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COMPLIANCE IS MANDATORY

John C. Stennis Space Center Standard High Pressure Industrial Water Piping “AG”

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Stennis Standard	SSTD-8070-0067-PIPE	C-1
	<i>Number</i>	<i>Rev.</i>
	Effective Date: February 12, 2016	
	Review Date: November 17, 2020	
	Page i of iii	
Responsible Office: NASA SSC Center Operations and SSC Propulsion Test		
SUBJECT: High Pressure Industrial Water Piping “AG”		

Document History Log

Revision	Date	Originator/ Phone	Description
Basic	4/21/2004	K Patel / 2845	Initial Release – supercedes SSC STD 47-041 Rev. B. Formatted per SPG 1400.1. Updated national standards references. Included the allowance of mechanical couplings in accordance with specific ASTM standards used in place of flanges and fittings.
A	12/15/2005	D Dike / 2803	John C. Stennis Space Center (SSC) Central Engineering Files (CEF) Archive Note: This standard supersedes COE Contract 1544, Sections 44 and 45. In section 2.0, corrected spelling of “draw” to “drawn” in second sentence. In section 3.0, added sentence “Referenced documents are assume to be the latest revision unless otherwise specified.” Deleted reference to MIL-G-12803 because this information is covered in ASTM F104 which is already listed as a reference. Deleted reference to AWS B2.1 and replaced it with ANSI/ASME B1.20.1 to address pipe thread. Deleted reference to ASTM A515/A515M (pressure vessel plates). Added reference to ASTM A671 (steel pipe). In section 5.0, revised references in the table to reflect the changes in references listed above. In the 26” through 96” column, changed “Nom Pipe Size” to “ID Pipe Size.” Updated ASTM reference (A671) and added an asterisk to call attention to the note below the table. In the NOTES section of 5.0, added a sentence to the first paragraph to specify that the design engineer should determine if mechanical couplings are to be used, and if so, they should be restricted to pipe size under 20”. Added note to explain the asterisk added to the ASTM reference in the 26” through 96” column to specify that the referenced ASTM standard refers to the outside diameter of pipe, but this SSC standard refers to the inside diameter of pipe.

Stennis Standard	SSTD-8070-0067-PIPE	C-1
	<i>Number</i>	<i>Rev.</i>
	Effective Date: February 12, 2016	
	Review Date: November 17, 2020	
	Page ii of iii	
Responsible Office: NASA SSC Center Operations and Propulsion Test		
SUBJECT: High Pressure Industrial Water Piping “AG”		

B	4/28/2014	D Dike / 2803	Five year revision, referenced updated and added the following references: ASCE MOP 119, ASME PCC-1, AWWA M11, AWWA C210, AWWA C216, AWWA C222, NACE SP0188, SSPC-SP5/NACE No.1, SSPC-SP10/NACE No. 2, SSPC-SP11, SSTD-8070-0112-IDCODES and SSTD-8070-0124-IDCODES. Added SMA Approval. Revised section 5.0 (table and its associated notes) to update ASTM specification numbers; add coverage and include data for ASTM A671 Gr. CC70 pipe; add requirements for mitered elbows, tees, and custom reducers; allow ASME standard fittings and flanges up to 48” size; add post-weld heat treat requirements for selected pipe wall thicknesses; and add Notes 2-6 and #. Added Section 5.1 and 5.2
C	11/17/2015	D Dike / 2803	Updated references and acronyms. Administrative changes throughout document. Revised cover sheet to require approval from NASA SSC Center Operations Design & Construction Project Management Division, with concurrence from NASA SSC Engineering and Test Directorate, and NASA SSC Safety and Mission Assurance. Added SSC NDT Level III inspector approval to that of Authorized Inspector throughout document. Revised 2.0: Noted that specification line designator numbers shall conform to requirements of SSTD-8070-0112-IDCODES. Section 6.0, Requirements: Revised ½” thru 4” and 5” thru 24” pipe specifications to meet ASME B31.3 for 300 psig pressure rating; revised 26” thru 112” fitting specifications; revised 26” thru 112” flanges specifications; and updated welding requirements. Added 8.0, Definitions.
C-1	02.12.2016	R. Carol Wolfram 8-1146	Administrative change. Replaced “Test Operations” with “Test Complex” throughout document.

Stennis Standard	SSTD-8070-0067-PIPE	C-1
	<i>Number</i>	<i>Rev.</i>
	Effective Date: February 12, 2016	
	Review Date: November 17, 2020	
	Page iii of iii	
Responsible Office: NASA SSC Center Operations and Propulsion Test		
SUBJECT: High Pressure Industrial Water Piping “AG”		

Table of Contents

1.0	PURPOSE.....	1
2.0	APPLICABILITY.....	1
3.0	REFERENCED DOCUMENTS.....	1
4.0	DESIGN REQUIREMENTS	2
5.0	REQUIREMENTS.....	3
5.1	Off-Site Shop-Applied Coating	7
5.1.1	<i>Coating and Lining Application Quality Assurance Manual</i>	<i>9</i>
5.1.2	<i>Coating and Lining Application Quality Assurance</i>	<i>9</i>
5.1.3	<i>Coating and Lining Holdback</i>	<i>10</i>
5.1.4	<i>Coating or Lining Repair</i>	<i>11</i>
5.2	Field-Applied Coating And Lining	12
6.0	RECORDS AND FORMS.....	13
7.0	ACRONYMS	13
8.0	DEFINITIONS	14

Stennis Standard	SSTD-8070-0067-PIPE	C-1
	Number	Rev.
	Effective Date: February 12, 2016	
	Review Date: November 17, 2020	
	Page 1 of 14	
Responsible Office: NASA SSC Center Operations and Propulsion Test		
SUBJECT: High Pressure Industrial Water Piping “AG”		

1.0 PURPOSE

This John C. Stennis Space Center (SSC) standard (SSTD) specifies materials and procedures to be used for the construction of systems as described below.

2.0 APPLICABILITY

This standard shall be used for specifying materials and components to be incorporated into piping system "AG" as designated on the Site-wide Operational and Repair Documentation (SORD) Drawing System. These piping system drawings are drawn in schematic form and are identified by system and specification line designator numbers. These line designator numbers shall conform to requirements of SSTD-8070-0112-IDCODES. The piping designator defined in SSTD-8070-0112-IDCODES for piping systems governed by this standard is "AG."

3.0 REFERENCED DOCUMENTS

Referenced documents are assumed to be the latest version unless otherwise specified.

ASCE MOP 119, *Buried Flexible Steel Pipe: Design and Structural Analysis*
ASME B1.20.1, *Pipe Threads General Purpose (Inch)*
ASME B16.11, *Forged Fittings, Socket-Welding and Threaded*
ASME B16.21, *Nonmetallic Flat Gaskets for Pipe Flanges*
ASME B16.47, *Series A Flanges*
ASME B16.5, *Pipe Flanges and Flanged Fittings*
ASME B16.9, *Factory-Made Wrought Steel Buttwelding Fittings*
ASME B31.3, *Process Piping Guide*
ASME Boiler and Pressure Vessel Code, Section VIII, *Rules for Construction of Pressure Vessels Division I*
ASME PCC-1, *Guidelines for Pressure Boundary Bolted Flange Assembly*
ASTM A53/A53M, *Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless*
ASTM A105/A105M, *Carbon Steel Forgings for Piping Applications*
ASTM A106, *Seamless Carbon Steel Pipe for High-Temperature Service*
ASTM A181/A181M, *Carbon Steel Forgings, for General-Purpose Piping*
ASTM A193/A193M, *Alloy-Steel and Stainless Steel Bolting Materials for High Temperature or High Pressure Service and Other Special Purpose Applications*
ASTM A194/A194M, *Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both*
ASTM A234/A234M, *Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service*
ASTM A350, *Standard Specification for Carbon and Low-Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components*
ASTM A671, *Electric-Fusion-Welded Steel Pipe for Atmospheric and Lower Temperatures*
ASTM D412, *Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension*

Stennis Standard	SSTD-8070-0067-PIPE	C-1
	Number	Rev.
	Effective Date: February 12, 2016	
	Review Date: November 17, 2020	
	Page 2 of 14	
Responsible Office: NASA SSC Center Operations and Propulsion Test		
SUBJECT: High Pressure Industrial Water Piping “AG”		

ASTM D522, *Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings*
 ASTM D570, *Standard Test Method for Water Absorption of Plastics*
 ASTM D870, *Standard Practice for Testing Water Resistance of Coatings Using Water Immersion*
 ASTM D4060, *Standard Test Method for Abrasion Resistance at Organic Coatings by the Taber Abraser*
 ASTM D4541, *Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers*
 ASTM E96, *Standard Test Methods for Water Vapor Transmission of Materials*
 ASTM F104, *Standard Classification System for Nonmetallic Gasket Materials*
 ASTM F1476-1, *Performance of Gasketed Mechanical Couplings for Use in Piping Applications*
 ASTM F1548-1, *Performance of Fittings for Use with Gasketed Mechanical Couplings Used in Piping Applications*
 ASTM G14, *Standard Test Method for Impact Resistance of Pipeline Coatings (Falling Weight Test)*
 ASTM G95, *Standard Test Method for Cathodic Disbondment Test of Pipeline Coatings (Attached Cell Method)*
 AWWA C208, *Dimensions for Fabricated Steel Water Pipe Fittings*
 AWWA C210, *Liquid-Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines*
 AWWA C216, *Heat-Shrinkable Cross-Linked Polyolefin Coatings for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines,*
 AWWA C222, *Polyurethane Coatings for the Interior and Exterior of Steel Water Pipe and Fittings*
 AWWA M11, *Steel Water Pipe – A Guide for Design and Installation*
 NACE SP0188, *Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates - Item No. 21038*
 SPR 1440.1, *SSC Records Management Program Requirements*
 SSPC-SP10/NACE No. 2, *Near-White Metal Blast Cleaning*
 SSPC-SP11, *Power Tool Cleaning to Bare Metal*
 SSPC-SP5/NACE No.1, *White Metal Blast Cleaning*
 SSTD-8070-0005-CONFIG, *SSC Preparation, Review, Approval, and Release of SSC Standards*
 SSTD-8070-0013-WELD, *Classes of Welding Inspection*
 SSTD-8070-0015-WELD, *Gas Tungsten Arc Weld (GTAW) Procedure for Carbon Steel (P-1, Group No. 1 or 2)*
 SSTD-8070-0112-IDCODES, *Test Complex Line Designator Numbers*
 SSTD-8070-0124-IDCODES, *Identification of Piping Systems and Above-Ground Markers*

4.0 DESIGN REQUIREMENTS

Service

Design Pressure

Temperature Range

Water

300 psig

32°F to 200°F