|  |  |  |
| --- | --- | --- |
| 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 #5823656-v4 (AV)** |
| 5 | May 23, 2017 | Updated references to standards ASTM A106/A106M-15, ASTM A193/A193M-16, ASTM A194/A194M-17, ASTM A307-14e1, ASTM A563-15 (AAM) |
| 6 | July 4, 2017 | Updated references to standards ASME B16.11-2016, ASTM A234/A234M-16 |
| 7 | August 15, 2017 | Removal of specified products (CPD PMO, OMM) |

NOTE:

This is a CONTROLLED Document. Any documents appearing in paper form are not controlled and should be checked against the on-line file version prior to use.

**Notice:** This Document hardcopy must be used for reference purpose only.

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

| Item | Size | Description |
| --- | --- | --- |
| Pipe | All | Black carbon steel, ASTM A106/A106M-15, Grade B seamless or ASTM A53/A53M-12, Grade B seamless or Electric Resistance Welding. Threaded, butt-welded, and flanged joints: |
|  | 40 mm & smaller | Schedule 80. |
|  | 50 mm thru 250 mm | Schedule 40, except 100 mm and smaller in chlorine service; Schedule 80. |
|  | 300 mm thru 400 mm | Schedule 30. |
|  | 450 mm thru 600 mm | Schedule 20. |
| Joints | 50 mm & smaller | Threaded or socket-welded; flanged at equipment as required or shown on the Drawings. |
|  | 60 mm & larger | Butt-welded or flanged at valves and equipment. |
| Fittings | 50 mm & smaller | Threaded or socket-weld, forged carbon steel, ASTM A105/A105M-14, 900 kg- or 1,365 kg WOG (1,365 kg chlorine service), conforming to the requirements of ANSI/ASME B16.11-2016; bore to match pipe inside diameter. |
|  | 60 mm & larger | Wrought carbon steel butt-welding, ASTM A234/A234M-16, Grade WPB meeting the requirements of ANSI/ASME B16.9-2012; fitting wall thickness to match adjoining pipe; long radius elbows unless shown otherwise on the Drawings. |
| Branch Connections | 50 mm & smaller | Threadolet or socket in conformance with Fittings above. |
|  | 60 mm & larger | Butt-welding tee in accordance with Fittings above. |
| Flanges | 50 mm& smaller | Forged carbon steel, ASTM A105/A105M-14, ANSI/ASME B16.5-2013 Class 150 or Class 300 socket-weld or threaded, 1.50 mm raised face. |
|  | 60 mm & larger | Forged carbon steel, ASTM A105/A105M-14, ASME B16.5-2013 Class 150 or Class 300 slip-on or welding neck, 1.50mm raised face; weld neck bore to match pipe internal diameter. Use weld neck flanges when abutting butt-weld fittings. |
| Unions | 50 mm & smaller | Threaded or socket-weld, forged carbon steel, ASTM A105/A105M-14, 13,800 or 20,700 kPag WOG, integral ground steel-to-steel seats, Association of American Railroads (AAR) design meeting the requirements of ANSI/ASME B16.11-2016, bore to match pipe. |
| Chlorine Service: Threaded or socket-weld end ammonia type tongue-and-groove flange union, ASTM A105/A105M-14 forged carbon steel, 10,350 kPag two-bolt oval type. |
| Bolting | All | Carbon steel ASTM A193/A193M-16, Grade B7 studs and ASTM A194/A194M-17, Grade 2H hex head nuts. Quench and temper for chlorine service.  When mating flange on equipment is cast iron and gasket is flat ring, provide ASTM A307-14e1, Grade B hex head bolts and ASTM A563-15, Grade A heavy hex nuts. |
| Gaskets | All flanges | General Service and Oil/Gas: 1.5 mm thick compressed non-asbestos composition flat ring type. Approved products: |
| Steam Service: Spiral wound, Type 304 stainless steel with non-asbestos filler, integral 3 mm thick carbon steel centering ring. Approved products: |
| Chlorine Unions: Chemical lead, 2 to 4 percent antimony, 3 mm thick. |
| Thread Lubricant |  | General Service: Teflon tape. |
| Chlorine Service: White lead paste or litharge and glycerine. |

**END OF SECTION**