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| Version | Date | Description of Revisions |
| 1 | August 30, 2006 | Approved final document. |
| 2 | August 12, 2014 | First draft review (AV) |
| 3 | June 8, 2015 | Second Draft for Review (AV) |
| **4** | **September 16, 2015** | **Updated, Finalized Specification – Reference eDOCS #5823660-v3A (AV)** |
| **5** | **May 23, 2017** | **Updated references to standards ASME B16.21-2016;** ASTM A106/A106M-15, ASTM A234/A234M-16, ASTM A307-14e1, ASTM A563-15, ASTM D412-16, **ASTM D1330-04 (2015)e1,** ASTM D4101-14e2, AWWA C606-15 (AAM) |

NOTE:

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**The on-line copy is the current version of the document.**

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| Item | Description | |
| Pipe | Black carbon steel; ASTM A106/A106M-15, Grade B seamless or ASTM A53/A53M-12, Grade B seamless or Electric Resistance Welded: | |
| 250 mm & smaller: | Schedule 40. |
| 300 mm thru 400 mm: | Schedule 30. |
| 450 mm thru 600 mm: | Schedule 20. |
| Lining | Glass: Completely fused above 760 degrees Celsius, 0.15 to 0.25 mm thick, defects which expose base metal not greater than 0.1 percent of total lined surface, hardness greater than 5 on the Mohs scale, lining bonded sufficiently to withstand a metal strain of .001 mm/mm without damage to the glass lining, finished lined pipe shall not deviate more than 0.0968 mm per metre of length from a centreline perpendicular to the flange face or square end of the pipe. Approved Products:   1. Water Works Supply Corp., Ferrock MEH-32 2. Ceramic Coating Co., SL-31 3. Approved Equivalent. | |
| Rubber: 3 mm minimum thickness rubber on pipe, fittings, and flanges; compounded to provide maximum resistance to chlorine corrosion, diffusion and aging; ASTM D412-16 tensile strength 16,500 kPa minimum; Durometer D Scale hardness 55 to 70; ASTM D413-98(2013) machine method adhesion 18 kg pull; shot-blast or grit-blast and clean surface immediately before application of adhesive; circumferential seams only at flanges and one per piece 3 m or more in length; air pockets and blisters are unacceptable. | |
| Polypropylene: ASTM D4101-14e2, Type 1. Minimum lining thicknesses for nominal pipe sizes: | |
| 50 mm & smaller: | 1.5 mm thick |
| 55 mm: | 2.0 mm thick |
| 100 mm: | 2.5 mm thick |
| 150 mm: | 3 mm thick |
| 200 mm to 300 mm: | 4 mm thick |
| Fittings | Lined same as pipe. | |
|  | Grooved End: AWWA C110/A21.10-12 and AWWA C606-15 malleable iron ASTM A47/A47M-99(2014) or ductile ASTM A536-84(2014) or steel, 1,050 kPa minimum working pressure. Approved products:   1. Victaulic Company 2. Tyco International, Grinnell 3. Approved Equivalent. | |
| Flanged: Carbon steel, ASTM A234/A234M-16, Grade WPB, thickness to match adjoining pipe; elbows long radius, unless otherwise shown on the Drawings. | |

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| Joints | Grooved End: Rigid type radius cut conforming to the requirements of AWWA C606-15. Approved products:   1. Victaulic Company 2. Tyco International, Grinnell 3. Approved Equivalent |
| Flanged: 862 kPag flat face or 1,725 kPag raised face ductile iron threaded conforming to the requirements of AWWA C115/A21.15-11. |
| Couplings | Grooved End: 1,050 kPa minimum working pressure malleable iron per ASTM A47/A47M-99(2014) or ductile iron in accordance with ASTM A536-84(2014). Approved products:   1. Victaulic Company 2. Tyco International, Grinnell 3. Approved Equivalent   Grooved End Adapter Flanges: 862 kpag malleable iron per ASTM A47/A47M-99(2014) or ductile iron in accordance with ASTM A536-84(2014). Approved products:   1. Victaulic Company 2. Tyco International, Grinnell 3. Approved Equivalent |
| Flanges | Forged carbon steel, slip-on or weld neck ASTM A105/A105M-14, 1,035- or 2,070 kPag. Provide weld neck flanges when abutting butt-weld fittings. Weld neck bore to match pipe. Weld prior to lining only. |
| Bolting | ASTM A307-14e1, Grade A carbon steel hex head bolts and ASTM A563-15, Grade A carbon steel hex head nuts.  Grooved End Coupling: Carbon steel, ASTM A183-14 bolts and nuts. |
| Gaskets | Grooved End Joints: Halogenated butyl conforming to the requirements of ASTM D2000-12 and AWWA C606-15 for water and air; nitrile for oil. |
| **[Flanged, Glass Lined Pipe and Fittings: 3 mm thick, red rubber (SBR), hardness 80 (Shore A), rated to 93 degrees Celsius, conforming to the requirements of ASME B16.21-2016, AWWA C207-13, and ASTM D1330-04 (2015)e1, Grades 1 and 2.]** |
| **[Flanged, [Rubber] [, and] [Polypropylene] Lined Pipe and Fittings: 3 mm thick, unless otherwise specified, homogeneous black rubber (EPDM), hardness 60 (Shore A), rated to 150 degrees Celsius, conforming to the requirements of ASME B16.21-2016 and ASTM D1330-04 (2015)e1Steam Grade.]**  Blind flanges shall be gasketed covering the entire inside face with the gasket cemented to the blind flange. |
| Joint Lubricant | Manufacturer's standard. |

**END OF SECTION**