEGION/UNDERGROUND SOLUTIONS

Created Date: 06/08/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 6.4.3 – PVC PIPE – FUSIBLE – AWWA C900/C905 – 14” THRU 36” – SANITARY SEWER & RECLAIMED WATER:

SPECIFICATION/MATERIAL:

Fusible AWWA C900/C905 Polyvinyl Chloride (PVC) Pipe shall meet/exceed the following performance specifications:

- ASTM D1784, manufactured from compounds with cell classification 12454.
- Manufacturer shall be listed with the Plastic Pipe Institute (PPI) as meeting the recipe and mixing requirements for pipe in this classification.
- Extruded with a unique formulation, for fusible pipe, that meets all requirements of PPI TR-2 “PPI PVC Range Composition Listing of Qualified Ingredients”.
- Pipe shall be clean and ends shall be tarped during shipment.
- Pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer.
- Fusible pipe shall be joined per the manufacturer's recommendation.
- Installation shall not exceed manufacturer's bending radius and safe pulling force.
- No solvent cement weld pipe or fittings will be accepted.
- Affidavit of compliance to this specification shall be available upon request.

COLOR-CODE:

- Purple.....Reclaimed Water
- Green.....Sanitary Sewer

DIMENSIONS:

- Ductile iron pipe size O.D. (DIPS/DIOD)
- DR 14, DR 18, DR 21, DR 25
- 20', 30' or 40' standard joint length.

PRESSURE RATING:

- 165 psi operating pressure @ 73 F for DR 25.
- 200 psi operating pressure @ 73 F for DR 21.
- 235 psi operating pressure @ 73 F for DR 18.
- 305 psi operating pressure @ 73 F for DR 14.



MANUFACTURER:

- AEGION/UNDERGROUND SOLUTIONS

Created Date: 06/08/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 7 – PVC PIPE – AWWA C909 – 6” THRU 12” – POTABLE WATER:

SPECIFICATION/MATERIAL:

Pipe shall meet/exceed the following performance specifications:

- AWWA C909 molecular oriented pipe.
- ASTM D1784, manufactured from compounds with cell classification 12454.
- Push-on integral bell type joints per ASTM D3139 testing requirements, with an elastomeric gasket installed.
- Gaskets per ASTM F477
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or “NSF-pw”.
- Pipe shall be clean and ends shall be tarped during shipment.
- No solvent cement weld pipe or fittings will be accepted.
- Affidavit of compliance to this specification shall be available upon request.

COLOR-CODE:

- Blue.....Potable Water

DIMENSIONS:

- Ductile iron pipe size O.D. (DIPS/DIOD)
- Twenty foot (20') standard joint length.

PRESSURE RATING:

- 150 psi operating pressure @ 73.4 Degrees F.



MANUFACTURER/PRODUCT(S):

- **JM EAGLE - ULTRA-BLUE**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 8 – DUCTILE IRON PIPE – PUSH-ON JOINT – 4” THRU 36”:

SPECIFICATION/MATERIAL:

- Pipe shall conform with ANSI/AWWA C151/A21.51. Additionally, 4"-16" pipe exterior shall be coated with a layer of arc-sprayed zinc per ISO 8179. The mass of zinc shall be 200 g/m² of pipe surface area. A finishing layer topcoat shall be applied to the zinc. The zinc coating system shall conform to ISO 8179-1 " Ductile iron pipes, fittings, accessories and their joints - External zinc-based coating -- Part 1: Metallic zinc with finishing layer. Third Edition, 2017-07. Pipe eighteen inches or larger (18"+) shall have standard asphaltic outside coating.
- Gaskets shall be furnished in accordance with ANSI/AWWA C111/A21.11.
- Pipe supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) for four through twelve inch (4"-12") pipe.
- Affidavit of compliance to this specification shall be available upon request.

COATING & LINING:

Potable and Reclaimed Water:

- ANSI/AWWA C104/A21.4, cement mortar lining and asphaltic coating.
- ANSI/AWWA C151/A21.51, per above coating requirements.

Sanitary Sewer and Force Mains:

- Exterior coating per ANSI/AWWA C151/A21.51, per above coating requirements.
- Sewer pipe shall have the interior coated (factory applied) or approved equal:
 - with an amine cured novolac epoxy, containing at least 20% by volume of ceramic quartz pigment "PROTECTO 401" (40 mils nominal)
 - The inside of the bell socket including a

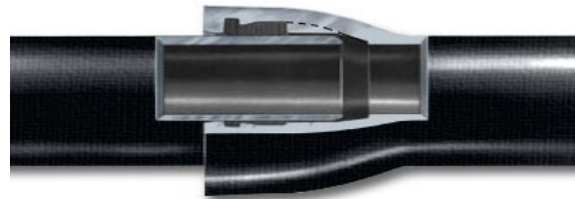
portion of the gasket cavity and a portion of the pipe barrel are coated with "PROTECTO 401" (6 mils nominal, 10 mils maximum)

DIMENSIONS:

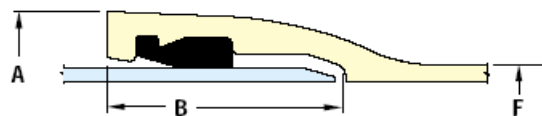
- Eighteen or twenty foot (18' or 20') standard joint length.

PRESSURE RATING:

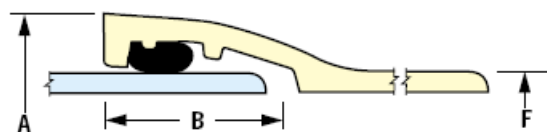
- Class 350 psi for four through twenty-four inch (4"-24") pipe.
- Class 250 psi for thirty through thirty-six inch (30"-36") pipe.



FASTITE JOINT Pipe 4" - 36"



TYTON JOINT Pipe 4" - 36"



MANUFACTURER/PRODUCT(S):

- AMERICAN CAST IRON– FASTITE
- MCWANE, INC.– TYTON (14"– 24" ONLY)
- U.S. PIPE & FOUNDRY– TYTON

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 8.1 – DUCTILE IRON PIPE – FLANGE JOINT – MINIMUM CLASS 53:

SPECIFICATION/MATERIAL:

Flange pipe shall meet/exceed the following performance specifications:

- Pipe shall conform with ANSI/AWWA C151/A21.51.
- Flanges shall conform to the chemical and physical properties specified for ductile iron fittings in ANSI/AWWA C110/A21.10.
- Shall conform to ANSI/AWWA C115/A21.15 flange pipe and fitting joints.
- Shall be drilled and faced to conform with ANSI B16.1 Class 125 flanges.
- Gaskets shall be ring type and produced from the following materials:
 - EPDM (Ethylene Propylene Diene Monomer)
 - Nitrile/Buna-N (NBR) (Acrylonitrile Butadiene)
 - Viton; Fluorel (FKM) (Fluorocarbon)
- Pipe supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Affidavit of compliance to this specification shall be available upon request.

COATING & LINING:

Potable and Reclaimed Water:

- ANSI/AWWA C104/A21.4, cement mortar lining and asphaltic coating.
- ANSI/AWWA C151/A21.51.

Sanitary Sewer and Force Mains:

- Exterior coating per ANSI/AWWA C151/A21.51
- Sewer pipe shall have the interior coated (factory applied) or approved equal:
 - with an amine cured novolac epoxy, containing at least 20% by volume of ceramic quartz pigment "PROTECTO 401" (40 mils nominal).

DIMENSIONS:

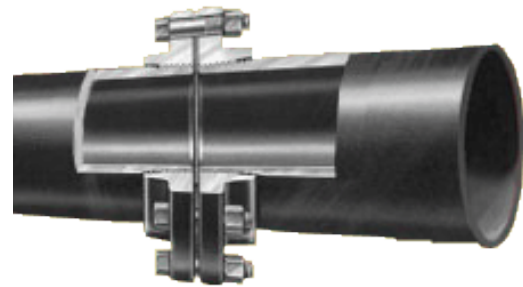
- Ductile iron pipe size O.D. (DIPS/DIOD)
- Eighteen or twenty foot (18' or 20') standard joint length or as specified for project.

PRESSURE RATING:

- Class 250 psi for four through twenty-four inch (4"-24") pipe.

RESTRICTIONS:

- Flange pipe is for use in aboveground or unburied service applications.



MANUFACTURER:

- AMERICAN CAST IRON
- MCWANE, INC.
- U.S. PIPE & FOUNDRY

Created Date: 06/21/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 8.2 – DUCTILE IRON PIPE – PUSH-ON RESTRAINED JOINT – TR FLEX – 4” THRU 36”:

SPECIFICATION/MATERIAL:

Restrained pipe shall meet/exceed the following performance specifications:

- Shall conform with ANSI/AWWA C150/A21.50 thicknesses and strength.
- Shall conform with ANSI/AWWA C151/A21.51, Additionally, 4"-16" pipe exterior shall be coated with a layer of arc-sprayed zinc per ISO 8179. The mass of zinc shall be 200 g/m² of pipe surface area. A finishing layer topcoat shall be applied to the zinc. The zinc coating system shall conform to ISO 8179-1 " Ductile iron pipes, fittings, accessories and their joints - External zinc based coating - Part 1: Metallic zinc with finishing layer. Third Edition, 2017-07
- Pipe eighteen inches or larger (18"+) shall have standard asphaltic outside coating.
- Gaskets shall be furnished in accordance with ANSI/AWWA C111/A21.11.
- Shall use a standard size Tyton gasket.
- Shall use ductile iron locking segments, inserted through a slot (or slots) in the bell face, to provide a positive axial lock between the bell interior surface and a retainer weldment on the spigot end of the pipe.
- Pipe supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) for four through twelve inch (4"-12") pipe.
- Affidavit of compliance to this specification shall be available upon request.

POTABLE WATER REQUIREMENT:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.

COATING & LINING:

Potable and Reclaimed Water:

- ANSI/AWWA C104/A21.4, cement mortar lining and asphaltic coating.
- ANSI/AWWA C151/A21.51 per above coating requirements

Sanitary Sewer and Force Mains:

- Exterior coating per ANSI/AWWA C151/A21.51 per above coating requirements.
- Sewer pipe shall have the interior coated (factory applied) amine cured novolac epoxy, containing at least 20% by volume of ceramic quartz pigment "PROTECTO 401" (40 mils nominal).

DIMENSIONS:

- Ductile iron pipe size O.D. (DIPS/DIOD)
- Eighteen or twenty foot (18' or 20') standard joint length.

PRESSURE RATING:

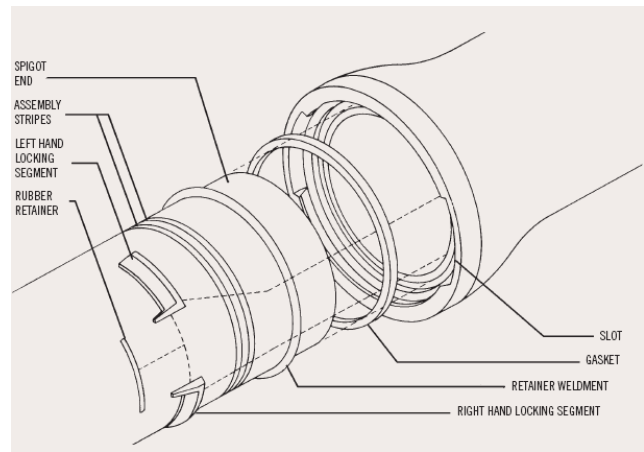
- Class 350 psi for four through twenty-four inch (4"-24") pipe.
- Class 250 psi for thirty through thirty-six inch (30"-36") pipe.

RESTRICTIONS:

- A TR Flex Gripper Ring shall be used for field cut pipe connections, which do not have a factory weldment.
- Field welding of spigot weldments is not allowed.

OPTIONAL:

- Acceptable for horizontal directional drill (HDD) installations.



MANUFACTURER/PRODUCT(S):

- U.S. PIPE & FOUNDRY – TR FLEX
- MCWANE, INC. – TR FLEX

Created Date: 09/13/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 8.3 – DUCTILE IRON PIPE – PUSH-ON RESTRAINED JOINT – FLEX-RING JOINT – 4" THRU 36":

SPECIFICATION/MATERIAL:

Restrained pipe shall meet/exceed the following performance specifications:

- Shall conform with ANSI/AWWA C150/A21.50 thicknesses and strength.
- Shall conform with ANSI/AWWA C151/A21.51. Additionally, 4"-16" pipe exterior shall be coated with a layer of arc-sprayed zinc per ISO 8179. The mass of zinc shall be 200 g/m² of pipe surface area. A finishing layer topcoat shall be applied to the zinc. The zinc coating system shall conform to ISO 8179-1 "Ductile iron pipes, fittings, accessories and their joints - External zinc based coat-ing - Part 1: Metallic zinc with finishing layer. Third Edition, 2017-07
- Pipe eighteen inches or larger (18"+) shall have standard asphaltic outside coating.
- Gaskets shall be furnished in accordance with ANSI/AWWA C111/A21.11.
- Shall use a standard size Fastite gasket.
- Pipe supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) for four through twelve inch (4"-12") pipe.
- Affidavit of compliance to this specification shall be available upon request.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.

COATING & LINING:

Potable and Reclaimed Water:

- ANSI/AWWA C104/A21.4, cement mortar lining and asphaltic coating.
- ANSI/AWWA C151/A21.51 per above coating requirements.

Sanitary Sewer and Force Mains:

- Exterior coating per ANSI/AWWA C151/A21.51 per above coating requirements.
- Sewer pipe shall have the interior coated (factory applied) amine cured novolac epoxy, containing at least 20% by volume of ceramic quartz pigment "PROTECTO 401" (40 mils nominal).

DIMENSIONS:

- Ductile iron pipe size O.D., (DIPS/DIOD)
- Eighteen or twenty foot (18' or 20') standard joint length.

PRESSURE RATING:

- Class 350 psi for four through twenty-four inch (4"-24") pipe.
- Class 250 psi for thirty through thirty-six inch (30"-36") pipe.

RESTRICTIONS:

- A Field Flex-Ring shall be used for field cut pipe connections, which do not have a factory weldment.
- Field welding of spigot weldments is not allowed.

ADDITIONAL INFORMATION:

- Standard Flex-Ring segments are yellow.
- Field Flex-Ring segments are yellow.

OPTIONAL:

- Acceptable for horizontal directional drill (HDD) installations.

4"- 12" Flex-Ring Joint



14"- 36" Flex-Ring Joint



MANUFACTURER/PRODUCT(S):

- **AMERICAN CAST IRON – FLEX-RING**

Created Date: 09/16/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

A 9 – GALVANIZED PIPE:

SPECIFICATION/MATERIAL:

- Schedule 40, galvanized steel pipe.
- Specifications shall conform to ASTM A53 grade A or latest revision thereof.

CONNECTION:

- Pipe shall have NPT threads on both ends and a coupling on one end making a full joint, Male Iron Pipe Thread (MIPT) X Female Iron Pipe Thread (FIPT).

DIMENSIONS:

- Twenty-one foot (21') standard joint length.

RESTRICTIONS:

- This material is **only** used for temporary sampling and flushing points during pipeline construction .
- Galvanized pipe is not acceptable for any other use.



MANUFACTURER:

- OPEN

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

**SECTION B:
FITTINGS
AND
ACCESSORIES**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section B: Fittings and Accessories

- B 1 PVC Fittings – Schedule 40
- B 2 PVC Fittings – Schedule 80 (Nipples & Plugs Only)
- B 3 High Density Polyethylene (HDPE) Flange & Mechanical Joint Adapters – AWWA C906
- B 4 High Density Polyethylene (HDPE) Pipe Wall Stiffeners
- B 5 Plastic Fittings – SDR 21
- B 6 PVC Fittings – Gasketed PVC – ASTM D3034
- B 6.1 PVC Fittings – Gasketed PVC – AWWA C900
- B 7 Brass Fittings/Miscellaneous
- B 8 Flanged Joint Fittings – AWWA C110
- B 8.1 Flange Joint Accessory Kits
- B 9 Mechanical Joint Fittings – AWWA C110 – Full Body – 4” Thru 36”
- B 10 Mechanical Joint Fittings – AWWA C153 – Compact Body – 4” Thru 36”
- B 11 Mechanical Joint Accessory Kits
- B 12 Mechanical Joint Connector
- B 13 Push-On Joint Fittings – AWWA C110/C153 – 4” Thru 24”
- B 14 Push-On Restrained Joint Fittings – Flex-Ring – 14” Thru 36”
- B 15 Push-On Restrained Joint Fittings – TR Flex – 14” Thru 36”

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 1 – PVC FITTINGS – SCHEDULE 40:

SPECIFICATION/MATERIAL:

Schedule 40 PVC fittings shall meet/exceed the following performance specifications:

- ASTM D2466, this standard covers Schedule 40 PVC threaded and socket pressure fittings. The standard stipulates thread and socket specifications as well as minimum lengths, wall thicknesses, burst pressures, material classification, quality, and requirements for marking identification.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines, when used in a potable water installation.

CONNECTION:

Adapters:

- Male Iron Pipe Thread (MIPT) X Solvent Weld (slip)
- Female Iron Pipe Thread (FIPT) X Solvent Weld (slip)

Couplings:

- Solvent Weld (slip) X Solvent Weld (slip)

Reducers:

- Solvent Weld (slip) X Solvent Weld (slip)

Bends:

- Solvent Weld (slip) X Solvent Weld (slip)

Tees:

- Solvent Weld (slip) X Solvent Weld (slip)

Cap:

- Solvent Weld (slip) X Solvent Weld (slip)

COLOR-CODE:

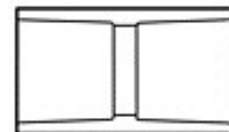
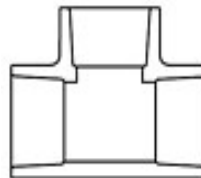
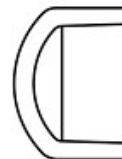
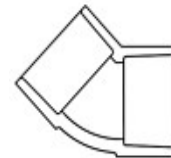
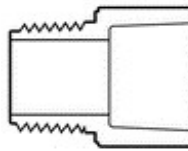
- Blue.....Potable Water
- Green.....Sanitary Sewer/Force Main
- Purple.....Reclaimed Water
- White.....All Services
- Gray.....All Services

SIZES:

- One-half (1/2") inch
- Three-quarter inch (3/4")
- One inch (1")
- One & one-half inch (1-1/2")
- Two inch (2")

RESTRICTIONS:

- Use of this product is limited to:
 - Customer side of meter Irrigation systems



MANUFACTURER:

- LASCO
- SPEARS

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 2 – PVC FITTINGS – SCHEDULE 80 (NIPPLES & PLUGS ONLY):

SPECIFICATION/MATERIAL:

Schedule 80 fittings (nipples & plugs) shall meet/exceed the following performance specifications:

- ASTM D2467, threaded pressure fittings, dimensions, thread gauging, minimum wall thickness and burst pressure, material classification, various quality aspects and requirements for marking identification for plugs.
- ASTM D1784, manufactured from compounds with cell classification 12454 (type 1, grade 1 material) for nipples & plugs.
- ASTM D1785, dimensional requirements, minimum burst and sustained pressure requirements, maximum operating pressure, and test procedures for determining pipe quality with respect to workmanship and materials for nipples.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines.

CONNECTION:

Nipples:

- Male Iron Pipe Thread (MIPT) on both ends.

Plugs:

- Male Iron Pipe Thread (MIPT)

COLOR-CODE:

- Blue.....Potable Water
- Green.....Sanitary Sewer
- Purple.....Reclaimed Water
- White.....All Services
- Gray.....All Services

SIZES:

- Three-quarter inch (3/4")
- One inch (1")
- One & one-half inch (1-1/2")
- Two inch (2")

RESTRICTIONS:

- Only male threads will be accepted in this section.



MANUFACTURER:

- CHEMTROL/NIBCO
- LASCO
- SPEARS

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 3 – HIGH DENSITY POLYETHYLENE (HDPE) FLANGE AND MECHANICAL JOINT ADAPTERS – AWWA C906:

SPECIFICATION/MATERIAL:

High Density Polyethylene, HDPE, fittings shall meet/exceed the following performance specifications:

- PE4710 Resin listed in Plastic Pipe Institute TR4.
- Cell classification per ASTM D3350 = 445574C/E ASTM D3035, minimum wall values.
- AWWA C906.
- Stainless Steel inserts are not required, but are acceptable, to meet this specification.
- Manufacturer shall be listed with the Plastic Pipe Institute as meeting the recipe and mixing requirements for pipe in this classification.

POTABLE WATER REQUIREMENTS:

- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 14, 61 or "NSF-pw".

COLOR-CODE:

- Black.....All Services

DIMENSIONS:

- Ductile iron pipe size O.D., D.I.P.S.
- DR 9, DR 11

SIZES:

- Four inch (4") through twenty-four inch (24").

PRESSURE RATING:

- 200 psi operating pressure @ 73.4 F for DR 11.
- 250 psi operating pressure @ 73.4 F for DR 9.

DESIGN:

- Plain end (PE) X mechanical joint (MJ).
- Plain end (PE) X flange joint (FL).

INCLUDE:

- Ductile iron gland ring.
- Rubber gasket.
- Proper size, length and number of bolts and nuts.

RESTRICTIONS:

- Mechanical joint adapters for butterfly valves must be specified to ensure proper valve operation.

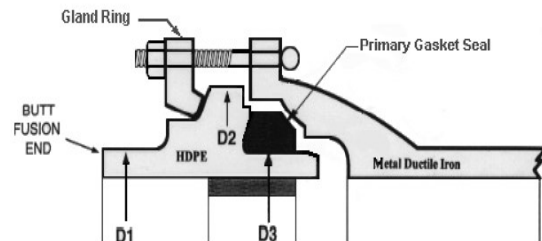
FIRE MAIN PRESSURE RATING & REQUIREMENTS:

- Dimension Ratio (DR) DR 9, pressure class 250 for fire mains.
- Factory Mutual Approved (FM).
- Stainless Steel insert stiffener required.

FLANGE ADAPTER



MECHANICAL JOINT ADAPTER



MANUFACTURER:

- CENTRAL PLASTICS
- CP CHEMICAL/PERFORMANCE PIPE
- ORION ENTERPRISES, INC.
- SPECIFIED FITTINGS

Created Date: 01/19/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 4 – HIGH DENSITY POLYETHYLENE (HDPE) PIPE WALL STIFFENERS:

SPECIFICATION/MATERIAL:

High Density Polyethylene, HDPE, pipe wall stiffeners shall meet/exceed the following performance specifications:

- Stiffeners shall be suitable for use with HDPE pipe made in accordance with AWWA C906, SDR 9 and 11.
- Shall be suitable for use with standard mechanical joint pipe or fittings made in accordance with ANSI/AWWA C111/A21.11, or ANSI/AWWA C153/A21.53, latest revision thereof.
- ASTM A240 type 304 or 316 Stainless Steel

DESIGN:

- Shall be either one or two piece design.
- Shall fit securely in the inside of pipe.

PRESSURE RATING:

- Stiffeners shall be suitable for use at pressures up to 150 psi

RESTRICTIONS:

- The use of this product is limited to repairs of existing, in-use, pipelines that can not be dewatered sufficiently to repair by fusion method.



MANUFACTURER/PRODUCT(S):

- **CASCADE WATERWORKS MFG. - CPS-DIPS SERIES**
- **JCM IND. - 230 & 231 SERIES**
- **ROMAC - STAINLESS STEEL STIFFENER**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 5 – PLASTIC FITTINGS – SDR 21:

SPECIFICATION/MATERIAL:

Plastic fittings (SDR 21) shall meet/exceed the following performance specifications:

- ASTM D1784, manufactured from compounds with cell classification 12454 (type 1, grade 1 material).
- Joints per ASTM D3139 testing requirements. Gaskets per ASTM F477.
- No solvent cement weld pipe or fittings will be accepted.
- Standard Dimension Ratio (SDR) 21.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines.

PRESSURE RATING:

- 200 psi operating pressure @ 73.4 Degrees F

CONNECTION:

- Male Iron Pipe Thread (MIPT) X Push-on integral bell type supplied with elastomeric gaskets installed.
- Push-on integral bell X Push-on integral bell supplied with elastomeric gaskets installed.

COLOR-CODE:

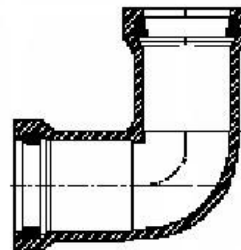
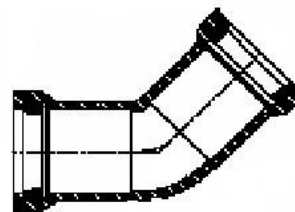
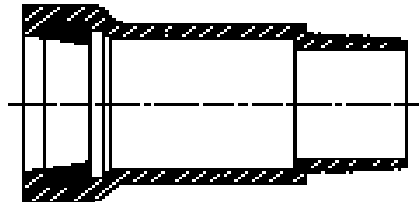
- Blue.....Potable Water
- Purple.....Reclaimed Water
- Green.....Sanitary Sewer
- White.....All Services

DIMENSIONS:

- Iron pipe size (IPS) Outside diameter controlled.

RESTRICTIONS:

- Only male threads will be accepted in this section.
- Use of this product is limited to two inch (2") diameter pressure applications.



MANUFACTURER:

- HARCO

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJJ)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 6 – PVC FITTINGS – GASKETED PVC – ASTM D3034:

SPECIFICATION/MATERIAL:

Plastic fittings (ASTM D3034) shall meet/exceed the following performance specifications:

- ASTM D3034 fitting requirements. Gaskets per ASTM F477.
- ASTM D1784, manufactured from compounds with cell classification 12454 (type 1, grade 1 material).
- No solvent cement weld pipe or fittings will be accepted.
- Joint per ASTM D3212 sewer plastic pipe using elastomeric gaskets.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in sanitary sewer.

DIMENSIONS:

- SDR 35, Standard wall, minimum requirement.
- SDR 26, Heavy wall, exceeds minimum requirements.

CONNECTION:

- Male Iron Pipe Thread (MIPT) X Push-on integral bell type supplied with elastomeric gaskets installed.
- Female Iron Pipe Thread (FIPT) X Push-on integral bell type supplied with elastomeric gaskets installed.
- Push-on integral bell X Push-on integral bell supplied with elastomeric gaskets installed.
- Spigot X Push-on integral bell supplied with elastomeric gaskets installed.

COLOR-CODE:

- Green....Sanitary Sewer
- White.....Sanitary Sewer



MANUFACTURER:

- NAPCO/CERTAINTeED
- GPK PRODUCTS
- HARCO
- IPEX
- MULTI-FITTINGS
- TIGRE USA INC.
- SPECIFIED FITTINGS, INC.

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 6.1 – PVC FITTINGS – GASKETED PVC – AWWA C900:

SPECIFICATION/MATERIAL:

Plastic fittings (AWWA C900) shall meet/exceed the following performance specifications:

- Shall be manufactured in one piece of injection molded or fabricated from a PVC compound meeting ASTM D1784.
- Gaskets per ASTM F477.
- ASTM D1784, manufactured from compounds with cell classification 12454 (type 1, grade 1 material).
- No solvent cement weld pipe or fittings will be accepted on sizes less than or equal to 8". Fabricated fittings are acceptable for sizes equal to and larger than 10".
- Joint per ASTM D3139 bell joint using elastomeric gaskets.

DIMENSIONS:

- C900 DR 18, 235 psi minimum requirement.

CONNECTION:

- Male Iron Pipe Thread (MIPT) X Push-on integral bell type supplied with elastomeric gaskets installed.
- Female Iron Pipe Thread (FIPT) X Push-on integral bell type supplied with elastomeric gaskets installed.
- Push-on integral bell X Push-on integral bell supplied with elastomeric gaskets installed.
- Spigot X Push-on integral bell supplied with elastomeric gaskets installed.

RESTRICTIONS:

- Use of this product is limited to:
 - Gravity sewer laterals and mains.



MANUFACTURER:

- HARCO
- MACON PLASTICS, INC.
- MULTI-FITTINGS
- NAPCO
- SPECIFIED FITTINGS, INC.

Created Date: 01/19/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 7 – BRASS FITTINGS/MISCELLANEOUS:

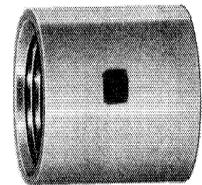
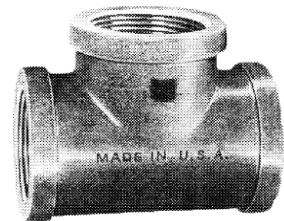
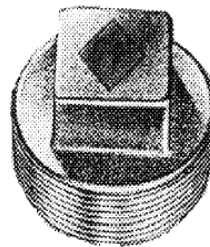
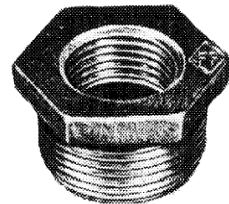
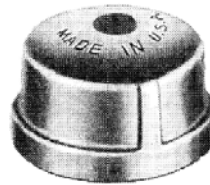
SPECIFICATION/MATERIAL:

Nipples, caps, plugs, tees, bend, and bushings shall meet/exceed the following performance specifications:

- Brass body conforming to AWWA C800, ASTM B62 (85-5-5-5) or the latest revisions thereof. All threads shall be standard iron pipe thread. All nipples shall conform to ASTM B43 (Seamless Red Brass Nipples) or latest revision thereof.

CONNECTION:

- Male iron pipe thread X male iron pipe thread.
- Female iron pipe thread X female iron pipe thread.
- Male iron pipe thread X female iron pipe thread.



MANUFACTURER:

- CAMBRIDGE BRASS
- FORD METER BOX CO. INC.
- LEE BRASS
- MERIT BRASS

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 8 – FLANGED JOINT FITTINGS – AWWA C110:

SPECIFICATION/MATERIAL:

Flanged fittings shall meet/exceed the following performance specifications:

- Fittings shall be ductile iron per ASTM A536 or cast iron per ASTM A126.
- Shall be produced in accordance with laying lengths specified in ANSI/AWWA C110/A21.10.
- Rubber gasket joints in accordance with ANSI/AWWA C111/A21.11.
- Flange surface shall be faced and drilled in accordance with ASME B16.1 Class 125.
- Nuts, bolts and gaskets shall be designed to withstand the design and test pressures of the pipe. All fittings shall have distinctly cast upon them the manufacturer's identification, pressure rating, nominal diameter and number of degrees or fraction of a circle on all bends.
- Fittings supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Factory Mutual Approved (FM) **and** Underwriter Laboratory Listed (UL) as noted by (UL/FM) for pipes four through twelve inches (4"-12"). Markings must be cast on the fitting at time of manufacture to meet this requirement.
- Affidavit of compliance to this specification shall be available upon request.

COATING

Potable and Reclaimed Water:

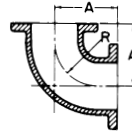
- Exterior coating: asphaltic or red epoxy coating.
- ANSI/AWWA C104/A21.4, cement mortar lining and asphaltic coating.
- ANSI/AWWA C116/A21.16 epoxy coating both inside and out.

Sanitary Sewer and Force Mains:

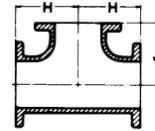
- Exterior coating: asphaltic or red epoxy coating.
- Sewer pipe shall have the interior coated (factory applied) or approved equal:
 - with an amine cured novolac epoxy, containing at least 20% by volume of ceramic quartz pigment "PROTECTO 401" (40 mils nominal)

PRESSURE RATING:

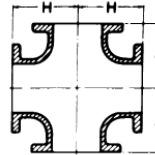
- Minimum of 250 psi for sizes four inch (4") through twenty-four inch (24").



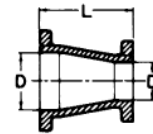
90° Bends (1/4)



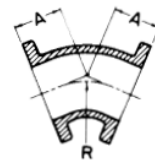
Straight Tees, Reducing on Branch Tees



Straight and Reducing Crosses



Concentric Reducer



45° Bends (1/8)

MANUFACTURER:

- AMERICAN CAST IRON
- MCWANE, INC./TYLER UNION
- SIGMA CORP.
- STAR PIPE PRODUCTS
- U.S. PIPE
- SIP IND.

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 8.1 – FLANGE JOINT ACCESSORY KITS:

SPECIFICATION/MATERIAL:

Flange Joint Accessory Kits shall meet/exceed the following performance specifications:

- Designed to work with flange pipe and fittings per ANSI/AWWA C110/A21.10 and ANSI B16.1 Class 125.
- Rubber gasket joints in accordance with ANSI/AWWA C111/A21.11.
- Nuts, bolts and gaskets shall be designed to withstand the design and test pressures of the pipe.
- Flat ring gaskets are preferred, but full face gaskets are acceptable.

Hex Bolts, Nuts & Lock Washers:

- Threads per ANSI B1.1 course thread series, Class 2A external and Class 2B internal.
- Stainless steel, A304.

Gasket:

- Synthetic red rubber per ASTM 13303.
- SBR.....Buna-S
- EPDM....Ethylene propylene
- NBR.....Nitrile/Buna-N
- FKM.....Viton; Fluore

REQUIREMENTS:

- Each accessory kit shall be a boxed package.

INCLUDE:

- One (1) rubber gasket.
- Proper number and size of bolts and nuts required for each pipe fitting face.
- Proper number and size lock washers when required.

RESTRICTIONS:

- The accessory kits, if ordered separate from the fitting, must be palletized for safety.

ADDITIONAL REQUIREMENTS:

- Lock washers are required when installed as part of a sewer pumping facility.



MANUFACTURER:

- SIGMA CORP.
- STAR PIPE PRODUCTS
- AMERICAN CAST IRON
- CLOW VALVE
- MCWANE, INC./TYLER UNION
- US PIPE

Created Date: 07/19/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 9 – MECHANICAL JOINT FITTINGS – AWWA C110 – FULL BODY – 4” THRU 36”:

SPECIFICATION/MATERIAL:

Mechanical joint, full body, fittings shall meet/exceed the following performance specifications:

- Fittings shall be ductile iron per ASTM A536. Shall be produced in accordance with laying lengths and body thickness specified in ANSI/AWWA C110/A21.10.
- Rubber gasket joints in accordance with ANSI/AWWA C111/A21.11.
- All fittings shall have distinctly cast upon them the manufacturer's identification, pressure rating, nominal diameter and number of degrees or fraction of a circle on all bends.
- Ductile iron fittings shall have the letters "DI" or "Ductile" cast on them.
- Fittings supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Sizes four through twelve inch (4"-12") Factory Mutual Approved (FM) or Underwriter Laboratory Listed (UL) is required. Marking must be cast on the fitting at time of manufacture to meet this requirement.
- Affidavit of compliance to this specification shall be available upon request.

COATING & LINING:

Potable and Reclaimed Water:

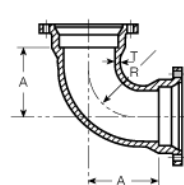
- Exterior coating: asphaltic coating.
- ANSI/AWWA C104/A21.4, cement mortar lining and asphaltic coating.
- ANSI/AWWA C116/A21.16 epoxy coating both inside and out.

Sanitary Sewer and Force Mains:

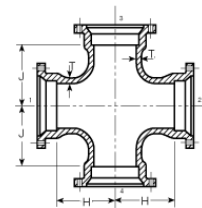
- Exterior coating: asphaltic coating.
- Sewer pipe shall have the interior coated (factory applied) or approved equal:
 - with an amine cured novolac epoxy, containing at least 20% by volume of ceramic quartz pigment "PROTECTO 401" (40 mils nominal).

PRESSURE RATING:

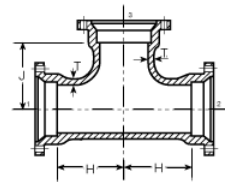
- Minimum of 350 psi for four through twenty-four inch (4"-24") pipe.
- Minimum of 250 psi for thirty through thirty-six inch (30"-36") pipe.



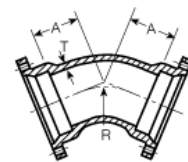
MJ and MJ



All MJ Cross



All MJ Tee



MJ and MJ

MANUFACTURER:

- AMERICAN CAST IRON
- MCWANE, INC./TYLER UNION
- SIGMA CORP.
- STAR PIPE PRODUCTS
- U.S. PIPE (30" - 48" ONLY)

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 10 – MECHANICAL JOINT FITTINGS – AWWA C153 – COMPACT BODY – 4” THRU 36”:

SPECIFICATION/MATERIAL:

Mechanical joint, compact or short body, fittings shall meet/exceed the following performance specifications:

- Fittings shall be ductile iron.
- Shall be produced in accordance with laying lengths and body thickness specified in ANSI/AWWA C153/A21.53.
- Rubber gasket joints in accordance with ANSI/AWWA C111/A21.11.
- All fittings shall have distinctly cast upon them the manufacturer's identification, pressure rating, nominal diameter and number of degrees or fraction of a circle on all bends.
- Ductile iron fittings shall have the letters “DI” or “Ductile” cast on them.
- Fittings supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A..
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Sizes four through twelve inch (4"-12") Factory Mutual Approved (FM) or Underwriter Laboratory Listed (UL) is required. Marking must be cast on the fitting at time of manufacture to meet this requirement.
- Affidavit of compliance to this specification shall be available upon request.

COATING & LINING:

Potable and Reclaimed Water:

- Exterior coating: asphaltic coating.
- ANSI/AWWA C104/A21.4, cement mortar lining and asphaltic coating.
- ANSI/AWWA C116/A21.16 epoxy coating both inside and out.

Sanitary Sewer and Force Mains:

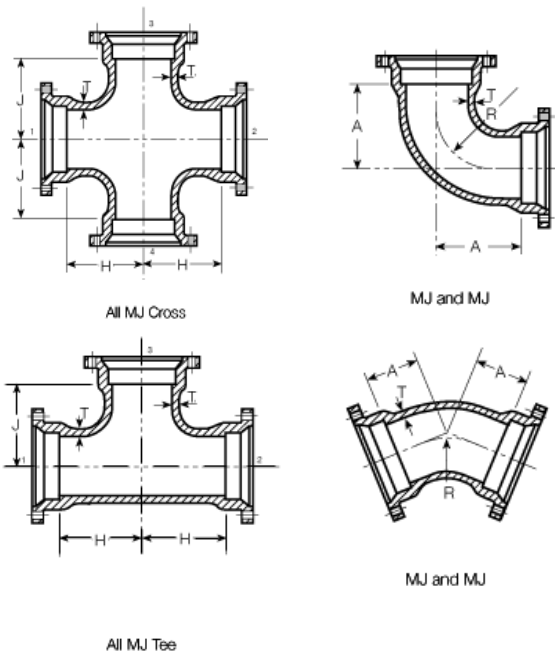
- Exterior coating: asphaltic coating.
- Sewer pipe shall have the interior coated (factory applied) or approved equal:
 - Containing at least 20% by volume of ceramic quartz pigment “PROTECTO 401” (40 mils nominal).

- The inside of the bell socket including a portion of the gasket cavity and a portion of the pipe barrel are coated with 8-mils (minimum) of epoxy.

PRESSURE RATING:

Minimum of 350 psi for four through twenty-four inch (4"-24") pipe.

Minimum of 250 psi for thirty through thirty-six inch (30"-36") pipe.



MANUFACTURER:

- **AMERICAN CAST IRON**
- **MCWANE, INC./TYLER UNION**
- **SIGMA CORP.**
- **STAR PIPE PRODUCTS**
- **U.S. PIPE**
- **SIP IND.**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 11 – MECHANICAL JOINT ACCESSORY KITS:

SPECIFICATION/MATERIAL:

Mechanical Joint Ductile Iron Pipe Fitting Accessory Kits shall meet/exceed the following performance specifications:

- Rubber gasket joints in accordance with ANSI/AWWA C111/A21.11 and the latest revisions thereof.
- Accessory kits for 4" through 12" sizes shall also conform to ANSI/AWWA C153/A21.53 and the latest revisions thereof.
- Accessory kits for 14" through 36" sizes shall also conform to ANSI/AWWA C110/A21.10 and the latest revisions thereof.
- Nuts, bolts and gaskets shall be designed to withstand the design and test pressures of the pipe.
- Mechanical joint glands shall be ductile iron.
- T-bolts and nuts shall be corten.
- Glands supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.

Gasket:

- SBR.....Buna-S
- EPDM....Ethylene Propylene
- NBR.....Nitrile/Buna-N
- FKM.....Viton; Fluorel

REQUIREMENTS:

- Each accessory kit shall be a boxed package.

INCLUDE:

- One (1) ductile iron gland.
- One (1) rubber gasket.
- Proper number of corten bolts and nuts required for each pipe fitting face.

RESTRICTIONS:

- The accessory kits, if ordered separate from the fitting, must be palletized for safety.



MANUFACTURER:

- AMERICAN CAST IRON
- CLOW VALVE
- SIGMA CORP.
- STAR PIPE PRODUCTS
- TYLER UNION
- U.S. PIPE

Created Date: 01/19/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 12 – MECHANICAL JOINT CONNECTOR:

SPECIFICATION/MATERIAL:

Restraint devices for nominal pipe sizes 4 inch through 24 inch shall consist of joining two mechanical joint fittings or a fitting to a valve, incorporated into a gland that shall meet/exceed the following performance specifications:

- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Ductile iron conforming to ASTM A536 grade 80-55-06, the latest revision thereof.
- Supplied with a Fusion bonded epoxy coating both inside and out in accordance with ANSI/ AWWA C116/A21.16.

Nuts and Bolts:

- Weathering steel (Corten) T-bolts and nuts conforming to ANSI/AWWA C111/A21.11 and ASTM A242.

Gasket:

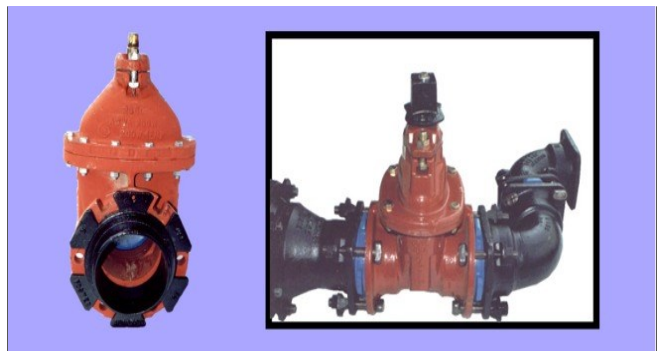
- Standard mechanical joint (MJ) gaskets conforming to AWWA C111/A21.11 and ASTM F477, made of:
 - SBR.....Buna-S
 - EPDM....Ethylene Propylene.
 - NBR.....Nitrile/Buna-N

INCLUDE:

- 1 each - Foster Adapter
- 2 each - Proper size MJ Gaskets.
- Proper number and size corten bolts and nuts.

RESTRICTIONS:

- Not for use on hydrant shoes
- May not fit both "Run" and "Branch" on compact tees or crosses.
- Must have epoxy coating (**NOT VISIBLE IN ALL PHOTOS**).



MANUFACTURER/PRODUCT(S):

- INFACCT CORP. - FOSTER ADAPTER

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 13 – PUSH-ON JOINT FITTINGS – AWWA C110/C153 – 4” THRU 24”:

SPECIFICATION/MATERIAL:

Push-on fittings shall meet/exceed the following performance specifications:

- Fittings shall be ductile iron, per ASTM A536, and have either Tyton Joint or Fastite Joint socket connections.
- Shall be produced in accordance with principals specified in ANSI/AWWA C110/A21.10 and ANSI/AWWA C153/ A21.53.
- Rubber gasket joints in accordance with ANSI/AWWA C111/A21.11.
- All fittings shall have distinctly cast upon them the manufacturer's identification, pressure rating, nominal diameter and number of degrees or fraction of a circle on all bends.
- Fittings supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Sizes four through twelve inch (4"-12") pipe Factory Mutual Approved (FM) or Underwriter Laboratory Listed (UL) is required. Marking must be cast on the fitting at time of manufacture to meet this requirement.
- Affidavit of compliance to this specification shall be available upon request.

PRESSURE RATING:

- Minimum of 350 psi for sizes four through twenty-four inch (4"-24") pipe.

COATING & LINING:

Potable and Reclaimed Water:

- Exterior coating: asphaltic or red epoxy coating.
- ANSI/AWWA C104/A21.4, cement mortar lining and asphaltic coating.
- ANSI/AWWA C116/A21.16 epoxy coating both inside and out.

Sanitary Sewer and Force Mains:

- Exterior coating: asphaltic or red epoxy coating.
- Sewer fittings shall have the interior coated (factory applied) or approved equal:
 - with an amine cured novolac epoxy, containing at least 20% by volume of ceramic quartz pigment "PROTECTO 401" (40 mils thick).

RESTRICTIONS:

- Shall only be installed with approved restraining type gaskets.
- Shall only be installed on ductile iron pipe.
- Plain end fittings are not allowed.



MANUFACTURER/PRODUCT(S):

- **SIGMA CORP. - TYTON**
- **STAR PIPE PRODUCTS - TYTON**
- **MCWANE, INC./TYLER UNION - UNION-TITE**
- **U.S. PIPE - TYTON**

Created Date: 08/31/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 14 – PUSH-ON RESTRAINED JOINT FITTINGS – FLEX-RING – 14” THRU 36”:

SPECIFICATION/MATERIAL:

Push-on restrained fittings shall meet/exceed the following performance specifications:

- Fittings shall be ductile iron, per ASTM A536, and have a modified Fastite Joint socket connection.
- Shall provide a boltless field adaptable restrained joint bell fitting connection.
- Shall be produced in accordance with principals specified in ANSI/AWWA C110/A21.10 and ANSI/AWWA C153/A21.53.
- Rubber gasket joints in accordance with ANSI/AWWA C111/A21.11.
- All fittings shall have distinctly cast upon them the manufacturer's identification, pressure rating, nominal diameter and number of degrees or fraction of a circle on all bends.
- Fittings supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Should comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Affidavit of compliance to this specification shall be available upon request.

PRESSURE RATING:

- Minimum of 350 psi for fourteen through twenty-four inch (14"-24") pipe.
- Minimum of 250 psi for thirty through thirty-six inch (30"-36") pipe.

COATING & LINING:

Potable and Reclaimed Water:

- Exterior coating: asphaltic.
- ANSI/AWWA C104/A21.4, cement mortar lining and asphaltic coating.

Sanitary Sewer and Force Mains:

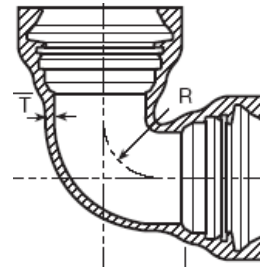
- Exterior coating: asphaltic.
- Sewer fittings shall have the interior coated (factory applied) amine cured novolac epoxy, containing at least 20% by volume of ceramic quartz pigment "PROTECTO 401" (40 mils nominal).

RESTRICTIONS:

- A Field Flex-Ring shall be used for field cut pipe connections, which do not have a factory weldment.
- Shall only be installed on ductile iron pipe.
- Plain end fittings are not allowed.

ADDITIONAL INFORMATION:

- Standard Flex-Ring segments are yellow.
- Field Flex-Ring segments are black.



Flex-Ring Socket W/ Standard Segments



MANUFACTURER/PRODUCT(S):

- **AMERICAN CAST IRON - FLEX-RING**

Created Date: 08/31/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

B 15 – PUSH-ON RESTRAINED JOINT FITTINGS – TR FLEX – 14” THRU 36”:

SPECIFICATION/MATERIAL:

Push-on restrained fittings shall meet/exceed the following performance specifications:

- Fittings shall be ductile iron, per ASTM A536, and have a modified Tyton Joint socket connection.
- Shall use ductile iron locking segments, inserted through a slot (or slots) in the bell face, to provide a positive axial lock between the bell interior surface and a retainer weldment on the spigot end of the pipe.
- Shall be produced in accordance with principals specified in ANSI/AWWA C110/A21.10 and ANSI/AWWA C153/A21.53.
- Rubber gasket joints in accordance with ANSI/AWWA C111/A21.11.
- All fittings shall have distinctly cast upon them the manufacturer's identification, pressure rating, nominal diameter and number of degrees or fraction of a circle on all bends.
- Fittings supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Affidavit of compliance to this specification shall be available upon request.

PRESSURE RATING:

- Minimum of 350 psi for fourteen through twenty-four inch (14"-24") pipe.
- Minimum of 250 psi for thirty through thirty-six inch (30"-36") pipe.

COATING & LINING:

Potable and Reclaimed Water:

- Exterior coating: asphaltic.
- ANSI/AWWA C104/A21.4, cement mortar lining and asphaltic coating.

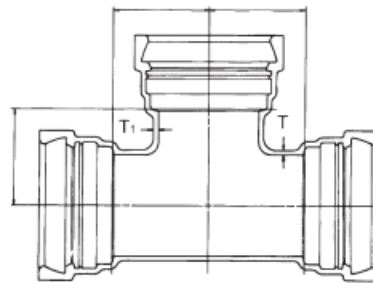
Sanitary Sewer and Force Mains:

- Exterior coating: asphaltic.
- Sewer fittings shall have the interior coated (factory applied) amine cured novolac epoxy, containing at

least 20% by volume of ceramic quartz pigment "PROTECTO 401" (40 mils nominal).

RESTRICTIONS:

- A TR Flex Gripper Ring shall be used for field cut pipe connections, which do not have a factory weldment.
- Shall only be installed on ductile iron pipe.
- Plain end fittings are not allowed.



TR Flex Gripper Ring Assembly



MANUFACTURER/PRODUCT(S):

- U.S. PIPE & FOUNDRY - TR FLEX OR HP LOK

Created Date: 08/31/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

**SECTION C:
JOINT RESTRAINTS**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section C: Joint Restraints

- C 1 Joint Restraints – Bell & Spigot Joint – New & In-Service Installations – 2” IPS – PVC Pipe
- C 1.1 Joint Restraints – Bell & Spigot Joint – New & In-Service Installations – AWWA C900 PVC Pipe
- C 1.1.1 Joint Restraints – Bell & Spigot Joint – New & In-Service Installations – AWWA C900 PVC & DI Pipe
- C 1.2 Joint Restraints – Bell & Spigot Joint – New Installations Only – AWWA C900 PVC Pipe
- C 1.3 Joint Restraints – Plain End to Mechanical Joint – AWWA C900 PVC Pipe
- C 2 Joint Restraints – Multiple Wedge Style Mechanical Joint – AWWA C900 PVC Pipe
- C 2.1 Joint Restraints – Multiple Wedge Style Mechanical Joint/Split Gland – Existing Installations Only – AWWA C900 PVC Pipe
- C 3 Joint Restraints – Flange Adapter – AWWA C900 PVC Pipe
- C 3.1 Joint Restraints – Flange Adapter – DI Pipe
- C 4 Joint Restraints – Multiple Wedge Style Bell & Spigot Joint – New Installations – DI Pipe
- C 4.1 Joint Restraints – Multiple Wedge Style Bell & Spigot Joint/Split Gland – Existing Installations – DI Pipe
- C 4.2 Joint Restraints – Multiple Wedge Style Mid Span Joint – New & Existing Installations – DI Pipe
- C 4.3 Joint Restraints – Multiple Wedge Style Mechanical Joint – DI Pipe
- C 4.4 Joint Restraints – Multiple Wedge Style Mechanical Joint/Split Gland – Existing Installations Only – DI Pipe
- C 5 Joint Restraints – Compression Style Mechanical Joint – DI Pipe
- C 6 Joint Restraint Gaskets – Push-On Joint – DI Pipe

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 1 – JOINT RESTRAINTS – BELL & SPIGOT JOINT – NEW & IN-SERVICE INSTALLATIONS – 2” IPS – PVC PIPE:

SPECIFICATION/MATERIAL:

Restraint devices for nominal IPS pipe joints and fittings on size 2 inch shall consist of two split rings with multiple gripping wedges or a series of serrations to grip the pipe in conjunction with a sufficient number of bolts connecting the retainer on one pipe to the other, shall meet/exceed the following performance specifications:

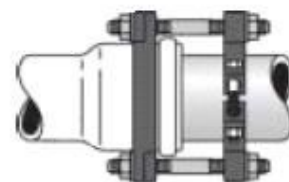
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.
- Shall possess a minimum rating of twice (2:1) the pressure rating of the pipe.
- Ductile Iron – ASTM A536. Grade 65-45-12.
- T-bolts, rods and hex nuts – Low alloy steel per ANSI/AWWA C111/A21.11

DESIGN:

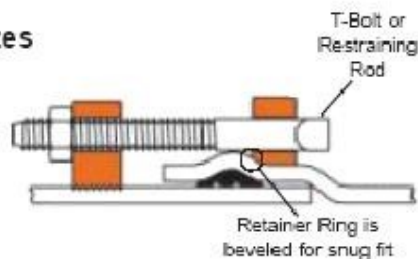
- Restraint devices for PVC pipe shall consist of two split rings a series of serrations to grip the pipe in conjunction with a sufficient number of bolts connecting the retainer on one pipe to the retainer on the next pipe or fitting.
- Shall be suitable for installation on new and in-service pipelines without disrupting pipeline service.

INCLUDE:

- Four (4) Split ring halves
- Two (2) Side clamping bolts and nuts
- Two (2) Proper length and size T-bolts and nuts or tie rods and nuts.



2"
Sizes



MANUFACTURER/PRODUCT(S):

- EBAA IRON - 6500, 7500 SERIES
- FORD METER BOX CO. INC. - UNI-FLANGE 1350, 1360, 1390 SERIES
- SIGMA CORP. - PVP SERIES (BELL & SPIGOT ONLY)

Created Date: 12/23/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 1.1 – JOINT RESTRAINTS – BELL & SPIGOT JOINT – NEW & IN-SERVICE INSTALLATIONS – AWWA C900 PVC PIPE:

SPECIFICATION/MATERIAL:

Restraint devices for nominal pipe sizes 4 inch through 12 inch shall consist of two split rings with multiple gripping wedges or a series of serrations to grip the pipe in conjunction with a sufficient number of bolts connecting the retainer on one pipe to the other and shall meet/exceed the following performance specifications:

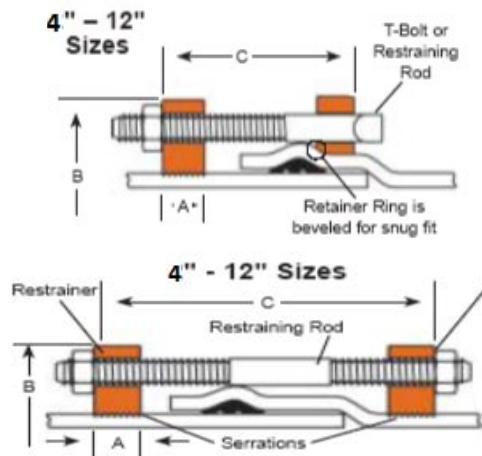
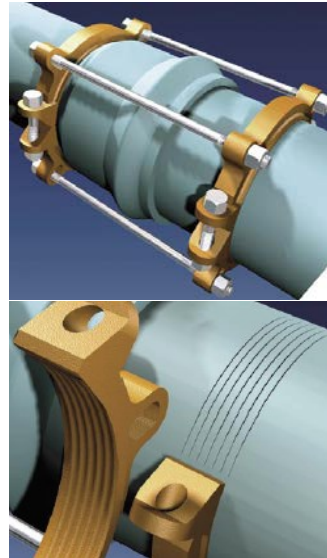
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.
- Shall possess a minimum rating of twice (2:1) the pressure rating of the pipe.
- Ductile Iron – ASTM A536 Grade 65-45-12.
- T-bolts, rods and hex nuts – Low alloy steel per ANSI/AWWA C111/ A21.11

DESIGN:

- Restraint devices for PVC pipe shall consist of two split rings with multiple gripping wedges or a series of serrations to grip the pipe in conjunction with a sufficient number of bolts connecting the retainer on one pipe to the retainer on the next pipe.
- Shall be suitable for installation on new and in-service pipelines without disrupting pipeline service.

INCLUDE:

- Four (4) Split ring halves
- Four (4) Side clamping bolts and nuts
- Proper number, length and size, T-bolts and nuts or tie rods and nuts.



MANUFACTURER/PRODUCT(S):

- EBAA IRON - 1500 & 1600 SERIES
- FORD METER BOX CO. INC. - UNI-FLANGE 1390
- STAR PIPE PRODUCTS - 1100, 1100G2, & 1200
- SIGMA CORP. - PV-LOK- PWP SERIES
- SMITH-BLAIR - 165 BELL-LOCK

Created Date: 01/19/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 1.1.1 – JOINT RESTRAINTS – BELL & SPIGOT JOINT – NEW & IN-SERVICE INSTALLATIONS – AWWA C900 PVC & DI PIPE:

SPECIFICATION/MATERIAL:

Dual use (PVC & DI pipe) bell and spigot restraint devices for nominal pipe sizes 4 inch through 12 inch shall meet/exceed the following performance specifications:

- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.
- Shall possess a minimum rating of twice (2:1) the pressure rating of the pipe.
- Shall be capable of new and in-service installations on PVC and DI pipe.
- Ductile Iron – ASTM A536. Grade 65-45-12.
- T-bolts, rods and hex nuts – Low alloy steel per ANSI/AWWA C111/A21.11

DESIGN:

- Restraint devices for PVC & DI pipe shall consist of a split ring behind the pipe bell and a split ring with multiple gripping wedges and/or a series of serrations to grip the pipe spigot in conjunction with a sufficient number of bolts connecting the bell ring on one pipe to the retainer on the next pipe.
- Shall be suitable for installation on new and in-service pipelines without disrupting pipeline service.
- Gripping wedges and/or a series of serrations are optional on the bell ring, required on spigot ring.

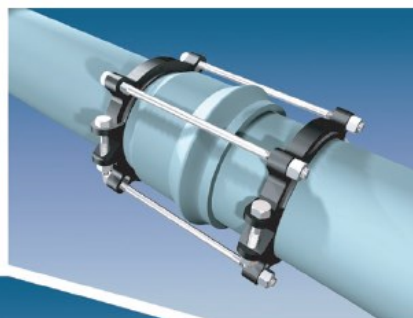
REQUIREMENTS:

- Each accessory kit shall be a boxed package.

INCLUDE:

- Four (4) Split ring halves.
- Four (4) Side clamping bolts and nuts.
- Proper number, length and size, T-bolts and nuts or tie rods and nuts.

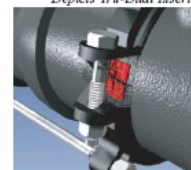
*Series 1612TD on 12 inch
PVC (C900) Pipe.*



*Series 1612TD on 12 inch
Ductile Iron Pipe.*



Depicts Tru-Dual Inserts



MANUFACTURER/PRODUCT(S):

- **EBAA IRON - 1500TD & 1600TD SERIES**

Created Date: 04/13/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 1.2 – JOINT RESTRAINTS – BELL & SPIGOT JOINT – NEW INSTALLATIONS ONLY – AWWA C900 PVC PIPE:

SPECIFICATION/MATERIAL:

Restraint devices for nominal pipe sizes 4 inch through 12 inch shall consist of one solid ring and one split or solid ring with multiple gripping wedges, or, a series of serrations to grip the pipe in conjunction with a sufficient number of bolts connecting the retainer on the spigot pipe to the bell of the other, and shall meet/exceed the following performance specifications:

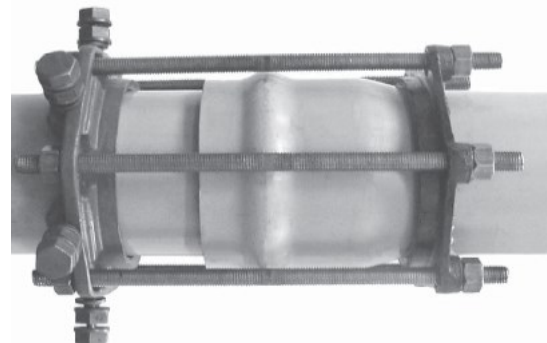
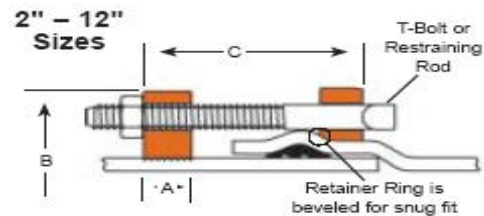
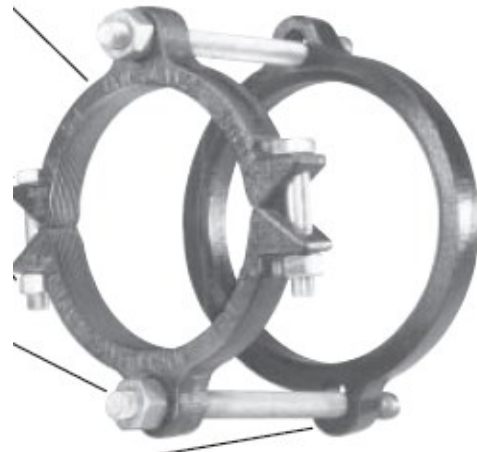
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.
- Shall possess a minimum rating of twice (2:1) the pressure rating of the pipe.
- Ductile Iron – ASTM A536. Grade 65-45-12.
- T-bolts, rods and hex nuts – Low alloy steel per ANSI/AWWA C111/A21.11.

DESIGN:

- Restraint devices for PVC pipe shall consist of one split ring or two solid rings with multiple gripping wedges or a series of serrations to grip the pipe in conjunction with a sufficient number of bolts connecting the retainer on one pipe to the retainer on the next pipe.
- Shall be capable of installation on new installation pipelines.

INCLUDE:

- Two (2) Split grip ring halves or One solid ring.
- One (1) Solid behind the bell ring.
- Two (2) Side clamping bolts and nuts, if required.
- Proper number, length and size, T-bolts and nuts or tie rods and nuts.



MANUFACTURER/PRODUCT(S):

- **FORD METER BOX CO. INC. - UNI-FLANGE**
1350 SERIES - Not for use on DR 14 PVC pipe.
- **STAR PIPE PRODUCTS - PVC**
STARGRIP-4100P

Created Date: 01/19/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 1.3 – JOINT RESTRAINTS – PLAIN END TO MECHANICAL JOINT – AWWA C900 PVC PIPE:

SPECIFICATION/MATERIAL:

Restraint devices for nominal pipe sizes 4 inch through 12 inch shall consist of a split ring with multiple gripping wedges or a series of serrations to grip the pipe in conjunction with a sufficient number of bolts connecting the retainer to the joint and shall meet/exceed the following performance specifications:

- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.
- Shall possess a minimum rating of twice (2:1) the pressure rating of the pipe.
- Ductile Iron – ASTM A536. Grade 65-45-12.
- T-bolts, rods and hex nuts – Low alloy steel per ANSI/AWWA C111/A21.11.

DESIGN:

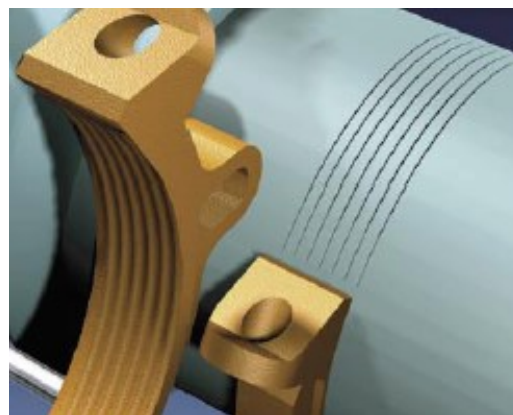
- Restraint devices for PVC pipe shall consist of a split ring with multiple gripping wedges or a series of serrations to grip the pipe in conjunction with a sufficient number of bolts connecting the retainer to the joint.

INCLUDE:

- Two (2) Split ring halves
- Two (2) Side clamping bolts and nuts
- Proper number, length and size, T-bolts and nuts or tie rods and nuts.

RESTRICTIONS:

- For use in existing, in-service pipelines only.



MANUFACTURER/PRODUCT(S):

- **EBAA IRON - 15PF00 SERIES**
- **FORD METER BOX CO. INC. - UNI-FLANGE 1300 SERIES**
- **STAR PIPE PRODUCTS - 1000C SERIES**
- **SIGMA CORP. - PV-LOK - PWM SERIES**
- **SMITH-BLAIR - 115 MJ-LOCK (FORMERLY BELL-LOCK)**

Created Date: 01/19/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 2 – JOINT RESTRAINTS – MULTIPLE WEDGE STYLE MECHANICAL JOINT – AWWA C900 PVC PIPE:

SPECIFICATION:

Restraint devices for nominal pipe sizes 4 inch through 12 inch shall consist of multiple gripping wedges incorporated into a follower gland and shall meet/exceed the following performance specifications:

- ANSI/AWWA C110/A21.10 or latest revision thereof.
- ANSI/AWWA C153/A21.53 or latest revision thereof.
- ANSI/AWWA C111/A21.11 or latest revision thereof.
- ASTM F1674-18 “Standard Test Method for Joint Restraint Products for use with PVC pipe”.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) for sizes through 12 inches.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Gland:**
 - Ductile iron conforming to the applicable provisions of ANSI/AWWA C111/A21.11 and ASTM A536.80.
- **Wedges:**
 - Ductile iron heat treated to a minimum hardness of 370 BHN.

DESIGN:

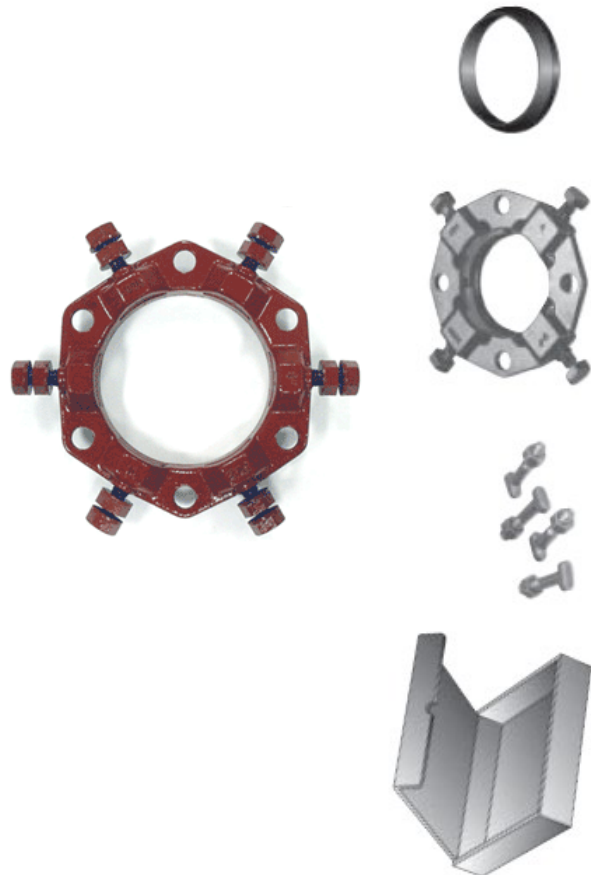
- Multiple gripping wedges incorporated within a mechanical joint follower gland, that when actuated, impart increasing resistance to pipe separation as pressure increases restraint nuts must be shear type torque design.
- Must include a minimum safety factor of 2:1 in all sizes.

REQUIREMENTS:

- Each accessory kit shall be a boxed package.

INCLUDE:

- One (1) ductile iron gland
- One (1) rubber gasket
- Proper number of corten T-bolts and nuts for each MJ pipe fitting face.



MANUFACTURER/PRODUCT(S):

- **EBAA IRON - MEGALUG 2000PV SERIES**
- **FORD METER BOX CO, INC.- UNI-FLANGE 1500 SERIES**
- **SMITH-BLAIR - CAM-LOCK 120**
- **STAR PIPE PRODUCTS - STARGRIP 4000 AND 4000G2 SERIES**
- **SIGMA CORP. - ONE LOK SERIES SLCE**

Created Date: 01/19/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 2.1 – JOINT RESTRAINTS – MULTIPLE WEDGE STYLE MECHANICAL JOINT/ SPLIT GLAND – EXISTING INSTALLATIONS ONLY – AWWA C900 PVC PIPE:

SPECIFICATION: Restraint devices for nominal pipe sizes 4 inch through 12 inch shall consist of multiple gripping wedges incorporated into a follower gland and shall meet/exceed the following performance specifications:

- ANSI/AWWA C110/A21.10 or latest revision thereof.
- ANSI/AWWA C153/A21.53 or latest revision thereof.
- ANSI/AWWA C111/A21.11 or latest revision thereof.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall possess a minimum rating of twice (2:1) the pressure rating of the pipe.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Gland:**
 - Ductile iron conforming to the applicable provisions of ASTM A536, Grade 65-45-12.
- **Wedges:**
 - Ductile iron heat treated to a minimum hardness of 370 BHN.

DESIGN:

- Multiple gripping wedges incorporated within a split mechanical joint follower gland, that when actuated, impart increasing resistance to pipe separation as pressure increases restraint nuts must be shear type torque design.
- Must include a minimum safety factor of 2:1 in all sizes.

REQUIREMENTS:

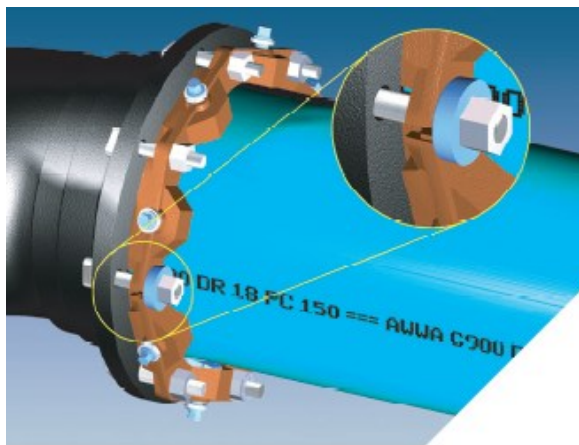
- Each accessory kit shall be a boxed package.

INCLUDE:

- One (1) ductile iron split gland
- One (1) rubber gasket
- Proper number of corten T-bolts and nuts for each MJ pipe fitting face.

RESTRICTIONS:

- For use in existing, in-service pipelines only.



Series 2012SV, for 12" Mechanical Joint Pipe or Fittings

MANUFACTURER/PRODUCT(S):

- **EBAA IRON - MEGALUG 2000SV Series**

Created Date: 07/27/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 3 – JOINT RESTRAINTS – FLANGE ADAPTER – AWWA C900 PVC PIPE:

SPECIFICATION:

Restraint devices for nominal pipe sizes 4 inch through 12 inch shall consist of multiple gripping wedges or a series of serrations incorporated within a follower gland and shall meet/exceed the following performance specifications:

- ANSI/AWWA C111/A21.11 or latest revision thereof.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:**
 - Ductile Iron – ASTM A536 Grade 65-45-12.
 - Flange drilling to ANSI B16.1, 125 lbs.
- **Gasket:**
 - Standard mechanical joint gasket made from the following:
 - SBR.....Buna-S
 - EPDM....Ethylene Propylene
 - NBR.....Nitrile/Buna-N

DESIGN:

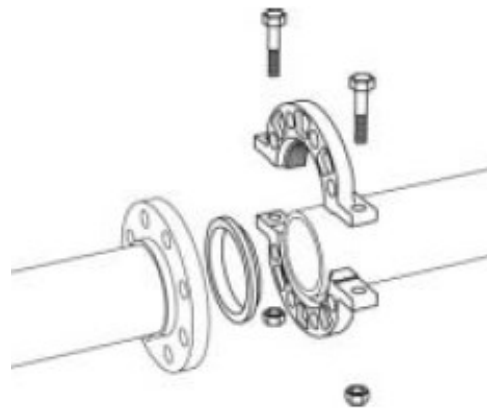
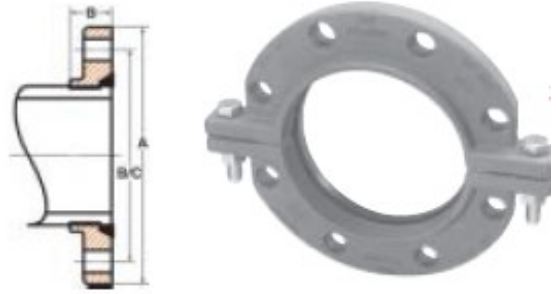
- Multiple gripping wedges or a series of serrations incorporated within a follower gland.
- Must include a minimum safety factor of 2:1 in all sizes.

INCLUDE:

- One (1) ductile iron gland
- One (1) rubber gasket
- Proper number of bolts and nuts for each pipe fitting face.

RESTRICTIONS:

- Application of product shall be approved by the Engineer.



MANUFACTURER/PRODUCT(S):

- **FORD METER BOX CO. INC. - UNI-FLANGE 900 SERIES**

Created Date: 01/19/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 3.1 – JOINT RESTRAINTS – FLANGE ADAPTER – DI PIPE:

SPECIFICATION:

Restraint devices for nominal pipe sizes 4 inch through 12 inch shall consist of multiple gripping wedges or screws incorporated within a follower gland and shall meet/exceed the following performance specifications:

- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) for sizes through 12 inches.
- ANSI/AWWA C111/A21.11 or latest revision thereof.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

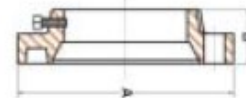
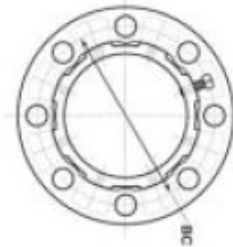
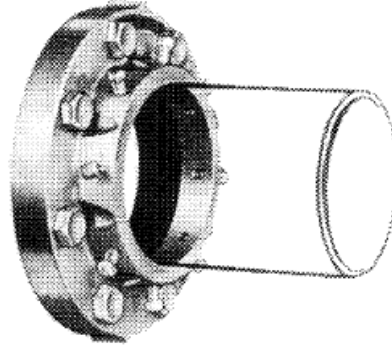
- **Body:**
 - Ductile Iron – ASTM A536 Grade 65-45-12.
 - Flange drilling to ANSI B16.1, 125 lbs.
- **Gasket:**
 - Standard mechanical joint gasket made from the following:
 - SBR.....Buna-S
 - EPDM....Ethylene Propylene
 - NBR.....Nitrile/Buna-N
- **Set Screws:**
 - Stainless Steel
 - AISI 4140 Steel/Zinc plated
 - Ductile Iron

DESIGN:

- Multiple gripping wedges or screws incorporated within a follower gland.
- Must include a minimum safety factor of 2:1 in all sizes.

INCLUDE:

- One (1) ductile iron gland
- One (1) rubber gasket
- Proper number of bolts and nuts for each pipe fitting face.
- Stainless Steel
- AISI 4140 Steel/Zinc plated
- Ductile Iron



MANUFACTURER/PRODUCT(S):

- **EBAA IRON - 1000 & 2100 SERIES**
- **FORD METER BOX CO, INC.- UNI-FLANGE 200, 400 & 420 SERIES**
- **ROMAC - FIELD FLANGE**
- **SIGMA CORP. - ZIP FLANGE/ ZF2 & ZF4 SERIES**
- **STAR PIPE PRODUCTS - 200 SERIES**
- **TYLER UNION - ADAPTER FLANGE - TUF FLANGE 4000 SERIES**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 4 – JOINT RESTRAINTS – MULTIPLE WEDGE STYLE BELL & SPIGOT JOINT – NEW INSTALLATIONS – DI PIPE:

SPECIFICATION:

Restraint devices for nominal pipe sizes 4 inch through 24 inch shall consist of multiple gripping wedges incorporated into one or two follower glands and shall meet/exceed the following performance specifications:

- ANSI/AWWA C110/A21.10 or latest revision thereof.
- ANSI/AWWA C153/A21.53 or latest revision thereof.
- ANSI/AWWA C111/A21.11 or latest revision thereof.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall possess a minimum rating of twice (2:1) the pressure rating of the pipe.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Glands:**
 - Ductile iron conforming to the applicable provisions of ANSI/AWWA C111/A21.11 and ASTM A536 grade 80-55-06
- **Wedges:**
 - Ductile iron heat treated to a minimum hardness of 370 BHN.

REQUIREMENTS:

- Each kit shall be a boxed package.

INCLUDE:

- Two (2) ductile iron glands
- Proper number, length and size, T-bolts and nuts or tie rods and nuts

OPTIONAL:

- May be installed on existing pipelines if product is capable.



Series 1706 on 6 inch Push-On Pipe Joints

MANUFACTURER/PRODUCT(S):

- **EBAA IRON - 1700 SERIES**
- **FORD METER BOX CO. INC. - UNI-FLANGE 1450 SERIES**
- **SIGMA CORP. - ONE LOK/SLDEH**
- **STAR PIPE PRODUCTS - STARGRIP 3100P SERIES**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 4.1 – JOINT RESTRAINTS – MULTIPLE WEDGE STYLE BELL & SPIGOT JOINT/SPLIT GLAND – EXISTING INSTALLATIONS – DI PIPE:

SPECIFICATION:

Restraint devices for nominal pipe sizes 4 inch through 24 inch shall consist of multiple gripping wedges incorporated into one or two follower split glands and shall meet/exceed the following performance specifications:

- ANSI/AWWA C110/A21.10 or latest revision thereof.
- ANSI/AWWA C153/A21.53 or latest revision thereof.
- ANSI/AWWA C111/A21.11 or latest revision thereof.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall possess a minimum rating of twice (2:1) the pressure rating of the pipe.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Glands:**
 - Ductile iron conforming to the applicable provisions ASTM A536 grade 65-45-12.
- **Wedges:**
 - Ductile iron heat treated to a minimum hardness of 370 BHN.

REQUIREMENTS:

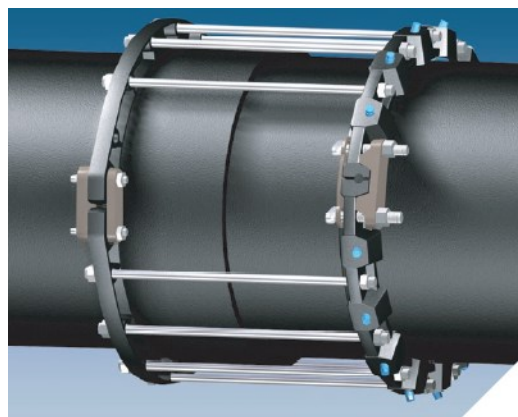
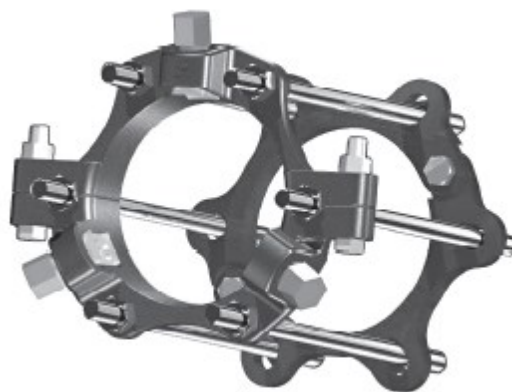
- Each kit shall be a boxed package.

INCLUDE:

- Two (2) ductile iron split glands
- Proper number, length and size, T-bolts and nuts or tie rods and nuts.

OPTIONAL:

- May be installed on new pipelines if product is capable.



1124HD on 24 inch pipe.

MANUFACTURER/PRODUCT(S):

- **EBAA IRON - 1100HD SERIES**
- **STAR PIPE PRODUCTS - STARGRIP 3100S SERIES**
- **SIGMA CORP. - ONE LOK/SSLDH**

Created Date: 07/27/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 4.2 – JOINT RESTRAINTS – MULTIPLE WEDGE STYLE MID SPAN JOINT – NEW & EXISTING INSTALLATIONS – DI PIPE:

SPECIFICATION: Restraint devices for nominal pipe sizes 4 inch through 24 inch shall consist of multiple gripping wedges incorporated into one or two split glands and shall meet/exceed the following performance specifications:

- ANSI/AWWA C110/A21.10 or latest revision thereof.
- ANSI/AWWA C153/A21.53 or latest revision thereof.
- ANSI/AWWA C111/A21.11 or latest revision thereof.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall possess a minimum rating of twice (2:1) the pressure rating of the pipe.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

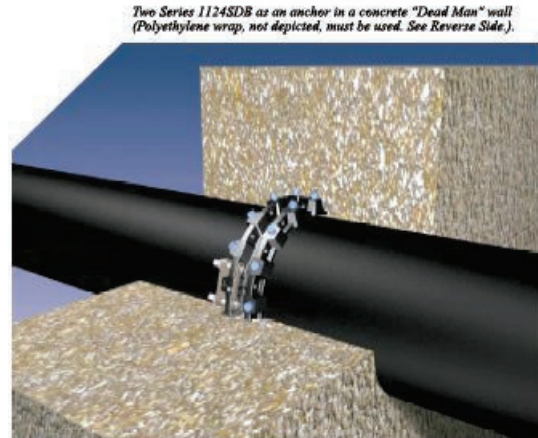
- **Gland body, Wedges:** Shall be cast from grade 65-45-12 ductile iron conforming to the applicable provisions of ANSI/AWWA C111/A21.11 and ASTM A536.
- **Wedges:** Ductile iron heat treated to a minimum hardness of 370 BHN.

INCLUDE:

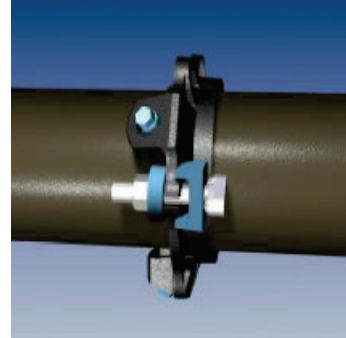
- One (1) ductile iron split gland.
- Proper number of corten T-bolts, nuts and appurtenances for each installation.

Important Note:

- When used as an anchor within concrete, polyethylene wrap must be used to prevent concrete intrusion into the wedge pocket.



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MANUFACTURER/PRODUCT(S):

- **EBAA IRON - 1100SDB SERIES**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 4.3 – JOINT RESTRAINTS – MULTIPLE WEDGE STYLE MECHANICAL JOINT – DI PIPE:

SPECIFICATION:

Restraint devices for nominal pipe sizes 4 inch through 24 inch shall consist of multiple gripping wedges incorporated into a follower gland shall meet/exceed the following performance specifications:

- ANSI/AWWA C110/A21.10 or latest revision thereof.
- ANSI/AWWA C153/A21.53 or latest revision thereof.
- ANSI/AWWA C111/A21.11 or latest revision thereof.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) for sizes through 12 inches.
- Underwriter Laboratory Listed (UL) as noted by (UL) for sizes through 24 inches.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Gland:** Ductile iron conforming to the applicable provisions of ANSI/AWWA C111/A21.11 and ASTM A536.80.
- **Wedges:** Ductile iron heat treated to a minimum hardness of 370 BHN.

DESIGN:

- Multiple gripping wedges incorporated within a mechanical joint follower gland, that when actuated, impart increasing resistance to pipe separation as pressure increases restraint nuts must be shear type torque design.
- Must include a minimum safety factor of 2:1 in all sizes.

REQUIREMENTS:

- Each accessory kit shall be a boxed package.

INCLUDE:

- One (1) ductile iron gland
- One (1) rubber gasket
- Proper number of corten T-bolts and nuts for each MJ pipe fitting face.

RESTRICTIONS:

- Shall not be used on plain end fittings (consult manufacturer's documentation).



MANUFACTURER/PRODUCT(S):

- EBAA IRON - MEGALUG 1100, 1100SD, 1100SDB
- FORD METER BOX CO. INC. - UNI-FLANGE 1400 SERIES
- ROMAC - ROMA GRIP/DI PIPE
- SIGMA CORP. - ONE LOK/SLDE
- SMITH-BLAIR - CAM-LOCK 111
- STAR PIPE PRODUCTS - STARGRIP 3000 SERIES

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 4.4 – JOINT RESTRAINTS – MULTIPLE WEDGE STYLE MECHANICAL JOINT/SPLIT GLAND – EXISTING INSTALLATIONS ONLY – DI PIPE:

SPECIFICATION:

- Restraint devices for nominal pipe sizes 4 inch through 24 inch shall consist of multiple gripping wedges incorporated into a mechanical joint follower gland, shall meet/exceed the following performance specifications:
- ANSI/AWWA C110/A21.10 or latest revision thereof.
- ANSI/AWWA C153/A21.53 or latest revision thereof.
- ANSI/AWWA C111/A21.11 or latest revision thereof.
- Shall possess a minimum rating of twice (2:1) the pressure rating of the pipe.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Gland:** Ductile iron conforming to the applicable provisions of ASTM A536 Grade 65-45-12.
- **Wedges:** Ductile iron heat treated to a minimum hardness of 370 BHN.

DESIGN:

- Multiple gripping wedges incorporated within a mechanical joint follower gland, that when actuated, impart increasing resistance to pipe separation as pressure increases restraint nuts must be shear type torque design.

REQUIREMENTS:

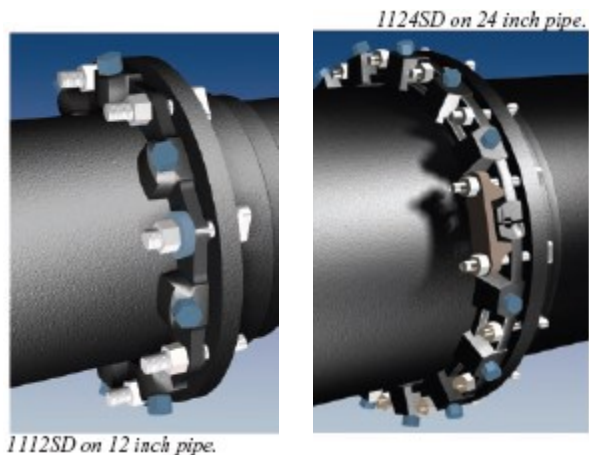
- Each accessory kit shall be a boxed package.

INCLUDE:

- One (1) ductile iron gland
- One (1) rubber gasket
- Proper number of corten T-bolts and nuts for each MJ pipe fitting face.

RESTRICTIONS:

- For use in existing, in-service pipelines only.



MANUFACTURER/PRODUCT(S):

- **EBAA IRON - MEGALUG 1100SD SERIES**
- **STAR PIPE PRODUCTS - STARGRIP 3000S SERIES**
- **SIGMA CORP. - ONE LOK SERIES SSDL**

Created Date: 07/27/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 5 – JOINT RESTRAINTS – COMPRESSION STYLE MECHANICAL JOINT – DI PIPE:

SPECIFICATION:

Restraint devices for nominal pipe sizes 4 inch through 12 inch mechanical joints consisting of multiple gripping wedges integral to the gasket that are compressed by a special follower gland, using standard T-bolts and nuts, that shall meet/exceed the following performance specifications:

- ANSI/AWWA C111/A21.11 or latest revision thereof.
- ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53, or latest revision thereof.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) for sizes through 12 inches.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.

MATERIAL:

- **Gland:** Ductile Iron per ASTM A536.
- **Gasket:**
 - SBR.....Buna-S
 - EPDM....Ethylene Propylene
 - NBR.....Nitrile/Buna-N
- **Bolts and Nuts:**
 - Corten T-bolts and nuts

DESIGN:

- Restraint devices for nominal mechanical joints, consisting of multiple gripping wedges integral to the gasket that are compressed by a special follower gland, using standard T-bolts and nuts.

INCLUDE:

- One (1) ductile iron gland
- One (1) rubber gasket
- Proper number of corten T-bolts and nuts for each MJ pipe fitting face.

RESTRICTIONS:

- Not approved for use on PVC Pipe

***PHOTO SHOWS BOTH PVC AND DI PIPE GASKETS, ONLY THE DI GASKET IS ACCEPTABLE AND ONLY FOR DI PIPE INSTALLATIONS.**



MANUFACTURER/PRODUCT(S):

- TYLER UNION - MJ FIELD LOK
- U.S. PIPE - MJ FIELD LOK

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

C 6 – JOINT RESTRAINT GASKETS – PUSH-ON JOINT – DI PIPE:

SPECIFICATION:

Restraint devices for nominal pipe sizes 4 inch through 24 inch for push-on Tyton Joint or Fastite Joint pipe and fittings, consisting of multiple gripping wedges integral to the gasket that are compressed when the joint is pushed home, that shall meet/exceed the following performance specifications:

- ANSI/AWWA C111/A21.11 or latest revision thereof.
- ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53, latest revision thereof.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) for sizes through 12 inches.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.

MATERIAL:

Gasket:

- SBR.....Buna-S
- EPDM....Ethylene Propylene
- NBR.....Nitrile/Buna-N

Locking Segments:

- Stainless Steel vulcanized into the gasket.

DESIGN:

- Gaskets shall be colored and the color shall be consistent throughout the entire cross section of the gasket. The color shall not be attained by surface coating, it shall be inherent within the rubber.
- Restrained gaskets are for use only in push-on joints. Both American's Amarillo Fast Grip Gaskets and U.S. Pipe, Red Field Lok 350 gaskets are acceptable.

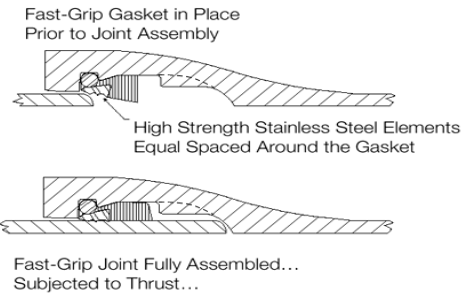
INCLUDE:

- One (1) Restraint push-on joint gasket.

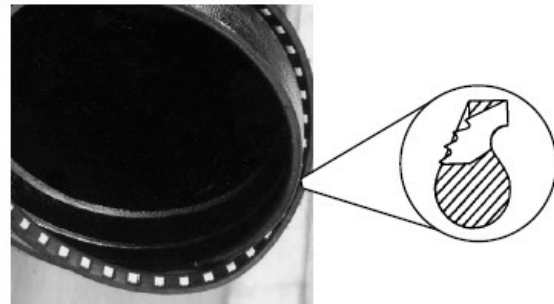
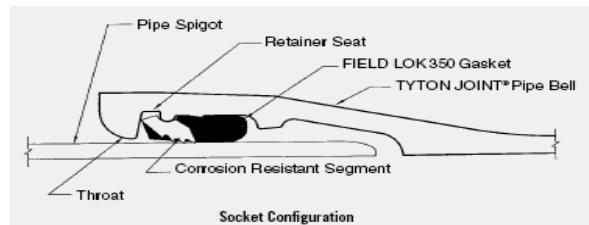
RESTRICTIONS:

- Amarillo Fast Grip gaskets shall only be installed in Fastite bell joints.
- Red Field Lok 350 gaskets shall only be installed in Tyton bell joints.

AMERICAN'S AMARILLO FAST GRIP JOINT



RED FIELD LOK 350 JOINT/ GASKET



MANUFACTURER/PRODUCT(S):

- **AMERICAN CAST IRON - AMARILLO FAST-GRIP GASKET**
- **U.S. PIPE - FIELD LOK 350 - RED GASKET**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

**SECTION D:
VALVES
AND
ACCESSORIES**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section D: Valves And Accessories

- D 1 Valves – Bronze Body Gate (Temporary Blow-offs Only)
- D 1.1 Valves – Bronze Body Hose Bibb (Temporary Sample Faucets Only)
- D 2 Valves – Resilient Seat – 2" (FIPT X FIPT)
- D 2.1 Valves – AWWA C509 – Resilient Seat – 4" Thru 12" (MJ X MJ)
- D 2.1.1 Valves – AWWA C515 – Resilient Seat – 4" Thru 12" (MJ X MJ)
- D 2.2 Tap Valves – AWWA C509 – Resilient Seat – 4" Thru 12" (FLG X MJ)
- D 2.2.1 Tap Valves – AWWA C515 – Resilient Seat – 4" Thru 12" (FLG X MJ)
- D 2.3 OS&Y Valves – Resilient Seat – 3" Thru 12" (FLG X FLG)
- D 2.4 Valves – Resilient Seat – 4" Thru 12" (FLG X FLG)
- D 2.5 Valves – Resilient Seat – 14" Thru 36" (MJ X MJ)
- D 2.6 Valves – Eccentric Plug – 4" Thru 6" (FLG X FLG)
- D 3 Check Valves – Resilient Seat – Potable Water – 4" Thru 12" (FLG X FLG)
- D 4 Swing Check Valves – Potable Water – 4" Thru 12" (FLG X FLG)
- D 4.1 Swing Check Valves – Sanitary Sewer – 4" Thru 12" (FLG X FLG)
- D 4.2 Swing Check Valves – Resilient Seat – Sanitary Sewer – 4" Thru 12" (FLG X FLG)
- D 5 Combination Air Valves – Stainless Steel – Sanitary Sewer – 2" Thru 12"
- D 5.1 Combination Air Valves – Stainless Steel – Sanitary Sewer – 12" and Larger
- D 5.2 Combination Air Valves – Reclaimed Water
- D 6 Air Release Valves – Short Body – Sanitary Sewer
- D 6.1 Air Release Valves – Stainless Steel – Sanitary Sewer
- D 7 Air Release Valves – (UL/FM) Potable & Reclaimed Water
- D 8 Air Release Valves – 2" Potable & Reclaimed Water

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 1 – VALVES – BRONZE BODY GATE (TEMPORARY BLOW-OFFS ONLY):

SPECIFICATION:

Bronze body gate valves shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) brass.
- Federal specification WW-V-541, Class A, Type 1, wedge disc.
- Non-rising stem gate valve.
- Manufactured for buried service.
- Turn counterclockwise to OPEN.
- Equipped with malleable iron hand wheel.
- Manufacturer's initials and pressure rating shall be cast on the valve body.

MATERIAL:

- **Body:** ASTM B62 (85-5-5-5) brass.
- **Handle:** Malleable iron or bronze.

PRESSURE RATING:

- 125 psi steam working pressure (SWP)
- 200 psi cold water rating (WOG).
- Shall be hydrostatic or pneumatic pressure tested at least twice the rated working pressure.

CONNECTION:

- Female screw ends threaded according to ANSI B2.1 for pipe threads.

REQUIREMENTS:

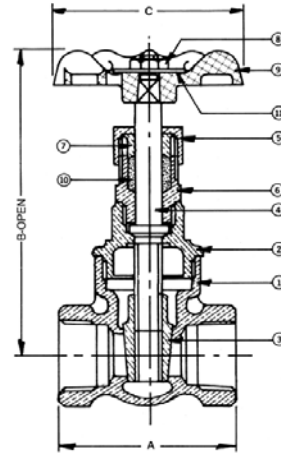
- Replacement hand wheels must be available.
- Provide catalog illustrations and parts schedule giving the material of which parts are made.

SIZES:

- Two inch (2").

RESTRICTIONS:

- This material is **only** used for temporary sampling and flushing points during pipeline construction.



MANUFACTURER/PRODUCT(S):

- **HAMMOND VALVE - IB645**
- **AMERICAN VALVE - 3FG**
- **NIBCO - T-113**
- **RED-WHITE VALVE CORP.**

Created Date: 11/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 1.1 – VALVES – BRONZE BODY HOSE BIBB (TEMPORARY SAMPLE FACUCETS ONLY):

SPECIFICATION:

Bronze body hose bibbs shall meet/exceed the following performance specifications:

- Manufactured from heavy duty brass components for commercial service applications.
- Shall provide positive shut off.
- Turn counterclockwise to OPEN.
- Equipped with malleable iron or bronze handle.
- Manufacturer's initials and pressure rating shall be cast on the valve body.

MATERIAL:

- **Body:** ASTM B584 grade C85700 brass
- **Handle:** Malleable iron or bronze.
- **Disk Seal:** NBR (Nitrile/Buna-N) or EPDM (Ethylene Propylene) rubber

PRESSURE RATING:

- 125 psi minimum non-shock cold working pressure.

CONNECTION:

- **Inlet:** 3/4" male pipe thread according to ANSI B2.1 for pipe threads.
- **Outlet:** 3/4" male hose thread according to ANSI B2.4 for loose-fitting hose threads.

REQUIREMENTS:

- Replacement handles must be available.
- Provide catalog illustrations and parts schedule giving the material of which parts are made.

SIZES:

- Three-quarter inch (3/4").

RESTRICTIONS:

- This material is only used for temporary sampling and flushing points during pipeline construction.



MANUFACTURER:

- OPEN

Created Date: 06/01/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 2 – VALVES – RESILIENT SEAT – 2” (FIPT X FIPT):

SPECIFICATION:

Resilient seat or wedge (RW) line valves shall meet/exceed the following performance specifications:

- AWWA C509 (standard wall thickness) or AWWA C515 (reduced wall thickness) for resilient seat gate valves with non-rising stems (NRS).
- Both ends shall have Female Iron Pipe Threads (FIPT).
- ANSI/AWWA C550, all interior and exterior body and bonnet surfaces shall be coated with a fusion bonded epoxy coating.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Cast iron or ductile iron conforming to ASTM A126 or A536.
- **Wedge:** Cast iron or ductile iron fully encapsulated (no exposed iron) or bronze vulcanized with EPDM (Ethylene Propylene) rubber.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Stuffing box & operating nut:** Cast iron or ductile iron conforming to ASTM A126 or A536.
- **Stem:** Bronze per ASTM B584 or Stainless Steel per AISI 430F.
- **Hex head nuts and bolts:** Stainless Steel

DESIGN:

- Resilient seat gate valve, NRS, open left (counter-clockwise)
- Both ends shall have female iron pipe threads (FIPT).
- Pressure rated for 200 psi minimum.
- Two inch (2”) square operating nut.

SIZE:

- Two inch (2”).



MANUFACTURER/PRODUCT(S):

- **AMERICAN CAST IRON - AFC - 2500 SERIES**
- **AMERICAN AVK - 03-063-39**
- **CLOW VALVE - 2639 & 2640**
- **KENNEDY VALVE - KS-FW 8057, KS-RW 7057**
- **M & H VALVE CO. - 4067-07**
- **MUELLER CO. - A-2362 SERIES**
- **U.S. PIPE - VALVE & HYDRANT - A-USP2-8**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 2.1 – VALVES – AWWA C509 – RESILIENT SEAT – 4” THRU 12” (MJ X MJ):

SPECIFICATION:

Resilient seat or wedge (RW) line valves shall meet/exceed the following performance specifications:

- AWWA C509 (standard wall thickness) for resilient seat gate valves with non-rising stems (NRS)
- Both ends shall be mechanical joint in accordance with ANSI/AWWA C111/A21.11.
- ANSI/AWWA C550, all interior and exterior body and bonnet surfaces shall be coated with a fusion bonded epoxy coating.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM).
- Shall have UL, FM mark displayed visibly and permanently on the valve.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Cast or ductile iron conforming to ASTM A126 or A536.
- **Wedge:** Cast or ductile iron fully encapsulated (no exposed iron) with EPDM (Ethylene Propylene) rubber and have raised colophon “EPDM” or the formula designation such as “EDK-70”.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber
- **Stuffing box & operating nut:** Cast or ductile iron conforming to ASTM A126 or A536.
- **Stem:** Copper alloy/ bronze.
- **Hex head nuts and bolts:** 304/316 Stainless steel.

DESIGN:

- Resilient seat gate valve, NRS, open left (counter-clockwise)
- Both ends shall be mechanical joint (MJ).
- Pressure rated for 250 psi minimum.
- Two inch (2”) square operating nut.

SIZE:

- Four inch (4”) through twelve inch (12”).

INCLUDE:

- Two (2) properly sized mechanical joint accessory kits



MANUFACTURER/PRODUCT(S):

- **AMERICAN AVK - 65 (CI) & 45 (DI) SERIES**
- **CLOW VALVE - 2639 & 2640 SERIES**
- **KENNEDY VALVE - KS-FW 8571 SERIES**
- **M & H VALVE CO. - 4067 SERIES**
- **MUELLER CO. - A-2361 SERIES**
- **J & S VALVE - 6900 SERIES**
- **U.S. PIPE - VALVE & HYDRANT - A-USP1-23 SERIES**

Created Date: 05/16/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 2.1.1 – VALVES – AWWA C515 – RESILIENT SEAT – 4” THRU 12” (MJ X MJ):

SPECIFICATION:

Resilient seat or wedge (RW) line valves shall meet/exceed the following performance specifications:

- AWWA C515 (standard for reduced wall thickness) for resilient seat gate valves with non-rising stems (NRS)
- Both ends shall be mechanical joint in accordance with ANSI/AWWA C111/A21.11.
- ANSI/AWWA C550, all interior and exterior body and bonnet surfaces shall be coated with a fusion bonded epoxy coating.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM).
- Shall have UL, FM mark displayed visibly and permanently on the valve.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** ductile iron conforming to ASTM A536.
- **Wedge:** cast or ductile iron fully encapsulated (no exposed iron) with EPDM (Ethylene Propylene) rubber and have raised colophon “EPDM”.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Stuffing box & operating nut:** ductile iron conforming to ASTM A536.
- **Stem:** copper alloy/ bronze.
- **Hex head nuts and bolts:** 304/316 Stainless steel.

DESIGN:

- Resilient seat gate valve, NRS, open left (counter-clockwise)
- Both ends shall be mechanical joint (MJ).
- Pressure rated for 250 psi minimum.
- Two inch (2”) square operating nut.

SIZE:

- Four inch (4”) through twelve inch (12”).

INCLUDE:

- Two (2) properly sized mechanical joint accessory kits



MANUFACTURER/PRODUCT(S):

- **AMERICAN CAST IRON - AFC-2500 SERIES**
- **CLOW VALVE - 2638 SERIES**
- **KENNEDY VALVE - KS-RW 7571 SERIES**
- **M & H VALVE CO. - 7000 SERIES**
- **MUELLER CO. - A-2361 SERIES**

Created Date: 05/16/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 2.2 – TAP VALVES – AWWA C509 – RESILIENT SEAT – 4” THRU 12” (FLG X MJ):

SPECIFICATION:

Resilient seat or wedge (RW) tap valves shall meet/exceed the following performance specifications:

- AWWA C509 (standard wall thickness) for resilient seat gate valves with non-rising stems (NRS).
- One end shall be mechanical joint in accordance with ANSI/AWWA C111/A21.11.
- One end shall be flange design with a raised tapping alignment centering ring and conform to MSS SP-60 standard.
- ANSI/AWWA C550, all interior and exterior body and bonnet surfaces shall be coated with a fusion bonded epoxy coating.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM).
- Shall have UL, FM mark displayed visibly and permanently on the valve.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Cast iron or ductile iron conforming to ASTM A126 or A536.
- **Wedge:** Cast iron or ductile iron fully encapsulated (no exposed iron) with EPDM (Ethylene Propylene) rubber and have raised colophon “EPDM” or the formula designation such as “EDK-70”.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Stuffing box & operating nut:** Ductile iron conforming to ASTM A536.

DESIGN:

- **Stem:** Copper alloy/bronze
- **Hex head nuts and bolts:** 304/316 Stainless steel
- Resilient seat gate valve, NRS, open left (counter-clockwise).
- Pressure rated for 250 psi minimum.
- Two inch (2”) square operating nut.

SIZE:

- Four inch (4”) through twelve inch (12”).

INCLUDE:

- One (1) properly sized mechanical joint accessory kit.
- One (1) properly sized flange joint accessory kit.

ADDITIONAL REQUIREMENTS:

- Shall have a laying length sufficient to allow complete retraction of A.P. Smith Tapping Machine when valve is in fully closed position.



MANUFACTURER/PRODUCT(S):

- **AMERICAN AVK - 45 (DI) SERIES**
- **CLOW VALVE - 2639 & 2640 SERIES**
- **KENNEDY VALVE - KS-FW 8950 SERIES**
- **M & H VALVE CO. - 4751 SERIES**
- **MUELLER CO. - T-2362 SERIES**
- **U.S. PIPE - VALVE & HYDRANT - T-USP2-19 SERIES**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 2.2.1 – TAP VALVES – AWWA C515 – RESILIENT SEAT – 4” THRU 12” (FLG X MJ):

SPECIFICATION:

Resilient seat or wedge (RW) tap valves shall meet/exceed the following performance specifications:

- Valves shall be ductile iron.
AWWA C515 (standard for reduced wall thickness) for resilient seat gate valves with non-rising stems (NRS).
- One end shall be mechanical joint in accordance with ANSI/AWWA C111/A21.11.
- One end shall be flange design with a raised tapping alignment centering ring and conform to MSS SP-60 standard.
- ANSI/AWWA C550, all interior and exterior body and bonnet surfaces shall be coated with a fusion bonded epoxy coating.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM).
- Shall have UL, FM mark displayed visibly and permanently on the valve.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Ductile iron conforming to ASTM A536.
- **Wedge:** Ductile iron fully encapsulated (no exposed iron) with EPDM (Ethylene Propylene) rubber and have raised colophon “EPDM”.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Stuffing box & operating nut:** Ductile iron conforming to ASTM A536.
- **Stem:** Copper alloy/ bronze.
- **Hex head nuts and bolts:** 304/316 Stainless steel.

DESIGN:

- Resilient seat gate valve, NRS, open left (counter-clockwise).

- Pressure rated for 250 psi minimum.
- Two inch (2”) square operating nut.

SIZE:

- Four inch (4”) through twelve inch (12”).

INCLUDE:

- One (1) properly sized mechanical joint accessory kit.
- One (1) properly sized flange joint accessory kit.

ADDITIONAL REQUIREMENTS:

- Shall have a laying length sufficient to allow complete retraction of A.P. Smith Tapping Machine when valve is in fully closed position.



MANUFACTURER/PRODUCT(S):

- **AMERICAN CAST IRON - AFC-2500 SERIES**
- **CLOW VALVE - 2638 SERIES**
- **KENNEDY VALVE - KS-RW 7950 SERIES**
- **M & H VALVE CO. - 7590 SERIES**
- **MUELLER CO. - T-2361 SERIES**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 2.3 – OS&Y VALVES – RESILIENT SEAT – 3” THRU 12” (FLG X FLG):

SPECIFICATION:

Resilient seat or wedge (RW), outside-screw-and-yoke (OS&Y) valves shall meet/exceed the following performance specifications:

- AWWA C509 (standard wall thickness) or AWWA C515 (standard for reduced wall thickness) for resilient seat gate valves with rising stems.
- Both ends shall be flanged, faced and drilled in accordance with ASME B16.1 Class 125.
- ANSI/AWWA C550, all interior and exterior body and bonnet surfaces shall be coated with a fusion bonded epoxy coating.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM).
- Shall have UL, FM mark displayed visibly and permanently on the valve.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Cast iron or ductile iron conforming to ASTM A126 or A536.
- **Wedge:** Cast iron or ductile iron fully encapsulated (no exposed iron) with EPDM (Ethylene Propylene) rubber and have raised colophon “EPDM” or the formula designation such as “EDK-70”.
- **Seal, packing & O-rings:** Nitrile/Buna-N or EPDM rubber, lubricated fiber/Teflon.
- **Stuffing box & operating wheel:** Cast iron or ductile iron conforming to ASTM A126 or A536.
- **Stem:** Copper alloy/bronze.
- **Pipe Plugs:** If equipped shall be brass/bronze or stainless steel.
- **Nuts & bolts:** 304/316 stainless steel, brass nuts required on packing gland bolts if used

DESIGN:

- Resilient seat gate valve, OS&Y, open left (counter-clockwise)
- Pressure rated for 250 psi minimum.
- Hand wheel operator.

SIZE:

- Three inch (3”) through twelve inch (12”).

INCLUDE:

- Two (2) properly sized flange joint accessory kits.



MANUFACTURER/PRODUCT(S):

- **AMERICAN CAST IRON - AFC-2500 SERIES**
- **AMERICAN AVK - 65 (CI) & 45 (DI) SERIES**
- **CLOW VALVE - 2638, 2639 & 2640 SERIES**
- **KENNEDY VALVE - KS-RW 7068, KS-FW 8068**
- **M & H VALVE CO. - 4068 SERIES**
- **MUELLER CO. - R-2361 SERIES**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 2.4 – VALVES – RESILIENT SEAT – 4” THRU 12” (FLG X FLG):

SPECIFICATION:

Resilient seat or wedge (RW) control valves shall meet/exceed the following performance specifications:

- AWWA C509 (standard wall thickness) or AWWA C515 (reduced wall thickness) for resilient seat gate valves with non-rising stems (NRS).
- Both ends shall be flanged, faced and drilled in accordance with ASME B16.1 Class 125.
- ANSI/AWWA C550, all interior and exterior body and bonnet surfaces shall be coated with a fusion bonded epoxy coating.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by *(UL/FM).
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Cast iron or ductile iron conforming to ASTM A126 or A536.
- **Wedge:** Cast iron or ductile iron fully encapsulated (no exposed iron) with EPDM (Ethylene propylene) rubber and have raised colophon “EPDM” or the formula designation such as “EDK-70”.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Stuffing box & operating nut:** Cast iron or ductile iron conforming to conforming to ASTM A126A126 or A536.
- **Stem:** Copper alloy/bronze.
- **Hex head nuts and bolts:** 304/316 Stainless steel.

DESIGN:

- Resilient seat gate valve, NRS, open left (counter-clockwise).
- Both ends shall be flange joint (FLG).
- Pressure rated for 250 psi minimum
- Operated by a ductile or cast iron hand wheel.

SIZE:

- Four inch (4”) through twelve inch (12”)

INCLUDE:

- Two (2) properly sized flange joint accessory kits.



MANUFACTURER/PRODUCT(S):

- **AMERICAN CAST IRON - AFC-2500 SERIES**
- **AMERICAN AVK - 65 (CI) & 45 (DI) SERIES**
- **CLOW VALVE - 2638, 2639 & 2640 SERIES**
- **KENNEDY VALVE - KS-RW**
- **M & H VALVE CO.**
- **MUELLER CO. - A-2361, A-2362 SERIES**
- **U.S. PIPE - VALVE & HYDRANT - A-USP1-6, A-USP2-6 SERIES**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 2.5 – VALVES – RESILIENT SEAT – 14” THRU 36” (MJ X MJ):

SPECIFICATION:

Resilient seat or wedge (RW) line valves shall meet/exceed the following performance specifications:

- Valves shall be ductile iron.
AWWA C509 (standard wall thickness) or AWWA C515 (standard for reduced wall thickness) for resilient seat gate valves with non-rising stems (NRS).
- Both ends shall be mechanical joint in accordance with ANSI/AWWA C111/A21.11.
- ANSI/AWWA C550, all interior and exterior body and bonnet surfaces shall be coated with a fusion bonded epoxy coating.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Ductile iron conforming to ASTM A536
- **Wedge:** Ductile iron fully encapsulated (no exposed iron) with EPDM (Ethylene propylene) rubber and have raised colophon “EPDM”.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Stuffing box & operating nut:** Ductile iron conforming to ASTM A536.
- **Stem:** copper alloy in accordance with AWWA C515
- **Bonnet hex head nuts and bolts:** 304/316 Stainless steel (no socket head bolts allowed).

DESIGN:

- Resilient seat gate valve, NRS, open left (counter-clockwise)
- Both ends shall be mechanical joint (MJ).
- Pressure rated for 150 psi minimum.
- Two inch (2”) square operating nut.

SIZE:

- Fourteen inch (14”) through thirty-six inch (36”).

ADDITIONAL REQUIREMENTS:

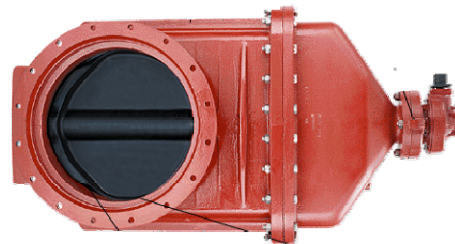
- Valves 24” and larger require a gear operator.

- Valves shall be installed vertical when used in raw sewer or sludge applications.

NRS with Spur Gearing



NRS with Bevel Gearing



MANUFACTURER/PRODUCT(S):

- **AMERICAN CAST IRON -AFC-2500 SERIES**
- **MUELLER CO. - A-2361 SERIES**
- **J & S VALVE - 6900 SERIES**
- **U.S. PIPE - VALVE & HYDRANT - A-USP1-23 SERIES**

Created Date: 03/08/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 2.6 – VALVES – ECCENTRIC PLUG – 4” THRU 6” (FLG X FLG):

SPECIFICATION:

Eccentric plug valves shall meet/exceed the following performance specifications:

- Shall be designed and manufactured to have a minimum wall thickness per AWWA C504 (rubber-seated butterfly valves).
- Interior ferrous metal surfaces shall be epoxy coated to comply with AWWA C550.
- Port area shall be a minimum 80% of full pipe area.
- Shall be non-lubricating type.
- Bearings shall be sintered, oil impregnated type 316 stainless steel.
- Stem packing seals shall be repackable while under pressure without removing the bonnet from the valve.
- Both ends shall be flanged, faced and drilled in accordance with ASME B16.1 Class 125.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Cast iron or ductile iron conforming to ASTM A126 or A536.
- **Plug:** Cast iron or ductile iron encapsulated with:
 - EPDM (Ethylene propylene) rubber.
 - Nitrile/Buna-N rubber
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.

DESIGN:

- Both ends shall be flange joint (FLG).
- Pressure rated for 175 psi minimum.
- Shall rotate 90 degrees (quarter turn) from full-open to full-closed position.
- Operated by a ductile or cast iron lever.

SIZE:

- Four inch (4”) through six inch (6”).

ADDITIONAL REQUIREMENTS:

- Shall be capable of passing “pigging” cleaning equipment in either direction without the use of special equipment.

RESTRICTIONS:

- Use of this product is limited to air release and combination air valves.



MANUFACTURER/PRODUCT(S):

- **CLOW VALVE - 6412-FF SERIES**
- **DEZURIK - PEF**
- **HENRY PRATT CO. - BALLCENTRIC**
- **MILLIKEN VALVE CO. - MILLCENTRIC**
- **VAL-MATIC - CAM-CENTRIC**
- **OPEN**

Created Date: 06/09/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 3 – CHECK VALVES – RESILIENT SEAT – POTABLE WATER – 4” THRU 12” (FLG X FLG):

SPECIFICATION:

Check valves shall meet/exceed the following performance specifications:

- ANSI/AWWA C508
- Shall have resilient seat.
- Shall be manufactured from ductile iron per ASTM A536 grade 65-45-12 or cast iron per ASTM A126 grade B.
- Shall be pressure rated for 250 psi (minimum) working pressure.
- Both ends shall be flanged, faced and drilled in accordance with ASME/ANSI B16.1, Class 125.
- All ferrous interior and exterior body and bonnet surfaces shall be coated with a fusion bonded epoxy coating in compliance with ANSI/AWWA C550.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- A mechanical indicator shall be provided to provide disc position.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Ductile iron, ASTM A536 grade 65-45-12, or cast iron, ASTM A126 grade B.
- **Disc:** Ductile iron, encapsulated with:
 - EPDM (Ethylene propylene) rubber
 - Nitrile/Buna-N rubber
- **Shaft:** Stainless Steel



MANUFACTURER/PRODUCT(S):

- AMERICAN CAST IRON - 2100 SERIES
- DEZURIK/APCO VALVE & PRIMER CORP.
- VAL-MATIC - SWING-FLEX

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 4 – SWING CHECK VALVES – POTABLE WATER – 4” THRU 12” (FLG X FLG):

SPECIFICATION:

Check valves shall meet/exceed the following performance specifications:

- AWWA C508, swing check valves.
- Shall be manufactured from ductile iron per ASTM A536 grade 65-45-12, cast iron per ASTM A126 Class B.
- Shall be pressure rated for 175 psi (minimum) working pressure.
- Both ends shall be flanged, faced and drilled in accordance with ASME/ANSI B16.1, Class 125.
- All ferrous interior and exterior body and bonnet surfaces shall be coated with a fusion bonded epoxy coating in compliance with ANSI/AWWA C550.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by *(UL/FM).
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Ductile iron, ASTM A536 grade 65-45-12, cast iron, ASTM A126 Class B.
- **Disc:** Bronze with EPDM (Ethylene propylene) rubber facing and a stainless steel shaft.



MANUFACTURER:

- AMERICAN CAST IRON
- VAG (GA IND.)
- KENNEDY VALVE
- M & H VALVE
- MUELLER CO.

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 4.1 – SWING CHECK VALVES – SANITARY SEWER – 4” THRU 12” (FLG X FLG):

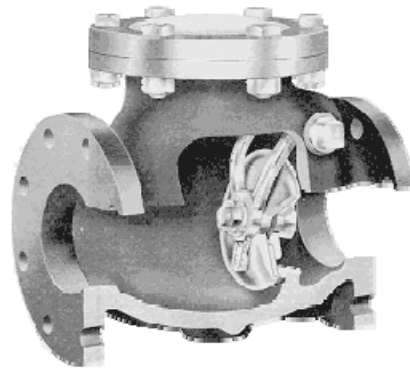
SPECIFICATION:

Check valves shall meet/exceed the following performance specifications:

- AWWA C508, swing check valves.
- Shall be manufactured from ductile iron per ASTM A536 grade 65-45-12, cast iron per ASTM A126 Class B.
- Shall be pressure rated for 175 psi (minimum) working pressure.
- Both ends shall be flanged, faced and drilled in accordance with ASME/ANSI B16.1, Class 125.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall be furnished with an outside lever and weight.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Ductile iron, ASTM A536 grade 65-45-12, cast iron, ASTM A126 Class B.
- **Disc:** Cast or ductile iron with bronze seat and a stainless steel shaft.



MANUFACTURER:

- AMERICAN CAST IRON
- VAG (GA IND.)
- KENNEDY VALVE
- M & H VALVE
- MUELLER CO.

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 4.2 – SWING CHECK VALVES – RESILIENT SEAT– SANITARY SEWER – 4” THRU 12” (FLG X FLG):

SPECIFICATION:

Check valves shall meet/exceed the following performance specifications:

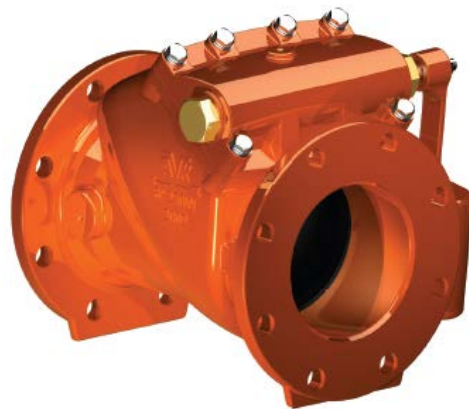
- AWWA C508, swing check valves.
- Shall be manufactured from ductile iron per ASTM A536 grade 65-45-12.
- Body and bonnet shall have fusion bonded epoxy coating on interior and exterior complying with AWWA C550.
- Shall be pressure rated for 175 psi (minimum) working pressure.
- Both ends shall be flanged, faced and drilled in accordance with ASME/ANSI B16.1, Class 125.
- Shall have a resilient seat that is drop tight, even at low pressure.
- Shall have no obstructions in the flow path for a 100% clear waterway.
- Valves supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall be furnished with an outside lever and weight.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Ductile iron, ASTM A536 grade 65-45-12.
- **Disc:** Shall be a carbon steel core completely encapsulated with EPDM.
- **Bonnet bolts:** 304/316 Stainless Steel
- **Hinge and hinge pin:** 316 Stainless Steel, hinge on 10"-12" is ductile iron.
- **O-Rings:** Acrylonitrile-butadiene rubber (NBR).

DESIGN:

- Shall be designed such that the disc, hinge, and bonnet can be removed as one assembly.
- Can be mounted vertically or horizontally.
- All internal exposed metal is stainless steel.



MANUFACTURER/PRODUCT(S):

- **AMERICAN AVK - SERIES 41**

Created Date: 02/13/08 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 5 – COMBINATION AIR VALVES – STAINLESS STEEL – SANITARY SEWER – 2” THRU 12”:

SPECIFICATION:

Combination air valves for sewage shall meet/exceed the following performance specifications:

- Shall be specifically designed to operate with liquids carrying solid particles such as sewage and effluent.
- Shall release accumulated air from the system while the system is under pressure.
- The valve must discharge air at high velocity during the filling of the system and admit air during its drainage.
- The valve shall be a double or triple float design.
- Shall be pressure rated for at least 75 psi.
- Shall be test pressure rated for at least 1.5 times working pressure.
- Threaded connection shall be National Pipe Thread (NPT).
- Shall be equipped with a gauge or relief port.
- Valves supplied must have ISO 9001 or later certification, or manufactured in the U.S.A..
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** 304 or 316 Stainless Steel
- **Outer metal parts:** 304 or 316 Stainless Steel and epoxy coated ductile iron.
- **Inner metal parts:** 304 or 316 Stainless Steel
- **Floats:** Plastic materials/Foamed Polypropylene or High Density Polyethylene.
- **O-Rings & Seals:** Nitrile/Buna-N or EPDM (Ethylene propylene) rubber.

CONNECTION:

Inlet:

- 2” Standard Male Iron Pipe Threads (MNPT).

Outlet:

- Flushing connection.
- Stainless Steel screen mesh & cover.

RESTRICTIONS:

- For force mains two through twelve inches (12”).



MANUFACTURER/PRODUCT(S):

- **A.R.I. USA INC. - MODEL D-025 (SHORT VERSION)**
- **VENT-O-MAT - SERIES RGX**

Created Date: 08/31/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 5.1 – COMBINATION AIR VALVES – STAINLESS STEEL – SANITARY SEWER – 12” AND LARGER:

SPECIFICATION:

Combination air valves for sewage shall meet/exceed the following performance specifications:

- Shall be specifically designed to operate with liquids carrying solid particles such as sewage and effluent.
- Shall release accumulated air from the system while the system is under pressure.
- The valve must discharge air at high velocity during the filling of the system and admit air during its drainage.
- The valve shall be a double or triple float design.
- Shall be pressure rated for at least 150 psi.
- Shall be test pressure rated for at least 1.5 times working pressure.
- Flange surface shall be faced and drilled in accordance with ASME B16.1 Class 125.
- Valves supplied must have ISO 9001 or later certification, or manufactured in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** 316 Stainless Steel
- **Outer metal parts:** 316 Stainless Steel
- **Inner metal parts:** 316 Stainless Steel
- **Floats:** Plastic materials/Foamed Polypropylene, High Density Polyethylene or 316 Stainless Steel.
- **O-Ring:** Nitrile/Buna-N or EPDM (ethylene-propylene) rubber.

CONNECTION:

Inlet:

- 4” Flange for mains up through 24” mains.
- 6” Flange for mains larger than 24”.

Outlet:

- Stainless Steel screen mesh & cover.
- Flushing connection.

RESTRICTIONS:

- For force mains twelve inches (12”) or larger.



MANUFACTURER/PRODUCT(S):

- A.R.I. USA INC. - MODEL D-025, D-020 (SHORT)
- VENT-O-MAT - SERIES RGX

Created Date: 08/31/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 5.2 – COMBINATION AIR VALVES – RECLAIMED WATER:

SPECIFICATION:

Air release valves for reclaimed water shall meet/exceed the following performance specifications:

- Shall be automatic float operated designed to release accumulated air from the piping system while the system is in operation and under pressure. The valve must discharge air at high velocity during filling of the system and admit air during its drainage.
- The valve body shall be threaded with National Pipe Thread (NPT) inlets.
- Shall be pressure rated for at least 150 psi.
- Shall be test pressure rated for at least 1.5 times working pressure.
- Valves supplied must have ISO 9001 or later certification, or manufactured in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Reinforced Nylon.
- **Drain Elbow:** Polypropylene.
- **Internal Screw:** Stainless Steel
- **Rolling Seal:** EPDM.
- **Clamping Stem:** Reinforced Nylon.
- **Float:** Foamed Polypropylene.
- **O-Ring:** Nitrile/Buna-N
- **Base:** Stainless Steel OR Brass

CONNECTION:

Inlet:

- 2" Standard male National Pipe Threads (NPT).

Outlet:

- 1-1/2" Standard female National Pipe Threads (NPT).

RESTRICTIONS/OPTIONAL USE:

- **Acceptable for use on all sizes of reclaimed water mains.**



D-040 B 2"

MANUFACTURER/PRODUCT(S):

- OPEN

Created Date: 08/28/07 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 6 – AIR RELEASE VALVES – SHORT BODY – SANITARY SEWER:

SPECIFICATION:

Air release valves for sewage shall meet/exceed the following performance specifications:

- Shall be specially designed to operate with liquids carrying solid particles such as sewage and effluent.
- Shall release accumulated air from the system while the system is under pressure.
- The valve shall be a float operated design.
- Shall be pressure rated for at least 150 psi.
- Shall be test pressure rated for at least 1.5 times working pressure.
- Short body sanitary sewer air release valves overall height shall not exceed 12-1/4".
- Threaded connection valves shall have National Pipe Threads (NPT).
- Shall be equipped with backwash accessory kit.
- Valves supplied must have ISO 9001 or later certification, or manufactured in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** Stainless Steel
- **Cover bolts:** Stainless Steel
- **Outer metal parts:** Stainless Steel
- **Inner metal parts:** Stainless Steel
- **Float:** Stainless Steel
- **O-Rings & Seals:** Nitrile/Buna-N or EPDM (Ethylene propylene) rubber.

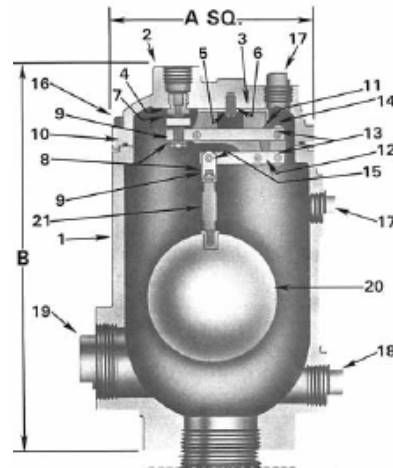
CONNECTION:

Inlet:

- 2" Standard National Pipe Threads (NPT).

RESTRICTIONS:

- Shall be equipped with a backwash kit.
- For use in existing, in service, shallow main applications only.



MANUFACTURER/PRODUCT(S):

- OPEN

Created Date: 10/06/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 6.1 – AIR RELEASE VALVES – STAINLESS STEEL – SANITARY SEWER:

SPECIFICATION:

Air release valves for sewage shall meet/exceed the following performance specifications:

- Shall be specially designed to operate with liquids carrying solid particles such as sewage and effluent.
- Shall release accumulated air from the system while the system is under pressure.
- The valve shall be a double or triple float design.
- Shall be pressure rated for at least 150 psi
- Shall be test pressure rated for at least 1.5 times working pressure.
- Threaded connection valves shall have National Pipe Threads (NPT).
- Flange surface shall be faced and drilled in accordance with ASME B16.1 Class 125.
- Shall be equipped with backwash accessory kit.
- Valves supplied must have ISO 9001 or later certification, or manufactured in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body:** 316 Stainless Steel
- **Outer metal parts:** 316 Stainless Steel
- **Inner metal parts:** 316 Stainless Steel
- **Upper Float:** Plastic materials/Foamed Polypropylene
- **Lower Float:** 316 Stainless Steel
- **O-Ring:** Nitrile/Buna-N or EPDM (ethylene-propylene) rubber

CONNECTION:

Inlet:

- 2" Standard Male Iron Pipe Threads (MNPT) for up to 12" mains.
- 4" Flange for mains up to and including 24" mains.
- 6" Flange for mains larger than 24".

RESTRICTIONS:

- Shall be equipped with backwash kit.



MANUFACTURER/PRODUCT(S):

- **A.R.I. USA INC. - Model S-020**

Created Date: 09/30/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

D 7 – AIR RELEASE VALVES – (UL/FM) POTABLE & RECLAIMED WATER:

SPECIFICATION:

Air release valves for potable water shall meet/exceed the following performance specifications:

- Shall be automatic float operated designed to re-release accumulated air from the piping system while the system is in operation and under pressure.
- AWWA C512.
- Shall be Underwriters Laboratories Listed (UL) and Factory Mutual Approved (FM) as noted by (UL/FM).
- Shall have a screened hood (not shown in detail for VMC-15A).
- The valve body shall be threaded with National Pipe Thread (NPT) inlets and outlets.
- Shall be pressure rated for at least 175 psi.
- Shall be test pressure rated for at least 1.5 times working pressure.
- Valves supplied must have ISO 9001 or later certification, or manufactured in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body & Cover:** Cast iron or ductile iron conforming to ASTM A126 or A536.
- **Coating:** Fusion bonded epoxy.
- **Outer trim:** Stainless Steel
- **Inner metal parts:** 316 Stainless Steel
- **Inner rubber parts:** Nitrile/Buna-N, EPDM (Ethylene propylene) or Viton rubber.

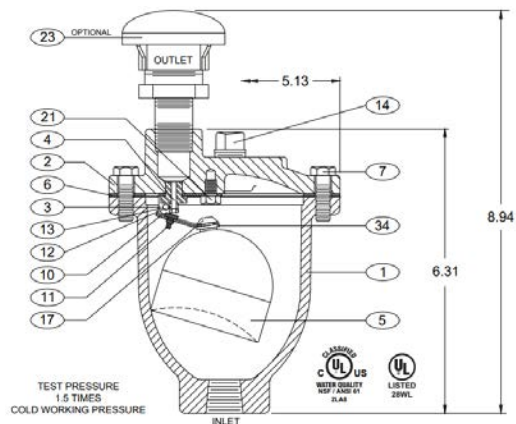
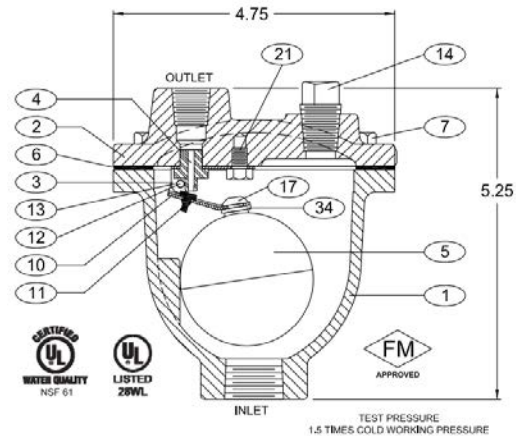
CONNECTION:

Inlet:

- 1" Standard Female Iron Pipe Threads (FNPT).

RESTRICTIONS/OPTIONAL USE:

- **UL/FM is required on valves installed on potable mains in sizes 12" and smaller.**
- **Acceptable for use on all sizes of potable and reclaimed mains.**



- | | |
|---------------|-------------------------------|
| 1 BODY | 11 ORIFICE BUTTON |
| 2 COVER | 12 PIVOT PIN |
| 3 LEVER FRAME | 13 RETAINING RING (NOT SHOWN) |
| 4 SEAT | 14 PIPE PLUG |
| 5 FLOAT | 17 FLOAT RETAINER |
| 6 GASKET | 21 LOCATOR |
| 7 COVER BOLT | 23 SCREENED HOOD (OPTIONAL) |
| 10 FLOAT ARM | 34 LOCK WASHER |

MANUFACTURER/PRODUCT(S):

- **VAL-MATIC - VMC-15A, VMC-22H**
- **OPEN**

Created Date: 10/12/05 (JJS)
 Last Revised Date: 08/01/22 (JJP)



Material Specifications
 Pinellas County
 14 South Ft. Harrison Ave.
 Clearwater, FL 33756

Material Specifications

D 8 – AIR RELEASE VALVES – 2” POTABLE & RECLAIMED WATER:

SPECIFICATION:

Air release valves for potable water shall meet/exceed the following performance specifications:

- Shall be automatic float operated designed to release accumulated air from the piping system while the system is in operation and under pressure.
- AWWA C512.
- Shall have a screened hood (not shown in detail).
- The valve body shall be threaded with National Pipe Thread (NPT) inlets and outlets.
- Shall be pressure rated for at least 150 psi.
- Shall be test pressure rated for at least 1.5 times working pressure.
- Valves supplied must have ISO 9001 or later certification, or manufactured in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **Body & Cover:** Cast iron or ductile iron conforming to ASTM A126 or A536.
- **Coating:** Exterior shall have universal alkyd primer.
- **Outer trim:** Stainless Steel
- **Inner metal parts:** 316 Stainless Steel
- **Inner rubber parts:** Nitrile/Buna-N, EPDM (Ethylene propylene) or Viton rubber.

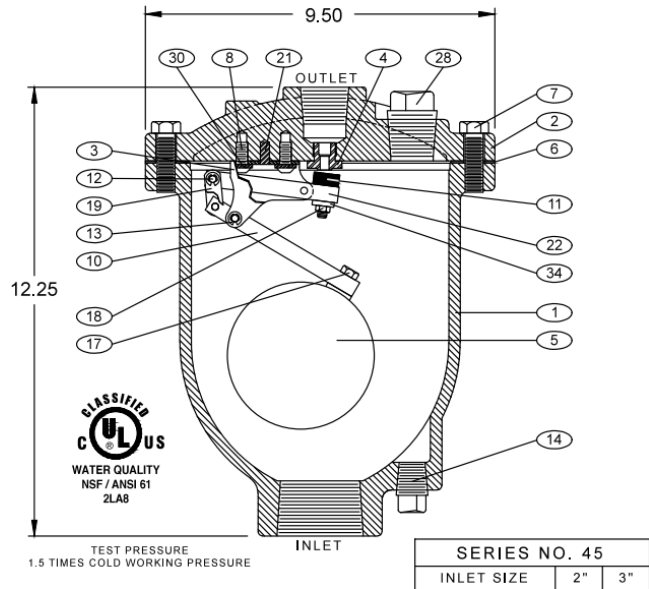
CONNECTION:

Inlet:

- 2” Standard Female National Pipe Threads (FNPT).

RESTRICTIONS/OPTIONAL USE:

- **Acceptable for use on potable main sizes over 12” only.**
- **Acceptable for use on all sizes of reclaimed water mains.**



- | | |
|-------------------|-----------------------|
| 1 BODY | 13 RETAINING RING |
| 2 COVER | 14 PIPE PLUG |
| 3 LEVER FRAME | 17 FLOAT RETAINER |
| 4 SEAT | 18 LOCK NUT |
| 5 FLOAT | 19 LINK |
| 6 GASKET | 21 LOCATING PIN |
| 7 COVER BOLT | 22 ORIFICE BUTTON ARM |
| 8 RETAINING SCREW | 28 PIPE PLUG |
| 10 FLOAT ARM | 30 WASHER |
| 11 ORIFICE BUTTON | 34 LOCK WASHER |
| 12 PIVOT PIN | |

MANUFACTURER/PRODUCT(S):

- VAL-MATIC - VMC-45
- OPEN

Created Date: 01/12/06 (JJS)
 Last Revised Date: 08/01/22 (JJP)



Material Specifications
 Pinellas County
 14 South Ft. Harrison Ave.
 Clearwater, FL 33756

Material Specifications

**SECTION E:
FIRE HYDRANTS**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section E: Fire Hydrants

E 1 Fire Hydrants

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

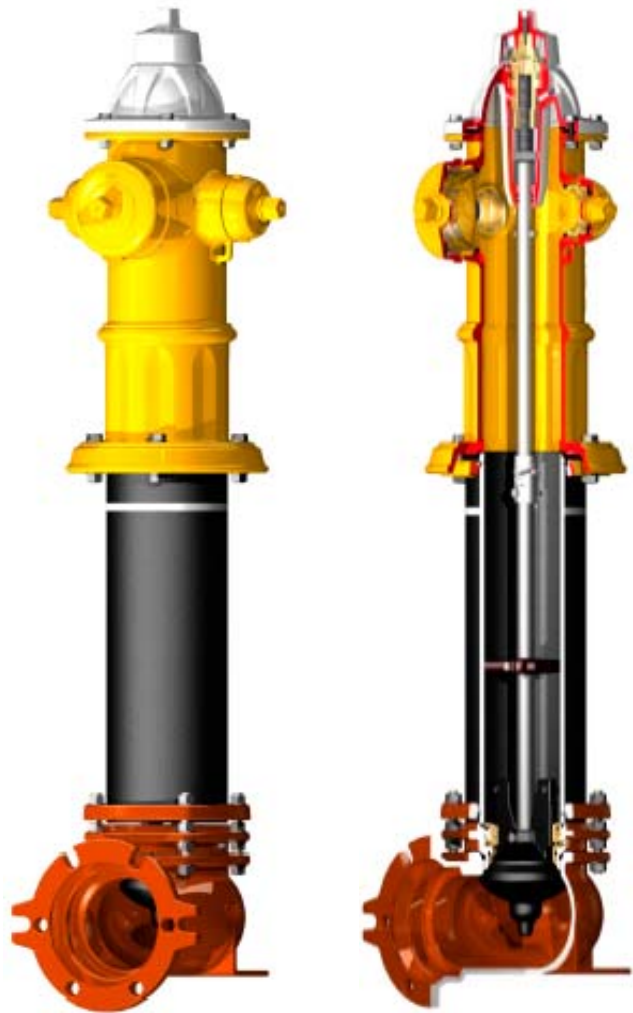
Material Specifications

E 1 – FIRE HYDRANTS:

SPECIFICATION/MATERIAL:

All fire hydrants shall fully comply with all provisions of American Water Works Association C502 (Dry Barrel Fire Hydrants) latest revision thereof, Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) (AWWA, U.L. and F.M. COLOPHONS MUST BE CAST IN UPPER BARREL OF EACH HYDRANT) and meet the following specific provisions:

- It will be compression type, opening counterclockwise, against the pressure and closing with the pressure.
- Drain outlets shall be omitted.
- 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 non-toxic 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° rotation of the nozzle section. Cut down bolts are not acceptable for this requirement.
- Main valve opening of the hydrant will not be less than 5-1/4” and open against the pressure.
- Hydrant nozzles will consist of two (2) hose nozzles and one (1) pumper nozzle. Threads on these nozzles will conform to NFPA 1963 for screw threads and gaskets for fire hose couplings.
- All nozzles shall be field replaceable with non-corrosive locking devices.
- Caulked nozzles are prohibited.
- Nozzle chains shall be omitted.
- The hydrant will be designed to permit the removal of all working parts, by one person, from the hydrant up through the barrel without disturbing the earth around the hydrant.
- An all bronze hydrant valve seat ring shall thread directly into an all bronze ring and shall be located



Created Date: 01/25/05 (JJS)
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Material Specifications
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E 1 – FIRE HYDRANTS CONT.:

between the lower hydrant barrel and base securely retained in this position.

- Upper valve plate must be B62 bronze, or epoxy coated, if used.
- The hydrant will be designed with an anti-friction bearing, so located that it will reduce the torque required to operate the hydrant.
- All internal stem pins or bolts and nuts shall be stainless steel.
- The safety stem coupling shall be of either Cast Iron, Bronze, or Stainless Steel.
- The operating stem, safety stem coupling and main valve assembly shall be capable of withstanding an application of 200 ft-lbs. of torque against either the full open or closed position with no damage to components. Downward stem travel shall be limited by a travel stop location in the upper housing of the hydrant or a stop in the shoe assembly.
- Operating nut and nozzle cap wrench nuts shall conform to existing specifications for this utility.
- The opening between the operating nut and dome shall have a weather shield or seal.
- The ferrous waterway of the hydrant's shoe must be epoxy coated.
- The shoe assembly must be designed to allow all of the MJ gland tee bolts to be inserted from the shoe body side.
- Centerline of pumper connection shall be a minimum of seventeen inches (17") above ground line.
- Ground line shall be three inches (3") or less below break flange.
- Main rubber valve shall be EPDM (ethylene-propylene) rubber.

COLOR:

- Hydrant shall be painted chrome yellow with white bonnet dome.

INLET TYPE & SIZE:

- Inlet shall be six inch (6") Mechanical Joint (MJ).

BURY LENGTH:

- Fire hydrant length, also known as the bury length,

shall be as measured from the bottom of the connecting pipe to the ground line of the hydrant in six inch (6") increments, from thirty inches (30") to sixty inches (60") inclusive. The bury length shall be clearly indicated on the upper six inches (6") of the lower barrel of each hydrant.

ADDITIONAL REQUIREMENTS:

- Only factory authorized repair parts and extensions will be acceptable.
- All shipments shall be palletized.
- Affidavit of compliance to this specification shall be available upon request.

MANUFACTURER/PRODUCT(S):

- **AMERICAN AVK - NOSTALGIC 2780 SERIES**
- **AMERICAN CAST IRON/FLOW CONTROL - AMERICAN-DARLING B-84-B-5**
- **AMERICAN CAST IRON/FLOW CONTROL - WATEROUS PACER**
- **CLOW VALVE - MEDALLION**
- **KENNEDY VALVE - GUARDIAN K81D**
- **MUELLER CO. - SUPER CENTURION A423**
- **U.S. PIPE - METROPOLITAN M-94**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
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Material Specifications

**SECTION F:
SERVICE SADDLES
AND
TAPPING DEVICES**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section F: Service Saddles and Tapping Devices

- F 1 NOT USED
- F 2 Service Saddles – Brass Alloy – Hinged Type – 2" PVC
- F 2.1 Service Saddles – Brass Alloy – Stainless Steel Straps – CI, DI & PVC
- F 2.2 Service Saddles – Ductile Iron – Stainless Steel Straps – CI, DI & PVC
- F 2.3 Service Saddles – Ductile Iron – Stainless Steel Straps – HDPE
- F 2.4 Service Saddles – Brass Alloy – Hinged Type – 2" IPS – HDPE
- F 3 Tapping Sleeves – Flange Connection – Fabricated Steel, Epoxy Coated – 4" Thru 24"
- F 3.1 Tapping Sleeves – Mechanical Joint Connection – Fabricated Steel, Epoxy Coated – 4" Thru 24"
- F 4 Tapping Sleeves – Flange Connection – Fabricated Stainless Steel – 4" Thru 12"
- F 4.1 Tapping Sleeves – Mechanical Joint Connection – Fabricated Stainless Steel – 4" Thru 12"
- F 5 Tapping Devices – 16" Thru 60"
- F 6 Sewer Service Saddles – Ductile Iron – Stainless Steel Straps – Non-Pressure
- F 6.1 Sewer Service Lateral Connection Hub – Non-Pressure

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
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Material Specifications

F 2 – SERVICE SADDLES – BRASS ALLOY – HINGED TYPE – 2” PVC:

SPECIFICATION:

Brass alloy service saddles shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) brass.
- ASTM D2000 gasket seals.
- Strap shall be a single hinged strap.
- Strap shall have a curvature accurately formed to meet the diameter of the pipe.
- Gasket shall be securely glued or imbedded in the body of the clamp to ensure a positive seal against the pipe.
- NSF 61

MATERIAL:

- **Body:**
 - Brass per ASTM B62
- **Straps:**
 - Brass per ASTM B62
- **Bolts & Nuts:**
 - Brass per ASTM B62
- **Gasket:**
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Brass: None

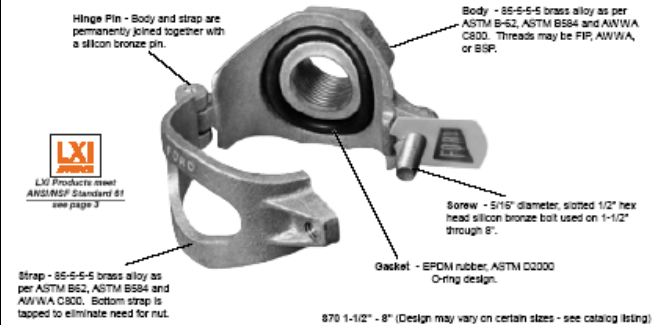
DESIGN:

- For iron pipe size, two inch (2”) PVC pipe.

OUTLETS:

- 3/4” & 1” shall be female AWWA CC taper female threads.

Hinged S70



MANUFACTURER/PRODUCT(S):

- A.Y. MCDONALD - 3891
- CAMBRIDGE BRASS - 800-0238-A3 (3/4"), 800-0238-A4 (1")
- FORD METER BOX CO. INC. - S70-203 (3/4"), S70-204 (1")
- MUELLER CO. - MODEL S13420

Created Date: 01/02/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

F 2.1 – SERVICE SADDLES – BRASS ALLOY – STAINLESS STEEL STRAPS – CI, DI & PVC:

SPECIFICATION:

Brass alloy service saddles shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) brass.
- ASTM D2000 gasket seals.
- 18-8 type 304 Stainless steel
- Strap shall be multiple straps or a single strap three inches or wider.
- Welds shall be fully passivated for corrosion resistance.
- Straps shall have a curvature accurately formed to meet the diameter of the pipe.
- Lubricant treated nuts to prevent galling.
- Gasket shall be securely glued or imbedded in the body of the clamp to ensure a positive seal against the pipe.
- NSF 61.

MATERIAL:

- **Body:**
 - Brass per ASTM B62
- **Straps:**
 - Stainless steel, 18-8 type 304.
- **Nuts & Washers:**
 - Stainless steel, 18-8 type 304
- **Gasket:**
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Brass: None

DESIGN:

- For cast iron, ductile iron and PVC pipe.

OUTLETS:

- 3/4" & 1" shall be female AWWA CC taper female threads.
- 1-1/2" & 2" shall be female iron pipe threads.



MANUFACTURER/PRODUCT(S):

- **A.Y. MCDONALD** - 3845, 3846 & 3855, 3856 SERIES
- **CAMBRIDGE BRASS** - 811 & 812 SERIES
- **FORD METER BOX CO. INC.** - 202BS STYLE
- **MUELLER CO.** - BR2S SERIES
- **POWERSEAL** - 3409 SERIES
- **ROMAC** - 202BS SERIES
- **SMITH-BLAIR** - 325 SERIES

Created Date: 01/20/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
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Material Specifications

F 2.2 – SERVICE SADDLES – DUCTILE IRON – STAINLESS STEEL STRAPS – CI, DI & PVC:

SPECIFICATION:

Ductile iron service saddles shall meet/exceed the following performance specifications:

- ASTM A536 ductile iron.
- ASTM D2000 gasket seals.
- 18-8 type 304 Stainless steel
- Strap shall be multiple straps or a single strap three inches or wider.
- Welds shall be fully passivated for corrosion resistance.
- Straps shall have a curvature accurately formed to meet the diameter of the pipe.
- Nylon or Fusion bonded epoxy coating, minimum 12 mils thick.
- Lubricant treated nuts to prevent galling.
- Gasket shall be securely glued or imbedded in the body of the clamp to ensure a positive seal against the pipe.
- NSF 61.

MATERIAL:

- **Body:**
 - Ductile iron per ASTM A536
- **Straps:**
 - Stainless steel, 18-8 type 304.
- **Nuts & Washers:**
 - Stainless steel, 18-8 type 304
- **Gasket:**
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Ductile iron: Fusion bonded epoxy or nylon.

DESIGN:

- For ductile iron, cast iron, and PVC pipe.

OUTLETS:

- 3/4" & 1" shall be female AWWA CC taper female threads.
- 1-1/2" & 2" shall be female iron pipe threads.



MANUFACTURER/PRODUCT(S):

- **A.Y. MCDONALD** - 4845A, 4846A, 4855A, 4856A SERIES
- **CASCADE WATERWORKS MFG.** - CNS2 STYLE
- **FORD METER BOX CO. INC.** - FC202 STYLE
- **JCM IND.** - MODEL 406
- **MUELLER CO.** - DR2S SERIES
- **POWERSEAL** - 3417DI, 3417DI-SW
- **ROMAC** - 202NS SERIES
- **SMITH-BLAIR** - 397, 317 SERIES

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
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Material Specifications

F 2.3 – SERVICE SADDLES – DUCTILE IRON – STAINLESS STEEL STRAPS – HDPE:

SPECIFICATION:

Ductile iron service saddles shall meet/exceed the following performance specifications:

- ASTM A536 ductile iron.
- ASTM D2000 gasket seals.
- 18-8 type 304 Stainless steel
- Strap shall be multiple straps or a single strap three inches or wider.
- Welds shall be fully passivated for corrosion resistance.
- Straps shall have a curvature accurately formed to meet the diameter of the pipe.
- Nylon or Fusion bonded epoxy coating, minimum 12 mils thick.
- Lubricant treated nuts to prevent galling.
- Gasket shall be securely glued or imbedded in the body of the clamp to ensure a positive seal against the pipe.
- NSF 61.

MATERIAL:

- **Body:**
 - Ductile iron per ASTM A536
- **Straps:**
 - Stainless steel, 18-8 type 304.
- **Nuts & Washers:**
 - Stainless steel, 18-8 type 304
- **Gasket:**
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Ductile iron: Fusion bonded epoxy or nylon.

DESIGN:

- For High Density Polyethylene (HDPE) pipe.

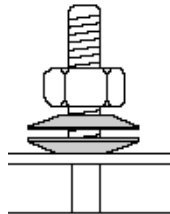
OUTLETS:

- 3/4" & 1" shall be female AWWA CC taper female threads.
- 1-1/2" & 2" shall be female iron pipe threads.

ADDITIONAL REQUIREMENTS:

- Spring washers may be required for use on HDPE pipe (consult manufacturer's documentation).

Spring washers



MANUFACTURER/PRODUCT(S):

- **CASCADE WATERWORKS MFG. - CNS2 STYLE** (W/ SPRING WASHERS)
- **FORD METER BOX CO. INC. - FCP202 STYLE** (W/ SPRING WASHERS)
- **JCM IND. - MODEL 406** (SPRING WASHERS NOT REQUIRED)
- **ROMAC - 202N-H SERIES** (W/ SPRING WASHERS)
- **SMITH-BLAIR - 317 SERIES** (W/ SPRING WASHERS)

Created Date: 06/22/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

F 2.4 – SERVICE SADDLES – BRASS ALLOY – HINGED TYPE – 2” IPS – HDPE:

SPECIFICATION:

Brass alloy service saddles shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) brass.
- ASTM D2000 gasket seals.
- Strap shall be a single hinged strap.
- Strap shall have a curvature accurately formed to meet the diameter of the pipe.
- Gasket shall be securely glued or imbedded in the body of the clamp to ensure a positive seal against the pipe.
- NSF 61.

MATERIAL:

- **Body:**
 - Brass per ASTM B62
- **Straps:**
 - Brass per ASTM B62
- **Bolts & Nuts:**
 - Brass per ASTM B62
- **Gasket:**
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Brass: None

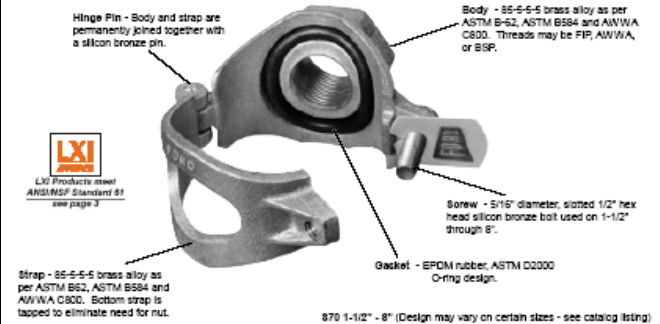
DESIGN:

- For iron pipe size, two inch (2”) HDPE pipe.

OUTLETS:

- 3/4” & 1” shall be female AWWA CC taper female threads.

Hinged S70



MANUFACTURER/PRODUCT(S):

- FORD METER BOX CO. INC. - MODEL S70

Created Date: 05/13/09 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
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Material Specifications

F 3 – TAPPING SLEEVES – FLANGE CONNECTION – FABRICATED STEEL, EPOXY COATED – 4" THRU 24":

SPECIFICATION:

Tapping sleeves shall meet/exceed the following performance specifications:

- ASTM A36 or A283 Grade C, carbon steel.
- ASTM D2000 gasket seals.
- 18-8 type 304 Stainless steel
- Body shall have a curvature accurately formed to meet the diameter of the pipe.
- Fusion bonded epoxy coating, minimum 12 mils thick.
- Lubricant treated nuts to prevent galling.
- Gasket shall be securely glued or imbedded in the body of the sleeve to ensure a positive seal against the pipe.
- NSF 61.
- Outlet half of sleeve shall be furnished with a three-quarter inch (3/4") NPT test port and bronze or stainless steel plug.

MATERIAL:

- **Body:**
 - Carbon steel per ASTM A36 or A283 Grade C.
- **Bolts, Nuts & Washers:**
 - Stainless steel, 18-8 type 304 with lubricant treatment to prevent galling.
- **Gasket:**
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Carbon steel: Fusion bonded epoxy

DESIGN:

- For ductile iron, cast iron and PVC pipe.

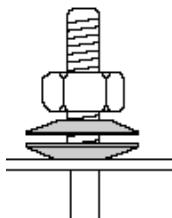
CONNECTION:

- Flange shall conform to AWWA C207 Class D, ANSI 150 lb. Drilling and recessed for tapping valve (MSS-SP60).

ADDITIONAL REQUIREMENTS:

- Spring washers may be required for use on HDPE pipe (consult manufacturer's documentation).
- This product is for connection of branch lines to existing in-service pipelines.

Spring washers



MANUFACTURER/PRODUCT(S):

- **CASCADE WATERWORKS MFG. - CFT-ESS SERIES**
- **FORD METER BOX CO. INC. - FTSC SERIES**
- **JCM IND. - MODEL 412 per spec.**
- **POWERSEAL - 3460CS SERIES per spec.**
- **ROMAC - STYLE FTS420 per spec.**
- **SMITH-BLAIR - 622 SERIES per spec.**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

F 3.1 – TAPPING SLEEVES – MECHANICAL JOINT CONNECTION – FABRICATED STEEL, EPOXY COATED – 4” THRU 24”:

SPECIFICATION:

Tapping sleeves shall meet/exceed the following performance specifications:

- AWWA C110 mechanical joint dimensions.
- ASTM A36 or A283 Grade C, carbon steel.
- ASTM D2000 gasket seals.
- 18-8 type 304 stainless steel
- Body shall have a curvature accurately formed to meet the diameter of the pipe.
- Fusion bonded epoxy coating, minimum 12 mils thick.
- Lubricant treated nuts to prevent galling.
- Gasket shall be securely glued or imbedded in the body of the sleeve to ensure a positive seal against the pipe.
- NSF 61.
- Outlet half of sleeve shall be furnished with a three-quarter inch (3/4”) NPT test port and bronze or stainless steel plug.

MATERIAL:

- **Body:**
 - Carbon steel per ASTM A36 or A283 Grade C.
- **Bolts, Nuts & Washers:**
 - Stainless steel, 18-8 type 304 with lubricant treatment to prevent galling.
- **Gasket:**
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Carbon steel: Fusion bonded epoxy

DESIGN:

- For ductile iron, cast iron and PVC pipe.

CONNECTION:

- Mechanical Joint (MJ).

ADDITIONAL REQUIREMENTS:

- This product is for connection of branch lines to existing in-service pipelines.



MANUFACTURER/PRODUCT(S):

- **POWERSEAL - 3460CS-MJ SERIES** per spec.
- **SMITH-BLAIR - 622-MJ SERIES** per spec.

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
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Material Specifications

F 4 – TAPPING SLEEVES – FLANGE CONNECTION – FABRICATED STAINLESS STEEL – 4” THRU 12”:

SPECIFICATION:

Tapping sleeves shall meet/exceed the following performance specifications:

- ASTM D2000 gasket seals.
- Outlet branch O-ring seal type gasket.
- ASTM A240, 18-8 type 304 stainless steel
- Welds shall be fully passivated for corrosion resistance.
- Body shall have a curvature accurately formed to meet the diameter of the pipe.
- Lubricant treated nuts to prevent galling.
- Gasket shall be securely glued or imbedded in the body of the clamp to ensure a positive seal against the pipe.
- NSF 61.

MATERIAL:

- **Body:**
 - Stainless steel, 18-8 type 304.
- **Flange:**
 - Stainless steel, 18-8 type 304.
- **Nuts & Washers:**
 - Stainless steel, 18-8 type 304
- **Gasket:**
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)

DESIGN:

- For ductile iron, cast iron and PVC pipe.

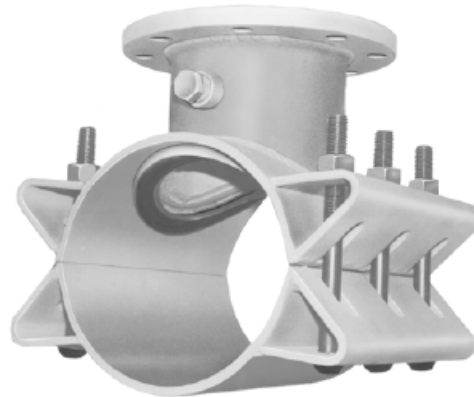
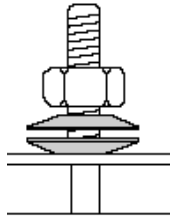
CONNECTION:

- Flange shall conform to AWWA C207 Class D, ANSI 150 lb. Drilling and recessed for tapping valve (MSS-SP60).

ADDITIONAL REQUIREMENTS:

- Spring washers may be required for use on HDPE pipe (consult manufacturer's documentation).
- This product is for connection of branch lines to existing in-service pipelines.

Spring washers



MANUFACTURER/PRODUCT(S):

- **JCM IND.** - *MODEL 452* per spec.
- **POWERSEAL** - *3460AS-HP SERIES* per spec.
- **ROMAC** - *STYLE STS420* per spec.

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
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Material Specifications

F 4.1 – TAPPING SLEEVES – MECHANICAL JOINT CONNECTION – FABRICATED STAINLESS STEEL – 4” THRU 12”:

SPECIFICATION:

Tapping sleeves shall meet/exceed the following performance specifications:

- AWWA C110 mechanical joint dimensions.
- ASTM D2000 gasket seals.
- Outlet branch O-ring seal type gasket.
- 18-8 type 304 stainless steel
- Welds shall be fully passivated for corrosion resistance.
- Body shall have a curvature accurately formed to meet the diameter of the pipe.
- Lubricant treated nuts to prevent galling.
- Gasket shall be securely glued or imbedded in the body of the clamp to ensure a positive seal against the pipe.
- NSF 61.

MATERIAL:

- **Body:**
 - Stainless steel, 18-8 type 304.
- **Flange:**
 - Stainless steel, 18-8 type 304.
- **Nuts & Washers:**
 - Stainless steel, 18-8 type 304
- **Gasket:**
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)

DESIGN:

- For ductile iron, cast iron and PVC pipe.

CONNECTION:

- Mechanical Joint (MJ).

ADDITIONAL REQUIREMENTS:

- Spring washers may be required for use on HDPE pipe (consult manufacturer's documentation).
- This product is for connection of branch lines to existing in-service pipelines.



MANUFACTURER/PRODUCT(S):

- JCM IND. - MODEL 452-MJ per spec.
- POWERSEAL - 3460MJ-AS SERIES per spec.

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJJ)



Material Specifications
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Clearwater, FL 33756

Material Specifications

F 5 – TAPPING DEVICES – 16” THRU 60”:

SPECIFICATION:

Tapping devices shall meet/exceed the following performance specifications:

- ASTM A36 or A283 Grade C, carbon steel.
- 18-8 type 304 stainless steel
- ASTM D2000 gasket seals.
- Straps shall have a curvature accurately formed to meet the diameter of the pipe.
- Lubricant treated strap nuts to prevent galling.
- Fusion bonded epoxy coating, minimum 12 mils thick.
- Gasket shall be securely glued or imbedded in the body of the sleeve to ensure a positive seal against the pipe.
- NSF 61.
- Outlet half of sleeve shall be furnished with a three-quarter inch (3/4”) NPT test port and bronze or stainless steel plug.

MATERIAL:

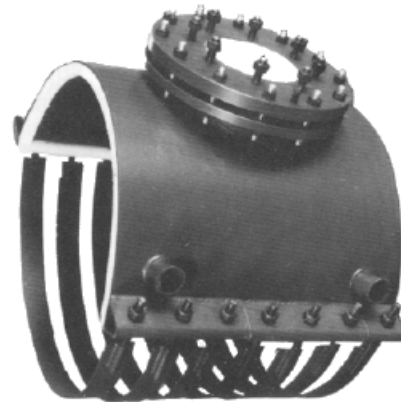
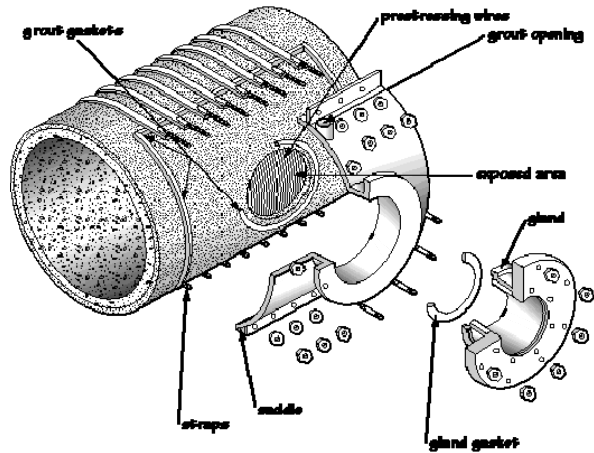
- **Body & Seal Plate:**
 - Carbon steel per ASTM A36 or A283 Grade C.
- **Straps, Nuts & Washers:**
 - Stainless steel, 18-8 type 304.
- **Gasket:**
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Carbon steel: Fusion bonded epoxy

DESIGN:

- For pre-stressed concrete cylinder pipe.

CONNECTION:

- Flange shall conform to AWWA C207 Class D, ANSI 150 lb. Drilling and recessed for tapping valve (MSS-SP60).



MANUFACTURER/PRODUCT(S):

- SMITH-BLAIR - 625 SERIES per spec.
- JCM IND. - MODEL 415 per spec.

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
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Material Specifications

F 6 – SEWER SERVICE SADDLES – DUCTILE IRON – STAINLESS STEEL STRAPS – NON-PRESSURE:

SPECIFICATION:

Ductile iron service saddles shall meet/exceed the following performance specifications:

- ASTM A536 ductile iron.
- ASTM D2000 gasket seals.
- Type 304 stainless steel
- Strap shall be multiple straps or a single strap three inches or wider.
- Welds shall be fully passivated for corrosion resistance.
- Straps shall have sufficient length to fit a wide range of pipe diameters.
- Nylon or Fusion bonded epoxy coating, minimum 12 mils thick or shop coat paint finish.
- Lubricant treated nuts to prevent galling.
- Gasket shall be securely glued or imbedded in the body of the clamp or inserted in the body of the clamp to ensure a positive seal against the pipe.

MATERIAL:

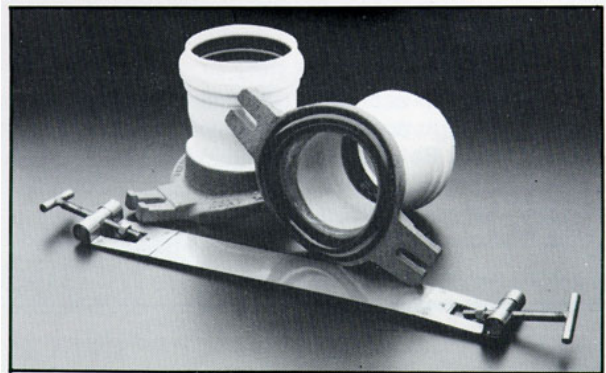
- **Body:**
 - Ductile iron per ASTM A536 Grade 65-45-12 or Cast Iron per ASTM A126.
- **Straps:**
 - Stainless steel, ASTM A240 type 304.
- **Bolts, Nuts & Washers:**
 - Stainless steel, ASTM A193, A194, A240 type 304.
- **Gasket:**
 - SBR (Styrene Butadiene)
 - Polyisoprene
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Ductile iron: Fusion bonded epoxy, nylon or shop coat paint finish.

DESIGN:

- For ductile iron, cast iron, vitrified clay pipe (VCP) and polyvinyl chloride (PVC) pipe.

OUTLETS:

- Four inch (4") & six inch (6").



MANUFACTURER/PRODUCT(S):

- **ROMAC** - *STYLE CB SEWER SADDLE*
- **GENECO** - *SEALTITE SEWER PIPE SADDLE*

Created Date: 07/05/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

F 6.1 – SEWER SERVICE LATERAL CONNECTION HUB – NON-PRESSURE:

SPECIFICATION/MATERIAL:

Sewer lateral connection hub pipe adapters shall meet/exceed the following performance specifications:

- Service lateral connection shall be accomplished by means of a compression-fit service connection.
- The service lateral connection shall be specifically designed for connection to the sewer main being installed.
- The gasket material shall be resistant to ozone, weathering, aging, and chemicals, including acids, alkalis, animal and vegetable fats, oils and petroleum products.
- Gaskets shall conform to ASTM F477.
- The PVC hub shall conform to ASTM D3034 SDR 35 or SDR 26.
- Bands and screw assembly shall be manufactured from totally non-magnetic series 300 stainless steel

RESTRICTIONS:

- Shall be used for connections and repairs to existing vitrified clay pipe (VCP) sanitary sewers that have been rehabilitated by cured in place lining (CIPP), HDPE pipe bursting or slip lining.



MANUFACTURER:

- INSERTA FITTINGS CO.
- OPEN

Created Date: 07/05/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

**SECTION G:
BRASS
SERVICE
MATERIAL**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section G: Brass Service Material

- G 1 Corporation Stops – Ground Key/Plug (CC X CTS)
- G 2 Corporation Stops – Ground Key/Plug (CC X FIPT)
- G 3 Corporation Stops – Ball (MIPT X CTS)
- G 4 Corporation Stops – Ball (MIPT X FIPT)
- G 5 Brass Service Line Fittings & Accessories (CTS O.D.)
- G 6 Brass Service Line Fittings – Steel Pipe Adapters (IPS O.D.)
- G 6.1 Brass Service Line Fittings – PVC Pipe Adapters (IPS O.D.)
- G 6.2 Brass Service Line Fittings – 2" HDPE Pipe Adapters (IPS O.D.)
- G 7 Brass Service Valves (FIPT X FIPT)
- G 8 Brass Service Valves (CTS X FIPT)
- G 9 Brass Meter Valves (CTS X MTR)
- G 9.1 Brass Meter Valves (FIPT X MTR)
- G 10 Meter Couplings – 3/4" Thru 1"
- G 10.1 Meter Couplings & Bushings – 1-1/2" Thru 2"
- G 10.2 Meter Bushings – 3/4" Thru 1"
- G 11 Meter Resetters – 5/8" X 3/4" Meter
- G 11.1 Meter Resetters – 1" Meter
- G 12 Insert Stiffeners – Stainless Steel
- G 12.1 Insert Stiffeners – PVC

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 1 – CORPORATION STOPS – GROUND KEY/PLUG (CC X CTS):

SPECIFICATION:

Ground key or plug type corporation stops shall meet/exceed the following performance specifications:

- ASTM Standards B62 (85-5-5-5) brass.
- AWWA C800

MATERIAL:

- **Body:** ASTM B62 Brass.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Trim:** Brass or Stainless Steel

DESIGN:

- Ground key or plug type design.
- Must accommodate polyethylene DR 9, CTS tubing.
- Pack joint is the only acceptable type.
- Full port opening design.
- Straight body design.

CONNECTION:

- Inlet side shall be AWWA CC taper male threads.
- Outlet side shall be compression type joint with external gripping device (Pack Joint) for copper tubing size (CTS) polyethylene tubing.

SIZES:

- Three-quarter inch (3/4")
- One inch (1")

RESTRICTIONS:

- Requires insert stiffener or liner in pack joint connection when installed with HDPE pipe.



MANUFACTURER/PRODUCT(S):

- A.Y. MCDONALD - 74701-22 SERIES
- CAMBRIDGE BRASS - 302NL-A_B_SERIES
- FORD METER BOX CO. INC. - F1000-_SERIES
- JONES WATER PRODUCTS - E-3401 SERIES
- MUELLER CO. - P-15008N SERIES

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 2 – CORPORATION STOPS – GROUND KEY/PLUG (CC X FIPT):

SPECIFICATION:

Ground key or plug type corporation stops shall meet/exceed the following performance specifications:

- ASTM Standards B62 (85-5-5-5) brass.
- AWWA C800

MATERIAL:

- **Body:** ASTM B62 brass.

DESIGN:

- Ground key or plug type design.
- Full port opening design.
- Straight body design.

CONNECTION:

- Inlet side shall be AWWA CC taper male threads.
- Outlet side shall be female iron pipe thread.

SIZES:

- Three-quarter inch (3/4").
- One inch (1").

RESTRICTIONS:

- For use **only** as chlorine injection point - shall have brass plug installed after use.



MANUFACTURER/PRODUCT(S):

- A.Y. MCDONALD - 73148 SERIES
- CAMBRIDGE BRASS - 302NL-A_F_ SERIES
- FORD METER BOX CO. INC. - F1600- _ SERIES
- JONES WATER PRODUCTS - E-51 SERIES
- MUELLER CO. - H-10045N SERIES

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 3 – CORPORATION STOPS – BALL (MIPT X CTS):

SPECIFICATION:

Ball type corporation stops shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) brass.
- AWWA C800

MATERIAL:

- **Body:** ASTM B62 Brass.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Trim:** Brass or Stainless Steel

DESIGN:

- Ball type design.
- Must accommodate polyethylene DR 9, CTS tubing.
- Pack joint is the only acceptable type.
- Full port opening design.
- Straight body design.

CONNECTION:

- Inlet side shall be male iron pipe threads.
- Outlet side shall be compression type joint with external gripping device (Pack Joint) for copper tubing size (CTS) polyethylene tubing.

SIZES:

- One & one-half inch (1-1/2")
- Two inch (2")

RESTRICTIONS:

- Requires insert stiffener or liner when installed with HDPE pipe.



MANUFACTURER/PRODUCT(S):

- A.Y. MCDONALD - 74704B-22 SERIES
- CAMBRIDGE BRASS - 301NL-M_B_ SERIES
- FORD METER BOX CO. INC. - FB1100-_ SERIES
- JONES WATER PRODUCTS - E-1935 SERIES
- MUELLER CO. - P-25028N SERIES

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 4 – CORPORATION STOPS – BALL (MIPT X FIPT):

SPECIFICATION:

Ball type corporation stops shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) brass.
- AWWA C800

MATERIAL:

- **Body:** ASTM B62 brass.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.

DESIGN:

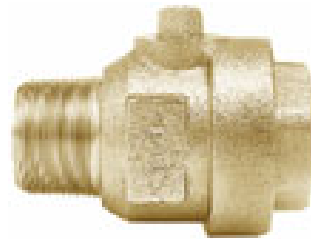
- Ball type design.
- Full port opening design.
- Straight body design.

CONNECTION:

- Inlet side shall be male iron pipe threads.
- Outlet side shall be female iron pipe thread.

SIZES:

- One & one-half inch (1-1/2").
- Two inch (2").



MANUFACTURER/PRODUCT(S):

- A.Y. MCDONALD - 73149B SERIES
- CAMBRIDGE BRASS - 301NL-M_F_ SERIES
- FORD METER BOX CO. INC. - FB1700-_ SERIES
- JONES WATER PRODUCTS - E-1931 SERIES

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 5 – BRASS SERVICE LINE FITTINGS & ACCESSORIES (CTS O.D.):

SPECIFICATION/MATERIAL:

Compression type brass fittings & accessories with external gripping devices shall meet/exceed the following performance specifications:

- Brass shall conform to AWWA C800, ASTM Standards B62 (85-5-5-5) waterworks brass or latest revision thereof.
- Outside Diameter (O.D.) mechanical compression coupling shall be designed and sized to seal on Type K or L copper tubing or polyethylene ASTM D2737 DR 9 tubing standard.

DESIGN:

- Pack Joint is the only acceptable design.

Set screw:

- Stainless Steel

Gasket:

- Nitrile/Buna-N
- EPDM

CONNECTION:

Inlet:

- Copper Tubing Size (CTS) compression with external gripping device.
- Female copper tube nut thread.

Outlet:

- Threaded ends will be standard Male Iron Pipe Threads (MIPT).
- Threaded ends will be standard Female Iron Pipe Threads (FIPT).
- Copper Tubing Size (CTS) compression with external gripping device.

RESTRICTIONS:

- Requires insert stiffener or liner when installed on PE pipe.



MANUFACTURER/PRODUCT(S):

- A.Y. MCDONALD - *MAC-PAK*
- CAMBRIDGE BRASS - *CAMPAK*
- FORD METER BOX CO. INC. - *PACK JOINT*
- JONES WATER PRODUCTS - *PACK JOINT*
- MUELLER CO. - *PACK JOINT*

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 6 – BRASS SERVICE LINE FITTINGS – STEEL PIPE ADAPTERS (IPS O.D.):

SPECIFICATION/MATERIAL:

Compression type brass fittings & accessories with external gripping devices shall meet/exceed the following performance specifications:

- Brass shall conform to AWWA C800, ASTM Standards B62 (85-5-5-5) waterworks brass or latest revision thereof.
- Outside Diameter (O.D.) mechanical compression coupling shall be designed and sized to seal on galvanized steel pipe.

DESIGN:

- Pack Joint is the only acceptable design.

Set screw:

- Stainless Steel

Gasket:

- Nitrile/Buna-N
- EPDM

CONNECTION:

Inlet:

- Galvanized steel pipe with external gripping device.

Outlet:

- Standard Male Iron Pipe Threads (MIPT).
- Standard Female Iron Pipe Threads (FIPT).
- Galvanized steel pipe with external gripping device.

STEEL PIPE ADAPTERS



MANUFACTURER/PRODUCT(S):

- A.Y. MCDONALD - *MAC-PAK*
- FORD METER BOX CO. INC. - *PACK JOINT*
- MUELLER CO. - *PACK JOINT*

Created Date: 03/16/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 6.1 – BRASS SERVICE LINE FITTINGS – PVC PIPE ADAPTERS (IPS O.D.):

SPECIFICATION/MATERIAL:

Compression type brass fittings & accessories with external gripping devices shall meet/exceed the following performance specifications:

- Brass shall conform to AWWA C800, ASTM Standards B62 (85-5-5-5) waterworks brass or latest revision thereof.
- Outside Diameter (O.D.) mechanical compression coupling shall be designed and sized to seal on ASTM D1785 IPS polyvinyl chloride (PVC) Schedule 40, 80 and SDR 21 PVC pipe.

DESIGN:

- Pack Joint is the only acceptable design.

Set screw:

- Stainless Steel

Gasket:

- Nitrile/Buna-N
- EPDM

CONNECTION:

Inlet:

- Schedule 40 PVC with external gripping device.
- Schedule 80 PVC with external gripping device.
- SDR 21 PVC with external gripping device.

Outlet:

- Standard Male Iron Pipe Threads (MIPT).
- Standard Female Iron Pipe Threads (FIPT).
- Schedule 40 PVC with external gripping device.
- Schedule 80 PVC with external gripping device.
- SDR 21 PVC with external gripping device.

Interchangeable:

- Fittings for two inch (2") PVC and Polyethylene (HDPE) ASTM D3035 DR 9 are interchangeable with the addition of an insert stiffener or liner.

PVC ADAPTERS



MANUFACTURER/PRODUCT(S):

- **A.Y. MCDONALD - MAC-PAK**
- **FORD METER BOX CO. INC. - PACK JOINT**
- **MUELLER CO. - PACK JOINT**

Created Date: 03/16/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 6.2 – BRASS SERVICE LINE FITTINGS – 2” HDPE PIPE ADAPTERS (IPS O.D.):

SPECIFICATION/MATERIAL:

Compression type brass fittings & accessories with external gripping devices shall meet/exceed the following performance specifications:

- Brass shall conform to AWWA C800, ASTM Standards B62 (85-5-5-5) waterworks brass or latest revision thereof.
- Outside Diameter (O.D.) mechanical compression coupling shall be designed and sized to seal on polyethylene ASTM D3035 DR 9, Iron Pipe Size (IPS), controlled outside diameter tubing standard.

DESIGN:

- Pack Joint is the only acceptable design.

Set screw:

- Stainless Steel

Gasket:

- Nitrile/Buna-N
- EPDM

CONNECTION:

Inlet:

- Polyethylene (HDPE) ASTM D3035 DR 9, Iron Pipe Size (IPS), controlled outside diameter tubing standard size compression with external gripping device.

Outlet:

- Standard Male Iron Pipe Threads (MIPT).
- Standard Female Iron Pipe Threads (FIPT).
- Polyethylene (HDPE) ASTM D3035 DR 9, Iron Pipe Size (IPS), controlled outside diameter tubing standard size compression with external gripping device.

RESTRICTIONS:

- Requires insert stiffener or liner when installed on HDPE pipe.

HDPE ADAPTERS



MANUFACTURER/PRODUCT(S):

- **A.Y. MCDONALD - MAC-PAK**
- **FORD METER BOX CO. INC. - PACK JOINT**
- **MUELLER CO. - PACK JOINT**

Created Date: 03/16/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 7 – BRASS SERVICE VALVES (FIPT X FIPT):

SPECIFICATION:

Brass service valves shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) brass.
- Brass ball shall be fluorocarbon coated.
- Valves 3/4" through 2" shall have a locking wing, capable of allowing standard padlock to swivel.
- All valves must be full port opening.

MATERIAL:

- **Body:** ASTM B62 Brass.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Handle:** Brass or Stainless Steel
- **Handle trim:** Brass or Stainless Steel

DESIGN:

- Ball valve curb stop, watertight in either direction.
- Full port opening design.
- Straight body design.

CONNECTION:

- Female Iron Pipe Thread (FIPT) X Female Iron Pipe Thread (FIPT).

SIZES:

- Three-quarter inch (3/4") through two inch (2").

RECLAIMED INSTALLATION REQUIREMENTS:

- Shall be equipped with handle.
- Valve and/or handle shall be labeled "**Reclaimed Water**".



MANUFACTURER/PRODUCT(S):

- **A.Y. MCDONALD - 76101W SERIES**
- **CAMBRIDGE BRASS - 212NL-F_F_ SERIES**
- **FORD METER BOX CO. INC. - B11-__W SERIES**
- **JONES WATER PRODUCTS - E-1900W SERIES**
- **MUELLER CO. - 300 - B-20200 SERIES W/ LOCKWING**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 8 – BRASS SERVICE VALVES (CTS X FIPT):

SPECIFICATION:

Brass service valves shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) brass.
- Brass ball shall be fluorocarbon coated.
- Valves 3/4" through 2" shall have a locking wing, capable of allowing standard padlock to swivel.
- All valves must be full port opening.

MATERIAL:

- **Body:** ASTM B62 Brass.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Handle:** Brass or Stainless Steel
- **Handle trim:** Brass or Stainless Steel

DESIGN:

- Ball valve curb stop, watertight in either direction.
- Full port opening design.
- Straight body design.

CONNECTION:

Inlet:

- Compression type joint with external gripping device (Pack Joint) for copper tubing size (CTS) polyethylene tubing.

Outlet:

- Standard Female Iron Pipe Threads (FIPT).

SIZES:

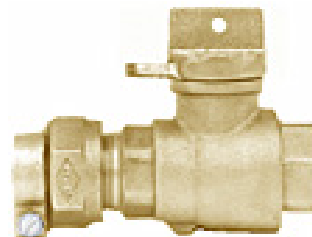
- Three-quarter inch (3/4") through two inch (2").

RECLAIMED INSTALLATION REQUIREMENTS:

- Shall be equipped with handle.
- Valve and/or handle shall be labeled "Reclaimed Water".

RESTRICTIONS:

- Requires insert stiffener or liner when installed on HDPE pipe.



MANUFACTURER/PRODUCT(S):

- A.Y. MCDONALD - 76102W-22 SERIES
- CAMBRIDGE BRASS - 212NL-B_F_ SERIES
- FORD METER BOX CO. INC. - PACK JOINT B41-__W SERIES
- JONES WATER PRODUCTS - E-1921W SERIES
- MUELLER CO. - P-25170N SERIES

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 9 – BRASS METER VALVES (CTS X MTR) :

SPECIFICATION:

Brass service valves shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) brass.
- Brass ball shall be fluorocarbon coated.
- Valves 3/4" and 1" shall have a locking wing, capable of allowing standard padlock to swivel.
- All valves must be full port opening.

MATERIAL:

- **Body:** ASTM B62 Brass.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Handle:** Brass or Stainless Steel
- **Handle trim:** Brass or Stainless Steel

DESIGN:

- Ball valve curb stop, watertight in either direction.
- Full port opening design.
- Straight body design.

CONNECTION:

Inlet:

- Compression type joint with external gripping device (Pack Joint) for copper tubing size (CTS) polyethylene tubing.

Outlet:

- Meter saddle nut.

SIZES:

- Three-quarter inch (3/4") and one inch (1").

INCLUDE:

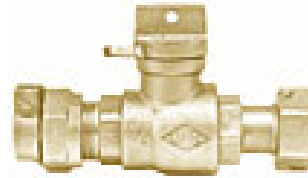
- One (1) One-eighth inch (1/8") thick Nitrile/Buna-N or EPDM rubber meter washer.

RECLAIMED INSTALLATION REQUIREMENTS:

- Shall be equipped with handle.
- Valve and/or handle shall be labeled "**Reclaimed Water**".

RESTRICTIONS:

- Requires insert stiffener or liner when installed on HDPE pipe.



MANUFACTURER/PRODUCT(S):

- **A.Y. MCDONALD - 76100MW-22 SERIES**
- **CAMBRIDGE BRASS - 212-B_T_SERIES**
- **FORD METER BOX CO. INC. - PACK JOINT B43-___W SERIES**
- **JONES WATER PRODUCTS - E-1925W SERIES W/ LOCK WING**
- **MUELLER CO. - P-24350N SERIES W/ LOCK WING**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 9.1 – BRASS METER VALVES (FIPT X MTR):

SPECIFICATION:

Brass service valves shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) brass.
- Brass ball shall be fluorocarbon coated.
- Valves 3/4" and 1" shall have a locking wing, capable of allowing standard padlock to swivel.
- All valves must be full port opening.

MATERIAL:

- **Body:** ASTM B-62 Brass.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Handle:** Brass or Stainless Steel
- **Handle trim:** Brass or Stainless Steel

DESIGN:

- Ball valve curb stop, watertight in either direction.
- Full port opening design.
- Straight body design.

CONNECTION:

Inlet:

- Inlet side shall be Female Iron Pipe Thread (FIPT).

Outlet:

- Meter nut.

SIZES:

- Three-quarter inch (3/4") and one inch (1").

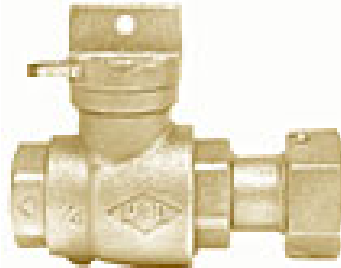
INCLUDE:

- One (1) one-eighth inch (1/8") thick Nitrile/Buna-N or EPDM rubber meter washer.

RECLAIMED INSTALLATION REQUIREMENTS:

- Shall be equipped with handle.
- Valve and/or handle shall be labeled "Reclaimed Water".

B13-332W



MANUFACTURER/PRODUCT(S):

- **A.Y. MCDONALD** - 76101MW 3/4, 76101MW 1
- **CAMBRIDGE BRASS** - 212NL-F3T3, 212NL-F4T4
- **FORD METER BOX CO. INC.** - PACK JOINT B13-332W, B13-444W
- **MUELLER CO.** - B-24351N 3/4, B-24351N 1

Created Date: 06/27/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 10 – METER COUPLINGS – 3/4” THRU 1”:

SPECIFICATION/MATERIAL:

Meter couplings shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) water works brass or latest revision thereof.
- Meter coupling shall be straight with outside iron pipe threads on tailpiece and meter threads.

CONNECTION:

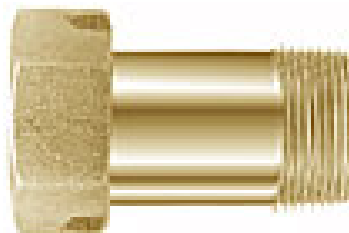
- Three-quarter inch (3/4”) and one inch (1”) shall be iron pipe thread X meter nut.

DESIGN:

- Three-quarter inch (3/4”) and one inch (1”) tailpiece must be machined inside and outside.

INCLUDE:

- One (1) Tailpiece
- One (1) Meter nut
- One (1) One-eighth inch (1/8”) thick Nitrile/Buna-N or EPDM rubber washer.



MANUFACTURER/PRODUCT(S):

- A.Y. MCDONALD - 74624, 74626
- CAMBRIDGE BRASS - SMOOTH BARREL 417NL-T3M3 & 417NL-T4M4
- JONES WATER PRODUCTS - E-130
- MUELLER CO. - H-10890N, H-10896N

Created Date: 01/20/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 10.1 – METER COUPLINGS & BUSHINGS – 1-1/2" THRU 2"

SPECIFICATION/MATERIAL:

Meter couplings shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) water works brass or latest revision thereof.
- Meter coupling shall be straight with outside iron pipe threads on tailpiece and meter threads on inside of meter nut.
- Meter bushing shall have male meter threads on outside and female iron pipe threads on inside.
- The meter bushing shall also be brass and have a machined smooth face on the male end to permit proper sealing against gasket material.

CONNECTION:

- One & one-half (1-1/2") and two inch (2") shall be iron pipe thread X meter nut .

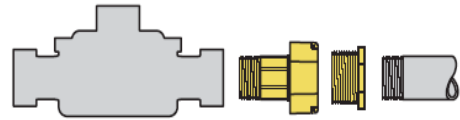
DESIGN:

- One & one-half inch (1-1/2") and two inch (2") tailpiece must be ribbed on outside and cored on inside.

INCLUDE:

- One (1) Tailpiece
- One (1) Meter nut
- One (1) Meter bushing - male meter thread X female iron pipe thread.
- One (1) One-eighth inch (1/8") thick Nitrile/Buna-N or EPDM rubber washer.

TYPICAL 1-1/2" & 2" METER INSTALLATION



METER COUPLING



METER BUSHING



MANUFACTURER/PRODUCT(S):

- **A.Y. MCDONALD** - 74620 1-1/2, 74620BB 1-1/2; 74620 2, 74620BB 2
- **CAMBRIDGE BRASS** - 417NL-T6M6 W/ BUSHING, 417NL-T7M7 W/ BUSHING
- **FORD METER BOX CO. INC.** - C38-66, BBIM66; C38-77, BBIM77
- **JONES WATER PRODUCTS** - E-134 W/ BUSHING
- **MUELLER CO.** - H 10891N W/ BUSHING
- **TRUMBULL MFG.** - 368-0597 W/ BUSHING, 368-0598 W/ BUSHING

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 10.2 – METER BUSHINGS – 3/4" THRU 1":

SPECIFICATION/MATERIAL:

Meter bushings shall meet/exceed the following performance specifications:

- ASTM B62 (85-5-5-5) water works brass or latest revision thereof.
- Shall have a machined smooth face on the male end to permit proper sealing against gasket material.

CONNECTION:

- Shall have female iron pipe thread X male meter threads.

SIZES:

- Three-quarter inch (3/4") through one inch (1").



MANUFACTURER/PRODUCT(S):

- FORD METER BOX CO. INC. - *BBIM-33, BBIM-44*
- OPEN

Created Date: 01/20/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 11 – METER RESETTERS – 5/8" X 3/4" METER:

SPECIFICATION:

Meter resetters shall meet/exceed the following performance specifications:

- Castings shall be made of ASTM B62 (85-5-5-5) brass.
- Applicable parts of AWWA C800.

MATERIAL:

- **Body:** ASTM B62 Brass.
- **Riser:** Copper.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Trim:** Brass or Stainless Steel
- **Solder:** Lead-free.

DESIGN:

- Ball valve curb stop design.
- Valve shall have padlock wings.
- Full port opening design.
- Shall have swivel meter saddle nut connections for 5/8" X 3/4" water meters.

CONNECTION:

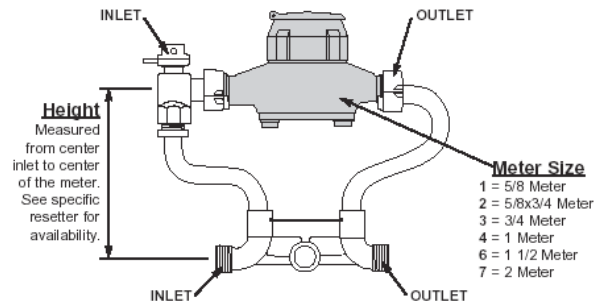
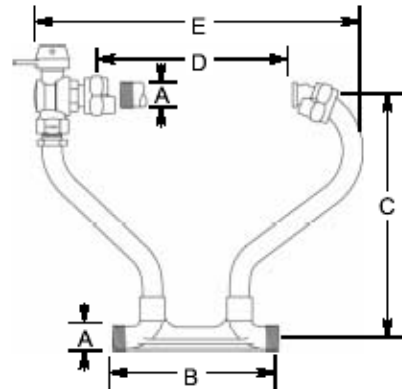
- Both bottom inlet and outlet sides shall be male meter thread.
- Both top inlet and outlet sides shall be meter saddle nut.

SIZES:

- **Meter size:** Five-eighths inch X Three-quarters inch (5/8" x 3/4").
- **Setter height:** Seven, nine and twelve inch (7", 9" and 12").

INCLUDE:

- Four (4) One-eighth inch (1/8") thick Nitrile/ Buna-N or EPDM rubber meter gaskets.
- OR**
- Two (2) One-eighth inch (1/8") thick Nitrile/ Buna-N or EPDM rubber and two copper clad resetter meter gaskets.



MANUFACTURER/PRODUCT(S):

- **A.Y. MCDONALD** - 718-2__ JX (5/8" x 3/4") SERIES
- **CAMBRIDGE BRASS** - 6010NL-2__ N2N2-UO SERIES; (__ : 07=7", 09=9", 12=12")
- **FORD METER BOX CO. INC.** - VB42- W-NL SERIES
- **JONES WATER PRODUCTS** - E03-MT-MT-BV-MC SERIES
- **MUELLER CO.** - (5/8" x 3/4")- B-2471N-__ SERIES

Created Date: 01/20/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 11.1 – METER RESETTERS – 1” METER:

SPECIFICATION:

Meter resetters shall meet/exceed the following performance specifications:

- Castings shall be made of ASTM B62 (85-5-5-5) brass.
- Applicable parts of AWWA C800.

MATERIAL:

- **Body:** ASTM B62 Brass.
- **Riser:** Copper.
- **Seal & O-rings:** Nitrile/Buna-N or EPDM rubber.
- **Trim:** Brass or Stainless Steel
- **Solder:** Lead-free.

DESIGN:

- Ball valve curb stop design.
- Valve shall have padlock wings.
- Full port opening design.
- Shall have swivel meter saddle nut connections for 1” water meters.

CONNECTION:

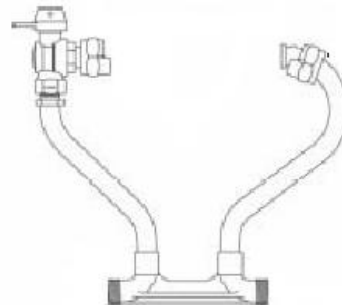
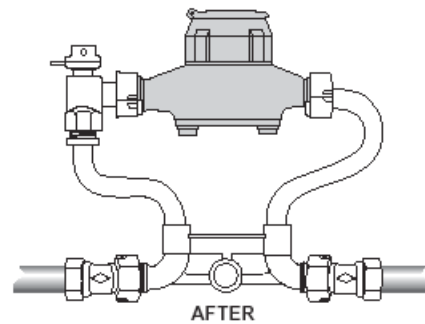
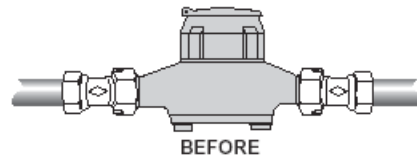
- Both bottom inlet and outlet sides shall be male meter thread.
- Both top inlet and outlet sides shall be meter saddle nut.

SIZES:

- **Meter size:** One inch (1”).
- **Setter height:** Ten and twelve inch (10” and 12”).

INCLUDE:

- Four (4) One-eighth inch (1/8”) thick Nitrile/Buna-N or EPDM rubber meter gaskets.
- OR**
- Two (2) One-eighth inch (1/8”) thick Nitrile/Buna-N or EPDM rubber and two copper clad resetter meter gaskets.



MANUFACTURER/PRODUCT(S):

- **A.Y. MCDONALD - 718-4__JX SERIES**
- **CAMBRIDGE BRASS - 6010NL-4__N4N4-UO SERIES.**
- **FORD METER BOX CO. INC. - VB44-__W-NL SERIES**
- **JONES WATER PRODUCTS - E03-MT-MT-BV-MC SERIES**
- **MUELLER CO. - (1”) - B-24118-__ SERIES**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 12 – INSERT STIFFENERS – STAINLESS STEEL:

SPECIFICATION/MATERIAL:

Insert stiffeners or liners (for use with brass service line fittings) shall meet/exceed the following performance specifications:

- Type 304 or 316 Stainless Steel
- Flare and beveled ends for proper installation.
- Designed for use with potable water.
- Shall be solid stainless steel, manufactured from plate or tube material.
- Shall fit snugly inside tubing or pipe.
- Shall fit the following type tubing.

TUBING TYPE:

- **CTS** polyethylene (PE) per ASTM D2737 SDR 9, copper tubing size O.D. controlled tubing.
- **IPS** polyethylene (PE) per ASTM D3035 DR9, iron pipe size O.D. controlled tubing.

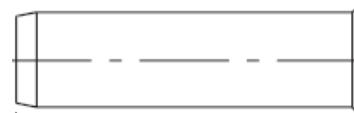
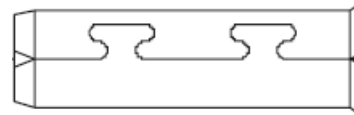
TUBING SIZE:

CTS:

- Three-quarter inch (3/4")
- One inch (1")
- One & one-half inch (1-1/2")
- Two inch (2")

IPS:

- Two inch (2")



MANUFACTURER:

- A.Y. MCDONALD
- CAMBRIDGE BRASS
- FORD METER BOX CO. INC.
- OPEN

Created Date: 03/16/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

G 12.1 – INSERT STIFFENERS – PVC:

SPECIFICATION/MATERIAL:

Insert stiffeners or liners for use with brass service line fittings shall meet/exceed the following performance specifications:

- Flare and beveled ends for proper installation.
- Designed for use with potable water.
- Shall be a solid PVC tube.
- Shall fit snugly inside tubing.
- Shall fit the following type tubing.

TUBING TYPE:

- CTS polyethylene (PE) per ASTM D2737 SDR 9, copper tubing size O.D. controlled tubing.

TUBING SIZE:

CTS:

- Three-quarter inch (3/4")
- One inch (1")



MANUFACTURER:

- A.Y. MCDONALD
- MARS CO.
- OPEN

Created Date: 03/16/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

**SECTION H:
REPAIR SLEEVES,
COUPLINGS,
CLAMPS &
NON-PRESSURE
ADAPTERS**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section H: Repair Sleeves, Couplings, Clamps & Non-Pressure Adapters

- H 1 Pipe Adapters – Non-Pressure
- H 1.1 Pipe Adapters – Concrete Manhole Adapters – 4” Thru 12”
- H 1.2 Pipe Adapters – Concrete Manhole Adapters – 8” and Larger
- H 1.3 Pipe Adapters – Concrete Manhole Boot Connectors
- H 2 Repair Clamps – Ductile Iron Lugs
- H 3 Repair Clamps – Stainless Steel
- H 4 Repair Clamps – Collar Leak
- H 5 Repair Clamps – Full Seal
- H 6 Repair Clamps – Bell Joint Leak – CI, DI, & PVC
- H 7 Repair Sleeves/Couplings – Restrained – CI, DI, PVC, & HDPE – 4” Thru 12”
- H 7.1 Repair Sleeves/Couplings – Non-Restrained – Transition – 2” Thru 12”

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

H 1 – PIPE ADAPTERS – NON-PRESSURE:

SPECIFICATION/MATERIAL:

Non-pressure pipe adapters shall meet/exceed the following performance specifications:

- ASTM D5926 standard specification for Polyvinyl Chloride (PVC) or manufactured with synthetic rubbers.
- ASTM C425 standard specification for watertight compression sealed joints of vitrified clay pipe.
- ASTM C1173 standard specification for flexible transition couplings for underground piping systems.
- CSA B602 standard specification for mechanical couplings for drain, waste, and vent piping.
- The connector shall be molded or extruded and vulcanized from materials whose physical & chemical properties meet/exceed the physical & chemical resistant properties outlined in ASTM C5926.
- The material shall be resistant to ozone, weathering, aging, and chemicals, including acids, alkalis, animal and vegetable fats, oils and petroleum products.
- Bands and screw assembly shall be manufactured from totally non-magnetic series 300 stainless steel.
- The size and application colophons must be embossed on each adapter.

RESTRICTIONS:

- For repairs and connections to existing vitrified clay pipe (VCP) facilities.



MANUFACTURER:

- FERNCO INC.
- MISSION RUBBER
- NDS

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

H 1.1 – PIPE ADAPTERS – CONCRETE MANHOLE ADAPTERS – 4” THRU 12”:

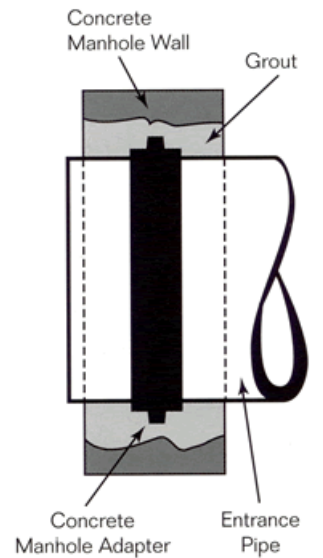
SPECIFICATION/MATERIAL:

Concrete manhole pipe adapters shall meet/exceed the following performance specifications:

- Manhole adapters shall create a water stop around pipes entering sanitary manhole walls.
- The material shall be resistant to ozone, weathering, aging, and chemicals, including acids, alkalis, animal and vegetable fats, oils and petroleum products.
- Shall be made of elastomeric Polyvinyl Chloride (PVC)
OR
- Virgin SBR per ASTM D2000 M2AA60.
- The size and application colophons must be cast on each adapter.

RESTRICTIONS:

- Shall be used for connections and repairs to existing brick manholes, and repairs to pre-cast manholes only.



MANUFACTURER:

- FERNCO
- ROMAC
- OPEN

Created Date: 06/27/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

H 1.2 – PIPE ADAPTERS – CONCRETE MANHOLE ADAPTERS – 8” AND LARGER:

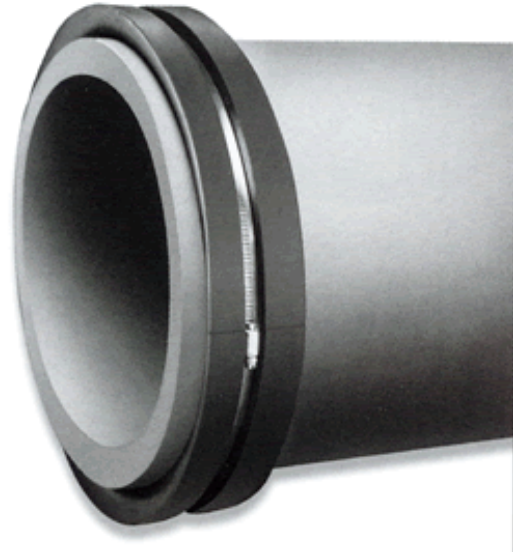
SPECIFICATION/MATERIAL:

Concrete manhole pipe adapters shall meet/exceed the following performance specifications:

- Manhole adapters shall create a water stop around pipes entering sanitary manhole walls.
- The material shall be resistant to ozone, weathering, aging, and chemicals, including acids, alkalis, animal and vegetable fats, oils and petroleum products.
- Shall be made of elastomeric Polyvinyl Chloride (PVC).
- The size and application colophons must be cast on each adapter.
- Bands and screw assembly shall be manufactured from totally non-magnetic series 304 stainless steel.

RESTRICTIONS:

- Shall be used for connections and repairs to existing brick manholes, and repairs to pre-cast manholes only.



MANUFACTURER:

- FERNCO
- OPEN

Created Date: 06/27/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

H 1.3 – PIPE ADAPTERS – CONCRETE MANHOLE BOOT CONNECTORS:

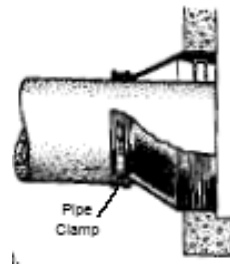
SPECIFICATION/MATERIAL:

Concrete manhole pipe adapters shall meet/exceed the following performance specifications:

- ASTM C923, Resilient connectors between reinforced concrete manhole structures, pipes and laterals.
- Manhole adapters shall create a watertight flexible seal around pipes entering sanitary manhole walls.
- The material shall be resistant to ozone, weathering, aging, and chemicals, including acids, alkalis, animal and vegetable fats, oils and petroleum products.
- Shall be made of elastomeric Polyvinyl Chloride (PVC), ethylene propylene (EPDM) or polyisoprene rubber.
- The size and application colophons must be cast on each adapter.
- Bands and screw assembly shall be manufactured from totally non-magnetic series 300 stainless steel.

REQUIREMENTS:

- Shall be used for connections to existing and new pre-cast manholes and structures.



MANUFACTURER/PRODUCT(S):

- A-LOK PRODUCTS
- TRELLEBORG - KOR-N-SEAL
- OPEN

Created Date: 06/27/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

H 2 – REPAIR CLAMPS – DUCTILE IRON LUGS:

SPECIFICATION:

Leak repair clamps shall meet/exceed the following performance specifications:

- ASTM A536 Ductile iron.
- 18-8 type 304 Stainless steel
- Gasket shall be securely glued or imbedded in the band of the clamp to ensure a positive seal against the pipe.
- Gaskets shall have ribbed surface.

MATERIAL:

- **Lugs:**
 - Ductile iron per ASTM A536
- **Band:**
 - Stainless steel, 18-8 type 304.
- **Bolts, Nuts & Washers:**
 - Carbon steel
- **Gasket:**
 - EPDM (ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Ductile iron: Shop coat
 - Stainless steel: None

DESIGN:

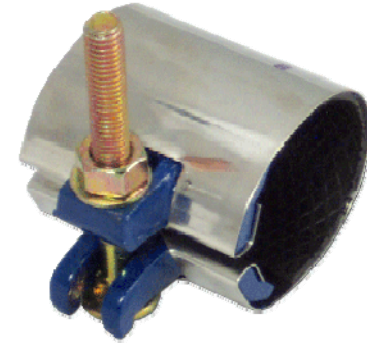
- For patching holes in iron pipe size O.D. pipe.

CLAMP WIDTH & BOLT AMOUNT:

- Three inch (3")...One (1) bolt
- Six inch (6").....Two (2) bolts

RESTRICTIONS:

- For repairs to existing, in-service pipelines only.



MANUFACTURER/PRODUCT(S):

- **CASCADE WATERWORKS MFG. - CDR SERIES**
- **DRESSER - STYLE 118**
- **FORD METER BOX CO. INC. - FSC SERIES**
- **JCM IND. - 110 SERIES**
- **MUELLER CO. - 212 SERIES**
- **TOTAL PIPING SOLUTIONS - 4100 SERIES**
- **POWER SEAL - 3151 SERIES**
- **ROMAC - SC SERIES**
- **SMITH-BLAIR - 245 REDI-CLAMP**

Created Date: 01/20/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

H 3 – REPAIR CLAMPS – STAINLESS STEEL:

SPECIFICATION:

Leak repair clamps shall meet/exceed the following performance specifications:

- 18-8 type 304 Stainless steel
- Type 304 Cast Stainless steel per ASTM A743.
- Gasket shall be securely glued or imbedded in the band of the clamp to ensure a positive seal against the pipe.
- Lubricant treated nuts to prevent galling.
- Gaskets shall have ribbed surface.

MATERIAL:

- **Lugs:**
 - Type 304 cast Stainless steel
- **Band:**
 - Stainless steel, 18-8 type 304.
- **Bolts, Nuts & Washers:**
 - Stainless steel with lubricant treated nuts to prevent galling.
- **Gasket:**
 - EPDM (Ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Stainless steel: None

DESIGN:

- For patching holes in iron pipe size O.D. pipe.
- Only cast lug design will be accepted.

CLAMP WIDTH & BOLT AMOUNT:

- Three inch (3")...One (1) bolt
- Six inch (6").....Two (2) bolts

RESTRICTIONS:

- For repairs to existing, in-service pipelines only.



MANUFACTURER/PRODUCT(S):

- FORD METER BOX CO. INC. - FLSC SERIES
- SMITH-BLAIR - 248 REDI-CLAMP

Created Date: 01/20/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

H 4 – REPAIR CLAMPS – COLLAR LEAK:

SPECIFICATION:

Leak repair clamps shall meet/exceed the following performance specifications:

- ASTM A536 Ductile iron.
- 18-8 type 304 Stainless steel
- Gasket shall be securely glued or imbedded in the band of the clamp to ensure a positive seal against the pipe.

MATERIAL:

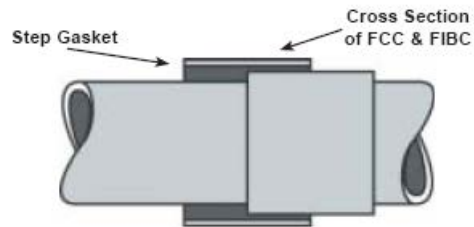
- **Lugs:**
 - Ductile iron per ASTM A536
- **Band:**
 - Stainless steel, 18-8 type 304.
- **Bolts, Nuts & Washers:**
 - Carbon steel
 - Stainless steel with lubricant treated nuts to prevent galling.
- **Gasket:**
 - EPDM (Ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Ductile iron: Shop coat
 - Stainless steel: None

DESIGN:

- For patching holes at joints on iron pipe size O.D. pipe.
- Only cast lug design will be accepted.

RESTRICTIONS:

- For repairs to existing, in-service pipelines only.



MANUFACTURER/PRODUCT(S):

- FORD METER BOX CO. INC. - FCC SERIES
- JCM IND. - MODEL 105
- POWER SEAL - 3140 SERIES
- SMITH-BLAIR - 229 COLLAR LEAK CLAMP

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

H 5 – REPAIR CLAMPS – FULL SEAL:

SPECIFICATION:

Full circle leak repair clamps shall meet/exceed the following performance specifications:

- ASTM A536 ductile iron.
- 18-8 type 304 Stainless steel
- Gasket shall be securely glued or imbedded in the band of the clamp to ensure a positive seal against the pipe.
- Gaskets shall have ribbed surface.

MATERIAL:

- **Lugs:**
 - Ductile iron per ASTM A536
- **Band:**
 - Stainless steel, 18-8 type 304.
- **Bolts, Nuts & Washers:**
 - Low alloy steel per AWWA C111.
- **Gasket:**
 - EPDM (Ethylene propylene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Ductile iron: Shop coat
 - Stainless steel: None

DESIGN:

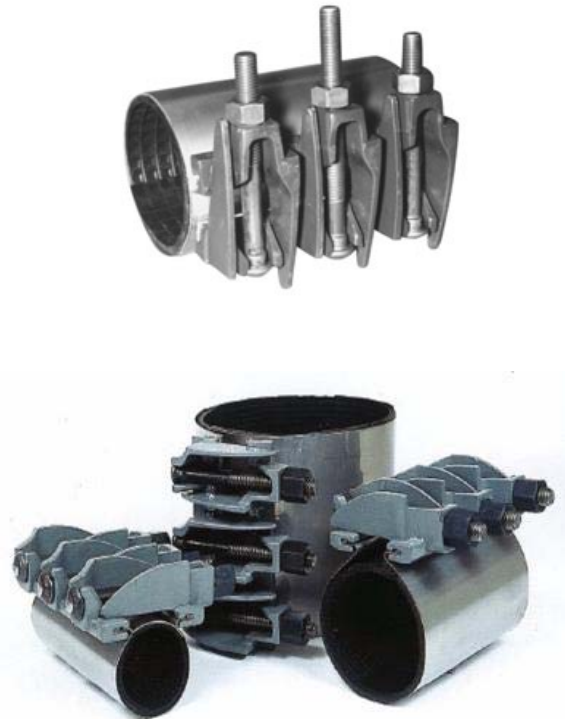
- For patching full circle holes in cast iron pipe size O.D. pipe.

RESTRICTIONS:

- For repairs to existing, in-service pipelines only.

ADDITIONAL REQUIREMENTS:

- Spring washers may be required for use on HDPE pipe (consult manufacturer's documentation).



MANUFACTURER/PRODUCT(S):

- **CASCADE WATERWORKS MFG. - CDR1**
- **DRESSER - STYLE 360**
- **FORD METER BOX CO. INC. - F1 SERIES**
- **JCM IND. - 101 SERIES**
- **MUELLER CO. - 500 SERIES**
- **POWER SEAL - 3121 SERIES**
- **ROMAC - CL1 SERIES**
- **SMITH-BLAIR - FULL CIRCLE 226 SINGLE BAND**

Created Date: 01/20/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

H 6 – REPAIR CLAMPS – BELL JOINT LEAK – CI, DI, & PVC:

SPECIFICATION:

Leak repair clamps shall meet/exceed the following performance specifications:

- ASTM A536 ductile iron.
- Low alloy steel per AWWA C111.
- ASTM D2000 gasket seals.

MATERIAL:

- **Bell and Spigot Rings:**
 - Ductile iron per ASTM A536.
- **Bolts, Nuts & Washers:**
 - Low alloy steel.
- **Gasket:**
 - EPDM (Ethylene propylene)
 - SBR (Styrene butadiene)
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Ductile iron: Shop coat

DESIGN:

- For leak repairs in bell joints on cast iron, ductile iron and C900 PVC pipe.

RESTRICTIONS:

- For repairs to existing, in-service pipelines only.



MANUFACTURER/PRODUCT(S):

- DRESSER - 160 SERIES
- FORD METER BOX CO. INC. - FBC SERIES
- JCM IND. - MODEL 143
- POWER SEAL - 3232 SERIES
- ROMAC - STYLE 516

Created Date: 01/20/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

H 7 – REPAIR SLEEVES/COUPLINGS – RESTRAINED – CI, DI, PVC, & HDPE – 4” THRU 12”:

SPECIFICATION:

Restraining repair sleeves or couplings shall meet/exceed the following performance specifications:

- Shall connect and restrain two plain end pipes of the same or dissimilar materials.
- Shall provide axial restraint by use of multiple gripping wedges incorporated into the follower glands coupled together with threaded rods.
- ASTM A536 ductile iron.
- Low alloy steel per ANSI/AWWA C111/21.11 or latest revision thereof.
- ASTM D2000 gasket seals.
- Shall possess a minimum rating of twice (2:1) the pressure rating of the pipe.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

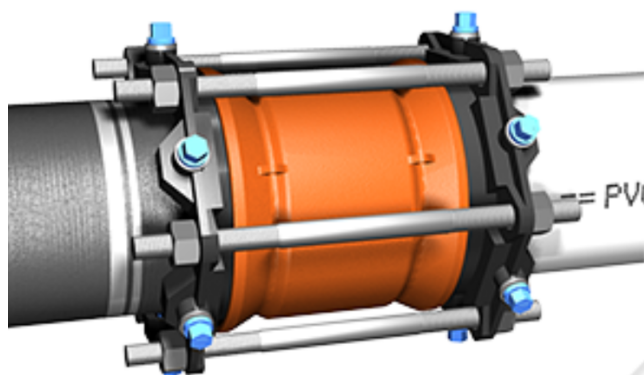
- **End Ring & Sleeve Body:**
 - Ductile iron per ASTM A536, minimum 65-45-12.
- **Bolts, Nuts & Rods:**
 - Low alloy steel per ANSI/AWWA C111/A21.11.
- **Gasket:**
 - EPDM (Ethylene propylene)
 - SBR (Styrene butadiene).
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Coupling Body: Fusion bonded epoxy.

APPLICATION:

- For leak repairs to join two plain end pipes of the same or dissimilar material.
- For use on cast iron, ductile iron, C900 PVC, and HDPE pipe.

RESTRICTIONS:

- For repairs to existing, in-service pipelines only.
- Insert stiffener is required on HDPE pipe.



MANUFACTURER/PRODUCT(S):

- **EBBA IRON - MEGA-COUPLING 3800 SERIES**

Created Date: 09/30/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

H 7.1 – REPAIR SLEEVES/COUPLINGS – NON-RESTRAINED – TRANSITION – 2” THRU 12”:

SPECIFICATION:

Non-restraining transmission repair sleeves or couplings shall meet/exceed the following performance specifications:

- Shall connect two plain end pipes of dissimilar or similar diameters.
- Shall join pipes with diameter differences as listed in “Minimum Required Coupling Size Range” in a single coupling kit.
- Shall have a two layer gasket, with a removable layer to allow for pipe diameter range expansion **OR** have separate gaskets included in a boxed kit to cover the required size range.
- NSF-61 for gaskets and coatings.
- Shall be pressure rated for a minimum working pressure of 150psi.
- Material supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

MATERIAL:

- **End Ring & Sleeve Body:**
 - Carbon Steel.
 - Ductile Iron.
- **Bolts, Nuts:**
 - 304 stainless steel with no-gall coating.
- **Gasket:**
 - EPDM (Ethylene propylene)
 - SBR (Styrene butadiene).
 - Nitrile/Buna-N (Acrylonitrile butadiene [NBR])
 - Viton; Fluorel (FKM)
- **Coating:**
 - Coupling Body & end rings: NSF-61 fusion bonded epoxy.

APPLICATION:

- For leak repairs to join two plain end pipes of dissimilar or similar diameters.
- For use on cast iron, ductile iron, AC, and PVC pipe.

RESTRICTIONS:

- For repairs to existing, in-service pipelines only.
- Shall not be used where joint restraint is required.

MINIMUM REQUIRED COUPLING SIZE RANGE:

- 2”- (2.375” to 2.50”)-(IPS through CIP)
- 3”- (3.50” to 4.13”)-(IPS through AC 200)
- 4”- (4.50” to 5.35”)-(IPS through AC 200)
- 6”- (6.625” to 7.56”)-(IPS through AC 200)
- 8”- (8.625” to 9.74”)- (IPS through AC 200)
- 10”- (10.75” to 11.95”)-(IPS through AC 150)
- 12”- (12.75” to 13.20”)-(IPS through DIP)
- 12”- (13.20” to 14.38”)-(DIP through AC 350)



MANUFACTURER/PRODUCT(S):

- **CASCADE WATERWORKS MFG. - OMEGA CRCR**
- **TOTAL PIPING SOLUTIONS, INC. - TX3 EXTENDED RANGE TRANSITION COUPLING**
- **OPEN**

Created Date: 05/03/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

**SECTION I:
CASTINGS
&
ACCESS COVERS**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section I: Castings & Access Covers

- I 1 Valve Boxes – Round Head
- I 2 Valve Box – Fixed Risers – Round Head
- I 3 Valve Box – Locking Lid – Round Head
- I 4 Valve Boxes – Square Head
- I 5 Valve Box – Fixed Risers – Square Head
- I 6 Meter Box – Cast Iron
- I 7 Manhole Castings – Service Clean-out Ring & Cover
- I 8.1 Manhole Castings – Standard Ring & Cover – 22-3/8" Clear Opening
- I 8.2 Manhole Castings – Standard Ring & Cover – 22" (Min.) Clear Opening
- I 9 Manhole Castings – Double Ring & Cover – 35" Clear Opening
- I 9.1 Manhole Castings – Double Ring & Cover – 48" Clear Opening
- I 10.1 Manhole Castings – Hinged Type Ring & Cover – 33-1/2"
- I 10.2 Manhole Castings – Hinged Type Ring & Cover - 34"
- I 11 Manhole Adjustment Rings
- I 12 Access Covers – Aluminum
- I 12.1 Access Covers – AASHTO HS-20 – Aluminum

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 1 – VALVE BOXES – ROUND HEAD:

SPECIFICATION/MATERIAL:

Valve boxes shall meet/exceed the following performance specifications:

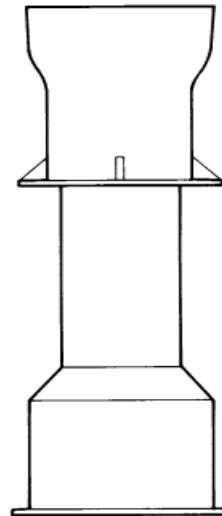
- Valve boxes shall be slip or sliding type.
- Lid shall be marked “WATER” or “SEWER” (to match service type application).
- Produced for gray cast iron.
- ASTM A48, Class 30 and 35.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- Shall have a paint or seal-coated finish.
- The lid shall fit flush in the top of the box without forcing and shall not rock.
- Shall have a non-tip lid with a minimum skirt of one & one-half inches (1-1/2”), for a total lid height of three and one-half inches (3-1/2”).
- Shall have a five and one-quarter inch (5-1/4”) shaft.

REQUIREMENTS:

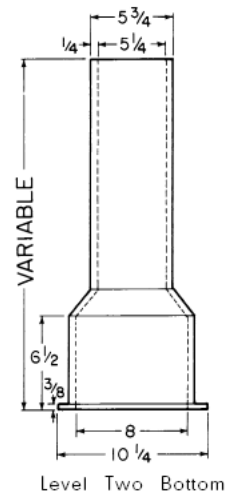
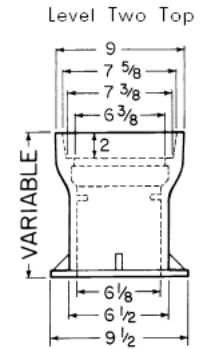
- All castings shall be poured at a foundry located in the U.S.A. or have ISO 9001 or later certification.
- All castings shall be true and free of holes.
- All castings shall have manufacturer's cast mark and part number clearly visible on each component of the two-piece valve box.
- Fixed riser extensions shall be available for the box top section to be considered for approval.
- Riser sections shall be continuously compatible to achieve any desired height in one inch (1”) and two inch (2”) increments plus or minus one-half inch (1/2”).
- Locking covers shall be available.

MINIMUM WEIGHT REQUIREMENTS:

- Shall **NOT** be less than 95% of minimum weight.
- Cover.....13 lbs.
- 10” Top section.....22 lbs.
- 16” Top section.....29 lbs.
- 15” Bottom section....20 lbs.
- 24” Bottom section....30 lbs.



Box Assembled



Level Two Bottom

MANUFACTURER/PRODUCT(S):

- **BINGHAM & TAYLOR** - 54-S + 61-S, 55-S + 61-S
- **SIGMA CORP.** - VB-4611X + 4612X, VB-4621X + VB-4622
- **TYLER UNION** - 6855 SERIES 10T + 15B, 16T

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 2 – VALVE BOX – FIXED RISERS – ROUND HEAD:

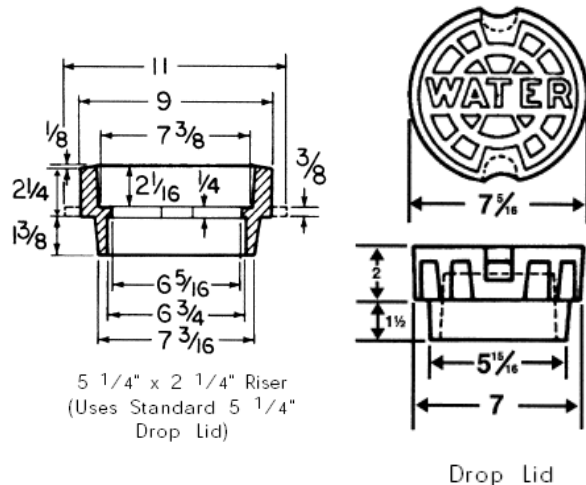
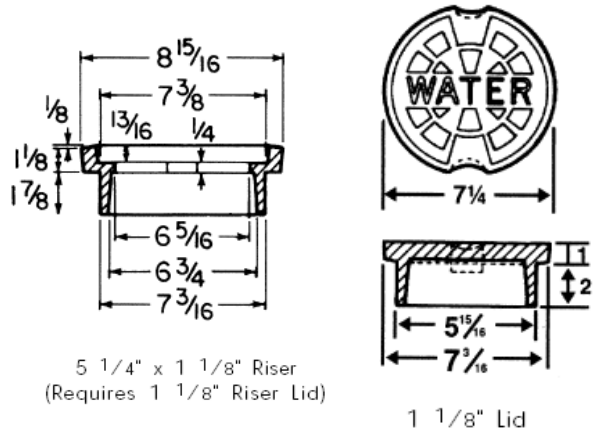
SPECIFICATION/MATERIAL:

Valve box fixed risers shall meet/exceed the following performance specifications:

- Lid shall be marked “WATER” or “SEWER” (designated at time of order).
- Produced for gray cast iron.
- ASTM A48, Class 30 and 35.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- The lid shall fit flush in the top of the box without forcing and shall not rock.
- Riser sections shall be continuously compatible to achieve any desired height in one inch (1”) and two inch (2”) increments plus or minus one-half inch (1/2”).
- All castings shall be true and free of holes.
- All castings shall have manufacturer's cast mark and part number clearly visible on each component.
- Shall have a paint or seal-coated finish.
- Shall fit all standard five and one-quarter inch (5-1/4”) shaft round valve boxes.

MINIMUM WEIGHT REQUIREMENTS:

- Shall **NOT** be less than 95% of minimum weight.
- 1” through 1-1/2” Riser.....6 lbs.
- 2” through 2-1/2” Riser.....9 lbs.



MANUFACTURER/PRODUCT(S):

- BINGHAM & TAYLOR
- SIGMA CORP. - VB-2601, VB-2602.
- TRUMBULL MFG.
- TYLER UNION
- STAR PIPE PRODUCTS

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 3 – VALVE BOX – LOCKING LID – ROUND HEAD:

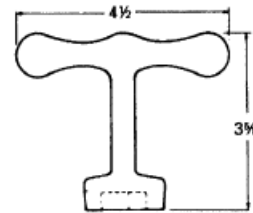
SPECIFICATION/MATERIAL:

Locking Valve box lids shall meet/exceed the following performance specifications:

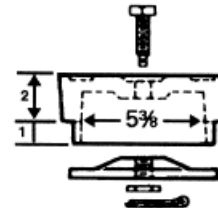
- Lid shall be marked "WATER" or "SEWER" (designated at time of order).
- Produced for gray cast iron.
- ASTM A48, Class 30 and 35.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- The lid shall fit flush in the top of the box without forcing and shall not rock.
- All castings shall be true and free of holes.
- Bolt shall have a standard waterworks pentagon head twenty-seven thirty-seconds of an inch ($27/32$ ") and made of brass.

REQUIREMENTS:

- All castings shall be poured at a foundry located in the U.S.A.



Wrench



Lock Lid

MANUFACTURER:

- BINGHAM & TAYLOR
- TYLER UNION

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 4 – VALVE BOXES – SQUARE HEAD:

SPECIFICATION/MATERIAL:

Valve boxes shall meet/exceed the following performance specifications:

- Valve boxes shall be slip or sliding type.
- Lid shall be marked "RECLAIMED WATER".
- Produced for gray cast iron.
- ASTM A48, Class 30 and 35.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- Shall have paint or seal-coated finish.
- The lid shall fit flush in the top of the box without forcing and shall not rock.
- Shall have a five and one-quarter inch (5-1/4") shaft.
- Head shall be seven and one-quarter square inches (7-1/4").
- All castings shall have manufacturer's cast mark and part number clearly visible on each component of the three piece valve box.

REQUIREMENTS:

- All castings shall be poured at a foundry located in the U.S.A. or have ISO 9001 or later certification.
- All castings shall be true and free of holes.
- Fixed riser extensions shall be available for the box top section to be considered for approval.
- Riser sections in one inch (1") increments plus or minus one-half inch (1/2") can be achieved by replacing the cover and are not required to be continuously compatible.
- Riser sections shall be continuously compatible to achieve any desired height in two inch (2") increments plus or minus one-half inch (1/2").

MINIMUM WEIGHT REQUIREMENTS:

- Shall **NOT** be less than 95% of minimum weight.
- Cover.....11 lbs.
- 10" Top section.....28 lbs.
- 15" Bottom section.....20 lbs.



MANUFACTURER/PRODUCT(S):

- **BINGHAM & TAYLOR - "PC RECLAIMED"**
- **SIGMA CORP. - VB-2604SQ + VB-4612X**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 5 – VALVE BOX – FIXED RISERS – SQUARE HEAD:

SPECIFICATION/MATERIAL:

Valve box fixed risers shall meet/exceed the following performance specifications:

- Lid shall be marked “RECLAIM” or “RECLAIMED WATER”.
- Produced for gray cast iron.
- ASTM A48, Class 30 and 35.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- The lid shall fit flush in the top of the box without forcing and shall not rock.
- Riser sections in one inch (1") increments plus or minus one-half inch (1/2") can be achieved by replacing the cover and are not required to be continuously compatible.
- Riser sections shall be continuously compatible to achieve any desired height in two inch (2") increments plus or minus one-half inch (1/2").
- All castings shall be true and free of holes.

REQUIREMENTS:

- All castings shall be poured at a foundry located in the U.S.A. or have ISO 9001 or later certification.
- All castings shall have manufacturer's cast mark and part number clearly visible on each component of the valve box riser and cover.

MINIMUM WEIGHT REQUIREMENTS:

- Shall **NOT** be less than 95% of minimum weight.
- Standard cover..... 11 lbs.
- 1-1/4" through 1-1/2" Riser..... 9 lbs.
- 2" through 2-1/4" Riser..... 12 lbs.



MANUFACTURER/PRODUCT(S):

- **BINGHAM & TAYLOR** - 6016-SQ 2-1/4".
- **SIGMA CORP.** - VB-2604SQ15, VB-2604SQ20.

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJJ)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 6 – METER BOX – CAST IRON:

SPECIFICATION/MATERIAL:

Iron meter boxes shall meet/exceed the following performance specifications:

- Boxes and lids shall be gray cast iron or ductile iron.
- ASTM A48 Class 30B and 35B.
- Boxes and lids supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Box and lid shall be coated with a asphalt based black paint.
- Affidavit of compliance to this specification shall be available upon request.

DIMENSIONS:

- Shall be 19" to 20" (length) X 10" to 16" (width).
- Shall have 2-1/4" to 4" (width) X 4-3/4" to 6" (height) mousehole centered on each end.
- Overall box depth shall be 10" to 13".

ADDITIONAL REQUIREMENTS:

- Boxes shall be palletized and banded.



MANUFACTURER:

- SIGMA CORP.
- U.S. FOUNDRY & MFG. CORP.
- OPEN

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 7 – MANHOLE CASTINGS – SERVICE CLEAN-OUT RING & COVER:

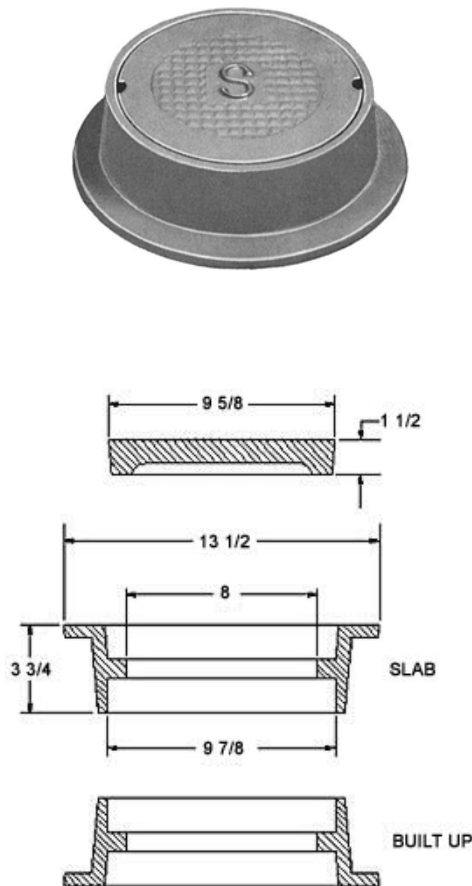
SPECIFICATION/MATERIAL:

Manhole castings, service clean-out, ring and cover, shall meet/exceed the following performance specifications:

- Ring and covers shall be gray cast iron or ductile iron.
- ASTM A48 Class 30B (gray cast iron).
- ASTM A536 Grade 65-45-12 (ductile).
- Ring and covers supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- Bearing surfaces shall be machined to ensure a proper flush fit without forcing, and to prevent rattling.
- All castings shall be true and free of holes.
- Affidavit of compliance to this specification shall be available upon request.
- Cover shall be labeled with “S” for sanitary sewer.
- Clean-out boxes shall be equal to the standard shown on included drawing.

ADDITIONAL REQUIREMENTS:

- Ring and covers shall be palletized and banded.



MANUFACTURER/PRODUCT(S):

- SIGMA CORP. - CO-762
- U.S. FOUNDRY & MFG. CORP. - USF 7621 RING & “FE” COVER.
- STAR PIPE PRODUCTS

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

18.1 – MANHOLE CASTINGS – STANDARD RING & COVER – 22-3/8" CLEAR OPENING:

SPECIFICATION/MATERIAL:

Manhole castings, standard ring and cover, shall meet/exceed the following performance specifications:

- Ring and covers shall be gray cast iron or ductile iron.
- ASTM A48 Class 30B (gray cast iron).
- ASTM A536 Grade 65-45-12 (ductile).
- Ring and covers supplied shall be poured in a foundry located in the U.S.A.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- Bearing surfaces shall be machined to ensure a proper flush fit without forcing, and to prevent rattling.
- All castings shall be true and free of holes.
- Affidavit of compliance to this specification shall be available upon request.
- Cover shall be labeled with:
 - **PINELLAS COUNTY**
 - TYPE OF SERVICE:
 - **SANITARY SEWER**
 - **POTABLE WATER**
 - **RECLAIMED WATER**
 - **YEAR MADE**

REQUIREMENTS:

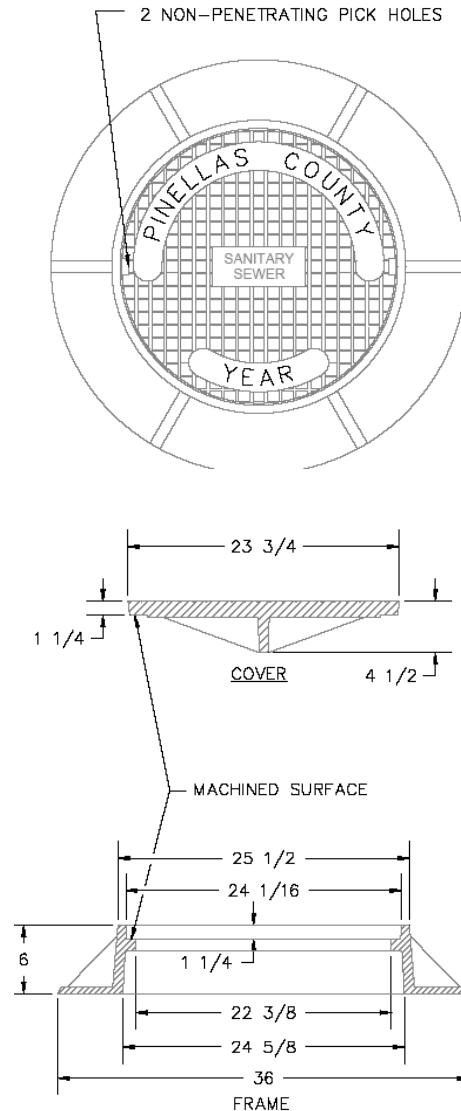
- All castings shall be poured at a foundry located in the U.S.A.

DIMENSIONS:

- Ring width shall be thirty-six (36") inches.
- Ring opening shall be twenty-two and three-eighths inches (22-3/8").
- Ring height shall be six inches (6"). Lid diameter shall be twenty-three and three-quarters inches (23-3/4").

ADDITIONAL REQUIREMENTS:

- Ring and covers shall be palletized and banded.



MANUFACTURER/PRODUCT(S):

- **U.S. FOUNDRY & MFG. CORP. - USF 195 RING & 'W' COVER** per spec.

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

1 8.2 – MANHOLE CASTINGS – STANDARD RING & COVER – 22” (MIN.) CLEAR OPENING:

SPECIFICATION/MATERIAL:

Manhole castings, standard ring and cover, shall meet/exceed the following performance specifications:

- Ring and covers shall be gray cast iron or ductile iron.
- ASTM A48 Class 35B and AASHTO M105 (gray cast iron).
- ASTM A536 Grade 20-50-05 (ductile).
- Ring and covers supplied shall be poured in a foundry located in the U.S.A.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- Bearing surfaces shall be machined to ensure a proper flush fit without forcing, and to prevent rattling.
- All castings shall be true and free of holes.
- Affidavit of compliance to this specification shall be available upon request.
- Cover shall be labeled with:
 - **PINELLAS COUNTY**
 - TYPE OF SERVICE:
 - **SANITARY SEWER**
 - **POTABLE WATER**
 - **RECLAIMED WATER**
 - **YEAR MADE**

REQUIREMENTS:

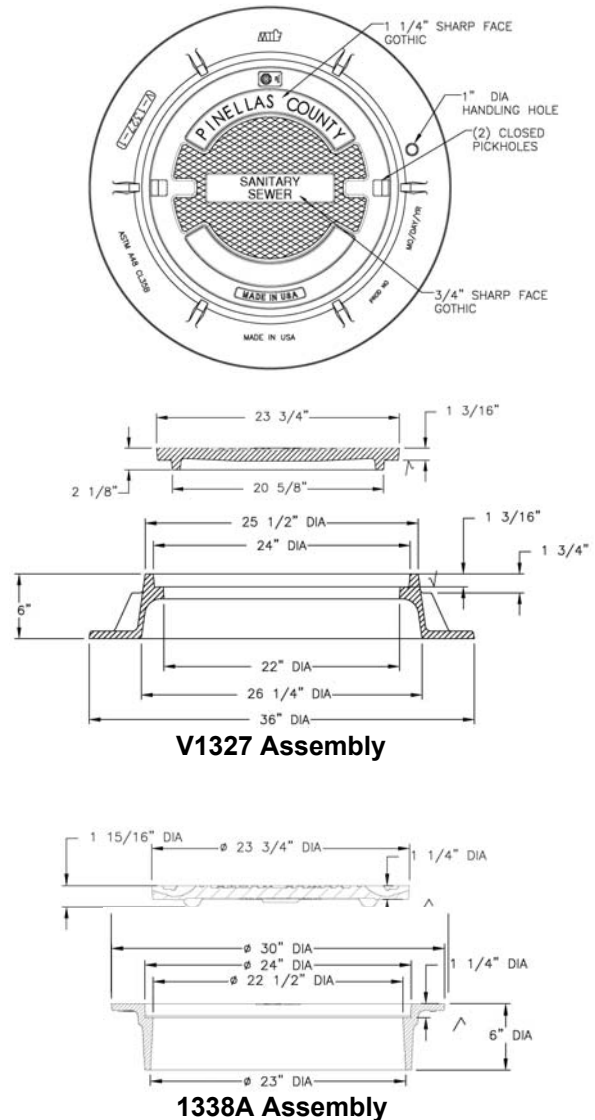
- All castings shall be poured at a foundry located in the U.S.A.

DIMENSIONS:

- Ring width shall be thirty-six (36”) inches. Ring opening shall have a minimum width of twenty-two inches (22”).
- Ring height shall be six inches (6”).
- Lid diameter shall be twenty-three and three-quarters inches (23-3/4”).

ADDITIONAL REQUIREMENTS:

- Ring and covers shall be palletized and banded.



MANUFACTURER/PRODUCT(S):

- EJ - MANHOLE LID & RING V1327 ASSEMBLY
- EJ - MANHOLE LID & RING 1338A ASSEMBLY
- OPEN

Created Date: 12/04/14 (DMS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

19 – MANHOLE CASTINGS – DOUBLE RING & COVER – 35” CLEAR OPENING:

SPECIFICATION/MATERIAL:

Manhole castings, double ring and cover, shall meet/exceed the following performance specifications:

- Ring and covers shall be gray cast iron or ductile iron.
- ASTM A48 Class 30B (gray cast iron).
- ASTM A536 Grade 65-45-12 (ductile).
- Ring and covers supplied shall be poured in a foundry located in the U.S.A.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- Bearing surfaces shall be machined to ensure a proper flush fit without forcing, and to prevent rattling.
- All castings shall be true and free of holes.
- Affidavit of compliance to this specification shall be available upon request.
- Cover shall be labeled with:
 - **PINELLAS COUNTY**
 - TYPE OF SERVICE:
 - **SANITARY SEWER**
 - **POTABLE WATER**
 - **RECLAIMED WATER**
 - **YEAR MADE**

REQUIREMENTS:

- All castings shall be poured at a foundry located in the U.S.A.

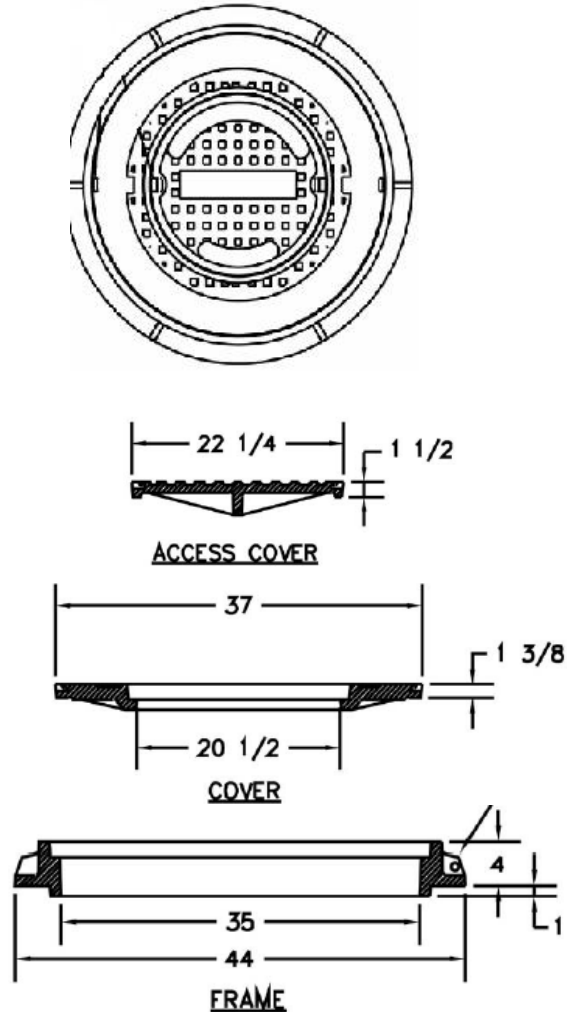
DIMENSIONS:

- Ring width shall be forty-four inches (44")
- Cover clear opening shall be thirty-five inches (35")
- Access cover clear opening shall be twenty and one-half inches (20-1/2").
- Ring height shall be four inches (4").

ADDITIONAL REQUIREMENTS:

- Ring and covers shall be palletized and banded.

Centered Access Lid



MANUFACTURER/PRODUCT(S):

- **U.S. FOUNDRY & MFG. CORP. - USF 671-AF-M** per spec.

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 9.1- MANHOLE CASTINGS – DOUBLE RING & COVER – 48” CLEAR OPENING:

SPECIFICATION/MATERIAL:

Manhole castings, double ring and cover, shall meet/exceed the following performance specifications:

- Ring and covers shall be gray cast iron or ductile iron.
- ASTM A48 Class 30B (gray cast iron).
- ASTM A536 Grade 65-45-12 (ductile).
- Ring and covers supplied shall be poured in a foundry located in the U.S.A.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- Bearing surfaces shall be machined to ensure a proper flush fit without forcing, and to prevent rattling.
- All castings shall be true and free of holes.
- Affidavit of compliance to this specification shall be available upon request.
- Cover shall be labeled with:
 - **PINELLAS COUNTY**
 - TYPE OF SERVICE:
 - **SANITARY SEWER**
 - **POTABLE WATER**
 - **RECLAIMED WATER**
 - **YEAR MADE**

REQUIREMENTS:

- All castings shall be poured at a foundry located in the U.S.A.

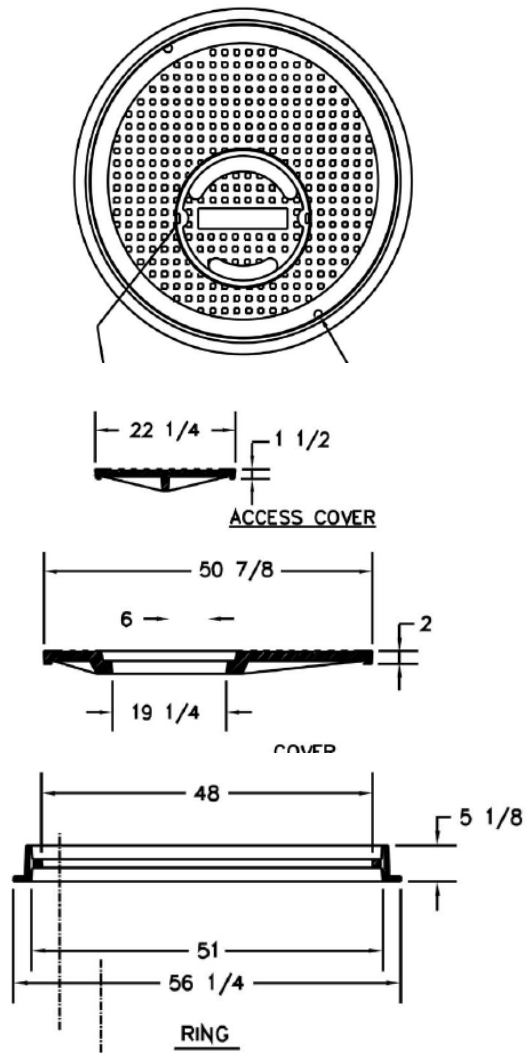
DIMENSIONS:

- Ring width shall be fifty-six and one-quarter inches (56-1/4”).
- Cover clear opening shall be forty-eight inches (48”).
- Access cover clear opening shall be nineteen and one-quarter inches (19-1/4”).
- Ring height shall be five and one-eighth inches (5-1/8”).

ADDITIONAL REQUIREMENTS:

- Ring and covers shall be palletized and banded.

Offset Access Lid



MANUFACTURER/PRODUCT(S):

- **U.S. FOUNDRY & MFG. CORP. - USF 691-AH-M**
per spec

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 10.1 – MANHOLE CASTINGS – HINGED TYPE RING & COVER – 33-1/2”:

SPECIFICATION/MATERIAL:

Hinged type manhole castings, ring and cover, shall meet/exceed the following performance specifications:

- Ring and covers shall be ductile iron.
- ASTM A536 65-45-12 ductile iron or ISO 1083 ductile iron.
- Ring and covers supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- Bearing surfaces shall be machined to ensure a proper fit and prevent rattling
- Sealing surface shall include an oil resistant gasket.
- All castings shall be true and free of holes.
- Affidavit of compliance to this specification shall be available upon request.
- Cover shall be labeled with:
 - TYPE OF SERVICE:
 - **SANITARY SEWER**
 - **POTABLE WATER**
 - **RECLAIMED WATER**
 - **YEAR MADE**
- Should include county logo.
- Should include label: “**PINELLAS COUNTY**” or “**PINELLAS COUNTY UTILITIES**”

DIMENSIONS:

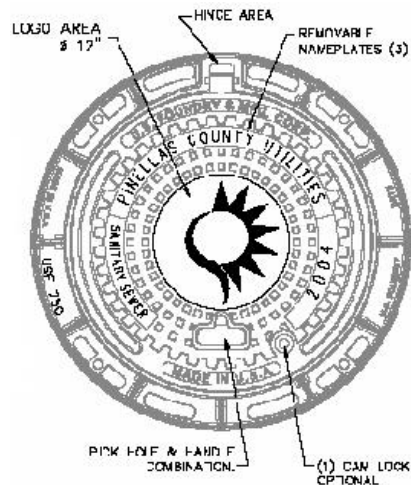
- Ring width shall be thirty-three and one-half inches (33-1/2”).
- Ring opening shall be 24”.
- Ring height shall be 4”.

ADDITIONAL REQUIREMENTS:

- Ring and covers shall be palletized and banded.

OPTIONAL:

- Cam lock



MANUFACTURER/PRODUCT(S):

- **U.S. FOUNDRY & MFG. CORP. - USF 750-KI** per spec.
- **PAMREX**
- **OPEN**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 10.2 – MANHOLE CASTINGS – HINGED TYPE RING & COVER – 34”:

SPECIFICATION/MATERIAL:

Hinged type manhole castings, ring and cover, shall meet/exceed the following performance specifications:

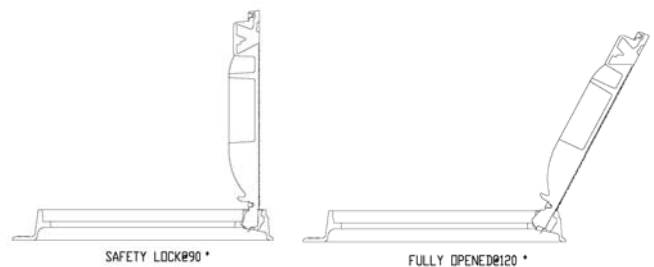
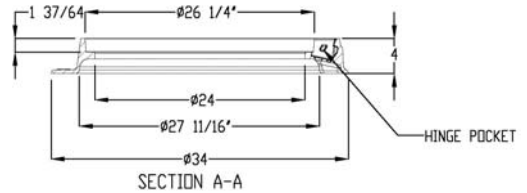
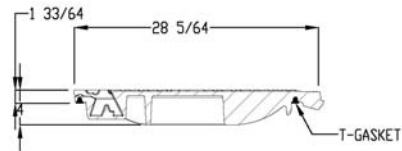
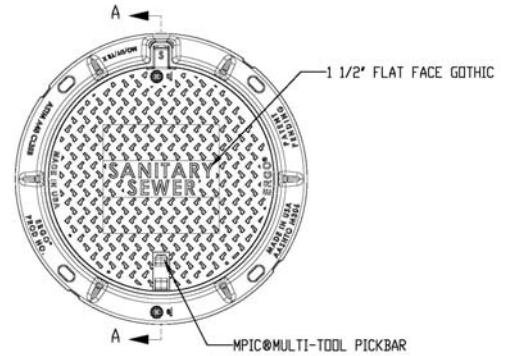
- Ring and covers shall be gray cast iron or ductile iron.
- AASHTO Standard A48 Class 35B and AASHTO M105 gray cast iron or
- ASTM A536 70-50-05 ductile iron
- Ring and covers supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- Bearing surfaces shall be machined to ensure a proper fit and prevent rattling
- Sealing surface shall include an oil resistant gasket.
- All castings shall be true and free of holes.
- Affidavit of compliance to this specification shall be available upon request.
- Cover shall be labeled with:
 - TYPE OF SERVICE:
 - **SANITARY SEWER**
 - **POTABLE WATER**
 - **RECLAIMED WATER**
 - **YEAR MADE**
- Should include county logo.
- Should include label: “**PINELLAS COUNTY**” or “**PINELLAS COUNTY UTILITIES**”

DIMENSIONS:

- Ring width shall be thirty-four (34”) inches.
- Ring opening shall be 24”.
- Ring height shall be 4”.

ADDITIONAL REQUIREMENTS:

- Ring and covers shall be palletized and banded.



MANUFACTURER/PRODUCT(S):

- EJ - ERGO ASSEMBLY
- OPEN

Created Date: 12/04/14 (DMS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 11 – MANHOLE ADJUSTMENT RINGS:

SPECIFICATION/MATERIAL:

Manhole adjustment rings, shall meet/exceed the following performance specifications:

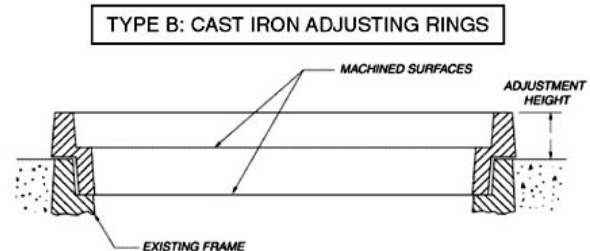
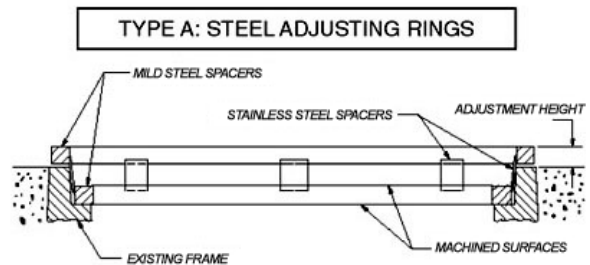
- Shall be of one-piece construction.
- Adjusting rings shall be steel, stainless steel, gray cast iron or ductile iron.
- Riser spacers or bands on Type A or II shall be stainless steel or 12 ga. galvanized steel.
- Steel risers shall be manufactured with a oil based primer paint finish.
- ASTM A48 Class 30B (gray cast iron).
- ASTM A536 Grade 65-45-12 (ductile).
- ASTM A36 (carbon structural steel).
- Adjusting rings supplied must have ISO 9001 or later certification, or be poured in a foundry located in the U.S.A.
- Shall be designed, constructed and capable of withstanding a minimum H-20 type loading.
- Shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings.
- Bearing surfaces shall be machined to ensure a proper flush fit without forcing, and to prevent rattling.
- All adjusting rings shall be true and free of holes.
- Affidavit of compliance to this specification shall be available upon request.

RESTRICTIONS:

- For adjustments to existing, in-service manholes only.

REQUIREMENTS:

- Type A or Type II steel adjusting rings shall be used when the adjustment height is less than the thickness of the lid plus One inch (1").
- Type B cast iron adjusting rings shall be used when the adjustment height is greater than the thickness of the lid plus One inch (1").



MANUFACTURER/PRODUCT(S):

- R.E.L.L. CORP. - TYPE II
- U.S. FOUNDRY & MFG. CORP. - TYPE A & B
- OPEN

Created Date: 01/20/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 12 – ACCESS COVERS – ALUMINUM:

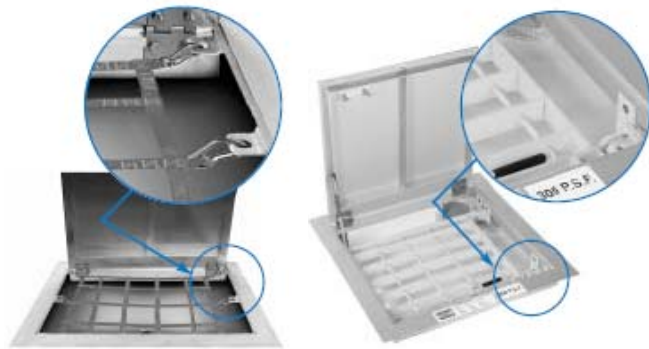
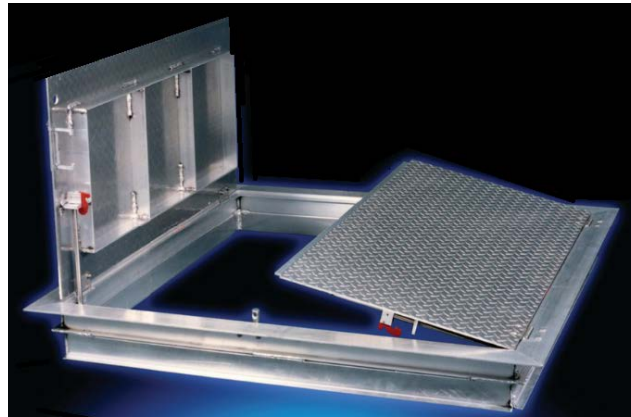
SPECIFICATION/MATERIAL:

Aluminum access covers shall meet/exceed the following performance specifications:

- Shall be designed, constructed and capable of withstanding a minimum 300 pound per square foot live load.
- Shall have checkered or diamond pattern finish on cover surface.
- Shall have vandal-proof recessed stainless steel hinges.
- Hasp will be fabricated round bar stock mounted vertically and drilled to accept a padlock.
- A fall prevention system shall be incorporated into the access frame.
- Doors over 50 lbs. in pull-weight shall be torsion bar loaded.
- All covers shall have a locking safety handle to hold them in the open position.
- Shall be cast into top slab of wet well or valve vault.
- Shall be sized to provide a clear opening to allow for service and removal of equipment (including pumps with mix flush valves).
- Access covers supplied must have ISO 9001 or later certification, or manufactured in a factory located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

FALL PREVENTION SYSTEM:

- Shall be one of two designs; Net or Grate
- **Net:**
 - Shall be a super strong polyester netting.
 - Hardware components shall be 316 stainless steel.
 - Shall be retractable and removable.
 - Shall comply with OSHA standard 1926.502, Drop test.
- **Grate:**
 - Shall be aluminum with 316 stainless steel components.
 - Shall withstand a 300 pound per square foot load.
 - Shall lock in place and rotate open 90 degrees.
 - Shall be removable.



MANUFACTURER:

- THE BILCO CO.
- HALLIDAY PRODUCTS
- USF FABRICATION INC.
- OPEN

Created Date: 09/30/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

I 12.1 – ACCESS COVERS – AASHTO HS-20 – ALUMINUM:

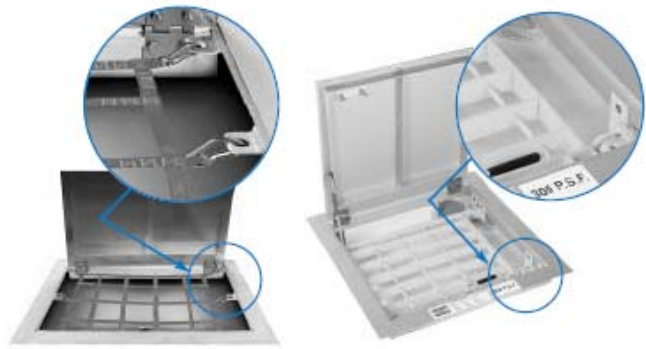
SPECIFICATION/MATERIAL:

Aluminum access covers shall meet/exceed the following performance specifications:

- Shall be designed, constructed and capable of withstanding a minimum AASHTO HS-20 load.
- Shall have checkered or diamond pattern finish on cover surface.
- Shall have vandal-proof recessed stainless steel hinges.
- Hasp will be fabricated round bar stock mounted vertically and drilled to accept a padlock.
- A fall prevention system shall be incorporated into the access frame.
- Doors over 50 lbs. in pull-weight shall be torsion bar loaded.
- All covers shall have a locking safety handle to hold them in the open position.
- Shall be cast into top slab of wet well or valve vault.
- Shall be sized to provide a clear opening to allow for service and removal of equipment (including pumps with mix flush valves).
- Access covers supplied must have ISO 9001 or later certification, or manufactured in a factory located in the U.S.A.
- Affidavit of compliance to this specification shall be available upon request.

FALL PREVENTION SYSTEM:

- Shall be one of two designs; Net or Grate
- **Net:**
 - Shall be a super strong polyester netting.
 - Hardware components shall be 316 stainless steel.
 - Shall be retractable and removable.
 - Shall comply with OSHA standard 1926.502, Drop test.
- **Grate:**
 - Shall be aluminum with 316 stainless steel components.
 - Shall withstand a 300 pound per square foot load.
 - Shall lock in place and rotate open 90 degrees.
 - Shall be removable.



MANUFACTURER:

- THE BILCO CO.
- HALLIDAY PRODUCTS
- USF FABRICATION INC.
- OPEN

Created Date: 09/30/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

**SECTION J:
SERVICE
BOXES &
ENCLOSURES**

Created Date: 12/05/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section J: Service Boxes & Enclosures

- J 1 1" Reclaimed Water Service Box – Non-metered Residential – Green Space
- J 2 5/8" X 3/4" Water Meter Box, 11" X 21" X 12" – Green Space
- J 2.1 5/8" X 3/4" Water Meter Box, 11" X 21" X 12" – Parking Area
- J 3 1" Water Meter Box, 13" X 24" X 12" – Green Space
- J 3.1 1" Water Meter Box, 13" X 24" X 12" – Parking Area
- J 4 Water Meter & Backflow Prevention Combination Meter Box, 11" X 32" X 12" – Green Space
- J 4.1 Water Meter & Backflow Prevention Combination Meter Box, 11" X 32" X 12" – Parking Area
- J 5 Water Meter & Backflow Prevention Combination Meter Box, 17" X 30" X 12" – Green Space
- J 5.1 Water Meter & Backflow Prevention Combination Meter Box, 17" X 30" X 12" – Parking Area
- J 6 Potable & Reclaimed Water Blow-off Box Lid – Parking Area
- J 7 Lid Details – J 2, J 2.1, J 3, J 3.1, J 4, J 4.1, J 5, J 5.1
- J 8 Box Details – J 2, J 3, J 4, J 5

Created Date: 12/05/04 (JJS)

Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 1 – 1” RECLAIMED WATER SERVICE BOX – NON-METERED RESIDENTIAL – GREEN SPACE:

SPECIFICATION/MATERIAL:

1” Reclaimed water service box for unmetered, residential, shall meet/exceed the following performance specifications:

- Boxes and lids shall be tested to meet ANSI/SCTE 77 Tier 8 and have labeling to indicate this loading.
- Box and lid shall be made of a polymer concrete and fiberglass reinforced polyester material.
- All hardware shall be brass or stainless steel.
- A latching device shall be incorporated into the assembly so that a key is required to open lid.
- The entire lid shall be solid and hinged to the box.
- The lid shall be manufactured to open less than 90 degrees and a minimum of 75 degrees.
- The lid and box top shall be purple in color (Pantone 522 C). Color shall be “Through Color” for full depth of lid and box top.
- The lid shall be permanently embossed with the wording “RECLAIMED WATER DO NOT DRINK” in English and Spanish “NO BEBER”, and the international “DO NOT DRINK” symbol along the upper half section of the lid.
- The initials “PCU” shall be embossed along the lower left quadrant of the lid.
- The letter size shall be 3/4” long X 1/2” wide minimum and the symbol 3-1/2” in diameter.
- Boxes to include one 2-1/2” wide X 6” high mousehole centered each end.
- Box shall have an integral bottom flange curved inward a minimum of 1-1/4” wide and a maximum of 1-1/2” to prevent settling.

DIMENSIONS:

- Shall be a minimum 16” wide X 21” long measured at bottom of inside box.
- Shall have minimum inside dimensions 11” wide X 16” long measured at the lid support.
- Overall depth of box shall be 12” deep.

ADDITIONAL REQUIREMENTS:

- An opening key shall be supplied with each box.
- Boxes shall be palletized, shrink-wrapped and banded.

APPLICATION:

- For one inch (1”) and one & one-half inch (1-1/2”) RCW residential services.
- See Material Specification 'J 7' for lid details.



MANUFACTURER:

- HUBBELL INC. - CDR/QUAZITE FRP
- NEW BASIS
- GLASSMASTERS

Created Date: 12/04/04 (JJS)

Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 2 – 5/8" X 3/4" WATER METER BOX, 11" x 21" x 12" – GREEN SPACE – (PAGE 1 OF 2):

SPECIFICATION/MATERIAL:

5/8" X 3/4" water meter box 11" wide X 21" long X 12" deep for green space applications, shall meet/exceed the following performance specifications:

- Boxes and covers shall be designed and tested to meet ANSI/SCTE 77 Tier 8 and have labeling to indicate this loading.
- Box and lid shall be made of a polymer concrete and fiberglass reinforced polyester material.
- Boxes shall be of straight wall design with integral bottom flange curved inward a minimum of 1-1/4" and a maximum of 1-1/2".
- The lid shall have a hinged 4-1/2" wide X 7-1/2" long cast iron meter reading access cover centered, be cast with wording "WATER METER", and have a lifting slot.
- The box lid shall have a 3/4" wide X 2" long lifting slot.
- Boxes to include one 2-1/2" wide X 5" high mousehole centered or offset each end.
- All lids shall be embossed "PCU" and patterned with a non-skid surface.
- The letter size shall be 3/4" long X 1/2" wide minimum
- All embossing shall be a minimum of 1/4" deep.
- Lids shall have a 2-1/8" X 2-7/8" diameter plugged knockout hole centered in a 4-1/2" diameter recessed area that is recessed 5/16".
- The box lip shall have 2 "V" slots on each of the four box sides equally spaced for drainage. The "V" slots shall be 3/4" wide at the inside edge of the lip by 3/4" long and come to a point at the wall.

DIMENSIONS:

- The lid shall be 2" thick.
- Box shall have minimum outside dimensions as follows: 14" wide X 24" long measured at top collar & 12" wide X 22" long measured at box bottom.
- Overall depth of box shall be 12" deep.

APPLICATION REQUIREMENTS:

- Acceptable in green space applications only.
- 5/8" X 3/4" metered services.

Potable Water:

- Lid shall be natural concrete in color and embossed "POTABLE".

Reclaimed Water:

- Lid shall be purple in color (Pantone 522 C). Color shall be "Through Color" for full depth of lid.

- Lid shall be permanently embossed with the wording "RECLAIMED WATER DO NOT DRINK" in English and Spanish "NO BEBER".
- Lid shall be embossed with a 3-1/2" diameter international "DO NOT DRINK" symbol.
- See Material Specification 'J 7 for lid details.

ADDITIONAL REQUIREMENTS:

- Boxes shall be palletized, shrink-wrapped, and banded.
- 2-1/4" tall X 1-1/2" wide "G" to be stenciled on the outside and inside of all green space boxes (color black).

MANUFACTURER:

- **ARMORCAST PRODUCTS CO.**
- **HUBBELL INC. - CDR/QUAZITE FRP**
- **NEW BASIS**
- **GLASSMASTERS**

Created Date: 12/03/04 (JJS)

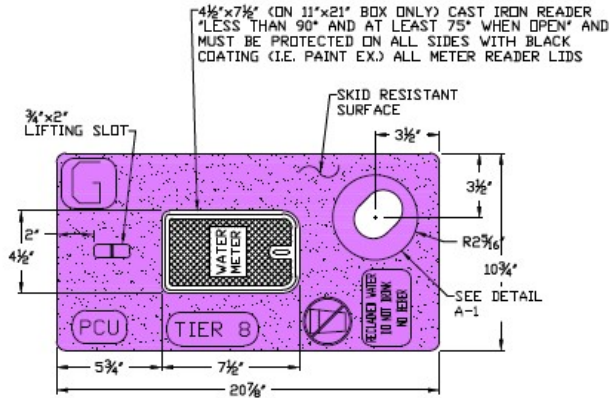
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

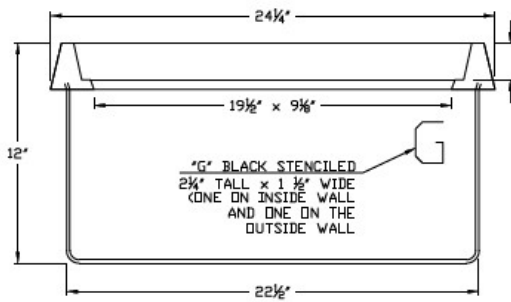
Material Specifications

J 2 – 5/8" X 3/4" WATER METER BOX, 11" x 21" x 12" – GREEN SPACE – (PAGE 2 OF 2):

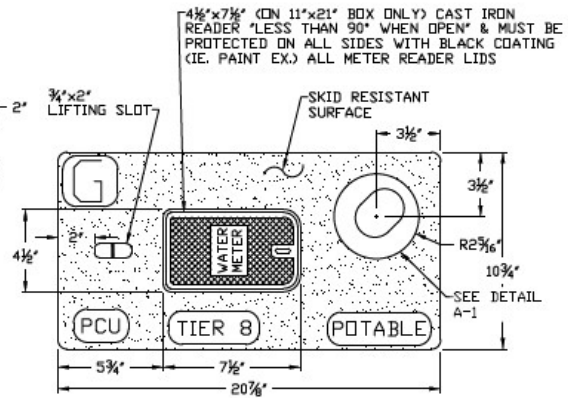


COVER PLAN AND SECTION

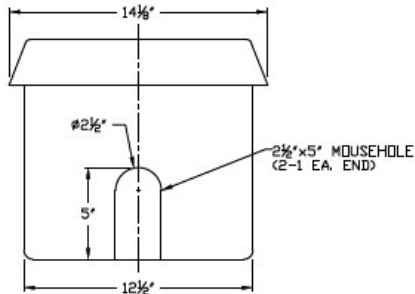
RECLAIMED LID



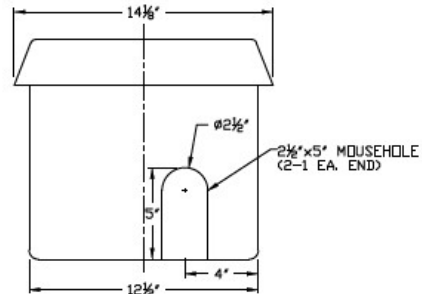
SIDE SECTION



POTABLE WATER LID * SUPPLIER TO VERIFY LID DIMENSION TO FIT EXISTING NEW BOXES



END SECTION
CENTER MOUSE HOLE



END SECTION
OFFSET MOUSE HOLE

Created Date: 12/03/04 (JJS)

Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 2.1 – 5/8" X 3/4" WATER METER BOX, 11" x 21" x 12" – PARKING AREA – (PAGE 1 OF 2):

SPECIFICATION/MATERIAL:

5/8" X 3/4" water meter box 11" wide X 21" long X 12" deep for parking area applications, shall meet/exceed the following performance specifications:

- Boxes and lids shall be designed and tested to meet ANSI/SCTE 77 Tier 22 and have labeling to indicate this load rating.
- Box and lid shall be made of a polymer concrete and fiberglass reinforced polyester material.
- Boxes shall be of straight wall design with integral bottom flange curved inward a minimum of 1-1/4" and a maximum of 1-1/2".
- The lid shall be a solid design.
- The lid shall have a 3/4" wide X 2" lifting slot.
- Boxes to include one 2-1/2" wide X 5" high mousehole centered or offset each end.
- All covers shall be embossed "PCU", "WATER METER" and patterned with a non-skid surface.
- The letter size shall be 3/4" long X 1/2" wide minimum and the symbol 3-1/2" in diameter.
- All embossing shall be a minimum of 1/4" deep.

DIMENSIONS:

- The lid shall be a minimum 2" thick.
- Box shall have minimum outside dimensions as follows: 14" wide X 24" long measured at top collar & 12" wide X 22" long measured at box bottom.
- Overall depth of box shall be 12" deep.

APPLICATION REQUIREMENTS:

- Required in parking area and acceptable in green space applications.
- 5/8" X 3/4" metered services.

Potable Water:

- Lid shall be natural concrete in color and embossed "POTABLE".

Reclaimed Water:

- Lid shall be purple in color (Pantone 522 C). Color shall be "Through Color" for full depth of lid.
- Lid shall be permanently embossed with the wording "RECLAIMED WATER DO NOT DRINK" in English and Spanish "NO BEBER".
- Lid shall have a 3-1/2" diameter international "DO NOT DRINK" symbol embossed on the lid.
- See Material Specification 'J 7' for lid details.

ADDITIONAL REQUIREMENTS:

- Boxes shall be palletized, shrink-wrapped, and banded.
- 2-1/4" tall X 1-1/2" wide "P" to be stenciled on the outside and inside of all parking boxes (color black).

MANUFACTURER:

- **ARMORCAST PRODUCTS CO.**
- **HUBBELL INC. - CDR/QUAZITE FRP**
- **NEW BASIS**
- **GLASSMASTERS**

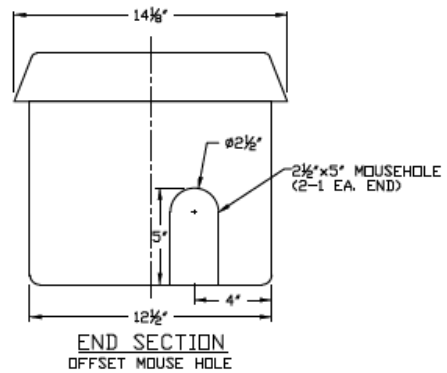
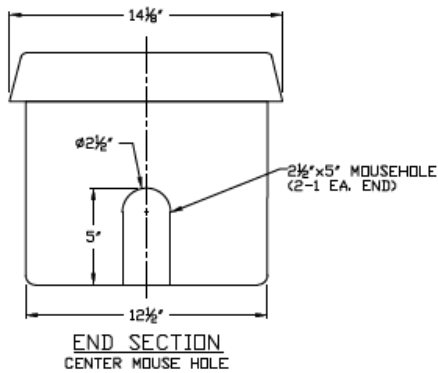
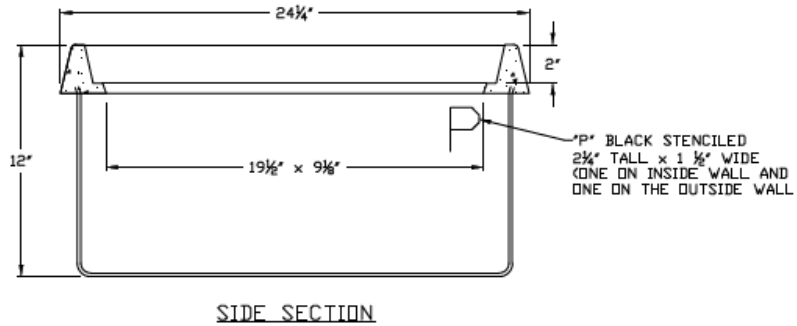
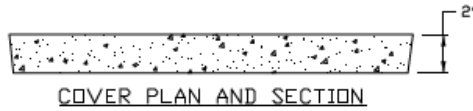
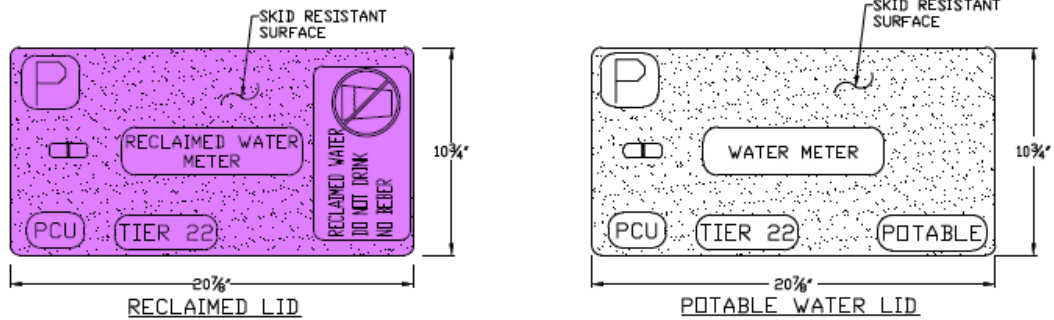
Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 2.1 – 5/8" X 3/4" WATER METER BOX, 11" x 21" x 12" – PARKING AREA – (PAGE 2 OF 2):



Created Date: 12/03/04 (JJS)

Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 3 – 1" WATER METER BOX, 13" x 24" x 12" – GREEN SPACE – (PAGE 1 OF 2):

SPECIFICATION/MATERIAL:

1" water meter box 13" wide X 24" long X 12" deep for green space applications, shall meet/exceed the following performance specifications:

- Boxes and lids shall be designed and tested to meet ANSI/SCTE 77 Tier 8 and have labeling to indicate this loading.
- Box and lid shall be made of a polymer concrete and fiberglass reinforced polyester material.
- Boxes shall be of straight wall design with integral bottom flange curved inward a minimum of 1-1/4" and a maximum of 1-1/2".
- The lid shall have a hinged 6" wide X 9" long cast iron meter-reading access cover centered over the meter, be cast with wording "WATER METER", and have a lifting slot.
- The box lid shall have a 3/4" wide X 2" long lifting slot.
- Boxes to include one 2-1/2" wide X 5" high mousehole centered each end.
- All lids shall be embossed "PCU", and patterned with a non-skid surface.
- The letter size shall be 3/4" long by 1/2" wide minimum.
- All embossing shall be a minimum of 1/4" deep.
- Lids shall have a 2" diameter plugged knockout hole centered in a 4-5/8" diameter recessed area that is recessed 5/16".
- The box lip shall have 2 "V" slots on each of the four box sides equally spaced for drainage. The "V" slots shall be 3/4" wide at the inside edge of the lip by 3/4" long and come to a point at the wall.

DIMENSIONS:

- The Lid shall be 2" thick.
- Box shall have minimum outside dimensions as follows:
16" wide X 25" long measured at top collar & 13" X 22" long measured at box bottom.
- Overall depth of box shall be 12" deep.

APPLICATION REQUIREMENTS:

- Acceptable in green space applications only.
- 1" metered services.

Potable Water:

- Lid shall be natural concrete in color and embossed "POTABLE".

Reclaimed Water:

- Lid shall be purple in color (Pantone 522C). Color shall be "Through Color" for full depth of lid.
- Lid shall be permanently embossed with the wording "RECLAIMED WATER DO NOT DRINK" in English and Spanish "NO BEBER".
- Lid shall have a 3-1/2" diameter international "DO NOT DRINK" symbol embossed on the lid.
- See Material Specification 'J 7' for lid details.

ADDITIONAL REQUIREMENTS:

- Boxes shall be palletized, shrink-wrapped, and banded.
- 2-1/4" tall X 1-1/2" wide "G" to be stenciled on the outside and inside of all green space boxes (color black).

MANUFACTURER:

- **ARMORCAST PRODUCTS CO.**
- **HUBBELL INC. - CDR/QUAZITE FRP**
- **NEW BASIS**
- **GLASSMASTERS**

Created Date: 12/03/04 (JJS)

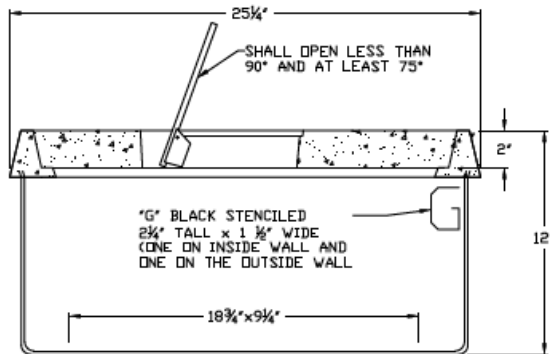
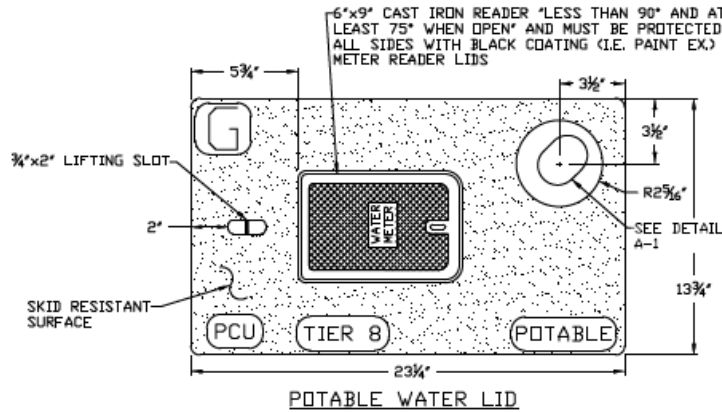
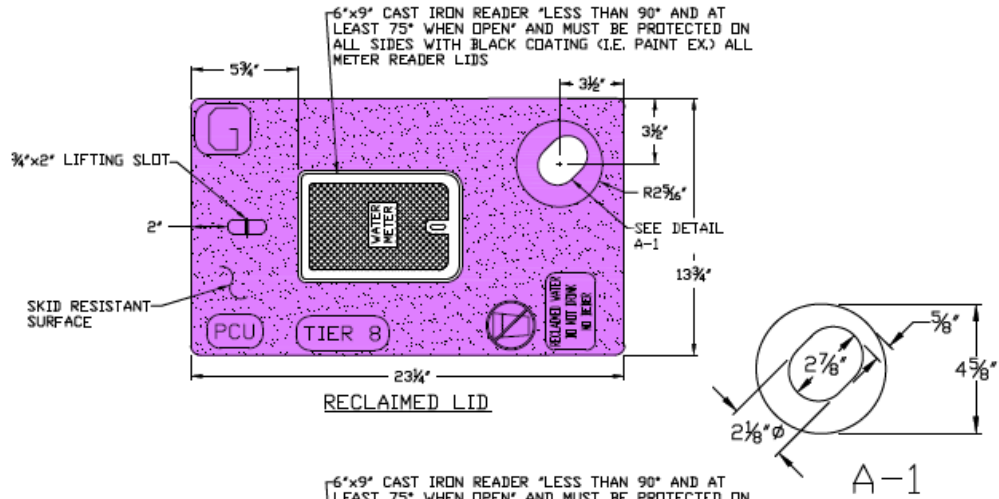
Last Revised Date: 08/01/22 (JJP)



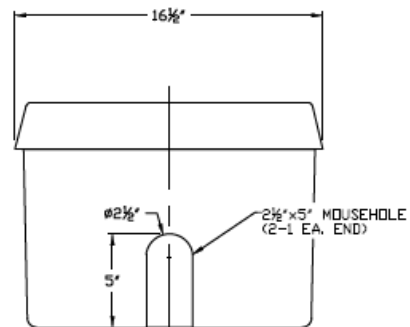
Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 3 – 1" WATER METER BOX, 13" x 24" x 12" – GREEN SPACE – (PAGE 2 OF 2):



SIDE SECTION



END SECTION

Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 3.1 – 1" WATER METER BOX, 13" x 24" x 12" – PARKING AREA – (PAGE 1 OF 2):

SPECIFICATION/MATERIAL:

1" water meter box 13" wide X 24" long X 12" deep for parking area applications, shall meet/exceed the following performance specifications:

- Boxes and lids shall be designed and tested to meet ANSI/SCTE 77 Tier 22 and have labeling to indicate this load rating.
- Box and lid shall be made of a polymer concrete and fiberglass reinforced polyester material.
- Boxes shall be of straight wall design with integral bottom flange curved inward a minimum of 1-1/4" and a maximum of 1-1/2".
- The lid shall be a solid design.
- The box lid shall have a 3/4" wide X 2" long lifting slot.
- Boxes to include one 2-1/2" wide X 5" high mousehole centered each end.
- All lids shall be embossed "PCU", "WATER METER" and patterned with a non-skid surface.
- The letter size shall be 3/4" long X 1/2" wide minimum
- All embossing shall be a minimum of 1/4" deep.

DIMENSIONS:

- The lid shall be a minimum 2" thick.
- Box shall have minimum outside dimensions as follows: 16" wide X 25" long measured at top collar & 13" wide X 22" long measured at box bottom.
- Overall depth of box shall be 12" deep.

APPLICATION REQUIREMENTS:

- Required in parking area and acceptable in green space applications.
- 1" metered services.

Potable Water:

- Lid shall be natural concrete in color and embossed "POTABLE"

Reclaimed Water:

- Lid shall be purple in color (Pantone 522 C). Color shall be "Through Color" for full depth of lid.
- Lid shall be permanently embossed with the wording "RECLAIMED WATER DO NOT DRINK" in English and Spanish "NO BEBER".
- Lid shall have a 3-1/2" diameter international "DO NOT DRINK" symbol embossed on the lid.

- See Material Specification 'J 7' for lid details.

ADDITIONAL REQUIREMENTS:

- Boxes shall be palletized, shrink-wrapped, and banded.
- 2-1/4" tall X 1-1/2" wide "P" to be stenciled on the outside and inside of all parking boxes (color black)

MANUFACTURER:

- **ARMORCAST PRODUCTS CO.**
- **HUBBELL INC. - CDR/QUAZITE FRP**
- **NEW BASIS**
- **GLASSMASTERS**

Created Date: 12/03/04 (JJS)

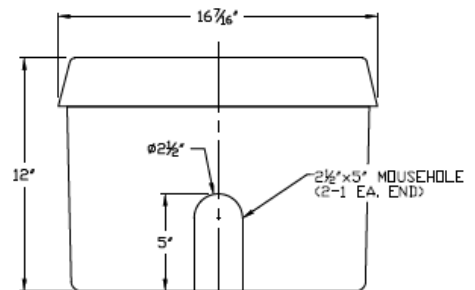
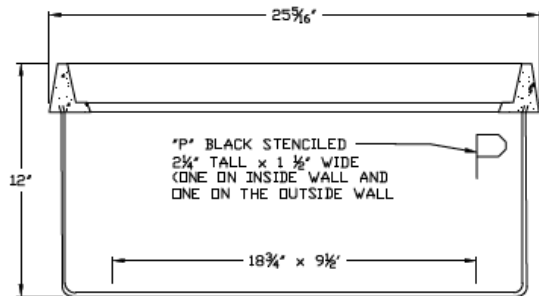
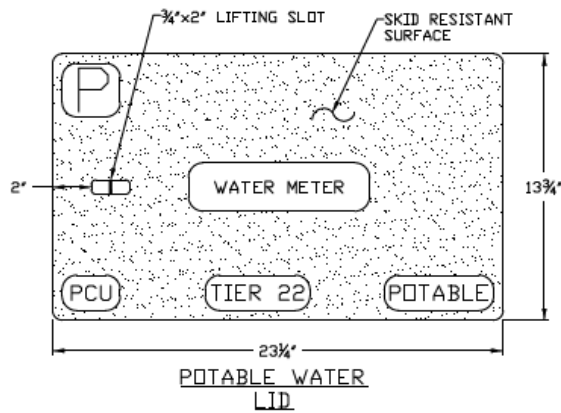
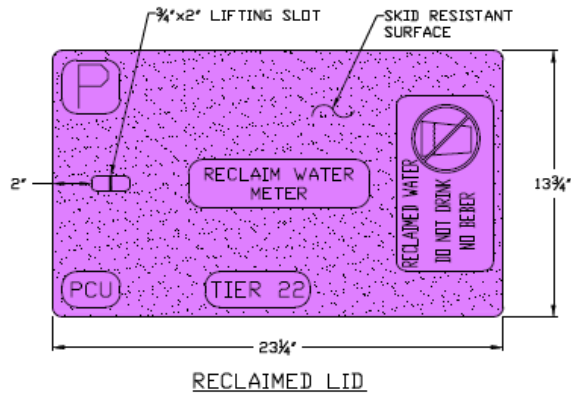
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 3.1 – 1" WATER METER BOX, 13" x 24" x 12" – PARKING AREA – (PAGE 2 OF 2):



Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 4 – WATER METER & BACKFLOW PREVENTION COMBINATION METER BOX, 11" x 32" x 12" – GREEN SPACE – (PAGE 1 OF 2):

SPECIFICATION/MATERIAL:

Backflow & water meter box 11" wide X 32" long X 12" deep for green space applications, shall meet/exceed the following performance specifications:

- Boxes and covers shall be designed and tested to meet ANSI/SCTE 77 Tier 8 and have labeling to indicate this loading.
- Box and lid shall be made of a polymer concrete and fiberglass reinforced polyester material.
- Boxes shall be of straight wall design with integral bottom flange curved inward a minimum of 1-1/4" and a maximum of 1-1/2".
- The lid shall have a hinged 6" wide X 9" long cast iron meter reading access cover centered and located 3.0" from the end of lid, be cast with wording "WATER METER", and have a lifting slot.
- The box lid shall have a 3/4" wide X 2" long lifting slot.
- Boxes to include one 2-1/2" wide X 5" high mousehole centered each end.
- All lids shall be embossed "PCU" and patterned with a non-skid surface.
- The letter size shall be 3/4" long X 1/2" wide minimum.
- All embossing shall be a minimum of 1/4" deep.
- Lids shall have a 2-1/8" X 2-7/8" diameter plugged knockout hole centered in a 4-5/8" diameter recessed area that is recessed 5/16".
- The box lip shall have 2 "V" slots on each of the four box sides equally spaced for drainage. The "V" slots shall be 3/4" wide at the inside edge of the lip by 3/4" long and come to a point at the wall.

DIMENSIONS:

- The lid shall have minimum thickness of 1-3/4".
- Box shall have minimum outside dimensions as follows: 14" wide X 36" long measured at top collar & 12" wide X 34" long measured at box bottom.
- Overall depth of box shall be 12" deep.

APPLICATION REQUIREMENTS:

- Acceptable in green space applications only.
- 5/8" X 3/4" meter & DCVA assembly.
- 1" meter & DCVA assembly.

Potable Water:

- lid shall be natural concrete in color and embossed "POTABLE".

ADDITIONAL REQUIREMENTS:

- Boxes shall be palletized, shrink-wrapped, and banded.
- See Material Specification 'J 7' for lid details.
- 2-1/4" tall X 1-1/2" wide "G" to be stenciled on the outside and inside of all green space boxes (color black).

MANUFACTURER:

- **ARMORCAST PRODUCTS CO.**
- **HUBBELL INC. - CDR/QUAZITE FRP**
- **NEW BASIS**
- **GLASSMASTERS**

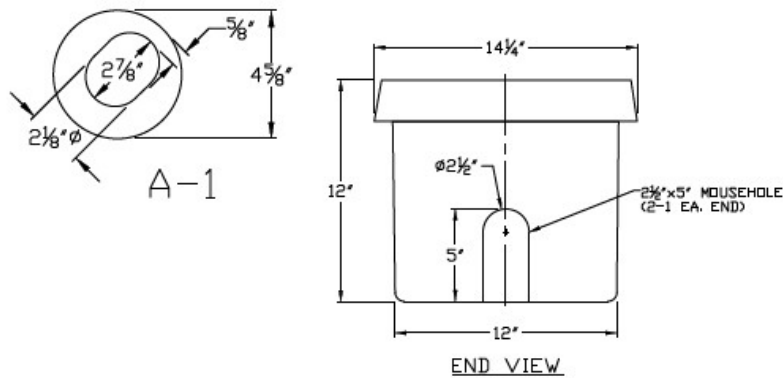
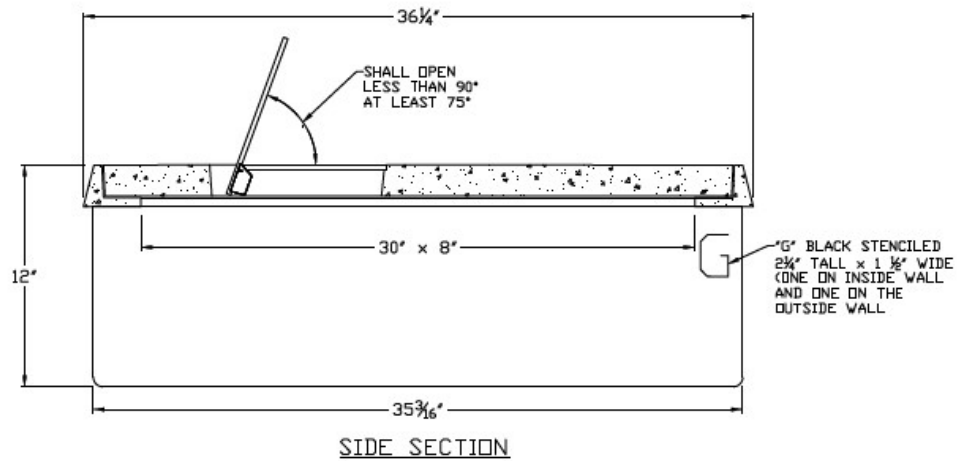
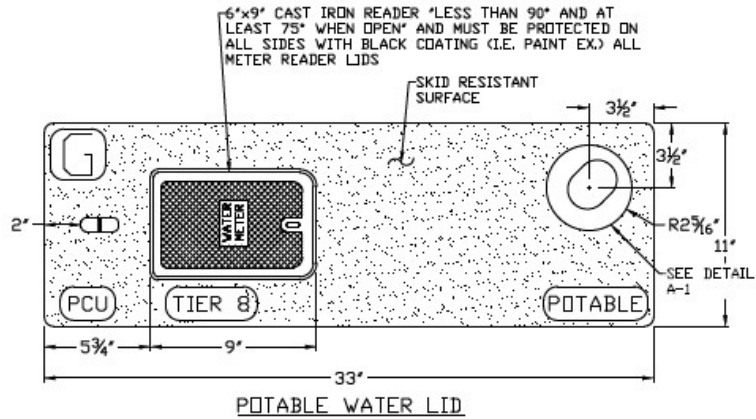
Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 4 – WATER METER & BACKFLOW PREVENTION COMBINATION METER BOX, 11" x 32" x 12" – GREEN SPACE – (PAGE 2 OF 2):



Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 4.1 – WATER METER & BACKFLOW PREVENTION COMBINATION METER BOX, 11" x 32" x 12" – PARKING AREA – (PAGE 1 OF 2):

SPECIFICATION/MATERIAL:

Backflow & water meter box 11" wide X 32" long X 12" deep for parking area applications, shall meet/exceed the following performance specifications:

- Boxes and lid shall be designed and tested to meet ANSI/SCTE Tier 22 and have labeling to indicate this load rating.
- Box and lid shall be made of a polymer concrete and fiberglass reinforced polyester material.
- Boxes shall be of straight wall design with integral bottom flange curved inward a minimum of 1-1/4" and a maximum of 1-1/2".
- The lid shall be a solid design.
- The lid shall have a 3/4" wide X 2" long lifting slot.
- Boxes to include one 2-1/2" wide X 5" high mousehole centered each end.
- All lids shall be embossed "PCU", WATER METER" and patterned with a non-skid surface.
- Letter size shall be 3/4" long X 1/2" wide minimum.
- All embossing shall be a minimum of 1/4" deep.

DIMENSIONS:

- The lid shall have minimum thickness of 1-3/4".
- Box shall have minimum outside dimensions as follows:
14" wide X 36" long measured at top collar & 12" wide X 34" long measured at box bottom.
- Overall depth of box shall be 12" deep.

APPLICATION REQUIREMENTS:

- Required in parking areas and acceptable in green space applications.
- 5/8" X 3/4" meter & DCVA assembly.
- 1" meter & DCVA assembly.

Potable Water:

- Lid shall be natural concrete in color and embossed "POTABLE".

ADDITIONAL REQUIREMENTS:

- Boxes shall be palletized, shrink-wrapped, and banded.
- See Material Specification 'J 7' for lid details.
- 2-1/4" tall by 1-1/2" wide "P" to be stenciled on the outside and inside of all parking boxes (color black).

MANUFACTURER:

- **ARMORCAST PRODUCTS CO.**
- **HUBBELL INC.** - *CDR/QUAZITE FRP*
- **NEW BASIS**
- **GLASSMASTERS**

Created Date: 12/03/04 (JJS)

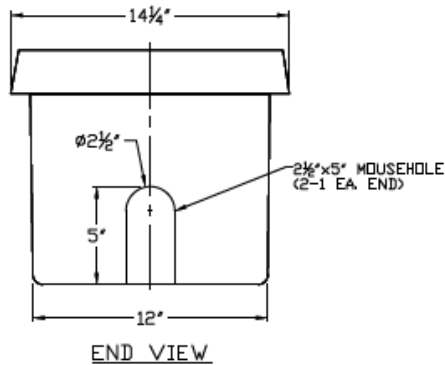
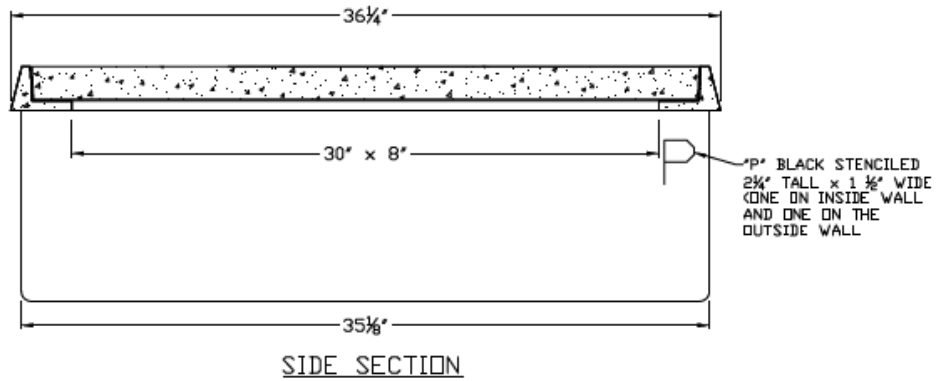
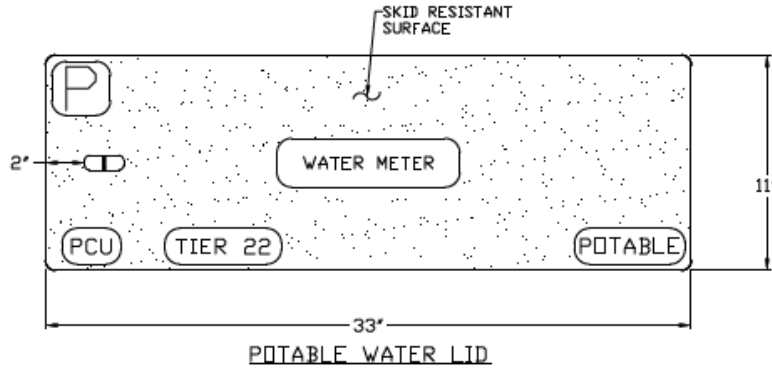
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
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Material Specifications

J 4.1 – WATER METER & BACKFLOW PREVENTION COMBINATION METER BOX, 11" x 32" x 12" – PARKING AREA – (PAGE 2 OF 2):



Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 5 – WATER METER & BACKFLOW PREVENTION COMBINATION METER BOX – 17” x 30” x 12” – GREEN SPACE – (PAGE 1 OF 2):

SPECIFICATION/MATERIAL:

Backflow & water meter box 17” wide X 30” long X 12” deep for green space applications, shall meet/exceed the following performance specifications:

- Boxes and lids shall be designed and tested to meet ANSI/SCTE 77 Tier 8 and have labeling to indicate this loading.
- Box and lid shall be made of a polymer concrete and fiberglass reinforced polyester material.
- Boxes shall be of straight wall design with integral bottom flange curved inward a minimum of 1-1/4” and a maximum of 1-1/2”.
- The lid shall have a hinged 6” wide X 9” long cast iron meter reading access cover centered over the meter, be cast with wording “WATER METER”, and have a lifting slot.
- The box lid shall have a 3/4” wide X 2” long lifting slot.
- Boxes (type A) to include one 3” wide X 5” high mousehole centered each end. Alternate boxes (type B) to include two 3” wide X 5” high mouseholes centered each end for green space application only.
- All lids shall be embossed “PCU”, and patterned with a non-skid surface.
- The letter size shall be 3/4” long X 1/2” wide minimum.
- All embossing shall be a minimum of 1/4” deep.
- Lids shall have a 2-1/8” diameter X 2-7/8” plugged knockout hole centered in a 4-5/8” diameter recessed area that is recessed 5/16”.
- The box lip shall have 2 “V” slots on each of the four box sides equally spaced for drainage. The “V” slots shall be 3/4” wide at the inside edge of the lip by 3/4” long and come to a point at the wall.

DIMENSIONS:

- The lid shall be 2” thick.
- Box shall have minimum outside dimensions as follows: 19” wide X 32” long measured at top collar & 17” wide X 30” long measured at box bottom.
- Overall depth of box shall be 12” deep.

APPLICATION REQUIREMENTS:

- Acceptable in green space applications only.
- 3/4” parallel DCVA assemblies.
- 1” parallel DCVA assemblies.

- 1-1/2” DCVA assembly.
- 2” DCVA assembly.
- 1-1/2” meter flanged or threaded.
- 2” meter flanged or threaded.

Potable Water:

- Lid shall be natural concrete in color and embossed “POTABLE”.

Reclaimed Water:

- Lid shall be purple in color (Pantone 522 C). Color shall be “Through Color” for full depth of lid.
- Lid shall be permanently embossed with the wording “RECLAIMED WATER DO NOT DRINK” in English and Spanish “NO BEBER”.
- Lid shall have a 3-1/2” diameter international “DO NOT DRINK” symbol embossed on the lid.
- See Material Specification 'J 7' for lid details.

ADDITIONAL REQUIREMENTS:

- Boxes shall be palletized, shrink-wrapped, and banded.
- 2-1/4” tall X 1-1/2” wide “G” to be stenciled on the outside and inside of all green space boxes (color black).

MANUFACTURER:

- **ARMORCAST PRODUCTS CO.**
- **HUBBELL INC. - CDR/QUAZITE FRP**
- **NEW BASIS**
- **GLASSMASTERS**

Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)

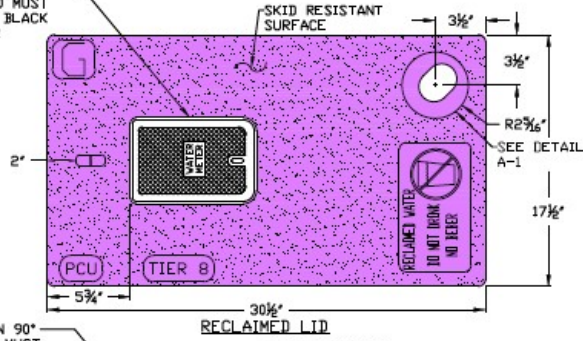


Material Specifications
Pinellas County
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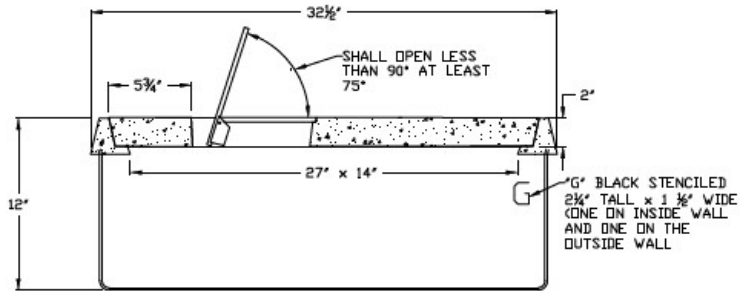
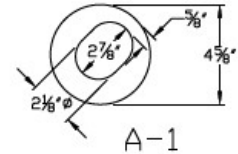
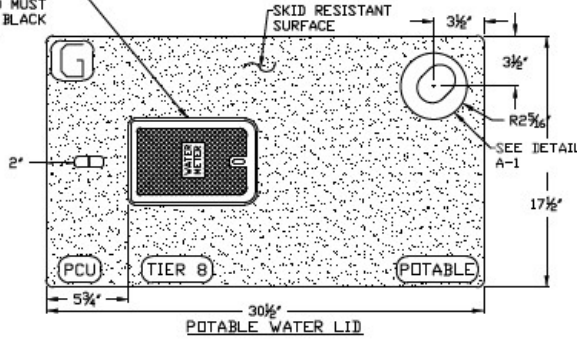
Material Specifications

J 5 – WATER METER & BACKFLOW PREVENTION COMBINATION METER BOX – 17" x 30" x 12" – GREEN SPACE – (PAGE 2 OF 2):

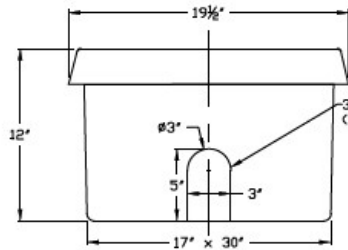
6"x9" CAST IRON READER "LESS THAN 90° AND AT LEAST 75° WHEN OPEN" AND MUST BE PROTECTED ON ALL SIDES WITH BLACK COATING (I.E. PAINT EX.) ALL METER READER LIDS



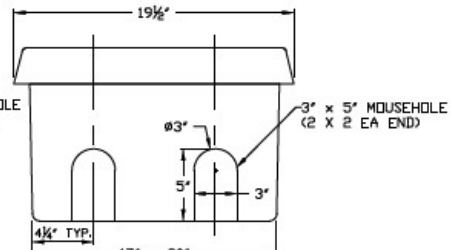
6"x9" CAST IRON READER "LESS THAN 90° AND AT LEAST 75° WHEN OPEN" AND MUST BE PROTECTED ON ALL SIDES WITH BLACK COATING (I.E. PAINT EX.) ALL METER READER LIDS



SIDE SECTION



TYPE A
END SECTION



TYPE B
END SECTION

Created Date: 12/03/04 (JJS)

Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 5.1 – WATER METER & BACKFLOW PREVENTION COMBINATION METER BOX – 17” x 30” x 12” – PARKING AREA – (PAGE 1 OF 2):

SPECIFICATION/MATERIAL:

Backflow & water meter box 17” wide X 30” long X 12” deep for parking area applications, shall meet/exceed the following performance specifications:

- Boxes and lids shall be designed and tested to meet ANSI/SCTE 77 Tier 22 and have labeling to indicate this load rating.
- Box and lid shall be made of a polymer concrete and fiberglass reinforced polyester material.
- Boxes shall be of straight wall design with integral bottom flange curved inward a minimum of 1-1/4” and a maximum of 1-1/2”.
- The lid shall be a solid design. The box lid shall have a 3/4” wide X 2” long lifting slot. Boxes to include one 3” wide X 5” high mousehole centered each end.
- All lids shall be embossed “PCU”, “WATER METER” and patterned with a non-skid surface.
- The letter size shall be 3/4” long X 1/2” wide minimum.
- All embossing shall be a minimum of 1/4” deep.

DIMENSIONS:

- The lid shall be a minimum 2” thick.
- Box shall have minimum outside dimensions as follows: 19” wide X 32” long measured at top collar & 17” wide X 30” long measured at box bottom.
- Overall depth of box shall be 12” deep.

APPLICATION REQUIREMENTS:

- Required in parking area and acceptable in green space applications.
- 3/4” parallel DCVA assemblies.
- 1” parallel DCVA assemblies.
- 1-1/2” DCVA assembly.
- 2” DCVA assembly.
- 1-1/2” meter flanged or threaded.
- 2” meter flanged or threaded.
- Potable or reclaimed water blow-offs.

Potable Water:

- Lid shall be natural concrete in color and embossed “POTABLE”.

Reclaimed Water:

- Lid shall be purple in color (Pantone 522 C). Color shall be “Through Color” for full depth of lid.
- Lid shall be permanently embossed with the wording “RECLAIMED WATER DO NOT DRINK” in English and Spanish “NO BEBER”.

- Lid shall have 3-1/2” diameter international “DO NOT DRINK” symbol embossed on the lid.
- See Material Specification 'J 7' for lid details.
- See Material Specification 'J 6' for Blow-Off lid requirements.

ADDITIONAL REQUIREMENTS:

- Boxes shall be palletized, shrink-wrapped, and banded.
- 2-1/4” tall X 1-1/2” wide “P” to be stenciled on the outside and inside of all green space boxes (color black).

MANUFACTURER:

- **ARMORCAST PRODUCTS CO.**
- **HUBBELL INC. - CDR/QUAZITE FRP**
- **NEW BASIS**
- **GLASSMASTERS**

Created Date: 12/03/04 (JJS)

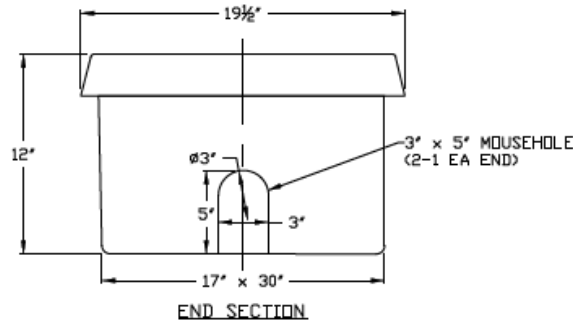
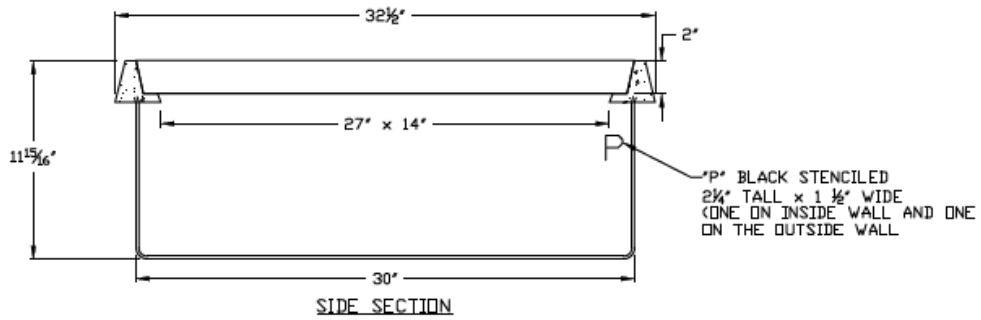
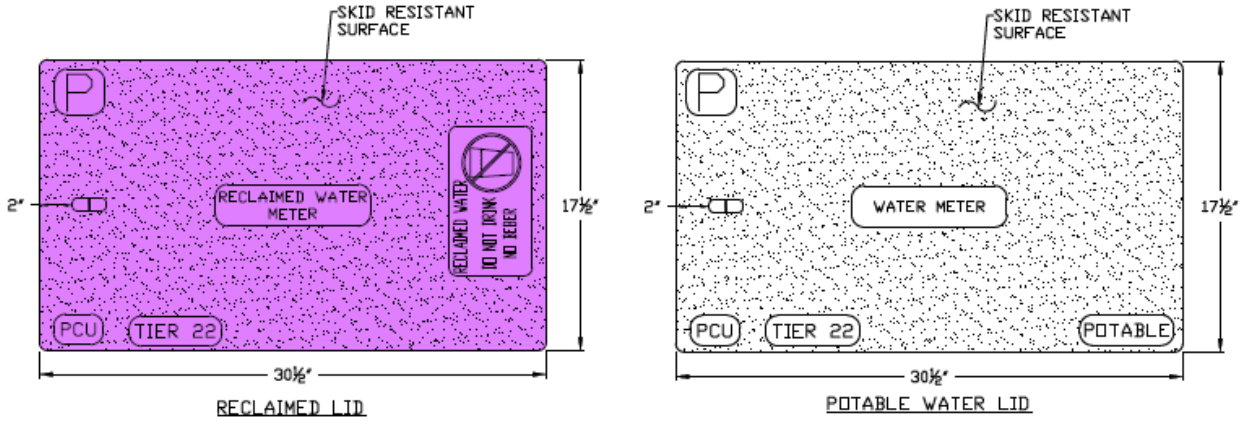
Last Revised Date: 08/01/22 (JJP)



Material Specifications
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Clearwater, FL 33756

Material Specifications

J 5.1 – WATER METER & BACKFLOW PREVENTION COMBINATION METER BOX – 17" x 30" x 12" – PARKING AREA – (PAGE 2 OF 2):



Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 6 – POTABLE & RECLAIMED WATER BLOW-OFF BOX LID – PARKING AREA – (PAGE 1 OF 2):

SPECIFICATION/MATERIAL:

5/8" X 3/4" water meter box 11" wide X 21" long for parking area applications, shall meet/exceed the following performance specifications:

- Boxes and lids shall be designed and tested to meet ANSI/SCTE 77 Tier 22 and have labeling to indicate this load rating.
- Box and lid shall be made of a polymer concrete and fiberglass reinforced polyester material.
- Boxes shall be of straight wall design with integral bottom flange curved inward a minimum of 1-1/4" and a maximum of 1-1/2".
- The lid shall be a solid design.
- The lid shall have a 3/4" wide X 2" long lifting slot.
- Box shall NOT include mouse holes.
- All lids shall be embossed "PCU" and "Reclaimed Water Blow-Off" or "Potable Water Blow-Off", and be patterned with a non-skid surface.
- The letter size shall be 3/4" high X 1/2" wide minimum
- All embossing shall be a minimum of 1/4" deep.

DIMENSIONS:

- The lid shall be a minimum 2" thick.
- Box shall have minimum outside dimensions as follows: 14" wide X 24" long measured at top collar & 12" wide X 22" long measured at box bottom.
- Overall depth of box shall be 12" deep.

APPLICATION REQUIREMENTS:

- Required in parking area and acceptable in green space applications.
- 5/8" X 3/4" metered services.

Potable Water:

- Lid shall be natural concrete in color and embossed "POTABLE"

Reclaimed Water:

- Lid shall be purple in color (Pantone 522 C). Color shall be "Through Color" for full depth of lid.
- Lid shall be permanently embossed with the wording "RECLAIMED WATER DO NOT DRINK" in English and Spanish "NO BEBER".
- Lid shall have a 3-1/2" diameter international "DO NOT DRINK" symbol embossed on the lid.

- See Material Specification 'J 7' for lid details.

ADDITIONAL REQUIREMENTS:

- Boxes shall be palletized, shrink-wrapped and banded.
- 2-1/4" tall X 1-1/2" wide "P" to be stenciled on the outside and inside of all parking boxes (color black).

MANUFACTURER:

- **ARMORCAST PRODUCTS CO.**
- **HUBBELL INC. - CDR/QUAZITE FRP**
- **NEW BASIS**
- **GLASSMASTERS**

Created Date: 12/03/04 (JJS)

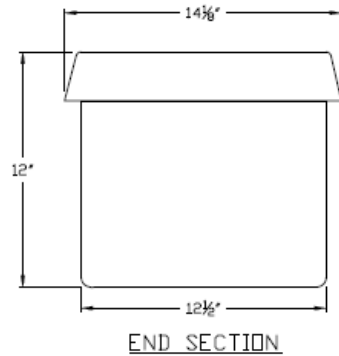
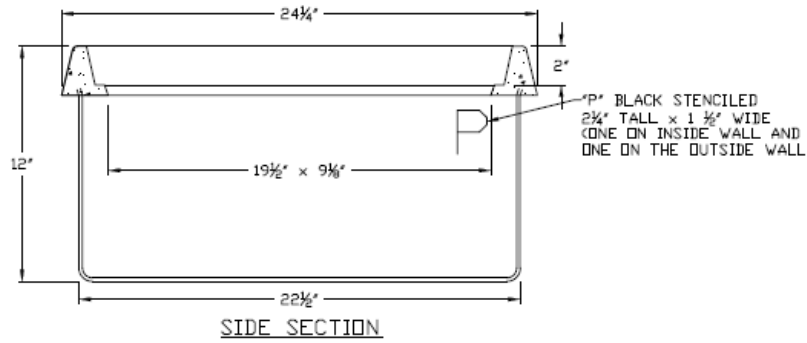
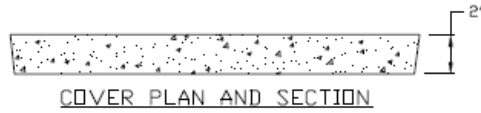
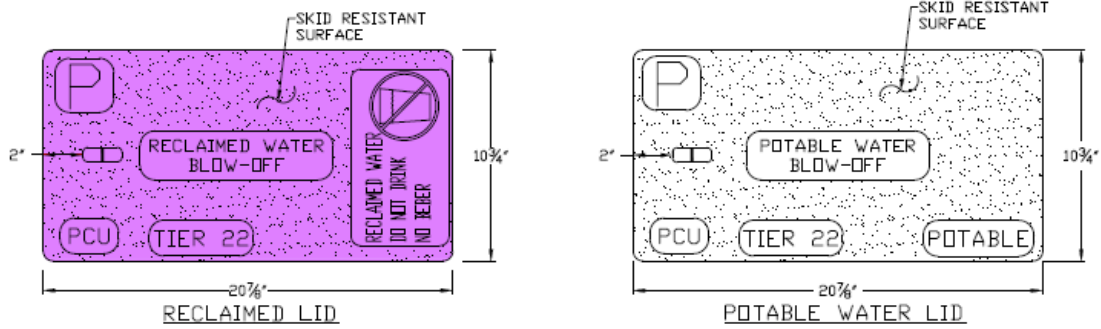
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 6 – POTABLE & RECLAIMED WATER BLOW-OFF BOX LID – PARKING AREA – (PAGE 2 OF 2):



NOTE:
NO MOUSEHOLE ONLY
ON VALVE BOXES

Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 7 – LID DETAILS – J 2, J 2.1, J 3, J 3.1, J 4, J 4.1, J 5, J 5.1, J 6 (PAGE 1 OF 2):

SPECIFICATION/MATERIAL:

- All lids shall be designed and tested to meet ANSI/ SCTE 77 Tier 8 or Tier 22 as required and have labeling to indicate the load rating.
- Lids shall be made of polymer concrete and fiber reinforced polyester material.
- All lids shall be made of a polymer concrete and fiber reinforced polyester material.
- All lids shall be patterned with a non-skid surface.
- All lids shall be embossed "PCU" in the lower left corner, labeled "WATER METER", "BLOW-OFF", or "VALVE" as required, and labeled "POTABLE", "RECLAIMED" or "SANITARY" as required.
- All embossed letters shall be a minimum of 3/4" high X 1/2" wide and shall be a minimum of 1/4" deep.
- The lid shall have a 3/4" wide X 2" long lifting slot.

Dimensions:

- The lid shall be a minimum 2" thick as required.

APPLICATION REQUIREMENTS:

Potable Water:

- Lid shall be natural concrete in color and labeled "POTABLE".

Reclaimed Water:

- Lid shall be purple in color (Pantone 522 C). Color shall be "Through Color" for full depth of lid.
- Lid shall be permanently embossed with the wording "RECLAIMED WATER DO NOT DRINK" in English and Spanish "NO BEBER".
- Shall have a 3-1/2" diameter international "DO NOT DRINK" symbol embossed on the lid.
- Lids in Green Spaces shall have a hinged 6" wide X 9" long cast iron meter reading access cover centered over meter, be cast with wording "WATER METER", and have a lifting slot. Except on the 11" X 21" lid shall have a 4-1/2" X 7-1/2" reader lid.
- All reader lids shall be coated with exterior grade flat black RUST-OLEUM (#7776730) or equal.

MANUFACTURER:

- **ARMORCAST PRODUCTS CO.**
- **HUBBELL INC. - QUAZITE**
- **NEW BASIS**
- **GLASSMASTERS**

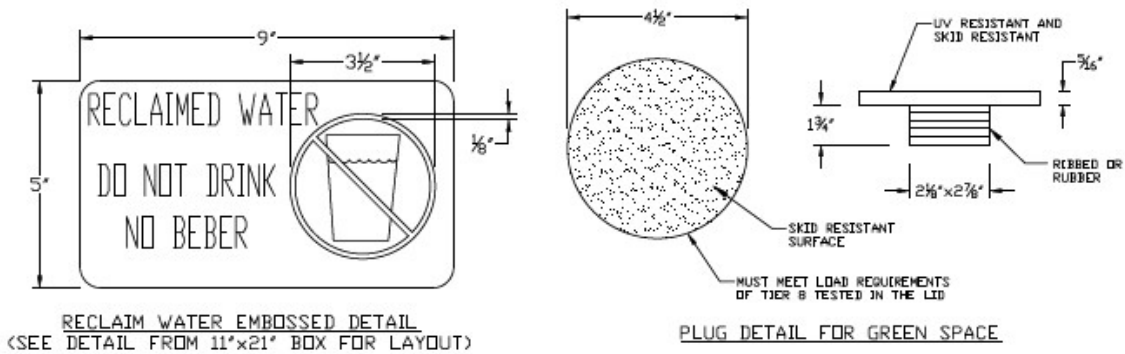
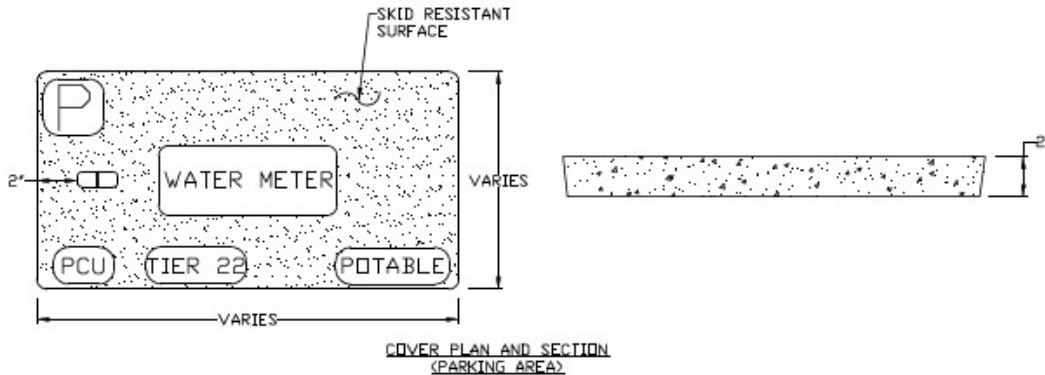
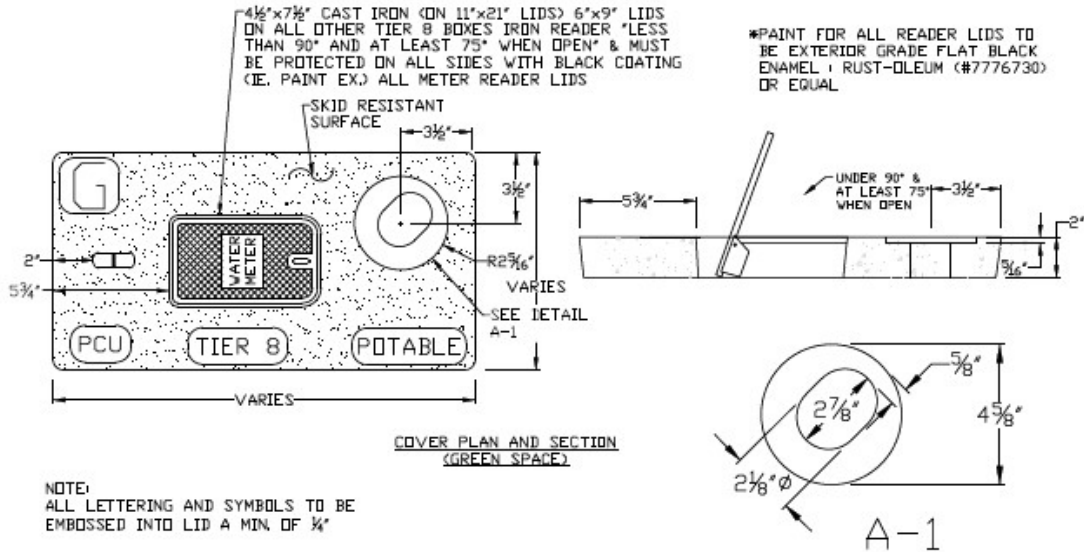
Created Date: 09/04/07 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

J 7 – LID DETAILS – J 2, J 2.1, J 3, J 3.1, J 4, J 4.1, J 5, J 5.1, J 6 (PAGE 2 OF 2):



Created Date: 09/04/07 (JJS)
Last Revised Date: 08/01/22 (JJP)



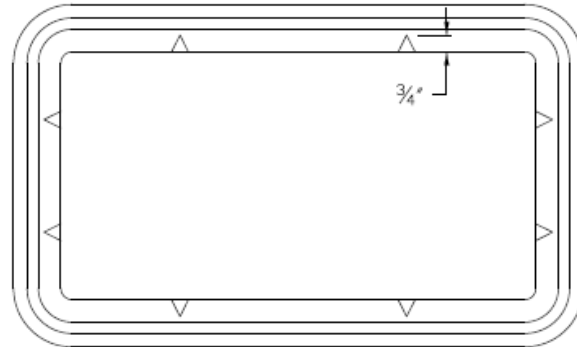
Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

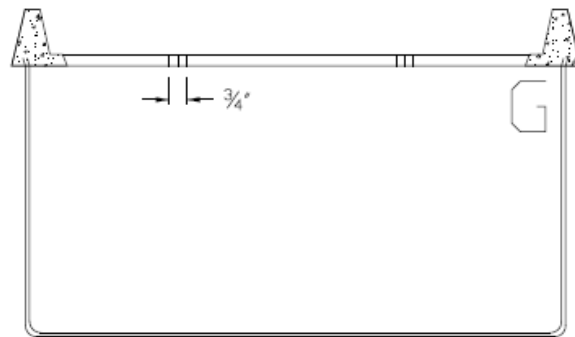
J 8 – BOX DETAILS – J 2, J 3, J 4, J 5 – GREEN SPACE:

SPECIFICATION/MATERIAL:

- The box lip shall have 2 "V" slots on each of the four box sides equally spaced for drainage. The "V" slots shall be 3/4" wide at the inside edge of the lip by 3/4" long and come to a point at the wall.



TOP VIEW



SECTION VIEW

MANUFACTURER:

- **ARMORCAST PRODUCTS CO.**
- **HUBBELL INC. - CDR/QUAZITE FRP**
- **NEW BASIS**
- **GLASSMASTERS**

Created Date: 09/04/07 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
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Material Specifications

**SECTION K:
MISCELLANEOUS**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section K: Miscellaneous

- K 1 Casing Spacers/Insulators – HDPE
- K 2 Casing Spacers/Insulators – Stainless Steel
- K 3 V-Bio Enhanced Polyethylene Encasement
- K 4 Manhole Insert – Stainless Steel
- K 5 Pipe Saddle Support – Adjustable – Valve Vaults
- K 6 Cam-Lok Coupling Adapters & Dust Caps
- K 7 Cylindrical Wall Seals & Line Sleeves
- K 8 Metal Detectable Underground Warning Tape
- K 9 Manhole Casting Adjustment Rings – HDPE
- K 9.1 Manhole Casting Adjustment Rings – EPS
- K 10 Manhole Internal Chimney Seal
- K 11 Pipe Casing End Seals
- K 12 Sanitary Sewer Inside Drop Bowls
- K 13 Flange Isolating Gasket Kits

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

K 1 – CASING SPACERS/INSULATORS – HDPE:

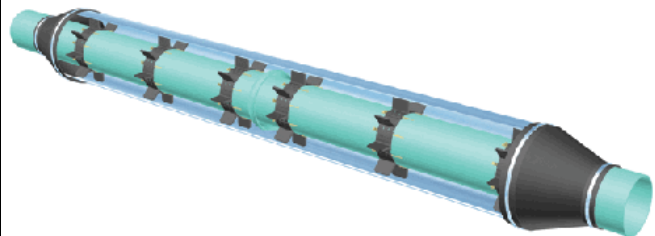
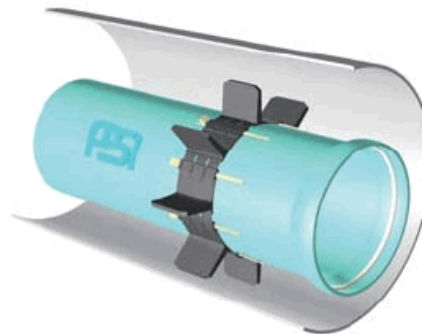
SPECIFICATION:

Casing Spacers/Insulators shall meet/exceed the following performance specifications:

- Must ensure electrical insulation between the two pipes.
- Shall permanently prevent bells from resting on casing pipe.
- Shall be resistant to corrosion.
- Spacers shall be manufactured out of high density polyethylene.

REQUIREMENTS:

- Calculations are required to determine:
 - Type of segment or element.
 - Size of segment or element.
 - How many spacers are needed.
 - The insulator spacing.
 - That the spacers are not overloaded.
- **Special tools may be required for installation.**



MANUFACTURER/PRODUCT(S):

- **CASCADE WATERWORKS MFG. - CCSPL GOLD SERIES**
- **GPT IND./PIPELINE SEAL & INSULATOR INC. - RANGER "II" SERIES**
- **RACI SPACERS NORTH AMERICA INC.**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

K 2 – CASING SPACERS/INSULATORS – STAINLESS STEEL:

SPECIFICATION:

Casing Spacers/Insulators shall meet/exceed the following performance specifications:

- Must ensure electrical insulation between the two pipes.
- Shall permanently prevent bells from resting on casing pipe.
- Shall be resistant to corrosion.
- Band widths of eight (8) or twelve (12) inches.

MATERIAL:

Panel & Riser:

- Type 304 (18-8) stainless steel per ASTM A240.

Liner:

- Elastomeric PVC per ASTM D149 or extruded EPDM rubber.

Skids:

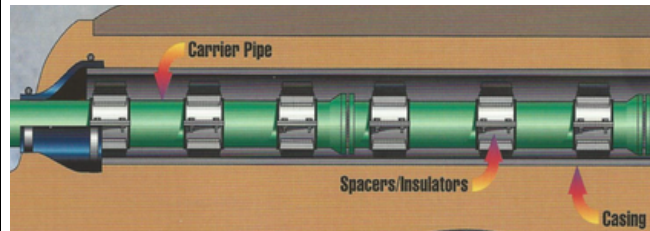
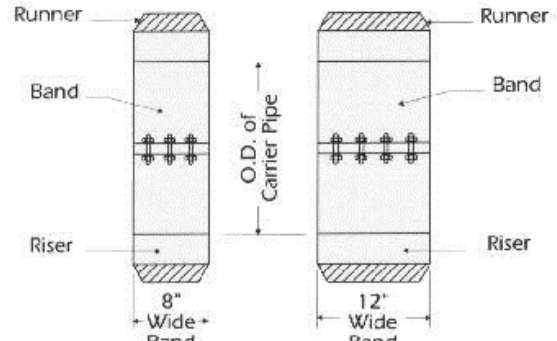
- Glass reinforced nylon or Ultra High Molecular weight (UHMW) polyethylene per ASTM D638.

Fasteners:

- Type 304 (18-8) stainless steel per ASTM A193.

REQUIREMENTS:

- Band width requirement determined by weight, pipe and fluid, and spacing.



MANUFACTURER/PRODUCT(S):

- **BWM CO. - MODEL BWM-SS**
- **CASCADE WATERWORKS MFG. - MODEL CCS**
- **CCI PIPELINE SYSTEMS - MODEL CSS**
- **POWER SEAL - MODEL 4810 PER SPEC.**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

K 3 – V-BIO ENHANCED POLYETHYLENE ENCASEMENT:

SPECIFICATION:

Polyethylene film shall meet/exceed the following performance specifications:

- ANSI/AWWA C105/A21.5, Polyethylene Encasement for Ductile Iron Pipe Systems.
- Shall have minimum thickness of 0.008” or 8-mil.
- The polyethylene encasement for use with ductile iron pipe systems shall consist of three layers of coextruded linear low density polyethylene fused into a single thickness.
- The inside surface of the polyethylene wrap to be in contact with the pipe exterior shall be fused with a blend of anti-microbial biocide to mitigate microbiologically induced corrosion and a volatile corrosion inhibitor to control galvanic corrosion.
- Shall be supplied in rolled tube form, suitable for installation method “A” as outlined in reference standard.
- The tube shall be sized according to the pipe being protected.
- Film shall be color coded.

COLOR-CODE:

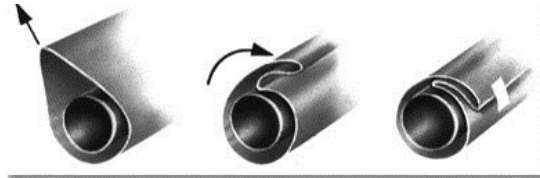
- Blue.....Potable Water
- Green.....Sanitary Sewer
- Purple.....Reclaimed Water

TUBE SIZE:

Nominal pipe diameter	Minimum flat tube width
4”	14”
6”	16”
8”	20”
10”	24”
12”	27”
14”	30”
16”	34”
18”	37”
20”	41”
24”	54”
30”	67”
36”- 42”	81”
48”	95”

MARKING REQUIREMENTS:

- Manufacturer's name or trademark
- Year of manufacture
- ANSI/AWWA C105/A21.5
- Thickness/type (LLDPE)
- Size
- Warning - Corrosion Protection - Repair Any Damage



MANUFACTURER:

- OPEN

Created Date: 03/15/05 (JJS)
 Last Revised Date: 08/01/22 (JJP)



Material Specifications
 Pinellas County
 14 South Ft. Harrison Ave.
 Clearwater, FL 33756

Material Specifications

K 4 – MANHOLE INSERT – STAINLESS STEEL:

SPECIFICATION:

Manhole inserts shall meet/exceed the following performance specifications:

- Shall reduce or eliminate inflow through manhole cover.
- Shall have a deep dish design to allow for easy removal and replacement of the manhole cover (i.e., cover rotation).
- Body shall be manufactured of 304 stainless steel with a thickness of not less than 18 gauge.
- Shall have a sealing gasket made of Nitrile/Buna-N (Acrylonitrile butadiene [NBR]), EPDM (Ethylene Propylene Diene Monomer) or closed cell neoprene.
- Shall have a handle made of 1/8" minimum, 304 stainless steel cable. Plastic coating of handle is optional or 1" heavy weight polypropylene.
- The handle shall be attached using two (2) 304 stainless steel round head bolts with flat washers and self-locking bolts or stainless steel pop rivets.

ADDITIONAL REQUIREMENTS:

When hydrogen sulfide (H₂S) gas levels warrant relief; a relief valve shall be provided and meet the following:

- The gas relief valve shall be designed to release at a pressure of 0.5 to 1.5 psi and have a water leak down rate no greater than 5 gallons per 24 hours.



MANUFACTURER/PRODUCT(S):

- **SEALING SYSTEMS INC. - STAINLESS STEEL INSERTS**
- **INFLOW SYSTEMS INC. - INFLOW SHIELD**
- **OPEN**

Created Date: 06/22/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

K 5 – PIPE SADDLE SUPPORT – ADJUSTABLE – VALVE VAULTS :

SPECIFICATION:

Adjustable pipe saddle supports shall meet/exceed the following performance specifications:

- Shall be a stanchion type support for vertical adjustment of stationary pipe.
- Shall comply with Federal Specification A-A-1192A (type 38) and the manufacturer's Standardization Society (MMS), MSS-SP-69 (type 38).
- Material shall be an assembled cast iron saddle, locknut nipple and special cast iron reducer.
- Shall have a Galvanized finish.
- Shall be capable of vertical adjustments of four & one-half (4-1/2") inches.

ADDITIONAL REQUIREMENTS:

- **For supporting pipe in pump station valve vaults only.**



MANUFACTURER/PRODUCT(S):

- **ANVIL INTERNATIONAL INC. - MODEL 264**
- **OPEN**

Created Date: 09/01/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

K 6 – CAM-LOK COUPLING ADAPTERS & DUST CAPS:

SPECIFICATION:

Cam-lock couplings adapters and dust caps shall meet/exceed the following performance specifications:

- Shall meet military standards/specifications: MIL-A-59326 (which replaces MIL-C-27487, Coupling Halves– Quick Disconnect).
- All threaded connections shall have National Pipe Threads (NPT).
- All metal parts shall have machined connection and sealing surfaces.

MATERIAL:

Part/Style “F”, male X male adapter:

- 316 Stainless Steel
- Brass/gun-metal.

Dust Cap:

- 316 Stainless Steel with brass or stainless steel handles.
- Polypropylene with brass or stainless steel handles.
- Ny-Glass with brass or stainless steel handles.
- PVC with brass or stainless steel handles.

Gasket:

- Nitrile/Buna-N
- EPDM (Ethylene Propylene Diene Mono-mer).
- Viton;Fluorel (FKM) (Fluorocarbon).

RESTRICTIONS:

- **Aluminum is not allowed.**



MANUFACTURER:

- OPEN

Created Date: 09/26/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

K 7 – CYLINDRICAL WALL SEALS & LINE SLEEVES:

SPECIFICATION:

Cylindrical wall seals & line sleeves shall meet/exceed the following performance specifications:

- Rubber links shall meet ASTM D2000 M3 BA510.
- Stainless steel shall meet ASTM F593, with an 85,000 psi average tensile strength.
- Hydrostatic seal shall be capable of holding 20 psig (40 feet of head) between the pipe and barrier through which it passes.
- Wall sleeves shall be high impact resistant HDPE or PVC.
- Wall sleeves shall have a integral water stop collar.
- Hole forming disks can be used for holes above 29" in diameter.
- Pressure plates shall be a composite material.
- Components and system shall be manufactured at a plant with a current ISO-9001:2000 registration.

MATERIAL:

Bolts and nuts:

- ANSI type 316 Stainless Steel
- ANSI type 304 Stainless Steel

Pressure Plates:

- Reinforced nylon polymers

Gasket:

- Nitrile/Buna-N
- EPDM (Ethylene Propylene Diene Monomer).
- Viton; Fluorel (FKM) (Fluorocarbon).

ADDITIONAL INFORMATION:

- For pipe penetrations through concrete vaults.
- Line sleeves are recommended, but not required. Holes can be cored into concrete barriers.



MANUFACTURER/PRODUCT(S):

- **ADVANCE PRODUCTS & SYSTEMS LLC. - INFINITY WALL SLEEVES**
- **GPT IND./PIPELINE SEAL & INSULATOR INC. -LINK-SEAL - MODEL S-316 & OS-316**
- **OPEN**

Created Date: 09/26/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

K 8 – METAL DETECTABLE UNDERGROUND WARNING TAPE:

SPECIFICATION:

Metal detectable underground tape shall meet/exceed the following performance specifications:

- Shall have a solid aluminum foil core with permanent printing under a protective layer to maintain the integrity and legibility of the warning sign.
- The aluminum core shall be laminated with a polyethylene layer.
- The inert polyethylene plastic shall be impervious to all known alkalis, acids, chemical reagents, and solvents likely to be encountered in the soil.
- Tape shall have a minimum thickness of 5 mils.
- The warning label shall be in black ink.
- The warning label shall be printed over a background color matching the type service.
- Affidavit of compliance to this specification shall be available upon request.

COLOR-CODE:

- Blue.....Potable Water
- Green.....Sanitary Sewer
- Purple.....Reclaimed Water

WIDTH REQUIREMENTS:

- Minimum of 2 inches.



MANUFACTURER/PRODUCT(S):

- EMPIRE LEVEL MFG. CORP.
- MERCO TAPE CO. - M225
- PRESCO
- TRUMBULL MFG. - 364-49 __
- OPEN

Created Date: 11/21/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

K 9 – MANHOLE CASTING ADJUSTMENT RINGS – HDPE:

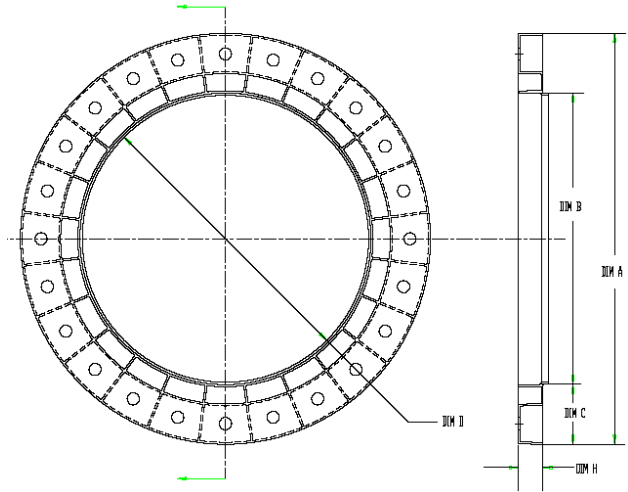
SPECIFICATION:

HDPE manhole casting adjustment rings shall meet/exceed the following performance specifications:

- Shall be manufactured from High Density Polyethylene (HDPE) plastic as identified in ASTM D-1248 Standard Specification for Polyethylene Plastic Molding and Extrusion Materials.
- Material properties shall be tested and qualified for usage per the ASTM test methods referenced in the above standard.
- Shall have a minimum dynamic-load rating of ASSHTO HS-20.
- Shall be tested to assure compliance with impact and loading requirements per ASSHTO Standard Specification for Highway Bridges.
- Shall be manufactured from 100% recycled or virgin material.
- Shall be installed with a butyl sealant meeting ASTM C-990 per manufacturer's directions.
- Affidavit of compliance to this specification shall be available upon request.

RESTRICTIONS:

- For adjustment of castings in non traffic applications only.



DIMENSION SCHEDULE

CONE SIZE	DIM A	DIM B	DIM C	DIM D	DIM H
24	23.75	33.50	5.00	23.25	1.25, 1.50, 2.00, 4.00
27	26.75	36.50	5.00	26.25	1.25, 1.50, 2.00, 4.00
30	29.75	39.50	5.00	29.25	1.50, 2.00, 3.25
32	31.75	41.50	5.00	31.25	2.00, 3.00
34	33.75	41.50	4.00	33.25	2.00, 3.00

MANUFACTURER:

- LADTECH INC.
- OPEN

Created Date: 12/28/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

K 9.1 – MANHOLE CASTING ADJUSTMENT RINGS – EPS:

SPECIFICATION:

Expanded Poly-Styrene (EPS) manhole casting adjustment rings shall meet/exceed the following performance specifications:

- Shall be manufactured from High Density Poly-styrene (EPS) and fully encapsulated with Poly-urea.
- Material properties shall be tested and qualified for usage per the ASTM test methods referenced in this specification.
- Shall have a minimum dynamic-load rating of ASSHTO HS-20.
- Shall be tested to assure compliance with impact and loading requirements per ASSHTO Standard Specification for Highway Bridges.
- Shall be installed with Secure & Seal and Veil Safer per manufacturer recommendations.
- Adjustment system shall include angle or wedge rings.
- Affidavit of compliance to this specification shall be available upon request.

RESTRICTIONS:

- For adjustment of castings in non traffic applications only.

Material properties of high density molded EPS:

Property	Units	ASTM Test	Results	
Density	pcf		3.0 pcf	4.5 pcf
Thermal Conductivity	BTU/hr	C518	0.224	0.239
40°FK factor at 75°F	Ft ² /°F/in		0.235	0.242
Compression Resistance				
10% deformation			50-70	70-90
5% deformation	psi	D1621	45-60	60-80
2% deformation			15-20	20-40
Flexural Strength	psi	D790	90-120	130-200
Water Absorption (by volume)	%	D570	2.0	1.7
Coefficient of Linear Expansion	in./in.°F	D696	2.7x10 ⁻⁵	2.8x10 ⁻⁵
Shear Strength	psi	D732	55	80
Tensile Strength	psi	D1623	70-90	130-140

Material properties of Polyurea coating/ Veil Safe:

Property	Units	ASTM Test	Results
Flexural Modulus	Psi	D790	375,000
Tensile Strength	psi	D638	8,600
Elongation	%	D638	300
Tear Strength	Psi	D624	575
Shore Hardness	D scale	D2240	80-82
Moisture Vapor Transition	Perm. in.	E96	0.010
Abrasion Resistance	Wt. loss-mg.	D6040	
H-18, 1000g, 1000 rev.			65
Cs-17, 1000g, 1000 rev.			<5
Flash Point	°F		>400
Coefficient of Thermal Expansion	In/in/°C	D696	4 x 10 ⁻³
Flame Spread		E108	UL790



MANUFACTURER/PRODUCT(S):

- OPEN

Created Date: 05/19/09 (JJS)
 Last Revised Date: 08/01/22 (JJP)



Material Specifications
 Pinellas County
 14 South Ft. Harrison Ave.
 Clearwater, FL 33756

Material Specifications

K 10 – MANHOLE INTERNAL CHIMNEY SEAL:

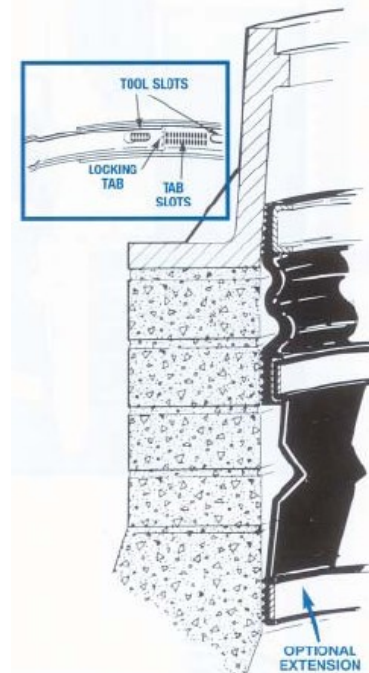
SPECIFICATION:

Manhole internal chimney seals shall meet/exceed the following performance specifications:

- Shall be designed to prevent leakage of water through the chimney section of the manhole.
- Shall have a minimum 25 year design life.
- Shall seal the entire chimney area and extend from the frame or casting down to the top of the cone.
- Shall consist of a flexible internal rubber seal and extension and stainless steel compression bands.
- The rubber shall be extruded or molded from a high grade rubber compound conforming to the applicable requirements of ASTM C-923, with a minimum 1200 psi tensile strength, maximum 18% compression set and a hardness (durometer) of 48 and have a minimum thickness of 3/16 inches.
- The sleeve shall be double, triple or quadruple pleated with a minimum unexpanded vertical height of 8 inches, 10 inches or 12 inches respectively.
- Expansion bands shall be 16 gauge stainless steel conforming to ASTM A-240 type 304 and have a minimum width of 1 inch.
- The bands shall have a minimum adjustment range of 2 diameter inches and have a capacity to develop the pressures necessary to make a watertight seal.
- The band shall be permanently held in this expanded position with a positive locking mechanism.
- Affidavit of compliance to this specification shall be available upon request.

ADDITIONAL REQUIREMENTS:

- Shall cover the entire area between the casting and the pre-cast manhole cone.



MANUFACTURER/PRODUCT(S):

- **CRETEX SPECIALTY PRODUCTS**
- **PRIMELINE / TRELLEBORG - NPC FLEXRIB FRAME-CHIMNEY SEAL**
- **OPEN**

Created Date: 04/13/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

K 11 – PIPE CASING END SEALS:

SPECIFICATION:

Casing pipe end seals shall meet/exceed the following performance specifications:

- Shall be designed to prevent leakage of water and soil through the casing pipe ends.
- Shall be one piece neoprene or synthetic rubber boot.
- Wrap around end seals are not acceptable.
- The rubber boot shall be chemical resistant and retain good flexibility.
- Bands and screw assembly shall be manufactured from totally non-magnetic series 300 stainless steel.
- Affidavit of compliance to this specification shall be available upon request.

ADDITIONAL REQUIREMENTS:

- Ends of casings shall be sealed utilizing brick and mortar under the rubber boot to secure the carrier pipe and maintain the pipe elevation/ height based upon the casing spacers and end seals.



MANUFACTURER/PRODUCT(S):

- **ADVANCE PRODUCTS & SYSTEMS, INC. - MODEL AC & AM**
- **CCI PIPELINE SYSTEMS - MODEL ESC**
- **GPT IND./PIPELINE SEAL & INSULATOR INC. - MODEL C, R, & S**
- **OPEN**

Created Date: 05/11/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

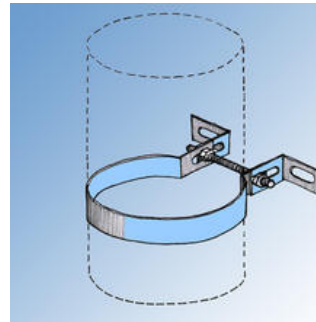
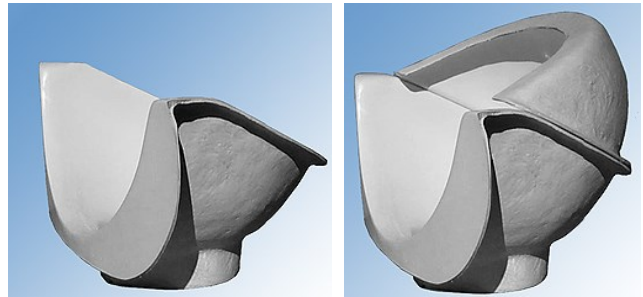
Material Specifications

K 12 – SANITARY SEWER INSIDE DROP BOWLS:

SPECIFICATION/MATERIAL:

Sanitary sewer inside drop bowls shall meet/exceed the following performance specifications:

- Shall be a plastic composite collection device designed to facilitate a controlled drop of effluent into the main stream flow of a sanitary sewer manhole.
- Shall be fabricated from marine grade fiberglass. Shall have an optional hood for use in force main applications.
- Clamping pipe supports brackets shall be manufactured from totally non-magnetic 11 gauge type 304 stainless steel.
- Bolts, washers and nuts shall be manufactured from totally non-magnetic 18-8 stainless steel.
- Secure bowl and pipe support brackets to wall with lead tamp-in expansion anchors.
- Seal bowl to wall with an approved marine grade high-performance polyurethane adhesive sealant.
- Connection from drop bowl to drop pipe shall be by approved external flexible pipe adapter.
- The bowl size shall be determined by incoming pipe size and flow rate.
- The bowl assembly shall be installed as per manufacturer's instructions.
- Affidavit of compliance to this specification shall be available upon request.



MANUFACTURER/PRODUCT(S):

- RELINER/DURAN INC. - *INSIDE DROP SYSTEM*
- OPEN

Created Date: 05/31/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

K 13 – FLANGE ISOLATING GASKET KITS:

SPECIFICATION/MATERIAL:

Flange isolating gasket kits shall meet/exceed the following performance specifications:

- Designed and manufactured to work with flange pipe and fittings per ANSI B16.1 Class 125.
- Shall create an insulated joint to separate a branch connection from a cathodically protected pipeline.
- Nuts, bolts and gasket shall be designed to withstand the design and test pressures of the pipe.
- Each kit shall be individually packaged in a reinforced cardboard box, which is clearly labeled as to its contents.
- Each kit shall include the following items:

Gasket:

- Gasket shall be full-faced isolating and sealing - Type "E", 1/8 inch thick, manufactured from Nema grade G-10 glass reinforced epoxy retainer with a Nitrile, Viton or EPDM seal. The G-10 retainer shall have a 550 volt/mil dielectric strength and a minimum 50,000 psi compressive strength.

Sleeve:

- Shall have one full length Nema grade G-10 sleeve for every flange bolt. The G-10 shall be a 1/32 inch thick tube with a 400 volt/mil dielectric strength.

Washer:

- Shall have two insulating washers manufactured from Nema grade G-10 glass reinforced epoxy for each bolt hole.
- Compressive strength shall be 50,000 psi, dielectric strength 550 volts/mil.
- Two, 1/8 inch thick zinc plated, hot rolled steel washers for each bolt.
- The I.D. of all washers shall fit over the isolating sleeve an same I.D. and O.D.
- ISO 9001 or later
- Affidavit of compliance to this specification shall be available upon request.



MANUFACTURER:

- **ADVANCE PRODUCTS & SYSTEMS INC.**
- **GPT IND./PIPELINE SEAL & INSULATOR INC.**
- **OPEN**

Created Date: 06/26/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

**SECTION L:
ELECTRICAL**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section L: Electrical

- L 1 Tracer Wire – Copper
- L 1.1 Tracer Wire – Copper-Clad Steel
- L 2 Direct Bury Wire Splice Kit

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

L 1 – TRACER WIRE – COPPER:

SPECIFICATION:

Tracer wire shall meet/exceed the following performance specifications:

- Manufactured for the purpose of direct burial power applications in accordance with the National Electric Code.
- Conductor shall be soft drawn bare copper meeting the requirements of ASTM Standard Specification B-3.
- Shall be a minimum gauge size 14.
- Conductor shall be solid strand.
- Insulation shall be polyvinylchloride (PVC) or low density, high molecular weight polyethylene for applications of up to 600 volts.
- Insulation shall be color coded per type service.
- Shall be constructed in accordance with Underwriter Laboratories, Inc.
- Thermoplastic High Heat resistant Nylon coated (THHN) and Thermoplastic Heat and Water resistant Nylon coated (THWN) are both acceptable.

COLOR-CODE:

- Blue.....Potable Water
- Purple.....Reclaimed Water
- Green.....Sanitary Sewer

RESTRICTIONS:

- For use in open cut pipeline installations.
- For service lines up to 2" in diameter installed by directional drill.



MANUFACTURER:

- OPEN

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

L 1.1 – TRACER WIRE – COPPER-CLAD STEEL:

SPECIFICATION/MATERIAL:

Tracer wire (Copper-Clad Steel Wire) shall meet/exceed the following performance specifications:

- Conductor shall be copper-clad steel wire composed of a steel core with a uniform and continuous copper cladding thoroughly bonded to the steel throughout.

Cladding:

- The steel and copper interface must have a metallurgical bond achieved through a high heat and pressure bonding process. Established process for porosity-free material.

Steel:

- Extra high strength with 0.54 carbon or greater. Verified to meet required mechanical properties.

Copper:

- UNS-C10200; of copper according to ASTM B-170 (latest revision). High conductivity, oxygen free copper to achieve optimal signal performance.
- Shall be a minimum gauge size 12AWG (.0808" diameter).
- Shall have an average tensile break load of 1150#
- Conductor shall be solid strand.

Surface Condition:

- Shall be free of any defects, including flakes, grooves, pits, and voids. Wire shall be smooth, bright and shiny, and free of excessive copper dust and residual drawing lubricants.
- Insulation shall be color coded per type service.

Insulation & thickness requirements:

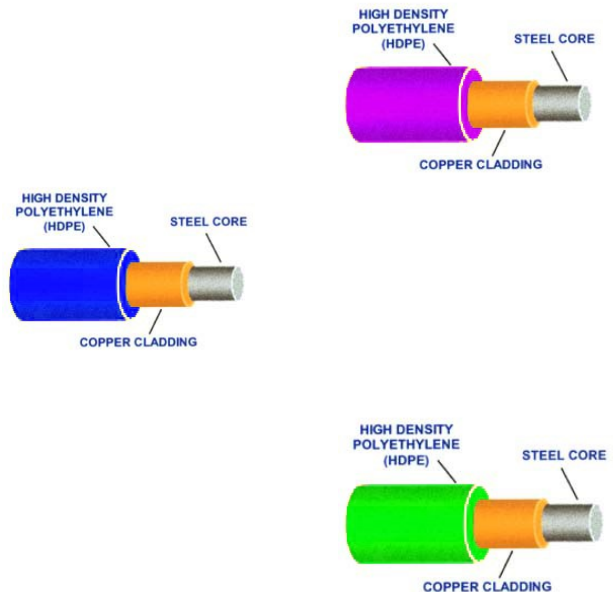
- Insulation shall be high molecular weight-high density polyethylene (HDPE) jacket complying with ASTM-D1248, 30 volt rating.
- 30 mil insulation for 2" to 8" pipe installed by directional drill and all sizes installed by open cut.
- 45 mil insulation for 10" and larger pipe and all subaqueous pipe installed by directional drill.

COLOR-CODE:

- Blue.....Potable Water
- Purple.....Reclaimed Water
- Green.....Sanitary Sewer

RESTRICTIONS:

- Acceptable for open cut installations.
- Required on pipe installed by horizontal directional drill over 2" in diameter.



MANUFACTURER/PRODUCT(S):

- **COPPERHEAD IND. - SOLOSHOT 1245_-EHS-__**
- **OPEN**

Created Date: 08/30/07 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

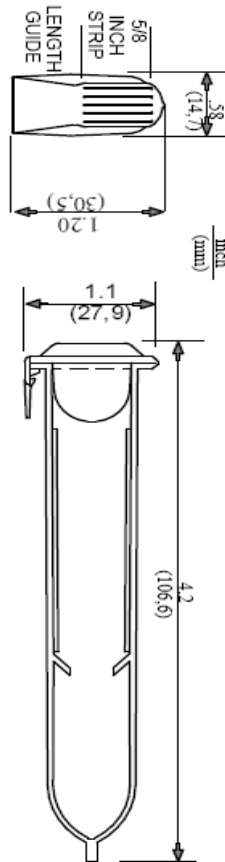
L 2 – DIRECT BURY SPLICE KITS:

SPECIFICATION:

- Direct bury water proof wire connectors shall meet/exceed the following performance specifications:
- UL 486D, direct bury wire splices.
- Shall be compatible with THHN or THWN insulation thickness and AWG solid strand copper wiring.
- Shall use a silicone insulating gel sealant.

DESIGN:

- Shall splice and effectively moisture seal three to four (minimum) #14 conductors as part of the installation of tracer wire in pipeline construction.



DRYCONN[®]
WATERPROOF CONNECTORS



MANUFACTURER/PRODUCT(S):

- **3M - DBRY-6 DIRECT BURY SPLICE KIT**
- **KING INNOVATION - DRYCONN (KING 6 BLUE)**

Created Date: 01/25/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

**SECTION M:
COATINGS
&
SEALANTS**

Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section M: Coatings & Sealants

- M 1 Manhole Coatings
- M 2 Metal Appurtenance Coatings
- M 3 Metal Appurtenance Primers – Fast Drying
- M 4 Metal Appurtenance Primers – Rust Inhibitive
- M 5 Grout – Chemically Activated Acrylic Gel
- M 5.1 Grout – Chemically Activated Acrylamide Gel
- M 5.2 Grout – Water Activated Polymer Solution – Foam
- M 6 Pipe Joint/Gasket Lubricants
- M 7 PTFE “Teflon” Thread Sealant Tape
- M 8 Flexible Joint Sealants
- M 8.1 Flexible Butyl Joint Sealants
- M 9 Vinyl/PVC Adhesive Tape
- M 9.1 Polyethylene Adhesive Tape
- M 10 Polyurethane Adhesive Sealant/Caulk
- M 11 Protecto 401 Touch-up Kit

Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 1 – MANHOLE COATINGS:

SPECIFICATION:

Manhole coatings shall meet/exceed the following performance specifications:

- Shall be a corrosion resistant coating.
- Shall provide one coat protection for concrete and steel in a variety of chemical, immersion and underground conditions.
- Steel Structures Painting Council, SSPC– Paint 16, Coal Tar Epoxy– Polyamide Black Paint.
- Corps of Engineers Formula C-200.
- Shall be a high build, polyamide epoxy, two component, coal tar coating.
- Finished product shall be black in color.



MANUFACTURER/PRODUCT(S):

- **BLP MOBILE PAINTS - 40-AX-7 MOTAR**
- **RUST-OLEUM - C9578**
- **SHERWIN-WILLIAMS - TARGUARD**
- **TNEMEC - SERIES 46H-413 HI-BUILD
TNEME-TAR**
- **OPEN**

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 2 – METAL APPURTENANCE COATINGS:

SPECIFICATION:

Metal appurtenance coatings shall meet/exceed the following performance specifications:

- Metal appurtenances shall mean exposed metal items that are not enclosed in vaults or exposed to a sewer gas environment including, but not limited to: valves, valve boxes, backflow device units, master meter units, fire hydrants, exposed piping, and shall also include curb reference markings.
- Shall have a high gloss finish with extended gloss and color retention.

- Federal specification crossover: TT-E-1593: Enamel, Silicone Alkyd Copolymer, Gloss (for interior and exterior use).
- Shall be a single component coating.
- Shall be applied per manufacturer's recommendations.

COLOR-CODE:

- Potable Water.....OSHA safety blue
- Fire hydrant body.....OSHA safety or chrome yellow
- Fire hydrant bonnet...White.
- Sanitary Sewer.....OSHA safety green
- Reclaimed Water.....OSHA safety purple
- Ballard/guard post.....OSHA safety yellow



SIL-SHIELD

95-5000 Series

HPC/Industrial Maintenance

Sil-Shield Silicone Alkyd Enamel High Gloss

GENERAL DESCRIPTION

Sil-Shield Silicone Alkyd Gloss Enamels are high solids, single component topcoats that are intended for use on interior or exterior, moderate industrial exposure. Ideal for use on structural steel, tanks, piping and towers. Sil-Shield offers infinite color capability through PermaColor® Color System. For Professional Use Only; Not intended for household use.

RECOMMENDED USES

Aluminum Galvanized Steel
Concrete Plaster
CMU Masonry
Ferrous Metal Stucco

FEATURES AND BENEFITS

Durable high gloss finish
Excellent fade resistance
Excellent gloss retention
Heat resistance to 350°F (177°C)
Meets the performance requirements of Federal Standards TT-E-490 and TT-E-1593

MIXING AND APPLICATIONS INFORMATION

Application Equipment: Changes in application equipment, pressures and/or tip sizes may be required depending on ambient temperatures and application conditions.

Airless Spray: Pressure 2000 to 2500 psi, tip 0.013" to 0.017"

Conventional Spray: Fluid Nozzle: DeVilbiss MBC gun, with 704 or 777 air cap with E or FF tip and needle, or comparable equipment. Atomization Pressure: 30 to 60. Fluid Pressure: Can not specify, dependent on numerous factors.

Brush: Polyester/Nylon Brush
Roller: 3/8" nap solvent resistant core

Thinning: Thin as needed with 97-727 up to the maximum VOC limit. Never thin beyond legal limits in VOC regulated areas.

For 2.08 lbs./gal. VOC, thin up to 19% with 97-725.
Conventional Spray: up to 32 oz./gallon with 97-725.
Airless Spray: up to 25 oz./gallon with 97-725.
Brush: up to 25 oz./gallon with 97-734.
Roller: up to 25 oz./gallon with 97-734.

Permissible temperatures during application:
Material: 40° to 90° F 5°C to 32°C
Ambient: 40° to 90° F 5°C to 32°C
Substrate: 40° to 130° F 5°C to 54°C

TINTING AND BASE INFORMATION

These products are designed to be tinted with colorants of the PermaColor System. Use formulas from the Sil-Shield section of the formula book or from the PermaColor System Software.

95-5000 Neutral Base
95-5012 White Base

PRODUCT DATA

PRODUCT TYPE: Silicone Alkyd Copolymer

GLOSS: Gloss: +75 (60° Gloss Meter)
VOC*: 317 g/L (2.65 lbs./gal.)
COVERAGE: 407 to 679 sq. ft./gal. (38 to 63 sq. m/3.78L)
Wet Film Thickness: 2.4 to 3.9 mils
Wet Microns: 61 to 99
Dry Film Thickness: 1.5 to 2.5 mils
Dry Microns: 38 to 63.5

Coverage figures do not include loss due to surface irregularities and porosity or material loss due to application method or mixing.

DFT: 1.5 to 2.5 mils
WEIGHT/GALLON*: 10 lbs.(4.5 kg)/+0.2 lbs. (91 g)

VOLUME SOLIDS*: 63.3% +/- 2%
WEIGHT SOLIDS*: 73.4% +/- 2%

*Product data calculated on 95-5000.

DRYING TIME: Dry time @ 77°F (25°C), 50% relative humidity.

To Touch: 4 hours
To Handle: 6 hours
To Recoat: 24 hours

Drying times listed may vary depending on temperature, humidity, film build, color, and air movement.

IN-SERVICE TEMPERATURE:

Dry Heat: 350°F (177°C)

CLEANUP: PPG Thinners 97-727 or xylene

DANGER: Rags, steel wool or waste soaked with this product may spontaneously catch fire if improperly discarded. Immediately after use, place rags, steel wool or waste in a sealed water-filled metal container. Refer to www.pittsburghpaints.com, Spontaneous Combustion Advisory for additional information.

FLASH POINT: 95-5000 106°F, (41°C)
95-5012 106°F (41°C)

SIL-SHIELD

95-5000 Series

HPC/Industrial Maintenance

Sil-Shield Silicone Alkyd Enamel High Gloss

GENERAL SURFACE PREPARATION

The surface to be coated must be dry, clean, and free of oil, grease, release agents, curing compounds, and other foreign materials. The service life of the coating is directly related to the surface preparation. Where appropriate bare areas should be primed with a suitable primer.

WARNING! If you scrape, sand, or remove old paint, you may release lead dust or fumes. LEAD IS TOXIC. EXPOSURE TO LEAD DUST OR FUMES CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a properly fitted NIOSH-approved respirator and prevent skin contact to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the USEPA National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead. In Canada contact a regional Health Canada office. Follow these instructions to control exposure to other hazardous substances that may be released during surface preparation.

ALUMINUM: Solvent Clean per SSPC-SP1 to remove grease and oils and then SSPC-SP7.

CONCRETE MASONRY UNITS: Allow the mortar to cure for thirty (30) days under normal drying conditions. Remove all dirt, dust, grime, loose mortar and all other forms of contamination.

CONCRETE, STUCCO, PLASTER, MASONRY other than CMU: Allow all concrete, mortar, plaster, etc. to cure for thirty (30) days under normal drying conditions. Remove all dirt, dust, grime, loose mortar and all other forms of contamination. Concrete which has been treated with curing compounds or hardeners, should be thoroughly abraded.

FERROUS METAL: The surface must be cleaned thoroughly to remove any dust, rust, and surface contaminants prior to priming.

GALVANIZED STEEL: Solvent Clean per SSPC-SP1 to remove grease and oils. If any oxidation (white rust) has formed, sand and remove all forms of contamination. If the galvanized has been passivated or stabilized, the surface must be abraded i.e. Brush-Off Blast Clean per SSPC-SP7 or chemically treat the surface.

RECOMMENDED PRIMERS

Aluminum 6-204, 90-712
Concrete Masonry Units 6-15
Concrete, Stucco, Plaster Masonry 4-603
other than CMU Unit
Ferrous Metal 6-208, 94-258, 97-680
Galvanized Steel 6-209, 90-712

LIMITATIONS OF USE

Must be used on dimensionally stable substrates. Not suitable for immersion service or for use on wood. Not intended for residential use or for areas that may be exposed to strong acids, alkalis, and solvents. Apply only when air, and the product and surface temperatures are 40°F (5°C) or higher, and when the surface temperature is at least 5°F (3°C) above the dew point. Do not apply silicone alkyd coatings over soft, slow drying, linseed oil primers. Do not apply directly over zinc rich primers - apply a barrier coat of Pit-Guard® All Weather Direct-to-Rust Epoxy coating between the zinc rich primer and the silicone alkyd topcoat.

SAFETY

Proper safety procedures should be followed at all times while handling this product. Explosion-proof equipment must be used when coating with these materials in confined areas. Keep containers closed and away from heat, sparks, and flames when not in use. USE WITH ADEQUATE VENTILATION. KEEP OUT OF REACH OF CHILDREN.

Spray equipment must be handled with due care and in accordance with manufacturer's recommendation. High-pressure injection of coatings into the skin by airless equipment may cause serious injury. Read all label and Material Safety Data Sheet for important health/safety information prior to use. MSDS are available through our website www.ppgipcc.com or by calling 1-800-441-9695.

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PPG Architectural Finishes, Inc. believes the technical data presented is currently accurate; however, no guarantee of accuracy, comprehensiveness, or performance is given or implied. Improvements in coating technology may cause future technical data to vary from what is in this bulletin. For complete, up-to-date technical information, visit our web site or call 1-800-441-9695.



PPG Industries, Inc.
Architectural Coatings
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Pittsburgh, PA 15272
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Technical Services
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1-888-807-5123 fax

Architect/Specifier
1-888-PPG-IDEA

PPG Canada, Inc.
Architectural Coatings
4 Kenview Blvd
Brampton, ON L7T 3E4

D14 9/2012
Supersedes (10/2011)

MANUFACTURER/PRODUCT(S):

- PPG PITTSBURGH PAINTS - 95-5000 SIL-SHIELD
- OPEN

Created Date: 10/03/05 (JJS)
Last Revised Date: 08/01/22 (JJF)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756


Material Specifications

M 3 – METAL APPURTENANCE PRIMERS – FAST DRYING:

SPECIFICATION:


Metal appurtenance coatings shall meet/exceed the following performance specifications:

- Metal Appurtenances shall mean exposed metal items that are not enclosed in vaults or exposed to a sewer gas environment including, but not limited to: valves, valve boxes, backflow device units, master meter units, fire hydrants, and exposed piping.
- Federal specification crossover: TT-P-664, quick drying, rust inhibiting, high solids modified alkyd red oxide primer.
- Shall be a single component primer.
- Shall be applied per manufacturer's recommendations.

 MULTIPRIME® 97-680 Series	
HPC/Industrial Maintenance MULTIPRIME® Low VOC Quick Dry Universal Primers	
Generic Type	Tinting and Base Information
Modified Alkyd	Small amounts of MPD (4257 Line) colorants may be added to provide desired contrasts. Additions up to 4 oz. (118 ml) per gallon have no effect on dry or recoat times. Do not tint with 94 Line Custom Colorants. Medium White (97-680) approximates color 517-3 in the PITTSBURGH® Paints VOICE OF COLOR SYSTEM®.
General Description	MULTIPRIME® Low VOC primers are inhibitive metal primers for use on ferrous metal or aluminum substrates. They may be topcoated with a variety of topcoats including epoxy, vinyl, urethane or conventional finishes. They may also be used as a barrier coat over existing alkyd systems to allow topcoating with strong solvent containing topcoats. FOR METAL SUBSTRATES ONLY.
Recommended Uses	Aluminum Ferrous Metal
Features / Benefits	Fast Dry, less than 30 minutes Compatible with most industrial maintenance topcoats Corrosion inhibitive formula
Limitations of Use	Apply only when temperatures are above 40°F (5°C) and surface temperature is at least 5°F (3°C) above the dew point. Not recommended for immersion service, as a barrier coat, or a primer beneath AQUAPON® High Build Coatings. Do not apply directly to new galvanized steel, old galvanized steel that has been cleaned by abrasive blast techniques, or over zinc rich primers. Latex products are not recommended as topcoats over these primers. Drying times listed may vary depending on temperature, humidity and air movement. DANGER: Rags, steel wool or waste soaked with this product may spontaneously catch fire if improperly discarded. Immediately after use, place rags, steel wool or waste in a sealed water-filled metal container. Refer to www.pittsburghpaints.com. Spontaneous Combustion Advisory for additional information.
Product Data	
Gloss:	Satin: Less than 25 (60°Gloss Meter)
VOC*:	3.28 lbs/gal 393.60 g/L
Coverage:	216 to 287 sq ft/gal (20 to 27 sq. m/3.78L)
<small>*These test include loss due to varying application method, surface porosity, or mixing.</small>	
DFI:	3.0 minimum to 4.0 maximum
Weight/Gallon*:	11.9 lbs. (5.4 kg) +/- 0.2 lbs. (91 g)
Volume Solids*:	53.8% +/- 2%
Weight Solids*:	72.4% +/- 2%
Clean-up:	97-727 PPG Xyol Thinner or MEK
<small>Results will vary by color, tinting and other additives.</small>	
*Product data calculated on 97-680	
Drying Time:	To Touch: 15 minutes To Handle: 30 minutes To Recoat: 30 minutes
Dry Time @77°F (25°C), 90% relative humidity	
Flash Point:	97-680 66°F. (18.9°C) 97-689 61°F. (16°C)

D13

Created Date: 10/03/05 (JJS)
Last Revised Date: 08/01/22 (JJP)

MULTIPRIME® 97-680 Series	
HPC/Industrial Maintenance MULTIPRIME® Low VOC Quick Dry Universal Primers	
General Surface Preparation	
Remove all loose paint, mill scale, and rust. The surface to be coated must be dimensionally stable, dry, clean, and free of oil, grease, and other foreign materials. For use as a primer coat apply 3.0 to 4.0 mils dry. (5.8 to 7.8 mils wet). For use as a barrier coat, apply 2.0 to 3.0 mils dry. (3.8 to 5.8 mils wet). WARNING! If you scrape, sand, or remove old paint, you may release lead dust or fumes. LEAD IS TOXIC. EXPOSURE TO LEAD DUST OR FUMES CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a properly fitted NIOSH-approved respirator and prevent skin contact to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the USEPA National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead. In Canada contact a regional Health Canada office. Follow these instructions to control exposure to other hazardous substances that may be released during surface preparation.	
PREVIOUSLY PAINTED SURFACES: Old coatings should be tested for adhesion of the existing system and lifting by the proposed topcoat. FERROUS METAL OR ALUMINUM: The minimum surface preparation for these substrates is SSPC-SP1 Hand Tool Cleaning or SSPC-SP3 Power Tool Cleaning. Improved service life may be obtained by the use of SSPC-SP6 (NACE Number 3) Commercial Blast Cleaning. Service life of coating is in direct proportion to surface preparation. The surface to be coated must be clean, dry, and well prepared to receive the coating. HPC Systems in Detail Brochure (H13095) COATING SYSTEMS: 240-HD, 244-HD. For specific recommendations, see your PITTSBURGH® Paints dealer or call 1-800-441-9695.	
Recommended Primers	Application Information
none	Self priming on properly prepared surfaces.
Recommended Spread Rates:	Wet Mills: 5.6 minimum to 7.4 maximum Wet Microns: 142.3 minimum to 188.0 maximum Dry Mills: 3.0 minimum to 4.0 maximum Dry Microns: 76.2 minimum to 101.6 maximum
Application Equipment: Changes in application equipment, pressures and/or tip sizes may be required depending on ambient temperatures and application conditions. Spray equipment must be handled with due care and in accordance with manufacturer's recommendation. High-pressure injection of coatings into the skin by airless equipment may cause serious injury. Conventional Spray: Fluid Nozzle: DeVilbiss gun, with 704 or 777 air cap with E tip and needle, or comparable equipment. Airatomization Pressure: 55 - 70 Fluid Pressure. Can not specify, dependent on numerous factors. Airless Spray: Pressure 1800 psi, tip 0.015" - 0.018" Brush: High Quality Natural Bristle Brush Roller: Not Recommended	
Thinning: Thinning is not required, though the product may be thinned 5% by volume with acetone to improve flow and leveling.	
Directions for Use	
Mix thoroughly to suspend all pigment. Conventional air or airless spray application is recommended. Explosion-proof equipment must be used when coating with these materials in confined areas. Keep containers closed and away from heat, sparks, and flames when not in use. USE WITH ADEQUATE VENTILATION. KEEP OUT OF REACH OF CHILDREN. Read all label and Material Safety Data Sheet (MSDS) information prior to use. MSDS are available through our website or by calling 1-800-441-9695.	
Permissible temperatures during application: Material: 40 to 90°F 5 to 32°C Ambient: 40 to 100°F 5 to 38°C Substrate: 40 to 130°F 5 to 54°C	
Packaging: 1-Gallon (3.78L) 5-Gallon (18.9L)	
<small>Not all products are available in all sizes. All containers are not full-filled.</small>	
<small>PPGAF believes the technical data presented is currently accurate; however, no guarantee of accuracy, comprehensiveness, or performance is given or implied. Improvements in coatings technology may cause future technical data to vary from what is in this bulletin. For complete, up-to-date technical information, visit our web site at 1-800-441-9695.</small>	
	PPG Industries, Inc. Technical Services Architect/Specifier PPG Architectural Finishes PPG Canada, Inc. One PPG Place 1-800-441-9695 1-888-PPG-IDEA 400 S. 13th Street Architectural Coatings Pittsburgh, PA 15272 1-888-807-5123 fax Louisville, KY 40203 4 Kenview Blvd www.ppgppc.com Brampton, ON L6T 8E4

MANUFACTURER/PRODUCT(S):

- PPG PITTSBURGH PAINTS - 97-680 MULTIPRIME
- OPEN



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 4 – METAL APPURTENANCE PRIMERS – RUST INHIBITIVE:

SPECIFICATION:

Metal appurtenance rust inhibitive primers shall meet/exceed the following performance specifications:

- Metal Appurtenances shall mean exposed metal items that are not enclosed in vaults or exposed to a sewer gas environment including, but not limited to: valves, valve boxes, backflow device units, master meter units, fire hydrants, and exposed piping.
- Federal specification crossover: TT-P-636; TT-P-654.
- Shall be a single component primer.
- Shall be applied per manufacturer's recommendations.



7-852, 7-858 Series

HPC/Industrial Maintenance	Int/Ext Rust Inhibitive Steel Primers
Generic Type	Tinting and Base Information
Alkyd Resin	DO NOT TINT.
General Description	7-852 White 7-858 Red
Industrial Enamel primers are for industrial use and may be used on properly prepared interior or exterior ferrous metal surfaces. Rust inhibitive formulation to keep corrosion in check. For Professional Use Only, Not Intended for Household Use.	
Recommended Uses	
Ferrous Metal	
Features / Benefits	
Rust inhibitive formulation. Durable interior/exterior primer Performance Offset to Federal Standards TT-P-636, TT-P-654, TT-P-1385	
Product Data	
Gloss:	Flat
VOC*:	2.75 lbs/gal 330.00 g/L
Coverage:	390 to 535 sq ft/gal (36 to 49 sq. m/3.78L)
<i>Note: Does not include loss due to varying application method, surface porosity, or mixing</i>	
DFT:	1.7 minimum to 2.3 maximum
Weight/Gallon*:	11.6 lbs. (5.3 kg) +/- 0.2 lbs. (91 g)
Volume Solids*:	56.5% +/- 2%
Weight Solids*:	75.7% +/- 2%
Clean-up:	Paint Thinner
<i>Results will vary by color, tinting and other additives. *Product data calculated on 7-852</i>	
Drying Time:	
To Touch:	6 to 8 hours
To Handle:	16 hours
To Recoat:	Overnight
Dry Time @77°F (25°C); 50% relative humidity	
Flash Point:	106°F, (41.1°C)
Limitations of Use	
Apply when air and surface temperatures are above 50°F (10°C), and surface temperature is at least 5°F (3°C) above the dew point. Avoid exterior application late in the day when dew and condensation are likely to form or if rain is threatening. Not recommended for immersion service. Do not leave untopcoated for an extended period of time. Allow primer to dry 24 hours before applying waterbased topcoats. Drying times listed may vary depending on temperature, humidity and air movement. DANGER: Rags, steel wool or waste soaked with this product may spontaneously catch fire if improperly discarded. Immediately after use, place rags, steel wool or waste in a sealed water-filled metal container. Refer to www.pittsburghpaints.com, Spontaneous Combustion Advisory for additional information.	

D8

Created Date: 10/03/05 (JJS)
Last Revised Date: 08/01/22 (JJP)

7-852, 7-858 Series

HPC/Industrial Maintenance Int/Ext Rust Inhibitive Steel Primers

General Surface Preparation

The surface to be coated must be dimensionally stable, dry, clean, and free of oil, grease, release agents, curing compounds, and other foreign materials. The service life of the coating is directly related to the surface preparation. WARNING: If you scrape, sand, or remove old paint, you may release lead dust or fumes. LEAD IS TOXIC. EXPOSURE TO LEAD DUST OR FUMES CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a properly fitted NIOSH-approved respirator and prevent skin contact to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the USEPA National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead. In Canada contact a regional Health Canada office. Follow these instructions to control exposure to other hazardous substances that may be released during surface preparation.

FERROUS METAL: The recommended surface preparation is Commercial Blast Clean per SSPC-SP6. The minimum surface preparation is Hand Tool or Power Tool Clean per SSPC-SP2 or SP3.

Recommended Primers

Application Information

Recommended Spread Rates:

Wet Mils :	3.0 minimum to	4.1 maximum
Wet Microns :	76.2 minimum to	104.0 maximum
Dry Mils :	1.7 minimum to	2.3 maximum
Dry Microns :	43.2 minimum to	58.4 maximum

Application Equipment: Changes in application equipment, pressures and/or tip sizes may be required depending on ambient temperatures and application conditions. Spray equipment must be handled with due care and in accordance with manufacturer's recommendation. High-pressure injection of coatings into the skin by airless equipment may cause serious injury.

Conventional Spray: Graco 700 Gun - 217-757 equipment. Fluid Pressure: 20 lbs. Atomizing Pressure: 35-40 lbs.

Airless Spray: Pressure 2000 psi, tip 0.015" - 0.021"

Brush: China or Natural Bristle Brush

Roller: 3/8" - 3/4" nap roller cover.

Thinning:

DO NOT THIN.

Directions for Use

Stir thoroughly before using and frequently during use. USE WITH ADEQUATE VENTILATION. KEEP OUT OF REACH OF CHILDREN. Explosion-proof equipment must be used when coating with these materials in confined areas. Keep containers closed and away from heat, sparks, and flames when not in use. Read all label and Material Safety Data Sheet (MSDS) information prior to use. MSDS are available through our website or by calling 1-800-441-9695.

Permissible temperatures during application:

Material:	60 to 90°F	16 to 32°C
Ambient:	50 to 100°F	10 to 38°C
Substrate:	50 to 125°F	10 to 52°C

Packaging: 1-Gallon (3.78L) 5-Gallon (18.9L)

Not all products are available in all sizes. All containers are not full-filled.

PPGAF believes the technical data presented is currently accurate; however, no guarantee of accuracy, comprehensiveness, or performance is given or implied. Improvements in coatings technology may cause future technical data to vary from what is in this bulletin. For complete, up-to-date technical information, visit our web site or call 1-800-441-9695.



PPG Industries, Inc.
Architectural Coatings
One PPG Place
Pittsburgh, PA 15272
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Technical Services
1-800-441-9695
1-888-807-5123 fax

Architect/Specifier
PPG Architectural Finishes
400 S. 13th Street
Louisville, KY 40203

PPG Canada, Inc.
Architectural Coatings
4 Kanview Blvd
Brampton, ON L6T 5E4

MANUFACTURER/PRODUCT(S):

- PPG PITTSBURGH PAINTS - 7-858
- OPEN



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 5 – GROUT – CHEMICALLY ACTIVATED ACRYLIC GEL:

SPECIFICATION/MATERIAL:

Chemically activated acrylic gel (grout) shall meet/exceed the following performance specifications:

- Shall be a water solution of acrylic resin.
- Shall form an elastic and cohesive gel with the addition of a catalyst which stops flowing water.
- Gel set time shall be controllable from a few seconds to several hours even in flowing water.
- Shall have approximately the same viscosity as water (1 to 2 centipoises) in solution.
- When catalyzed, shall produce a gel which is non-toxic.
- Shall have a tracer dye added if colorless.
- Shall be mixed and applied per manufacturer's recommendations.

Catalyst:

- AV-101 Catalyst T+ or Chemical grout monomer, Triethanolamine (TEA) catalyst & water.
- AV-103 Catalyst SP or Sodium Persulfate (SP) initiator & water.

Possible Additives:

- AV-105 Ethylene Glycol: Protects against freezing.
- AV-257 Icoset: Increases compressive and tensile strength.
- AC 50W: Root Inhibitor.
- Dye: Tracer Dyes

RESTRICTIONS:

- For sealing existing or rehabilitated, in-service gravity sewers and manholes including:
 - Sewer joint sealing.
 - Sewer laterals.
 - Manhole waterproofing.
 - Lateral connections to cured in-place liners.
- Not for potable water applications.
- For soil stabilization.
- Shall not be used after 6-12 months from manufacturer date depending on manufacturer.



MANUFACTURER/PRODUCT(S):

- **AVANTI INT. - AV-118 DURI-FLEX**
- **DE NEEF CONST. CHEMICALS INC. - AC-400 ACRYLATE GROUT**
- **OPEN**

Created Date: 01/12/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 5.1 – GROUT – CHEMICALLY ACTIVATED ACRYLAMIDE GEL:

SPECIFICATION/MATERIAL:

Chemically activated acrylamide gel (grout) shall meet/exceed the following performance specifications:

- Shall be a water solution of three or more chemicals which is a blend of Acrylamide Monomer (AM) and Methylenebisacrylamide (MBA).
- Shall form an elastic and cohesive gel with the addition of catalysts which stops flowing water.
- Gel set time shall be controllable from a few seconds to several hours even in flowing water.
- Shall have approximately the same viscosity as water (1 to 2 centipoises) in solution.
- Shall have a tracer dye added.
- Shall be mixed and applied per manufacturer's recommendations.

Catalyst:

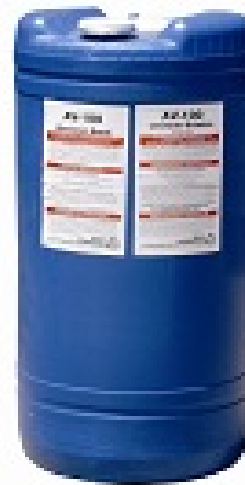
- AV-101 Catalyst T+.
- AV-102 Catalyst AP.

Possible Additives:

- AV-105 Ethylene Glycol: Protects against freezing.
- AV-257 Icoset: Increases compressive and tensile strength.
- AC 50W: Root Inhibitor.
- Dye: Tracer Dyes

RESTRICTIONS:

- For sealing existing or rehabilitated, in-service gravity sewers and manholes including:
 - Sewer joint sealing.
 - Sewer laterals.
 - Manhole waterproofing.
 - Lateral connections to cured in-place liners.
- Not for potable water applications.
- For soil stabilization.
- Shall not be used after 12 months from manufacturer's date.



MANUFACTURER/PRODUCT(S):

- **AVANTI INT. - AV-100 CHEMICAL GROUT (LIQUID)**
- **OPEN**

Created Date: 01/24/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 5.2 – GROUT – WATER ACTIVATED POLYMER SOLUTION – FOAM:

SPECIFICATION:

Water activated polymer solution which cures when reacted with water (grout) shall meet/exceed the following performance specifications:

- Shall prevent water infiltration unto sub-grade structures and pipes.
- Shall be either hydrophilic or hydrophobic polyurethane.
- Shall form a strong film, gel, or foam of polyurethane, with the addition of or contact with water, which stops flowing water.
- Shall have an approximate viscosity of 120-2500 centipoises in solution.
- Shall be mixed and applied per manufacturer's recommendations.
- Shall be supplied in cartridges for use with or without a caulking gun.

RESTRICTIONS:

- For sealing existing or rehabilitated, in-service gravity sewers and manholes including:
 - Large cracks or joints in concrete.
 - Precast structures.
 - Manhole waterproofing.
 - Manhole connections or pipe penetrations.



MANUFACTURER/PRODUCT(S):

- **AVANTI INT. - AV-202 MULTI-GROUT**
- **DE NEEF CONST. CHEMICALS, INC. - HOT SHOT CARTRIDGES**
- **OPEN**

Created Date: 04/03/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 6 – PIPE JOINT/GASKET LUBRICANTS:

SPECIFICATION:

Pipe gasket lubricants shall meet/exceed the following performance specifications:

- ANSI/AWWA C111/A21.11, Rubber-gasket joints for ductile-iron pressure pipe and fittings.
- Shall be suitable for lubricating the parts of the joint for assembly.
- Shall be nontoxic.
- Shall not support the growth of bacteria.
- Shall have no deteriorating effects on the gasket material.
- Shall not impart taste or odor to the water in the pipe.
- Containers shall be labeled with the trade name of the lubricant.
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Affidavit of compliance to this specification shall be available upon request.



MANUFACTURER/PRODUCT(S):

- JTM PRODUCTS/PHOENIX - *EASE-ON PIPE JOINT LUBRICANT*
- J.C. WHITLAM - *BLUE LUBE*
- OPEN

Created Date: 11/04/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 7 – PTFE “TEFLON” THREAD SEALANT TAPE:

SPECIFICATION:

PTFE (polytetrafluoroethylene) “Teflon” thread sealant tape shall meet/exceed the following performance specifications:

- Shall meet MIL-T-27730A specifications.
- Shall be Underwriters Laboratory Listed as noted (UL).
- Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.
- Shall be nontoxic.
- Shall not support the growth of bacteria.
- Shall not impart taste or odor to the water in the pipe.
- Affidavit of compliance to this specification shall be available upon request.

ADDITIONAL REQUIREMENTS:

- **Color**.....White
- **Density**..... Standard .5 - .7
- **Thickness**..... .003" - .0038"
- **Temperature**.....- 450°F to + 500°F
- **Pressure**.....Hard vacuum to 10,000 psi
- **Package**.....Plastic Spool & Shell
- **Width**..... 3/4" or 1"
- **Length per spool**.....260" or 520"



MANUFACTURER/PRODUCT(S):

- **MERCO TAPE CO. - M55**
- **OPEN**

Created Date: 11/21/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 8 – FLEXIBLE JOINT SEALANTS:

SPECIFICATION:

Preformed flexible plastic joint sealant (gaskets) shall meet/exceed the following performance specifications:

- ASTM C-990 standard specification for joints, concrete pipe, manholes and pre-cast box sections.
- Federal Specification SS-S210-A, "Sealing Compound Preformed Plastic For Pipe Joints", Type 1, Rope Form.
- AASHTO M-198 75 1.
- Shall be produced from blends of refined hydrocarbon resins and plasticizing compounds reinforced with inert mineral filler.
- Shall appear as a semi-solid black strip.
- Shall contain no solvents, irritating fumes or obnoxious odors.
- The compound shall not depend on oxidizing, evaporating, or chemical action for its adhesive or cohesive strength.
- Shall be supplied in extruded rope-form of suitable cross-section and of such size as to fill the joint space when manhole sections are stacked.
- Shall be protected by a suitable removable two-piece wrapper.
- Affidavit of compliance to this specification shall be available upon request.



Chemical Composition	TEST METHOD	REQUIRED
Hydrocarbon, % by weight	ASTM D 4-80	50-70
Inert Mineral Filler, % by weight	AASHTO T111	30-50
Volatile Matter, % by weight	ASTM D 6-80	2.0 Max.
Physical Properties*		
Specific gravity, @ 77F.	ASTM D 71-84	1.2-1.35
Ductility at 77F, cm	ASTM D 113-85	5.0 min.
Softening Point, Ring & Ball, @ 77F	ASTM D 36-85	320 min.
Penetration, Cone, @ 77 F, 150 g, 5 sec. In 0.1 mm	ASTM D 217-82	50-120
Flash Point, Cleveland Open Cup, F	ASTM D 92-85	600 min.
Fire Point, Cleveland Open Cup, F	ASTM D 92-85	625 min.
Compression Test @ 77° F lb/in ²	ASTM C 972	100 max.
Compression Test @ 32° F lb/in ²	ASTM D 972	200 max.
Sag or Flow Resistance		
Sag or flow resistance, in vertical position for 5 days @ 135 F	FS SS-S-210A sect. 4.5.3/ASTM C 990	No sagging
Chemical Resistance		
30 days Immersion @ room temperature in each of the following:	FS SS-S-210A sect. 3.6/ASTM C 990	
5% Solution of Caustic Potash		No visible Deterioration
5% Solution of Hydrochloric Acid		No visible Deterioration
5% Solution of Sulfuric Acid		No visible Deterioration
Saturated Hydrogen Sulfide Solution		No visible Deterioration

MANUFACTURER/PRODUCT(S):

- HENRY CO. - RN101 - RAM-NEK
- OPEN

Created Date: 12/28/05 (JJS)
 Last Revised Date: 08/01/22 (JJP)



Material Specifications
 Pinellas County
 14 South Ft. Harrison Ave.
 Clearwater, FL 33756

Material Specifications

M 8.1 – FLEXIBLE BUTYL JOINT SEALANTS:

SPECIFICATION:

Preformed flexible butyl plastic joint sealant (gaskets) shall meet/exceed the following performance specifications:

- ASTM C-990 standard specification for joints, concrete pipe, manholes and pre-cast box sections.
- Federal Specification SS-S210-A, "Sealing Compound Preformed Plastic For Pipe Joints", Type 1, Rope Form.
- AASHTO M-198B.
- Shall be produced from special blend of butyl and asphalt.
- Shall appear as a extruded black fluid coil.
- Shall be protected by a suitable removable two-piece wrapper.
- Affidavit of compliance to this specification shall be available upon request.



Chemical Composition	TEST METHOD	REQUIRED
Hydrocarbon, % by weight	ASTM D 4-80	50-70
Inert Mineral Filler, % by weight	AASHTO T111	30-50
Volatile Matter, % by weight	ASTM D 6-80	2.0 Max.
Physical Properties*		
Specific gravity @ 77F.	ASTM D 71-84	1.2-1.35
Ductility at 77F, cm	ASTM D 113-85	5.0 min.
Softening Point, Ring & Ball, @ 77F	ASTM D 36-86	320 min.
Penetration, Cone, @ 77 F, 150 g, 5 sec., in 0.1 mm	ASTM D 217-82	50-120
Flash Point, Cleveland Open Cup, F	ASTM D 92-85	600 min.
Fire Point, Cleveland Open Cup, F	ASTM D 92-85	625 min.
Compression Test @ 77° F lbf/in ²	ASTM C 972	100 max.
Compression Test @ 32° F lbf/in ²	ASTM D 972	200 max.
Sag or Flow Resistance		
Sag or flow resistance, in vertical position for 5 days @ 135 F	FS SS-S-210A sect. 4.5.3/ASTM C 990	No sagging
Chemical Resistance		
30 days immersion @ room temperature in each of the following:	FS SS-S-2120A sect. 3.6/ASTM C 990	
5% Solution of Caustic Potash		No visible Deterioration.
5% Solution of Hydrochloric Acid		No visible Deterioration.
5% Solution of Sulfuric Acid		No visible Deterioration.
Saturated Hydrogen Sulfide Solution		No visible Deterioration.

MANUFACTURER/PRODUCT(S):

- HENRY CO. - BN109 - BUTYL-NEK
- OPEN

Created Date: 11/21/05 (JJS)
 Last Revised Date: 08/01/22 (JJP)



Material Specifications
 Pinellas County
 14 South Ft. Harrison Ave.
 Clearwater, FL 33756

Material Specifications

M 9 – VINYL/PVC ADHESIVE TAPE:

SPECIFICATION:

Vinyl or Polyvinyl Chloride (PVC) adhesive tape shall meet/exceed the following performance specifications:

- **Adhesion to steel:** minimum 17 oz./in. width per ASTM D3330.
- **Tensile strength at break:** minimum 15 oz./in. width per ASTM D 3759.
- **Minimum elongation at break:** 120%: per ASTM D 3759.
- **Minimum backing thickness:** 4.0 mils per ASTM D 3652.
- **Minimum total tape thickness:** 5.0 mils per ASTM D 3652.
- Shall be a minimum width of two inches (2").
- Shall be color coded for type of service.
- Affidavit of compliance to this specification shall be available upon request.

INTENDED USE:

- Installation of polyethylene encasement.
- Attachment of tracer wire.

COLOR-CODE:

- Blue.....Potable Water
- Purple.....Reclaimed Water
- Green.....Sanitary Sewer



MANUFACTURER/PRODUCT(S):

- **3M - VINYL TAPE 471**
- **MERCO TAPE - M804**
- **SHURTAPE - VP 410**
- **OPEN**

Created Date: 12/28/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 9.1 – POLYETHYLENE ADHESIVE TAPE:

SPECIFICATION:

Polyethylene adhesive tape shall meet/exceed the following performance specifications:

- **Adhesion to steel:** minimum 10 oz./in. width per ASTM D3330.
- **Tensile strength at break:** minimum 10 oz./in. width per ASTM D 3759.
- **Elongation at break:** 220%: per ASTM D 3759.
- **Minimum backing thickness:** 3.5 mils per ASTM D 3652.
- **Minimum total tape thickness:** 5.0 mils per ASTM D 3652.
- Shall be a minimum width of two inches (2").
- Shall be color coded for type of service.
- Affidavit of compliance to this specification shall be available upon request.

INTENDED USE:

- Installation of polyethylene encasement.
- Attachment of tracer wire.

COLOR-CODE:

- Blue.....Potable Water.
- Purple.....Reclaimed Water.
- Green.....Sanitary Sewer.



MANUFACTURER/PRODUCT(S):

- 3M - POLYETHYLENE TAPE 483
- OPEN

Created Date: 12/29/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 10 – POLYURETHANE ADHESIVE SEALANT/CAULK:

SPECIFICATION:

High-performance polyurethane adhesive & sealant shall meet/exceed the following performance specifications:

- Shall be a high-performance marine grade polyurethane adhesive sealant.
- Shall have a minimum tensile strength of 600 psi
- Shall have a minimum 900% elongation before breaking.
- Shall be suitable for above and below water applications.
- Shall not shrink.
- Shall create a permanent bond with fiberglass and gel coat material.
- Affidavit of compliance to this specification shall be available upon request.

INTENDED USE:

- Installation of inside drop bowl.
- Sealing of bowl to manhole wall.



MANUFACTURER/PRODUCT(S):

- 3M - MARINE ADHESIVE SEALANT 5200
- 3M - MARINE ADHESIVE SEALANT 5200 FAST CURE

Created Date: 06/01/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

M 11 – PROTECTO 401 TOUCH-UP KIT:

SPECIFICATION:

Protecto 401 touch-up kit shall meet/exceed the following performance specifications:

- Shall be a brushable novalac epoxy designed for sealing cut ends and repairs when pipes are lined with Protecto 401 Ceramic Epoxy.
- Shall be applied per manufacturer's procedure.
- Affidavit of compliance to this specification shall be available upon request.

SURFACE PREPARATION:

- The surface preparation shall be equal to the specifications for the project or as outlined in the touch-up procedure.
- Shall not be applied over wet or frozen surfaces.

APPLICATION DATA:

- Application by brush, roller or airless sprayer.
- Thinning or clean up with Methyl Ethyl Ketone.
- Dry film thickness shall be as outlined in specifications.
- Pipe and fitting can be installed while still wet.

INTENDED USE:

- Sealing of cut ends of Protecto 401 lined pipe.
- Repairing field damaged areas of Protecto 401 lined pipe and fittings.

CONTENTS OF KIT:

- Protecto joint compound part A.
- Protecto joint compound part B.
- Paint brush.
- Stir stick.
- Sand paper.
- Directions.



MANUFACTURER:

- **INDURON COATINGS INC. - PROTECTO 401**

Created Date: 06/15/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

**SECTION N:
CONCRETE**

Created Date: 12/03/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section N: Concrete

- N 1 Concrete – Pre-cast Thrust Blocks
- N 2 Cement – Calcium Aluminate
- N 3 Cement – Calcium Aluminate Lining System – Sanitary Sewer
- N 4 Cement – Hydraulic Cement
- N 5 Concrete – High Early Strength Concrete Mix

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

N 1 – CONCRETE – PRE-CAST THRUST BLOCKS:

SPECIFICATION:

Concrete thrust blocks shall meet/exceed the following performance specifications:

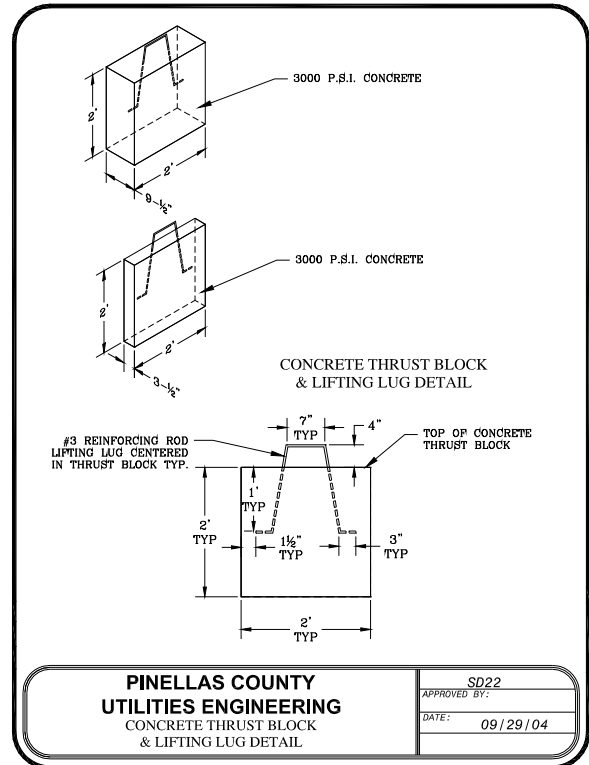
- Must conform to the standard detail.

ADDITIONAL REQUIREMENTS:

- Thrust blocks shall be palletized and banded.

RESTRICTIONS:

- For connections, repairs and adjustments to existing, in-service pipelines only.



MANUFACTURER:

- OPEN

Created Date: 12/04/04 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

N 2 – CEMENT – CALCIUM ALUMINATE:

SPECIFICATION:

Calcium aluminate cement shall meet/exceed the following performance specifications:

- Made with 100% fused calcium aluminate aggregate and calcium aluminate cement.
- Compressive strength per ASTM C109 shall meet the following minimums:
 - 1 hour.....400 psi
 - 24 hours.....2000 psi
 - 28 days.....9000 psi
- Shall have a minimum bond of 2000 psi per ASTM C882.
- Shall have no shrinkage @ 95% R.H. per ASTM C596.

APPLICATION:

- For use where harsh hydrogen sulfide conditions exist in sanitary sewers.
- For construction or reconstruction of the bench and invert in concrete, masonry, or inert (such as fiberglass) lined manholes, wet wells and lift stations.



MANUFACTURER/PRODUCT(S):

- **STRONG SEAL - BENCH MIX**
- **OPEN**

Created Date: 06/24/05 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

N 3 – CEMENT – CALCIUM ALUMINATE LINING SYSTEM – SANITARY SEWER:

SPECIFICATION:

Calcium aluminate cement lining system shall meet/exceed the following performance specifications:

- Lining material shall provide a corrosion resistant liner to prevent any deterioration of concrete surfaces from hydrogen sulfide and other corrosive gases/acids produced by wastewater and to prevent infiltration.
- Shall be 100% calcium aluminate cement with 100% calcium aluminate aggregate.
- Manufacturer shall warrant material and workmanship for a minimum period of ten (10) years.
- Shall be designed to withstand long-term exposure to a bacterially corrosive hydrogen sulfide environment that may be expected to produce a pH of 1 on normal Portland Cement concrete or typical brick and mortar surfaces.
- Mortar furnished under this specification shall be a pre-packaged mortar, including all cement, aggregate, and any required admixtures of fibers.
- It is the intent of this specification that the contractor only be required to add the proper amount of potable water so as to produce a mortar suitable for pneumatic application.
- Typical package weights shall not be less than 50 pounds.
- To ensure total unit responsibility, all materials and installation shall be furnished by, and coordinated with, one supplier/manufacturer.
- **Use of this product is restricted to rehabilitation of existing structures.**
- The chemical composition of the cement portion as well as the aggregates of the mortar mix shall be as follows:

Chemical analysis main constituents			
Al ₂ O ₃	CaO	FeO+Fe ₂ O ₃	SiO ₂
41% - 46%	33% - 38%	8% - 13%	4% - 9%

- The design properties of the mortar mix shall be as follows:

MINIMUM PHYSICAL/ MATERIAL PROPERTIES

	24 HRS	7 DAYS	28 DAYS
ASTM C 109 Compressive Strength, psi	>5,500	>7,000	>8,000
ASTM C 293 Flexural Strength, psi	>1,300	>1,400	>1,600
ASTM C 596 Shrinkage at 90% Humidity, %	< 0.04	< 0.06	< 0.08
ASTM C 666 Freeze-Thaw After 300 Cycles		No Damage	
ASTM C 496 Splitting Tensile Strength		> 900 psi	
ASTM C 882 Bond Strength by Slant Shear		> 2,300 psi at 28 days	
ASTM C 457 Air Void Content (7 Days)		2-4%	
ASTM C 642 Specific Gravity/Absorption Test (7 Days)		3-5%	
Static Modulus of Elasticity (24 hrs)		7.1 x 10 ⁶ psi	



MANUFACTURER/PRODUCT(S):

- **KERNEOS ALUMINATE TECHNOLOGIES - SEWPERCOAT PG**
- **OPEN**

Created Date: 02/14/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

N 4 – CEMENT – HYDRAULIC CEMENT:

SPECIFICATION:

Cement-based hydraulic cement shall meet/exceed the following performance specifications:

- Shall be used above or below grade, interior or exterior.
- Shall not shrink.
- Shall stop seeping or flowing water in concrete and masonry structures.
- Hydraulic cement furnished under this specification shall be a pre-packaged product, including all cement and any required admixtures.
- It is the intent of this specification that the contractor only be required to add the proper amount of potable water so as to produce a mortar suitable for application.
- **Coverage:** One pound shall fill a minimum of 15 cubic inches.
- **Packaging:** 50 lb. pail.
- **Shelf life:** One year from date of manufacture.

TECHNICAL DATA:

- Shall have a minimum compressive strength of ASTM C109:
 - 24 hours.....1800 psi
 - 48 hours.....3500 psi
- Shall have a minimum tensile strength of ASTM C307:
 - 24 hours.....200 psi
 - 28 days.....360 psi

APPLICATION:

- For use where harsh hydrogen sulfide conditions exist in sanitary sewers or other structures to stop seepage and flowing water.



MANUFACTURER/PRODUCT(S):

- **PROSPEC / BONSAI - INSTANT HYDRAULIC CEMENT**
- **OPEN**

Created Date: 02/17/06 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

N 5 – CONCRETE – HIGH EARLY STRENGTH CONCRETE MIX:

SPECIFICATION:

High early strength concrete mix shall meet/exceed the following performance specifications:

- Shall be used above or below grade, interior or exterior.
- High early concrete mix furnished under this specification shall be a pre-packaged product, including all cement and any required admixtures.
- It is the intent of this specification that the contractor only be required to add the proper amount of clean potable water so as to produce a concrete mix suitable for application.
- **Coverage:** A 60 lb bag yields approximately 0.45 cu ft. An 80 lb bag yields approximately 0.60 cu ft.
- **Packaging:** 60 & 80 lb. bags.
- **Shelf life:** One year from date of manufacture.

TECHNICAL DATA:

- Shall have a minimum compressive strength of ASTM C387:
 - 1 day.....1500 psi
 - 3 days.....2500 psi
 - 7 days.....3500 psi
 - 28 days.....5000 psi
- Slump range: 2" - 3".

Use of this product is restricted to small non-structural concrete repairs where truck mix is not practical and should be limited to:

- Sidewalk panel replacement.
- Curb and gutter section replacement.
- Valve box pads.



MANUFACTURER/PRODUCT(S):

- **QUIKRETE - QUIKRETE 5000 CONCRETE MIX (NO. 1007)**
- **OPEN**

Created Date: 07/24/07 (JJS)
Last Revised Date: 08/01/22 (JJP)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

**SECTION 0:
STRUCTURES**

Created Date: 09/21/05 (JJS)
Last Revised Date: 11/22/10 (JJS)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

Section O: Structures

- O 1 Fiberglass Manholes – Sanitary Sewer
- O 2 Fiberglass Manhole Liners – Sanitary Sewer
- O 3 Fiberglass Wetwell Liners – Sanitary Sewer
- O 4 Polypropylene and/or Fiberglass Reinforced Plastic Concrete Protective Liners – Sanitary Sewer
- O 4.1 Polypropylene/Fiberglass Reinforced Plastic Manhole Base Liners – Sanitary Sewer
- O 5 High Density Polyethylene Concrete Protective Liners – Sanitary Sewer
- O 6 Geopolymer Liner System – Sanitary Sewer
- O 7 Multi-Component Urethane/Epoxy, Polyurea Liner System – Sanitary Sewer
- O 8 Polymorphic Resin Liner System – Sanitary Sewer

Created Date: 09/21/05 (JJS)
Last Revised Date: 11/22/10 (JJS)



Material Specifications
Pinellas County
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Clearwater, FL 33756

Material Specifications

O 1 – FIBERGLASS MANHOLES – SANITARY SEWER:

SPECIFICATION:

Fiberglass manholes shall meet/exceed the following performance specifications:

- Shall be manufactured from commercial grade polyester resin or other suitable polyester or vinyl ester resins with fiberglass reinforcements specifically manufactured for use with sewage.
- Shall be a one piece unit.
- Shall have no vertical seams.
- Shall meet ASTM D3753, Fiberglass-Reinforced Polyester Manholes and Wetwells.
- Reinforcing material shall be Grade “E” type glass in the form of continuous roving and chop roving, having a coupling agent that will provide a suitable bond between the glass reinforcement and the resin.
- The inter surface shall be a resin-rich layer of 0.010 to 0.020 inches thick.
- The concentric cone section shall be affixed to the barrel section at the factory with resin-glass reinforced joint resulting in a one piece unit.
- The manhole wall thickness shall not be less than 0.50 (1/2) inches.
- Shall provide an area for which a grade ring or brick can be installed to accept a typical metal ring & cover and have strength to support a traffic load without damage to the manhole.
- As a UV inhibitor the resin on the exterior surface shall have a color pigment added for a minimum thickness of .125 (1/8) inches.
- Stub out connections shall be made by using a fiberglass reinforced pipe stub out as a sealing surface for an approved manhole connection boot.
- Invert and bench area can be either a non-corrosive material completely enclosed in a minimum 1/4 inch layer of fiberglass chop or concrete coated with an approved coating.
- Shall have a minimum dynamic-load rating of 16,000 lbs. (AASHTO H-20) when tested in accordance with ASTM D3753 and shall not leak, crack or suffer other damage when load tested to 40,000 lbs.

- Shall meet/exceed NBS PS 15-69 physical properties as listed in table 1, of that standard:
 - Ultimate Tensile Strength.....15,000 psi
 - Flexural Strength.....22,000 psi
 - Flexural Modulus or elasticity.....1,000,000 psi
- Shall have a concrete base, 8” thick when less than 12’ deep and 12” thick when more than 12’ deep. The base shall extend a minimum of 1 foot from the outside wall of the manhole.
- The base shall be sized to act as an anti-flotation device for the entire unit.
- Shall be sized per construction drawings.
- Affidavit of compliance to this specification shall be available upon request.

IDENTIFICATION:

- Each manhole shall be marked inside and out with the following information:
 - Manufacturer's name and trademark
 - Manufacturer's factory location
 - Manufacturer's serial number or date code
 - Total length or nominal diameter



MANUFACTURER:

- **CONTAINMENT SOLUTIONS, INC.**
- **L.F. MFG. INC.**
- **OPEN**

Created Date: 09/21/05 (JJS)
Last Revised Date: 10/12/05 (JJS)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

O 2 – FIBERGLASS MANHOLE LINERS – SANITARY SEWER:

SPECIFICATION:

Fiberglass manhole liners shall meet/exceed the following performance specifications:

- Shall be manufactured from commercial grade polyester resin or other suitable polyester or vinyl ester resins with fiberglass reinforcements specifically manufactured for use with sewage.
- Shall be a one piece unit.
- Shall have no vertical seams.
- Shall meet ASTM D3753, Fiberglass Reinforced Polyester Manholes and Wetwells.
- Reinforcing material shall be Grade "E" type glass in the form of continuous roving and chop roving, having a coupling agent that will provide a suitable bond between the glass reinforcement and the resin.
- The inter surface shall be a resin-rich layer of 0.010 to 0.020 inches thick.
- The concentric cone section shall be affixed to the barrel section at the factory with resin-glass reinforced joint resulting in a one piece unit.
- The liner wall thickness shall not be less than 0.50 (1/2) inches.
- Shall provide an area for which a grade ring or brick can be installed to accept a typical metal ring & cover and have strength to support a traffic load without damage to the manhole.
- As a UV inhibitor the resin on the exterior surface shall have a color pigment added for a minimum thickness of 0.125 (1/8) inches.
- Shall have a minimum dynamic-load rating of 16,000 lbs. (AASHTO H-20) when tested in accordance with ASTM D3753 and shall not leak, crack or suffer other damage when load tested to 40,000 lbs.
- Shall meet/exceed NBS PS 15-69 physical properties as listed in table 1, of that standard:
 - Ultimate Tensile Strength.....15,000 psi
 - Flexural Strength.....22,000 psi
 - Flexural Modulus or elasticity.....1,000,000 psi
- Shall be sized per construction drawings.

- Pipe entering through the manhole wall with an invert equal to or higher than the bench will be sealed all around the interior wall by use of a fiberglass patch kit. There will be no exposed mortar above bench or fillet level.
- Affidavit of compliance to this specification shall be available upon request.

IDENTIFICATION:

- Each manhole liner shall be marked inside and out with the following information:
 - Manufacturer's name and trademark
 - Manufacturer's factory location
 - Manufacturer's serial number or date code
 - Total length or nominal diameter



MANUFACTURER:

- **CONTAINMENT SOLUTIONS, INC.**
- **L.F. MFG. INC.**
- **OPEN**

Created Date: 09/21/05 (JJS)
Last Revised Date: 10/12/05 (JJS)



Material Specifications
Pinellas County
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Clearwater, FL 33756

Material Specifications

O 3 – FIBERGLASS WETWELL LINERS – SANITARY SEWER:

SPECIFICATION:

Fiberglass wetwell liners shall meet/exceed the following performance specifications:

- Shall be manufactured from commercial grade polyester resin or other suitable polyester or vinyl ester resins with fiberglass reinforcements specifically manufactured for use with sewage.
- Shall be a one piece unit.
- The wetwell liner pipe shall have plain ends and have no vertical seams.
- Fiberglass tops and hatch openings shall be provided.
- Shall meet ASTM D3753, Fiberglass-Reinforced Polyester Manholes and Wetwells.
- Reinforcing material shall be Grade “E” type glass in the form of continuous roving and chop roving, having a coupling agent that will provide a suitable bond between the glass reinforcement and the resin.
- The inter surface shall be a resin-rich layer of 0.010 to 0.020 inches thick.
- The liner wall thickness shall not be less than 0.625 (5/8) inches.
- As a UV inhibitor the resin on the exterior surface shall have a color pigment added for a minimum thickness of 0.125 (1/8) inches.
- Shall have a minimum dynamic-load rating of 16,000 lbs. (AASHTO H-20) when tested in accordance with ASTM D3753 and shall not leak, crack or suffer other damage when load tested to 40,000 lbs.
- Shall meet/exceed NBS PS 15-69 physical properties as listed in table 1, of that standard:
 - Ultimate Tensile Strength.....15,000 psi
 - Flexural Strength.....22,000 psi
 - Flexural Modulus or elasticity.....1,000,000 psi
- Shall be sized per construction drawings.
- Pipe entering through the wetwell wall with an invert equal to or higher than the bench will be sealed all around the interior wall by use of a fiberglass patch kit.

- Affidavit of compliance to this specification shall be available upon request.

IDENTIFICATION:

- Each wetwell liner shall be marked inside and out with the following information:
 - Manufacturer's name and trademark
 - Manufacturer's factory location
 - Manufacturer's serial number or date code
 - Total length or nominal diameter



MANUFACTURER:

- **CONTAINMENT SOLUTIONS, INC.**
- **L.F. MFG. INC.**
- **OPEN**

Created Date: 9/22/05 (JJS)
Last Revised Date: 10/12/05 (JJS)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

O 4 – POLYPROPYLENE AND/OR FIBERGLASS REINFORCED PLASTIC CONCRETE PROTECTIVE LINERS – SANITARY SEWER:

SPECIFICATION:

Polypropylene (PP) and/or fiberglass reinforced plastic (FRP) concrete protective manhole and wetwell liners shall meet/exceed the following performance specifications:

- Shall be manufactured from commercial grade polypropylene or plastic polyurethane hybrid polymer composite with fiberglass reinforcements specifically manufactured for use with sewage.
- Shall be a non load-bearing component.
- Shall be cast integrally within monolithic pre-cast concrete structure sections.
- PP liner sections consist of 3 or more segments of equal height and radial length that when welded together will form a section which corresponds to the inside diameter of the concrete structure.
- FRP liner sections shall be prefabricated rigid sections of non-layered homogeneous composite with an aggregate coated and steel spirals/ lattice bonded outer surface to anchor to concrete sections.
- The liner shall have return joint flanges correspond-ing to pre-cast sections.
- Lined pre-cast section seams shall be sealed with an approved butyl sealant strip or extrusion welding.
- PP/ FRP or PE tops, hatch openings, base and cone sections shall be provided.
- The liner wall thickness shall not be less than:
 - PP and PE.....0.24 inches
 - FRP.....0.16 inches
- Shall be sized per construction drawings.

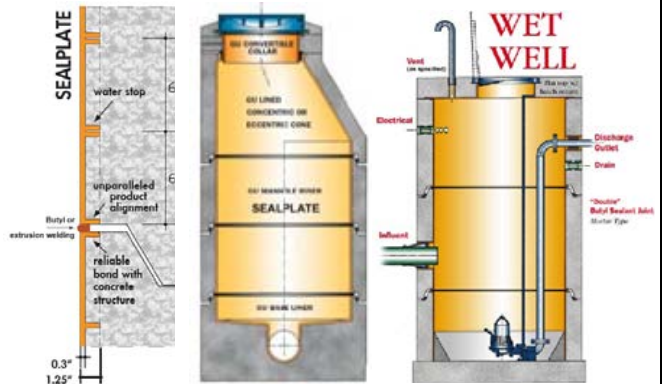
MATERIAL PROPERTIES:

- Polypropylene (PP) - 100% Polypropylene copolymer
- Hardness - 80 Rockwell (R scale)
- Polyethylene (PE)
- Hardness - 80 Rockwell (R scale)
- Fiberglass reinforced Polyurethane composite
- Reinforcing material shall be Grade "E" type glass with a minimum length of fibers being

- 0.625 inches. Content by weight 12% - 15%
- Inert filler content by weight 10% - 13%
- Bonding aggregate, pre-washed, kiln dried, fractured 3/8" gravel. Graded particle size minimum 3/16" and maximum 3/8". Rate of application - 3.5 lbs./sq ft.

PHYSICAL PROPERTIES:

- Density of FRP per ASTM D1622: 1.17g/cm3
- Shore "A" hardness durometer per ASTM D2240- exceeds 90 on scale.
- Shall exhibit no surface degradation from chemicals per ASTM D1308 when exposed to:
 - Nitric Acid.....69%
 - Hydrochloric Acid.....60%
 - Ammonia.....28%
 - Sodium Hydroxide.....5.25%
 - Sulfuric Acid.....50%
 - Sulphuric Acid.....80%
 - Acetone
 - Unleaded Gasoline
 - Turpentine
- Affidavit of compliance to this specification shall be available upon request.



MANUFACTURER:

- **GU FLORIDA INC. - REHAB LINER**
- **OPEN**

Created Date: 02/09/06 (JJS)
Last Revised Date: 05/28/09 (JJS)



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

O 4.1 – POLYPROPYLENE/FIBERGLASS REINFORCED PLASTIC MANHOLE BASE LINERS – SANITARY SEWER:

SPECIFICATION:

Polypropylene (PP)/ fiberglass reinforced plastic (FRP) concrete protective manhole base liners shall meet/exceed the following performance specifications:

- Shall include: full flow channels with side walls to the crown of the pipes; inner bench surfaces to have a non-skid pattern; gasketed, flexible and watertight bell type connectors and/or sleeves for flexible boot connectors of either PP, FRP or PVC to suit specific pipe types, alignments and grades shall be monolithically attached to the manhole base liner channeling and shall extend to the outside profile of the pre-cast concrete structure.
- Shall be a non load-bearing component.
- Shall be integrally cast in pre-cast concrete structures.
- Shall be prefabricated one piece construction of non-layered homogeneous composite with an aggregate coated and steel spirals/ lattice bonded outer surface to anchor to concrete sections.
- The liner thickness shall not be less than 0.12" - 0.20" inches.
- Shall be sized per construction drawings.

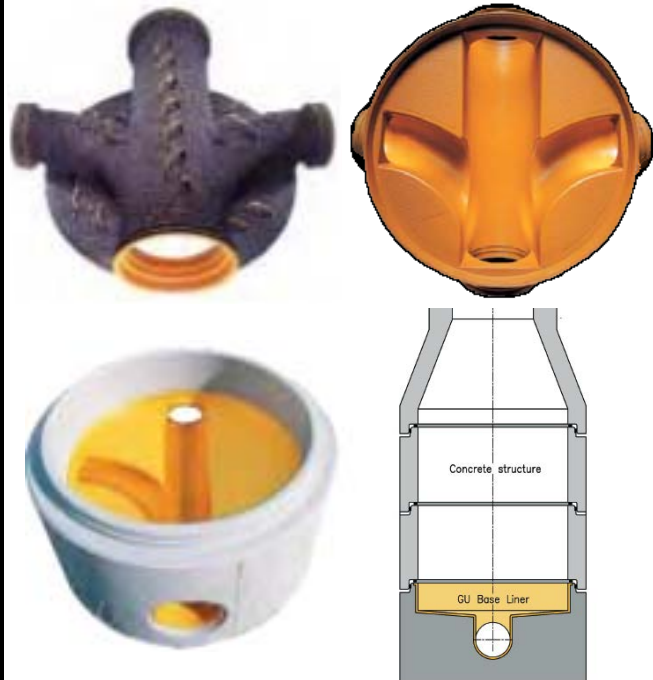
MATERIAL PROPERTIES:

- Polypropylene (PP)- 100% Polypropylene copolymer.
 - Hardness– 80 Rockwell (R scale)
- Fiberglass reinforced Polyurethane composite (FRP)
 - Glass fiber– type E, min fiber length– 0.625" inches. Content by weight– 10% - 12%.
 - Inert filler content by weight– 10% - 13%.
- Bonding aggregate, pre-washed, kiln dried, fractured 3/8" gravel. Graded particle size minimum 3/16" and maximum 3/8". Rate of application: 3.5 lbs./sq ft.

PHYSICAL PROPERTIES:

- Density of FRP per ASTM D1622: 1.17g/cm³
- Shore "A" hardness durometer per ASTM D2240-exceeds 90 on scale.

- Shall exhibit no surface degradation from chemicals per ASTM D1308 when exposed to:
 - Nitric Acid.....69%
 - Hydrochloric Acid.....60%
 - Ammonia.....28%
 - Sodium Hydroxide.....5.25%
 - Sulfuric Acid.....50%
 - Sulphuric Acid.....80%
 - Acetone
 - Unleaded Gasoline
 - Turpentine
- Acetone immersion per ASTM D2152- No attack.
- Affidavit of compliance to this specification shall be available upon request.



MANUFACTURER:

- **GU FLORIDA INC.**
- **OPEN**

Created Date: 05/28/09 (JJS)
Last Revised Date:



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

O 5 – HIGH DENSITY POLYETHYLENE CONCRETE PROTECTIVE LINERS – SANITARY SEWER – PAGE 1 OF 2:

SPECIFICATION:

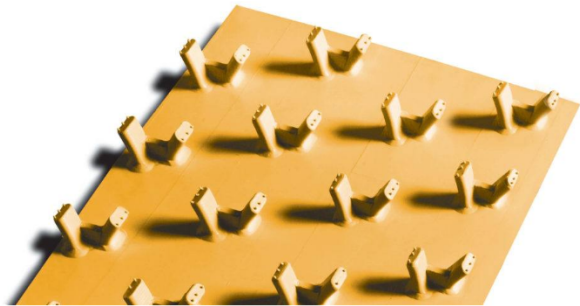
High density polyethylene (HDPE) or polypropylene random copolymer (PP-R) concrete protective manhole and wetwell liners shall meet/exceed the following performance specifications:

- Shall be manufactured from high density polyethylene (HDPE) or polypropylene random copolymer (PP-R) and extruded with a large number of anchoring studs, a minimum of 39/ft², shall have a minimum pull out of 112.5 lbs./anchoring stud.
- Shall provide a waterproof, corrosion resistant liner to prevent any deterioration of concrete surfaces from hydrogen sulfide and other corrosive gases/acids produced by wastewater.
- Shall be a non load-bearing component.
- Shall be integrally cast in new pre-cast concrete structures.
- The liner wall thickness shall not be less than 2mm and the flat sheet, non anchored, used for overlap-ping joints, shall have a minimum thickness of 3mm.
- Shall have good impact resistance, shall be flexible, and have an elongation sufficient to bridge up to a 1/4-inch settling crack, without damage to the lining.
- The interior surfaces to be protected shall include the walls, ceiling, and pipe entries.
- All joints shall be sealed by means of thermal welding performed by Agru certified welder.
- All welding shall be performed in accordance with the published directives and procedures of the manufacturer and by welders certified by the manufacturer.
- Completion of welding will provide a one piece monolithic concrete protective liner system.
- Inspection shall be by visually checking and spark testing all welded joints.
- The liner shall be repairable at any time during the life of the structure.
- Shall be sized per construction drawings.

MATERIAL PROPERTIES:

- The liner system and welding rod shall be manu-

factured from the same resins and meet **the properties on the following page (page 2 of 2).**



MANUFACTURER/PRODUCT(S):

- **AGRU - SURE GRIP LINER**
- **OPEN**

Created Date: 02/13/06 (JJS)
Last Revised Date:



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

O 5 – HIGH DENSITY POLYETHYLENE CONCRETE PROTECTIVE LINERS – SANITARY SEWER – PAGE 2 OF 2:

PRODUCT DATA		Minimum Average Values					
Property	Test Method	80 (2.0)	100 (2.5)	120 (3.0)	160 (4.0)	200 (5.0)	
Thickness (nominal), mil (mm)	ASTM D5199						
Density, g/cc, minimum (black)	ASTM D792, Method B	0.94	0.94	0.94	0.94	0.94	
Density, g/cc, minimum (yellow/other)		0.935	0.935	0.935	0.935	0.935	
Tensile Properties (ave. both directions)	ASTM D6693, Type IV						
Strength @ Yield (min. ave.), lb/in width (N/mm)	2 in/minute	176 (30.8)	220 (38.5)	264 (46)	352 (61)	440 (77)	
Elongation @ Break (min. ave.), %(GL=2.0in)	ASTM D4218	300	300	300	300	300	
Carbon Black Content (range in %)**	ASTM D5596	2 - 3	2 - 3	2 - 3	2 - 3	2 - 3	
Carbon Black Dispersion (Category)**		Only near spherical agglomerates for 10 views: 9 views in Cat. 1 or 2, and 1 view in Cat. 3					
Pull Out Resistance psf (kN/m ²)	ISO 4624	16,500 (800)					
Back Pressure Resistance long term	SKZ-Test 700mm x 700mm	1000 hour at 1.5 bar (21.76 psi)					

AGRU America geomembranes are certified to pass Low Temp. Brittleness via ASTM D746 (-80 °C) and Dimensional Stability via ASTM D1204 (±2% @ 100°C).

Created Date: 02/13/06 (JJS)
Last Revised Date:



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

O 6 – GEOPOLYMER LINER SYSTEM – SANITARY SEWER:

SPECIFICATION:

Geopolymer mortar protective manhole and wetwell liner system shall meet/exceed the following performance specifications:

- Shall be a formulated mortar comprised of aluminosilicate powder and an alkaline activator, forming a durable monolithic inorganic polymer structure when mixed with water.
- Shall provide a waterproof, corrosion resistant liner to prevent any deterioration of concrete surfaces from hydrogen sulfide and other corrosive gases/acids produced by wastewater.
- Can be used to rehabilitate and protect concrete, steel, plastic, or masonry surfaces.
- System shall yield a high early and long-term strength, and restore structural integrity of brick/concrete structures.
- To ensure total unit responsibility, all material and installation shall be furnished by, and coordinated with, one supplier/ manufacturer.
- The monolithic liner shall cover all interior surfaces to be protected and including the walls, ceiling, benches, inverts and pipe entries.
- Application of liner system shall be in strict accordance with manufacturer's recommendation. Minimum thickness of 1/2" (12.7mm) for new or non-corroded infrastructure, and minimum thickness of 1" (25.4mm) for structural restoration of existing infrastructure.



MINIMUM PHYSICAL/MATERIAL PROPERTIES:

COMPRESSIVE STRENGTH (ASTM C109)	>8,000 psi
TENSILE STRENGTH (ASTM C496)	>900 psi
FLEXURAL STRENGTH (ASTM C78)	>800 psi
FLEXURAL STRENGTH (ASTM C293)	N/A
MODULUS OF ELASTICITY (ASTM C469)	5.49 x 10 ⁶ psi
BOND STRENGTH (ASTM C882)	>3,000 psi
FREEZE THAW (ASTM C666)	NO VISIBLE DAMAGE
SHRINKAGE (ASTM C1090)	≤ 0.02%
DRY SHRINKAGE (ASTM C596)	
pH RESISTANCE	1
CURING TEMPERATURE RANGE	

MANUFACTURER/PRODUCT(S):

- **QUADEX - GEOKRETE GEOPOLYMER**
- **OPEN**

Created Date: 08/05/22 (JJP)
Last Revised Date:



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756

Material Specifications

O 7 – MULTI-COMPONENT URETHANE/EPOXY, POLYUREA LINER SYSTEM – SANITARY SEWER:

SPECIFICATION:

Multi-component protective manhole and wetwell liner system shall meet/exceed the following performance specifications:

- Shall be a two component, 100% solids, no VOC's, elastomeric coating.
- Manufacturer shall warrant material and workmanship for a minimum period of ten (10) years.
- Shall provide a waterproof, corrosion resistant liner to prevent any deterioration from hydrogen sulfide and other corrosive gases/acids produced by wastewater.
- Can be used to rehabilitate and protect concrete, steel, fiberglass, or masonry surfaces.
- Shall use a system tested approved high early strength, non-corrosive, cementitious concrete to rebuild the substrate profile and create a surface for coating.
- To ensure total unit responsibility, all material and installation shall be furnished by, and coordinated with, one supplier/ manufacturer.
- The interior surfaces to be protected shall include the walls, ceiling, benches and pipe entries.
- Urethane/epoxy, polyurea liner system shall be a minimum of 90 mils to an unlimited build thickness.

ADHESION RESULTS:

ASTM D-4541 Patti Tester
 Concrete (direct to concrete) >350PSI
 (NO PRIMER):
 - Glue Failure
 Concrete Green Monster Primer.....600 PSI
 - EPOXY Glue Failure
 - 1/8" Concrete on dolly
 Carbon Steel (direct)900 PSI



PRIMER:

TYPICAL PROPERTIES (1:1 BY VOL.):

• TENSILE STRENGTH, PSI	ASTM D638	4500
• COMPRESSIVE STRENGTH, NEAT	ASTM D695	3800
• SHRINKAGE		None
• HARDNESS, SHORE D	ASTM D2240	71
• COLOR		Amber/Gray
• VOC, g/l 2.3		
• TACK FREE @ 72° F		10 min
• FINAL CURE @ 72° F	ASTM D638	20 min
• ELONGATION, %	ASTM D4541	6
• BOND STRENGTH, psi		1200
• SOLIDS CONTENT,%		89
• VISCOSITY, cps, neat		25
• POT LIFE @ 72° F		3 min

LINER:

TYPICAL PHYSICAL PROPERTIES

• TENSILE STRENGTH, PSI	ASTM D412	4500
• ELONGATION, %	ASTM D412	460
• 100% MODULUS	ASTM D412	1460
• 200% MODULUS	ASTM D412	1960
• 300% MODULUS	ASTM D412	2650
• HARDNESS, SHORE A	ASTM D2240	98
• HARDNESS, SHORE D	ASTM D2240	52
• HYDRAULIC PRESSURE, PSI minimum while spraying		2000
• ABER ABRASION, MG LOSS	ASTM D4060	17.0
• CS 17 WHEELS	1KG, 1000 REVS	
• VISCOSITY B-SIDE (75°F)	CPS	650
• VISCOSITY A-SIDE (75°F)	CPS	350
• TEAR STRENGTH, PLI	ASTM D624	570
• BLOCK TEMPERATURE	°F	160
• FLEXIBILITY, 1/8" MANDREL	ASTM D1737	PASS
• FLASH POINT, °F	PENSKY-MARTIN	>200



MANUFACTURER/PRODUCT(S):

- **GML COATINGS - GREEN MONSTER**
- **OPEN**

Created Date: 05/21/09 (JJS)
 Last Revised Date: 11/22/2010 (JJS)



Material Specifications
 Pinellas County
 14 South Ft. Harrison Ave.
 Clearwater, FL 33756

Material Specifications

O 8 – POLYMORPHIC RESIN LINER SYSTEM – SANITARY SEWER:

SPECIFICATION:

Polymorphic resin protective manhole and wetwell liner system shall meet/exceed the following performance specifications:

- Manufacturer shall warrant material and workmanship for a minimum period of ten (10) years.
- Shall be a modified isphthalic polyester liner system made of two-components, 100% solid, known as polymorphic resin as described below.
- Shall provide a waterproof, corrosion resistant liner to prevent any deterioration of concrete surfaces from hydrogen sulfide and other corrosive gases/acids produced by wastewater.
- Can be used to rehabilitate and protect concrete, steel, fiberglass, or masonry surfaces.
- System shall restore structural integrity of brick/concrete structures.
- Shall use an approved quick setting cementitious material to bring substrate to profile.
- To ensure total unit responsibility, all material and installation shall be furnished by, and coordinated with, one supplier/ manufacturer.
- The resin based material shall be used to form the sprayed on/ structure enhanced monolithic liner covering all interior surfaces to be protected and shall include the walls, ceiling, benches, invert and pipe entries.
- Application of liner system shall be in strict accordance with manufacturer's recommendation. The three coat system is made of a prime coat (DS-101 10-25 mils thick), intermediate coat (DS-301 75-150 mils thick), and a final coat (DS-401 10-25 mils thick). Final installation shall be a minimum thickness of 150 mils and not more than 250 mils thick.

MINIMUM PHYSICAL/MATERIAL PROPERTIES:

Flexural Strength	ASTM D790	8,630 psi
Compressive Strength	ASTM D695	15,120 psi
Tensile Strength	ASTM D638	4,900 psi
Barcol Hardness	Impressor #L25	72 to 75
Adhesive Strength	direct to metal	1,582 psi
Adhesive Strength	direct to concrete	substrate failure



MANUFACTURER/PRODUCT(S):

- **INTEGRATED ENVIRONMENTAL TECHNOLOGIES LTD. - I.E.T. SYSTEM 3**
- **OPEN**

Created Date: 11/22/2010 (JJS)
Last Revised Date:



Material Specifications
Pinellas County
14 South Ft. Harrison Ave.
Clearwater, FL 33756