

**Section A: Pipe**Effective Date: 01-01-19Revision #: 2[A 1 PVC Pipe - Schedule 40](#)[A 2 PVC Pipe - Schedule 80](#)[A 3 Polyethylene Service Tubing](#)[A 3.1 Polyethylene 2" Potable Water Main Tubing](#)[A 3.2 High Density Polyethylene Pipe \(HDPE\)](#)[A 4 PVC Pipe \(2" SDR-21\)](#)[A 5 PVC Pipe \(AWWA C – 900\) – Potable Water \(4" thru 24"\)](#)[A 5.1 PVC Pipe \(AWWA C – 900\) – Sewer \(4" thru 24"\)](#)[A 5.2 PVC Pipe Restrained Joint Pipe & Couplings \(AWWA C – 900\) \(4" thru 16"\)](#)[A 5.3 PVC Pipe Fusible \(AWWA C-900\) - Potable Water \(4" thru 24"\)](#)[A 5.3.1 PVC Pipe Fusible \(AWWA C-900\) - Sewer Force Main \(4" thru 24"\)](#)[A 6 Ductile Iron Pipe/ Push-On Joint/ Class 350 \(4" thru 36"\)](#)[A 6.1 Ductile Iron Pipe/ Flanged Joint/ Class 53](#)[A 6.2 Ductile Iron Pipe/ Restrained Push-On Joint/ TR Flex Joint \(4" thru 36"\)](#)[A 6.3 Ductile Iron Pipe/ Restrained Push-On Joint/ Flex- Ring Joint \(4" thru 48"\)](#)[A 7 Stainless Steel Pipe](#)[A 8 Galvanized Pipe \(Temporary\)](#)

**A 1 – PVC PIPE - SCHEDULE 40:**

Effective Date: 01-01-19  
 Revision #: 2

**MATERIAL / SPECIFICATION:**

Schedule 40 Polyvinyl Chloride, PVC, Pipe shall meet or exceed the performance specifications of:

- 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 12454B (Type 1, Grade 1 material).

**CONNECTIONS:**

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

**DIMENSIONS:**

- 20’ standard joint length.



**MANUFACTURER:**

- CHARLOTTE PIPE AND FOUNDRY
- COLONIAL
- DIAMOND PLASTICS
- FREEDOM PLASTICS
- NAPCO
- NATIONAL PIPE & PLASTICS
- JM EAGLE
- IPEX
- PIPELIFE

**RESTRICTIONS:**

Use of this product is limited to:

- Sewer service laterals
- 2” Water blow offs
- Water lines

**A 2 – PVC PIPE - SCHEDULE 80:**

Effective Date: 01-01-19

Revision #: 2

**MATERIAL/ SPECIFICATION:**

Schedule 80 Polyvinyl Chloride, PVC, Pipe shall meet or exceed the performance specifications of:

- 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 12454B (Type 1, Grade 1 material).

**CONNECTION:**

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

**DIMENSIONS:**

- 20’ standard joint length

**SIZES:**

- 3/4”
- 1”
- 1-1/2”
- 2”



**MANUFACTURER:**

- CHEMTROL
- CHARLOTTE PIPE AND FOUNDRY
- COLONIAL
- ESLON THERMOPLASTICS
- FREEDOM PLASTICS
- NATIONAL PIPE AND PLASTICS
- WORLD OF PLASTICS, INC.
- JM EAGLE
- IPEX
- NORTH AMERICAN PIPE
- PIPELIFE

**RESTRICTIONS:**

- Pump station chemical feed applications downstream from backflow preventer.

**A 3 – POLYETHYLENE SERVICE TUBING:**

Effective Date: 01-01-19

Revision #: 2

**SPECIFICATION/ MATERIAL:**

PE-3608 High Density Polyethylene, HDPE, tubing shall meet or exceed the performance specifications of:

- PE-3608 Resin listed in Plastic Pipe Institute TR4 Cell classification per ASTM Standards D3350 = 345444 or 345464.
- ASTM Standards D2737 dimensional standard, Copper Tubing Size, CTS, controlled outside diameter.
- AWWA C901
- MFG. Shall be listed with the Plastic Pipe Institute as meeting the recipe and mixing requirements for pipe in this classification.

**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 14, 61 or “NSF-pw”.

**PRESSURE RATING:**

- 200-psi. operating pressure @ 73.4 F

**COLOR-CODED:**

- Blue - potable water

**DIMENSIONS:**

- Copper tubing size, C.T.S. O.D. controlled
- DR-9

**SIZES:**

- 1”
- 1-1/2”
- 2”



**MANUFACTURER:**

- DURA-LINE PW TUBING
- ADS
- CHARTER PLASTICS
- ENDOT

**RESTRICTIONS:**

Use of this product is limited to:

- Water service lines

**A 3.1 – POLYETHYLENE 2” POTABLE WATER MAIN TUBING:**

Effective Date: 01-01-19

Revision #: 2

**SPECIFICATION/ MATERIAL:**

PE-3608 High Density Polyethylene, HDPE, tubing shall meet or exceed the performance specifications of:

- PE-3608 Resin listed in Plastic Pipe Institute TR4 Cell classification per ASTM Standards D3350 = 345444 or 345464E.
- ASTM Standards D3035 dimensional standard, Iron Pipe Size, IPS, controlled outside diameter.
- AWWA C901
- MFG. Shall be listed with the Plastic Pipe Institute as meeting the recipe and mixing requirements for pipe in this classification.
- 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 “NSFpw”.

**PRESSURE RATING:**

- 200-psi. operating pressure @ 73.4 F

**COLOR-CODED:**

- Blue - potable water
- Black with minimum of three (3) evenly spaced blue stripes - potable water

**DIMENSIONS:**

- Iron pipe size, I.P.S. O.D. controlled
- DR-9

**SIZES:**

- 2”



**MANUFACTURER:**

- CHARTER PLASTICS/BLUE STRIPE PIPE
- ENDOPURE/ BLUE WITH CLEAR CORE
- LAMSON VYLON/ PRESSURE FLEX WATER
- ADS

**RESTRICTIONS:**

Use of this product is limited to:

- 2” potable water mains

**A 3.2 – HIGH DENSITY POLYETHYLENE PIPE (HDPE) 4”-36”:**

Effective Date: 01-01-19  
Revision #: 2

**MATERIAL/ SPECIFICATION:**

PE-4710 High Density Polyethylene, HDPE, pipe shall meet or exceed the performance specifications of:

- PE-4710 Resin listed in Plastic Pipe Institute TR4.
- Cell classification per ASTM D3350 = 345444C or 345464C for black OR 345444E or 345464E for non-black & color.
- ASTM F 714, minimum wall values.
- AWWA C906.
- MFG. 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– CODED:**

- Blue - potable water.
- Green - sanitary sewer/ force main.

**DIMENSIONS:**

- Ductile iron pipe size O.D., D.I.P.S.
- DR-11, DR-13.5

**PRESSURE RATING:**

- 200-psi. operating pressure @ 73.4 F for DR-11.
- 160-psi. operating pressure @ 73.4 F for DR-13.5

**JOINING RESTRICTIONS:**

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

**RESTRICTIONS:**

- DR-13.5 considered for mains 6” and larger when hydraulic or availability restrictions apply. Submittal to and approval by CFPWA required.

**FIRE MAIN PRESSURE RATING & REQUIREMENTS:**

- Dimension Ratio (DR) DR-11, pressure class 200 for fire mains.
- Factory Mutual Approved (FM) pipe.



**MANUFACTURER:**

- CHARTER PLASTICS/ STRIPE PIPE
- CP CHEMICAL
- PERFORMANCE PIPE DRISCOPEX
- FLYING W PLASTICS
- JM EAGLE PE PIPE
- LAMSON VYLON/ PRESSURE FLEX WATER
- RINKER MATERIALS– POLY PIPE
- WL PLASTICS

**A 4 – PVC Pipe (2” SDR 21):**

Effective Date: 01-01-19

Revision #: 2

**MATERIAL/ SPECIFICATION:**

2” SDR 21 Polyvinyl Chloride, PVC, Pipe shall meet or exceed the performance specifications of:

- ASTM D2241 or latest revision thereof.
- ASTM D1784, manufactured from compounds with cell classification 12454B.
- 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”.
- 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.

**PRESSURE RATING:**

- 200 psi. at 23 Degrees C (73.4 Degrees F)

**COLOR-CODED:**

- Blue - potable water

**DIMENSIONS:**

- Iron pipe size (IPS) Outside diameter controlled
- 20’ and 21’ standard joint length



**MANUFACTURER:**

- CHARLOTTE PIPE AND FOUNDRY
- DIAMOND PLASTICS
- FREEDOM PLASTICS
- JM EAGLE
- NAPCO
- NATIONAL PIPE & PLASTICS
- PIPELIFE

**RESTRICTIONS:**

Use of this product limited to:

- 2” Water Mains



**A 5 – PVC PIPE (AWWA C-900) - POTABLE WATER (4" THRU 24"):**

Effective Date: 01-01-19  
 Revision #: 2

**MATERIAL/ SPECIFICATION:**

AWWA C-900 Polyvinyl Chloride, PVC, Pipe shall meet or exceed the performance specifications of:

- ASTM D1784, manufactured from compounds with cell classification 12454A or 12454B.
- Push-on integral bell type joints per ASTM D3139 testing requirements, supplied with elastomeric gaskets 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- CODED:**

- Blue - potable water

**DIMENSIONS:**

- Ductile iron pipe size O.D., D.I.P.S.
- DR-18, DR-14
- 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 200 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:**

- DIAMOND PLASTICS
- FREEDOM PLASTICS
- JM EAGLE/ BLUE BRUTE
- NAPCO
- NATIONAL PIPE & PLASTICS
- PIPELIFE

**RESTRICTIONS:**

- DR-14 is a design option for special installations. CFPWA approval required.



**A 5.1 – PVC PIPE (AWWA C-900) - SEWER (4” THRU 24”):**

Effective Date: 01-01-19

Revision #: 2

**MATERIAL/ SPECIFICATION:**

AWWA C-900 Polyvinyl Chloride, PVC, Pipe shall meet or exceed the performance specifications of:

- ASTM D1784, manufactured from compounds with cell classification 12454A or 12454B.
- Push-on integral bell type joints per ASTM D3139 testing requirements, supplied with elastomeric gaskets 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- CODED:**

- Green - sanitary sewer

**DIMENSIONS:**

- Ductile iron pipe size O.D., D.I.P.S.
- DR-18, DR-14
- 20’ standard joint length
- Shorter 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.

**RESTRICTIONS:**

- DR-14 is a design option for special installations. CFPUA approval required.



**MANUFACTURER:**

- DIAMOND PLASTICS
- FREEDOM PLASTICS
- JM EAGLE/ BLUE BRUTE
- NAPCO
- NATIONAL PIPE & PLASTICS
- PIPELIFE

**A 5.2 – PVC PIPE RESTRAINED JOINT PIPE & COUPLINGS (AWWA C-900)  
(4” THRU 16”):**

Effective Date: 01-01-19  
Revision #: 2

**MATERIAL / SPECIFICATION:**

AWWA C-900, Pipe shall meet or exceed the performance specifications of:

- ASTM D1784, manufactured from compounds with cell classification 12454A or 12454B.
- 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).
- 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 3600 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.

**COLOR– CODED:**

- Blue– potable water
- Green– sanitary sewer/ force main

**DIMENSIONS:**

- Ductile iron pipe size O.D., D.I.P.S.
- DR-18, DR-14.
- 20’ standard joint length.

**PRESSURE RATING:**

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

**RESTRICTIONS:**

- Only for low profile carrier pipes inside casings with prior approval by CFPUA.
- DR-14 is a design option for special installations. CFPUA approval required.



**MANUFACTURER:**

- CERTAINTEED– CERTA-LOK
- JM EAGLE LOC 900
- DIAMOND LOK-21

<b>A 5.3 – PVC PIPE FUSIBLE (AWWA C-900) - POTABLE WATER (4" THRU 24"):</b>		Effective Date: <u>01-01-19</u> Revision #: <u>2</u>
<p><b><u>MATERIAL/ SPECIFICATION:</u></b>                  Fusible AWWA C-900 Polyvinyl Chloride, PVC, Pipe shall meet or exceed the performance specifications of:</p> <ul style="list-style-type: none"> <li>• ASTM D1784, manufactured from compounds with cell classification 12454.</li> <li>• Manufacture shall be listed with the Plastic Pipe Institute (PPI) as meeting the recipe and mixing requirements for pipe in this classification.</li> <li>• Extruded with a unique formulation, for fusible pipe, that meets all requirements of PPI TR-2 "PPI PVC Range Composition Listing of Qualified Ingredients".</li> <li>• 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.</li> <li>• Pipe shall be clean and ends shall be tarpred during shipment.</li> <li>• Pipe shall be extruded with plain ends. The end shall be square to the pipe and free of any bevel or chamfer.</li> <li>• Fusible pipe shall be joined per the manufacture's recommendation.</li> <li>• Installation shall not exceed manufacture's bending radius and safe pulling force.</li> <li>• No solvent-cement weld pipe or fittings will be accepted.</li> <li>• Affidavit of compliance to this specification shall be available upon request.</li> </ul> <p><b><u>COLOR- CODED:</u></b></p> <ul style="list-style-type: none"> <li>• Blue - potable water</li> </ul> <p><b><u>DIMENSIONS:</u></b></p> <ul style="list-style-type: none"> <li>• Ductile iron pipe size O.D., D.I.P.S.</li> <li>• DR-18 DR-14</li> <li>• 20', 30' or 40' standard joint length.</li> </ul>	<p><b><u>PRESSURE RATING:</u></b></p> <ul style="list-style-type: none"> <li>• 235-psi. operating pressure @ 73 F for DR-18.</li> <li>• 305-psi. operating pressure @ 73 F for DR-14.</li> </ul> 	
<p><b><u>RESTRICTIONS:</u></b></p> <ul style="list-style-type: none"> <li>• DR-14 is a design option for special installations. CFPWA approval required.</li> </ul>	<p><b><u>MANUFACTURER:</u></b></p> <ul style="list-style-type: none"> <li>• UNDERGROUND SOLUTIONS</li> </ul>	

**A 5.3.1 – PVC PIPE FUSIBLE (AWWA C-900) - SEWER FORCE MAIN (4” THRU 24”):**

Effective Date: 01-01-19  
Revision #: 2

**MATERIAL/ SPECIFICATION:**

Fusible AWWA C-900 Polyvinyl Chloride, PVC, Pipe shall meet or exceed the performance specifications of:

- ASTM D1784, manufactured from compounds with cell classification 12454.
- Manufacture 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 end shall be square to the pipe and free of any bevel of chamfer.
- Fusible pipe shall be joined per the manufacture’s recommendation.
- Installation shall not exceed manufacture’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– CODED:**

- Green - sewer force main

**DIMENSIONS:**

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

**RESTRICTIONS:**

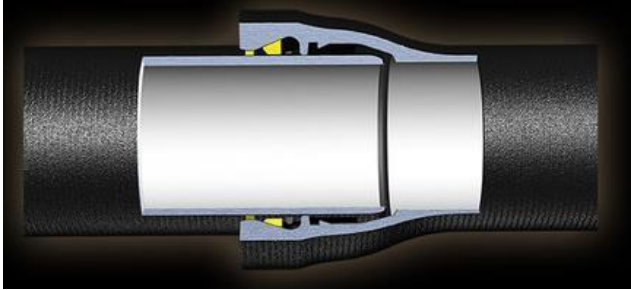
- DR-14 is a design option for special installations. CFPUA approval required.



**MANUFACTURER:**

- UNDERGROUND SOLUTIONS



<p><b>A 6 – DUCTILE IRON PIPE/ PUSH-ON JOINT/ CLASS 350 (4” THRU 36”):</b></p>		<p>Effective Date: <u>01-01-19</u> Revision #: <u>2</u></p>
<p><b><u>MATERIAL/ SPECIFICATION:</u></b></p> <ul style="list-style-type: none"> <li>• Pipe shall conform with AWWA C151 (ANSIA21.51). Additionally, 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 system shall conform to ISO 8179-1 Ductile iron pipes – External zinc based coating – Part 1: Metallic zinc with finishing layer.</li> <li>• Gaskets shall be furnished in accordance with AWWA C111 (ANSI– A21.11).</li> <li>• Pipe supplied must have ISO 9001 or later certification, or poured in a foundry located in the U.S.A.</li> <li>• Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.</li> <li>• Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) for sizes four (4”) thru twelve (12”) inch.</li> <li>• Affidavit of compliance to this specification shall be available upon request.</li> </ul> <p><b><u>DIMENSIONS:</u></b></p> <ul style="list-style-type: none"> <li>• 18’ or 20’ standard joint length.</li> </ul> <p><b><u>PRESSURE RATING:</u></b></p> <ul style="list-style-type: none"> <li>• Class 350- psi. for sizes 4” thru 24” pipe.</li> <li>• Class 250- psi for sizes 30” thru 36” pipe.</li> </ul>	<p><b><u>COATING &amp; LINING:</u></b></p> <p><b>Potable Water:</b></p> <ul style="list-style-type: none"> <li>• Exterior - AWWA C151 (ANSI-A21.51), per above ISO 8179-1 requirements.</li> <li>• Interior - AWWA C104 (ANSI-A21.4), cement mortar lining and asphaltic coating.</li> </ul> <p><b>Sanitary Sewers and Force Mains:</b></p> <ul style="list-style-type: none"> <li>• Exterior - AWWA C151 (ANSIA21.51) per above ISO 8179-1 requirements.</li> <li>• 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” or “PERMOX CTF” (40 mils nominal) or polyamine ceramic epoxy containing at least 20% by volume ceramic hollow microspheres “tnemec series 431 permashield pl” (40 mils nominal).</li> <li>• The inside of the bell socket including a portion of the gasket cavity and a portion of the pipe barrel are also coated with the above products (6” mils nominal, 10 maximum).</li> </ul> 	
<p><b><u>RESTRICTIONS:</u></b></p>	<p><b><u>MANUFACTURER:</u></b></p> <ul style="list-style-type: none"> <li>• AMERICAN CAST IRON– FASTITE</li> <li>• Mc WANE, INC.– TYTON (14”– 24” ONLY)</li> <li>• US PIPE &amp; FOUNDRY– TYTON</li> </ul>	

**A 6.1 – DUCTILE IRON PIPE/ FLANGE JOINT/ MINIMUM CLASS 53:**

Effective Date: 01-01-19  
Revision #: 2

**MATERIAL/ SPECIFICATION:**

Flange pipe shall meet or exceed the performance specifications of:

- Pipe shall conform with AWWA C151 (ANSIA21.51).
- Flanges shall conform to the chemical and physical properties specified for ductile iron fittings in ANSI/AWWA C 110/A21.10.
- Shall conform to AWWA C115 (ANSI-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 OR FULL-FACE TYPE AND PRODUCED FROM ONE OF 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 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.

**DIMENSIONS:**

- Ductile iron pipe size O.D., D.I.P.S.
- 18’ or 20’ standard joint length or as specified for project.

**PRESSURE RATING:**

- Class 250-psi. for sizes 4” thru 24” pipe.

**RESTRICTIONS:**

- Flange pipe is for use in inside buildings, above ground outside, or inside underground vault or manhole service applications.

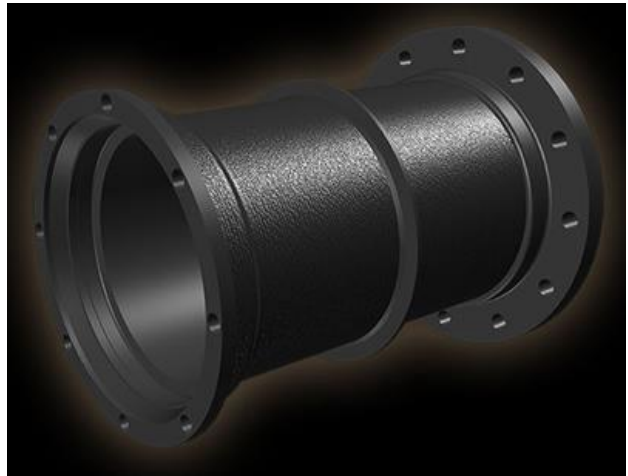
**COATING & LINING:**

**Potable Water:**

- Exterior - AWWA C151 (ANSI-A21.51), per above ISO 8179-1 requirements.
- Interior - AWWA C104 (ANSI-A21.4), cement mortar lining and asphaltic coating.

**Sanitary Sewers and Force Mains:**

- Exterior - AWWA C151 (ANSIA21.51). per above ISO 8179-1 requirements.
- 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” or “PERMOX CTF” (40 mils nominal) or polyamine ceramic epoxy containing at least 20% by volume ceramic hollow microspheres “TNEMEC SERIES 431 PERMA-SHIELD PL” (40 mils nominal).



**MANUFACTURER:**

- AMERICAN CAST IRON
- Mc WANE, INC.
- US PIPE & FOUNDRY



<b>A 6.2 – DUCTILE IRON PIPE/ RESTRAINED PUSH-ON JOINT/TR FLEX JOINT (4” THRU 36”):</b>	Effective Date: <u>01-01-19</u> Revision #: <u>2</u>
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**MATERIAL / SPECIFICATION:**  
 Restrained pipe shall meet or exceed the performance specifications of:

- Shall conform with AWWA C150 (ANSI–A21.50) thicknesses and strength.
- Shall conform with AWWA C151 (ANSI-A21.51), Additionally, pipe exterior shall be coated with a layer of arc-sprayed zinc per ISO 8179. The mass of zinc shall be 200 g/m<sup>2</sup> 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 pipe – External zinc based coating – Part 1: Metallic zinc with finishing layer.
- Gaskets shall be furnished in accordance with AWWA C111 (ANSI– 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 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 sizes four (4”) thru twelve (12”) inch.
- Affidavit of compliance to this specification shall be available upon request.

**PRESSURE RATING:**

- Class 350-psi. for sizes 4” thru 24” pipe.
- Class 250-psi. for sizes 30” thru 36” pipe.

**DIMENSIONS:**

- Ductile iron pipe size O.D., D.I.P.S.
- 18’ or 20’ standard joint length.

**RESTRICTIONS:**

**COATING & LINING:**

**Potable Water:**

- Exterior - AWWA C151 (ANSI-A21.51) per above ISO 8179- 1 requirements.
- Interior - AWWA C104 (ANSI-A21.4), cement mortar lining and asphaltic coating.

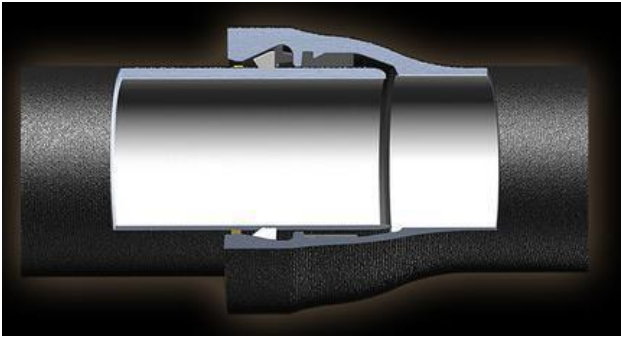
**Sanitary Sewers and Force Mains:**

- Exterior - AWWA C151 (ANSIA21.51) per above ISO 8179-1 requirements.
- 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” or “PERMOX CTF” (40 mils nominal) or polyamine ceramic epoxy containing at least 20% by volume ceramic hollow microspheres “TNE MEC SERIES 431 PERMA-SHIELD PL” (40 mils nominal).



**MANUFACTURER:**

- US PIPE & FOUNDRY– TR FLEX
- Mc WANE, INC.– TR FLEX

<b>A 6.3 – DUCTILE IRON PIPE/ RESTRAINED PUSH-ON JOINT/FLEX- RING JOINT (4” THRU 48”):</b>		Effective Date: <u>01-01-19</u> Revision #: <u>2</u>
<p><b><u>MATERIAL / SPECIFICATION:</u></b> Restrained pipe shall meet or exceed the performance specifications of:</p> <ul style="list-style-type: none"> <li>• Shall conform with AWWA C150 (ANSI–A21.50) thicknesses and strength.</li> <li>• Shall conform with AWWA C151 (ANSI-A21.51), Additionally, pipe exterior shall be coated with a layer of arc-sprayed zinc per ISO 8179. The mass of zinc shall be 200 g/m<sup>2</sup> 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 pipe – External zinc based coating – Part 1: Metallic zinc with finishing layer.</li> <li>• Gaskets shall be furnished in accordance with AWWA C111 (ANSI-A21.11).</li> <li>• Shall use a standard size Fastite gasket.</li> <li>• Pipe supplied must have ISO 9001 or later certification, or poured in a foundry located in the U.S.A.</li> <li>• Shall comply with and be labeled as approved by the National Sanitation Foundation (NSF) for use in potable water lines meeting NSF 61.</li> <li>• Factory Mutual Approved (FM) and Underwriter Laboratory Listed (UL) as noted by (UL/FM) for sizes four (4”) thru twelve (12”) inch.</li> <li>• Affidavit of compliance to this specification shall be available upon request.</li> </ul> <p><b><u>PRESSURE RATING:</u></b></p> <ul style="list-style-type: none"> <li>• Class 350-psi. for sizes 4” thru 24” pipe.</li> <li>• Class 250-psi. for sizes 30” thru 36” pipe.</li> </ul> <p><b><u>DIMENSIONS:</u></b></p> <ul style="list-style-type: none"> <li>• Ductile iron pipe size O.D., D.I.P.S.</li> <li>• 18’ or 20’ standard joint length.</li> </ul> <p><b><u>ADDITIONAL INFORMATION:</u></b></p> <ul style="list-style-type: none"> <li>• Standard Flex-Ring segments are yellow.</li> <li>• Field Flex-Ring segments are black.</li> </ul>	<p><b><u>COATING &amp; LINING:</u></b> <b>Potable Water:</b></p> <ul style="list-style-type: none"> <li>• Exterior - AWWA C151 (ANSI-A21.51) per above ISO 8179-1 requirements.</li> <li>• Interior - AWWA C104 (ANSI-A21.4), cement mortar lining and asphaltic coating.</li> </ul> <p><b>Sanitary Sewers and Force Mains:</b></p> <ul style="list-style-type: none"> <li>• Exterior - AWWA C151 (ANSIA21.51) per above ISO 8179-1 requirements.</li> <li>• 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” or “PERMOX CTF” (40 mils nominal) or polyamine ceramic epoxy containing at least 20% by volume ceramic hollow microspheres “TNEMEC SERIES 431 PERMA-SHIELD PL” (40 mils nominal).</li> </ul>	
<p><b><u>RESTRICTIONS:</u></b></p>	<p><b><u>MANUFACTURER:</u></b></p> <ul style="list-style-type: none"> <li>• AMERICAN CAST IRON– FLEX-RING</li> </ul>	

**A 7 – STAINLESS STEEL PIPE:**

Effective Date: 01-01-19  
 Revision #: 2

**MATERIAL/ SPECIFICATION:**

- Schedule 40, 316 stainless steel pipe.
- Specifications shall conform to ANSI/ASME 36.19.

**CONNECTIONS:**

- Pipe shall have NPT threads on both ends and a coupling on one end making a full joint, mipt X fipt. As required on detail drawings.

**DIMENSIONS:**

- 21' standard joint length.



**MANUFACTURER:**

- OPEN

**RESTRICTIONS:**

- This material is required for air/vacuum release valve piping or other special uses as noted on detail drawings.

**A 8 – GALVANIZED PIPE (TEMPORARY):**

Effective Date: 01-01-19  
 Revision #: 2

**MATERIAL/ SPECIFICATION:**

- Schedule 40, galvanized steel pipe.
- Specifications shall conform to ASTM A-53 grade-A or latest revision thereof.

**CONNECTIONS:**

- Pipe shall have NPT threads on both ends and a coupling on one end making a full joint, mipt X fipt.

**DIMENSIONS:**

- 21' standard joint length.



**MANUFACTURER:**

- OPEN

**RESTRICTIONS:**

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