# Engineering Standard

SAES-S-050 5 February 2006

Sprinkler and Standpipe Systems in Buildings

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## Saudi Aramco DeskTop Standards

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Revised paragraphs are indicated in the right margin

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## 1 Scope

1.1 This Saudi Aramco Engineering Standard establishes the system components for sprinkler, standpipe or combined systems in Saudi Aramco operated and/or maintained buildings.

1.2 It covers the branch piping of raw/fire water combined distribution system or dedicated firewater distribution system, downstream of the isolation valve, and system components thereafter serving the sprinkler, standpipe or combined systems of a building.

1.3 This standard shall be used in conjunction with the SAES-M-100, Saudi Aramco Building Code, with the exception that Fire Extinguishing Systems shall comply with the current edition of the following Industry Standards with certain modifications listed in this standard.

1) NFPA 13 Installation of Sprinkler Systems

2) NFPA 14 Installation of Standpipe and Hose Systems

## 2 Conflicts and Deviations

2.1 Any conflicts between this standard and other applicable Saudi Aramco Engineering Standards (SAESs), Materials System Specifications (SAMSSs), Standard Drawings (SASDs), or industry standards, codes, and forms shall be resolved in writing by the Company or Buyer Representative through the Manager, Consulting Services Department of Saudi Aramco, Dhahran.

2.2 Direct all requests to deviate from this standard in writing to the Company or Buyer Representative, who shall follow internal company procedure SAEP-302 and forward such requests to the Manager, Consulting Services Department of Saudi Aramco, Dhahran.

## 3 References

The selection of material and equipment, and the design, construction, maintenance, and repair of equipment and facilities covered by this standard shall comply with the latest edition of the references listed below, unless otherwise noted.

3.1 Saudi Aramco References

Saudi Aramco Engineering Procedure

*SAEP-302* *Instructions for Obtaining a Waiver of a Mandatory Saudi Aramco Engineering Requirement*

Saudi Aramco Engineering Standards

| | |
|---|---|
| *SAES-A-004* | *Pressure Testing* |
| *SAES-H-002* | *Internal and External Coatings for Steel Pipelines and Piping* |
| *SAES-L-006* | *Metallic Pipe Selection* |
| *SAES-L-008* | *Selection of Valves* |
| *SAES-L-032* | *Material Selection for Piping Systems* |
| *SAES-L-060* | *Nonmetallic Piping* |
| *SAES-M-100* | *Aramco Building Code* |
| *SAES-S-060* | *Aramco Plumbing Code* |
| *SAES-X-400* | *Cathodic Protection of Buried Pipelines* |

Saudi Aramco Materials System Specifications

| | |
|---|---|
| *01-SAMSS-034* | *RTR (Fiberglass) Pressure Pipe and Fittings* |
| *02-SAMSS-005* | *Butt Welding Pipe Fittings* |
| *02-SAMSS-011* | *Forged Steel Weld Neck Flanges for Low and Intermediate Temperature Service* |

Saudi Armco Engineering Standard Drawings

| | |
|---|---|
| *AD-036090* | *Joints for Welding Cement Lined Pipe* |

General Instructions

| | |
|---|---|
| *GI-0432.000* | *Pipeline Hydrotest Water Disposal* |

3.2 Industry Codes and Standards

American National Standards Institute

| | |
|---|---|
| *ANSI B1.20.1* | *Pipe Threads, General Purpose* |
| *ANSI B16.3* | *Malleable Iron Threaded Fittings Classes 150 & 300* |
| *ANSI B16.9* | *Factory-Made Wrought Steel Butt welding Fittings* |

American Petroleum Institute

| | |
|---|---|
| *API STD 5L* | *Specification for Line Pipe* |

American Society of Mechanical Engineers

| | |
|---|---|
| *ASME B16.5* | *Pipe Flanges & Flanged Fittings* |

American Society for Testing and Materials

| | |
|---|---|
| *ASTM A105* | *Forgings, Carbon Steel, for Piping Components* |
| *ASTM A53* | *Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless* |
| *ASTM A197* | *Cupola Malleable Iron* |
| *ASTM A234* | *Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures* |
| *ASTM A307* | *Carbon Steel Externally Threaded Standard Fasteners* |
| *ASTM A312* | *Seamless and Welded Austenitic Stainless Steel Pipes* |

American Water Works Association

| | |
|---|---|
| *AWWA C151* | *Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids* |

American Welding Society

| | |
|---|---|
| *AWS A5.8* | *Brazing Filler Metal* |

British Standards Institution

| | |
|---|---|
| *BS 729* | *Hot Dip Galvanized Coatings on Iron and Steel Articles* |
| *BS 1640* | *Steel Butt-Welding Pipe Fittings for the Petroleum Industry.*<br>*Part 2: Wrought Iron and Austenitic Cr-Ni Steel Fittings,*<br>*Part 4: Wrought Iron and Austenitic Cr-Ni Steel Fittings (Metric)* |
| *BS 1845* | *Filler Metals for Brazing* |
| *BS 2871* | *Copper and Copper Alloys Tubes;*<br>*Part 2: Tubes for General Purposes* |
| *BS 4504* | *Circular Flanges for Pipes, Valves and Fittings* |

German Standards

| | |
|---|---|
| *DIN 1755* | *Wrought Copper Alloy Tubes* |
| *DIN 8513* | *Braze and Braze Weld Filler Metals, Part 3* |
| *DIN 17671* | *Tubes of Copper and Wrought Copper Alloys, Strength Properties* |
| *DIN 6037* | *Loose Flanges and Welded Stub Ends for Pipes of Forged Copper Alloys; Nominal Pressures 10, 16 and 25.* |

The Engineering Equipment and Materials Users Association

| | |
|---|---|
| *EEMUA* | *Publication No. 144 - 90/10 Copper Nickel Alloy Piping; Specification: Tubes, Seamless and Welded* |
| *EEMUA* | *Publication No. 145 - 90/10 Copper Nickel Alloy Piping; Specifications: Flanges, Composite and Solid* |
| *EEMUA* | *Publication No. 146 - 90/10 Copper Nickel Alloy Piping; Specifications: Fittings* |

International Organization for Standardization

| | |
|---|---|
| *ISO 2531* | *Ductile Iron Pipes, Fittings and Accessories for Pressure Pipelines* |

National Fire Protection Association

| | |
|---|---|
| *NFPA 13* | *Installation of Sprinkler Systems* |
| *NFPA 14* | *Installation of Standpipe and Hose Systems* |

## 4 Modifications of NFPA 13, Installation of Sprinkler Systems

4.1 Summary of Modifications of NFPA 13

| NFPA 13 1996 Edition Chapter Number | Title | Remarks | Page No. |
|---|---|---|---|
| **Chapter 1** | **General Information** | | |
| Chapter 1-1 | Scope | No Change | - |
| Chapter 1-2 | Purpose | No Change | - |
| Chapter 1-3 | Retroactive Clause | No Change | - |
| Chapter 1-4 | Definitions | Modified | 7 |
| Chapter 1-5 | Abbreviations | No Change | - |
| Chapter 1-6 | Level of Protection | Modified | 7 |

| | | | |
|---|---|---|---|
| Chapter 6-6 | In-Rack Sprinklers | No Change | - |
| **Chapter 7** | **Water Supplies** | | |
| Chapter 7-1 | General | Modified | 12 |
| Chapter 7-2 | Types | No Change | - |
| **Chapter 8** | **System Acceptance** | | |
| Chapter 8-1 | Approval of Sprinkler Systems | No Change | - |
| Chapter 8-2 | Acceptance Requirements | Modified | 13 |
| Chapter 8-3 | Circulating Closed Loop Systems | Modified | 13 |
| Chapter 8-4 | Instructions | No Change | - |
| Chapter 8-5 | Hydraulic Design Information Sign | No Change | - |
| Chapter 8-6 | Circulating Close Loop Systems | Modified | 13 |
| **Chapter 9** | **Marine Systems** | | |
| Chapter 9-1 | General | No Change | - |
| Chapter 9-2 | System Components, Hardware, and Use | No Change | - |
| Chapter 9-3 | System Requirements | No Change | - |
| Chapter 9-4 | Installation Requirements | No Change | - |
| Chapter 9-5 | Design Approaches | No Change | - |
| Chapter 9-6 | Water Supplies | No Change | - |
| Chapter 9-7 | Plans and Calculations | No Change | - |
| Chapter 9-8 | System Acceptance | No Change | - |
| Chapter 9-9 | System Maintenance | No Change | - |
| **Chapter 10** | **System Maintenance** | | |
| Chapter 10-1 | General | No Change | - |
| **Chapter 11** | **Referenced Publications** | **No Change** | **-** |
| Appendix A | Explanatory Material | No Change | - |
| Appendix B | Miscellaneous Topics | No Change | - |
| Appendix C | Referenced Publications | No Change | - |

4.2 Detailed Modifications of NFPA 13

The following paragraph numbers refer to NFPA 13, which is part of this standard. The text in each paragraph below is an addition, exception, modification, or deletion to NFPA 13 as noted. Paragraph numbers not appearing in NFPA 13 are new paragraphs to be inserted in numerical order.

Chapter 1 (NFPA 13)
General Information

1-4.1 NFPA Definitions. Replace the definition of "Authority Having Jurisdiction" by the following statements.

1-4.1.1 The Authority Having Jurisdiction of waiver approval is vested in the Manager of Responsible Engineering Organization, as defined in SAEP-302.

1-4.1.2 The Authority Having Jurisdiction, regarding the technical aspects, applicability or clarification of this standard, rests with the Chairman of Plumbing and Utility Standards Committee.

1-4.1.3 The Authority Having Jurisdiction, regarding the fire safety aspect of the requirements in this standard including the building classifications, system requirements, design approaches, and approval of fire extinguishing systems, working plans and calculations, is the Chief Fire Prevention Engineer of Loss Prevention Department.

1-4.1.4 Approval of construction and inspection of fire extinguishing systems, covered by this standard, shall be performed by person designated for these tasks in accordance with the current procedures of Saudi Aramco.

1-4.7 (Addition) Any change in the occupancy classifications shall be approved by the Chief Fire Prevention Engineer of Loss Prevention Department.

1-6 (Addition) Any change in the level of protection shall be approved by the Chief Fire Prevention Engineer of Loss Prevention Department.

## Chapter 2 (NFPA 13)
## System Components And Hardware

2-3.1 (Exception) Pipe or tube used in above ground sprinkler, standpipe or combined systems shall be of the materials listed in Tables 2-3.1(A) and 2-3.1(B). All piping and tubing shall withstand a minimum working pressure of not less than 1026 kPa (175 psi). Refer to SAES-L-006 for limitation on pipe sizes.

**Table 2-3.1(A) - Piping Materials For Use With A Raw Water Supply**

| Materials and Dimensions | Standard |
|---|---|
| Pipe, steel, schedule 30, black or galvanized for piping 8 inch nominal pipe size (NPS) and larger | ASTM A53<br>API STD 5L Grade B |
| Pipe, steel, schedule 40, black or galvanized for piping less than 8 inch NPS | ASTM A53<br>API STD 5L Grade B |

Refer to paragraph 2-3.1.1 and 2-3.1.2 for additional requirements.

**Table 2.3.1(B) – Piping Materials for Use with a Sea Water Supply**

| Materials and Dimensions | Standard |
|---|---|
| Pipe, steel, schedule 30, cement-lined or FBE lined per SAES-H-002 for piping 8 inch NPS and larger | ASTM A53<br>API STD 5L Grade B |
| Pipe, steel, schedule 40, cement-lined or FBE lined per SAES-H-002 for piping less than 8 inch NPS | ASTM A53<br>API STD 5L Grade B |
| Tube, copper-nickel or UNS S31254, seamless, 20 bar (2000 kPa) for piping 4 inch NPS and smaller, 16 bars (1600 kPa) for piping larger than 4 inch NPS:<br>**Material Designation in Standard**<br>90/10 copper-nickel-iron (CN 102) | <br><br><br><br>BS 2871: Part 2<br>and EEMUA Publication |

| | |
|---|---|
| CuNi 10 Fe (Material No. 2.0872)<br>UNS S31254 | No. 144<br>DIN 17671/DIN 1755<br>ASTM A312 |

Refer to paragraph 2.3.1.1 and 2.3.1.2 for additional requirements.

2-3.1.1 (Addition) Ferrous pipe shall not be used downstream of any copper-nickel pipe or tube.

2-3.1.2 (Addition) Carbon steel pipe schedule 40, 2 inches or smaller shall be galvanized.

2-3.2, 2-3.3 and 2-3.4 Deleted.

2-3.5 and Table 2-3.5 Deleted.

2-3.6 (Exception) Exclude Copper pipes.

2-4.1 (Exception) Fittings used in sprinkler, standpipe or combined systems shall be of the materials listed in Tables 2-4.1(A) and 2-4.1(B). Fittings shall withstand a minimum working pressure of not less than 1026 kPa (175 psi).

**Table 2-4.1(A) - Fittings For Use With A Raw Water Supply**

| Materials and Dimensions | Standard |
|---|---|
| Malleable Iron Threaded Fittings, for smaller than sizes 4 inch NPS, ANSI B16.3 dimensions, black or galvanized to match pipe, Class 150, will taper threads per ANSI B1.20.1 | ASTM A197 |
| Factory-Made Wrought Carbon Steel, Grade WPB, for Welding Fittings, for sizes 4 inch NPS and larger, ANSI B16.9 dimensions, Class 150, ASTM A234 | 02-SAMSS-005 |
| Steel Pipe Flanges and Flanged Fittings; ASME B16.5AS dimensions, Class 150, ASTM A105 | 02-SAMSS-011 |

**Table 2-4.1(B) - Fittings For Use With A Sea Water Supply**

| Materials and Dimensions | Standard |
|---|---|
| Factory-made Wrought Carbon Steel, Grade WPB, for Welding Fittings for piping 4 inch NPS and larger, ANSI B16.9 dimensions, Class 150, Cement or FBE lined per SAES-H-002 | ASTM A234 |
| Steel Pipe Flanges and Flanged Fittings, ASME B16.5 dimensions, Class 150, Cement or FBE lined per SAES-H-002 | ASTM A105 |
| Flanges, Composite Blind Disc: 90/10 copper-nickel-iron, ASME B16.5 dimensions, 5 mm thick | BS 2871: Part 2 and EEMUA Publication No. 145<br>DIN 17671/DIN 1755 |
| Outer Flange: Steel, galvanized pwer BS 729 (610 g/m²), ASME B16.5 dimensions, Class 150 | ASTM A105 |
| Flange, Composite, Weld Neck | BS 2871: Part 2 and |

| | |
|---|---|
| Inner Flange: 90/10 copper-nickel, BS 4504: Part 2, Table 10.25 and 16.25 (DIN 6037 dimensions) | EEMUA Publication No. 145 DIN 17671/DIN 1755 |
| Outer Flange: Steel, galvanized per BS 729 (610 g/ m²), ASME B16.5 dimensions, Class 150 | ASTM A105 |
| Flange, Composite, Slip-on<br>Inner Flange: 90/10 copper-nickel, BS 4504 dimensions | BS 2871: Part 2 and EEMUA Publication No. 145 DIN 17671/ DIN 1755 |
| Outer Flange: Steel, galvanized per BS 729 (610 g/ m²), ASME B16.5 dimensions, Class 150 | ASTM A105 |
| Flange bolts, carbon steel, Grade B | ASTM A307 |
| Pipe Fittings, butt or socket welding, 90/10 copper-nickel, pressure rating to match tubing, type as required to BS 1640 dimensions | BS 2871: Part 2 and EEMUA Publication No. 146 DIN 17671/ DIN 1755 |
| Brazing fittings and connectors, 90/10 copper-nickel, capillary x capillary or capillary x NPT, type as required, with or without integral silver-brazing alloy rings | BS 2871: Part 2 and EEMUA Publication No. 146 DIN 17671/ DIN 1755 |
| Brazing filler metal:<br>BAg-7<br>AG 14<br>L-Ag55Sn (Material No. 2.5159) | <br>AWS A5.8, Table 1<br>BS 1845, Table 2<br>DIN 8513: Part 3, Table 1 |

2-4.2 and Table 2-4.2 Deleted.

2-5.1.1 (Addition) Steel pipe larger than 4 inch NPS shall not be joined by threaded connections.

2-5.1.2 (Addition) Joints for copper-nickel tube shall be made by one of the following methods:

a) Composite flanges;

b) Butt welding;

c) Socket welding;

d) Copper-nickel capillary brazing fittings or connectors.

2-5.1.3 (Addition) Joints between steel pipe and copper-nickel tube shall be made with an insulating flange or a dielectric union.

2-5.2.1 (Addition)

a) Cement lined pipes and fittings shall be joined in accordance with Saudi Aramco Engineering Standard Drawing AD-036090

b) FBE lined pipes and fittings shall be joined using flanges or approved mechanical couplings

2-5.4 and 2-5.4.1 Deleted.

2-5.5 Other joint types shall be approved by the Chief Fire Prevention Engineer of the Loss Prevention Dept., and the Chairman of the Plumbing and Utilities Committee.

2-7.1.1 (Addition) All valves shall comply with the provisions of SAES-L-008.

2-7.1.2 (Exception) Minimum pressure rating of valves shall be 12.1 bar (175 psi). When water pressures exceed 12.1 bar (175 psi), valves shall be used in accordance with their pressure ratings.

2-8.1 (Exception) The fire department connection shall comply with SAES B-017.

2-9 Deleted.

Chapter 3 (NFPA 13)
System Requirements

3-5 Deleted.

3-6 Deleted.

Chapter 4 (NFPA 13)
Installation Requirements

4-14.3.6.1 (Addition) Indirect connection, if used, shall be in accordance with SAES-S-060.

4-14.3.6.2 (Exception) Where drain pipes are buried underground, the pipes shall be in accordance with SAES-S-060.

4-14.4.2.1 (Exception) Where corrosive conditions are known to exist due to moisture or fumes from corrosive chemicals or both, the sprinkler system, the standpipe system or the combined system shall be coated in accordance with SAES-H-002.

4-14.4.2.3 (Exception) Steel pipe, where exposed to weather, shall be coated in accordance with SAES-H-002.

4-14.4.2.4 (Exception) Where steel pipe is used underground, the pipe shall be coated in accordance with SAES-H-002, and shall be cathodically protected if required by SAES-X-400.

Chapter 6 (NFPA 13)
Plans And Calculations

6-4.1 (Addition) Velocity requirements of SAES-L-032 may be disregarded for hydraulically calculated sprinkler, deluge and foam waterspray systems.

Chapter 7 (NFPA 13)
Water Supplies

7-1.2.2 (Addition) Underground firewater supply pipe or tube from the discharge end of the isolation valve, isolating the firewater supply pipe from the water main, to the first flange above ground of the sprinkler, standpipe or combined system shall be of the materials listed in Tables 7-1.2.2(A) and 7-1.2.2(B). All piping and tubing shall withstand a minimum working pressure of not less than 1026 kPa (175 psi). Refer to SAES-L-006 paragraph 2.2 for limitation on pipe sizes.

**Table 7-1.2.2(A) - Underground Raw Water Supply Piping Materials**

| Materials and Dimensions | Standard |
|---|---|
| Pipe, steel, schedule 30, cement-lined or FBE lined per SAES-H-002 for piping 8 inch NPS and larger | ASTM A53<br>API STD 5L Grade B |
| Pipe, steel, schedule 40, cement-lined or FBE lined per SAES-H-002 for piping less than 8 inch NPS | ASTM A53<br>API STD 5L Grade B |
| Pipe, ductile iron, cement-lined per SAES-H-002 for piping 12 inch NPS and larger | AWWA C151 |
| Pipe, ductile iron, cement-lined per SAES-H-002 for piping 300 mm NPS and larger | ISO 2531 |
| RTR (Fiberglass) pipe (for buried application only) Refer to SAES-L-060 for limitations | 01-SAMSS-034 |

**Table 7-1.2.2(B) - Underground Sea Water Supply Piping Materials**

| Materials and Dimensions | Standard |
|---|---|
| Pipe, steel, schedule 30, cement-lined or FBE lined per SAES-H-002 for piping 8 inch NPS and larger | ASTM A53<br>API STD 5L Grade B |
| Pipe, steel, schedule 40, cement-lined or FBE lined per SAES-H-002 for piping less than 8 inch NPS | ASTM A53<br>API STD 5L Grade B |
| Pipe, ductile iron, cement-lined per SAES-H-002 for piping 12 inch NSP and larger | AWWA C151 |
| Pipe, ductile iron, cement-lined per SAES-H-002 for piping 300 mm and larger | ISO 2531 |
| RTR (Fiberglass) pipe (for buried application only)<br>Refer to SAES-L-060 for limitations | 01-SAMSS-034 |
| Pipe, copper-nickel, seamless<br>20 bar (2000 kPa) for piping 4 inch NSP and smaller<br>16 bar (1500 kPa) for piping larger than 4 inch NSP | |
| Material Designation in Standard<br>90/10 Copper-nickel-iron (CN 102) | BS 2871: Part 2 and<br>Publication No. 144 |
| CuNi 10 Fe (Material No. 2.0872) | DIN 17671/DIN 1755 |

## Chapter 8 (NFPA 13)
## System Acceptance

8-2.2.1 (Exception) All interior piping and attached appurtenances subjected to system working pressure shall be hydrostatically tested in accordance with SAES-A-004.

8-2.2.5 (Exception) All underground firewater supply piping or tubing, shall be

hydrostatically tested in accordance with SAES-A-004.

8-2.2.6 (Exception) Disposal of water used for flushing and testing the piping system shall be in accordance with GI-0432.000.

8-2.2.9 (Addition) Additional inspection of any weld joint at any stage of the fabrication may be requested by Saudi Aramco Inspection, including re-inspection of previously inspected joints. Saudi Aramco Inspection also has the right to request or conduct independent NDT of any joint. If such testing should disclose gross non-conformance to the Code requirements, all repairs and NDT costs shall be done at the contractor's expense.

8-3 Deleted.

8.3 Deleted.

8-6 Deleted.

## 5 Modifications of NFPA 14, Installation of Standpipe and Hose Systems

5.1 Summary of Modifications of NFPA 14

| NFPA 14 1993 Edition Chapter Number | Title | Remarks | Page No. |
|---|---|---|---|
| **Chapter 1** | **General Information** | | |
| Chapter 1-1 | Scope | No Change | - |
| Chapter 1-2 | Purpose | No Change | - |
| Chapter 1-3 | Retroactivity | No Change | - |
| Chapter 1-4 | Definitions | Modified | 15 |
| Chapter 1-5 | Units | No Change | - |
| **Chapter 2** | **System Components and Hardware** | | |
| Chapter 2-1 | General | No Change | - |
| Chapter 2-2 | Pipe and Tube | Modified | 16 |
| Chapter 2-3 | Fittings | Modified | 16 |
| Chapter 2-4 | Joining of Pipe and Fittings | Modified | 16 |
| Chapter 2-5 | Hangers | No Change | - |
| Chapter 2-6 | Valves | Modified | 17 |
| Chapter 2-7 | Hose Stations | No Change | - |
| Chapter 2-8 | Hose Connections | No Change | - |
| Chapter 2-9 | Fire Department Connections | Modified | 17 |
| Chapter 2-10 | Signs | No Change | - |
| **Chapter 3** | **System Requirements** | | |
| Chapter 3-1 | General | No Change | - |
| Chapter 3-2 | Types of Standpipe Systems | No Change | - |
| Chapter 3-3 | Classes of Standpipe Systems | No Change | - |
| Chapter 3-4 | Requirements for Manual Standpipe Sysems.. | No Change | - |
| Chapter 3-5 | Requirements for Dry Standpipe Systems | No Change | - |
| Chapter 3-6 | Gauges | No Change | - |

| | | | |
|---|---|---|---|
| Chapter 3-7 | Water Flow Alarms..... | Modified | 17 |
| **Chapter 4** | **Installation Requirements** | | |
| Chapter 4-1 | Location and Protection of Piping..... | Modified | 17 |
| Chapter 4-2 | Gate Valves and Check Valves..... | No Change | - |
| Chapter 4-3 | Fire Department Connections..... | No Change | - |
| Chapter 4-4 | Support of Piping..... | No Change | - |
| Chapter 4-5 | Installation of Signs..... | No Change | - |
| Chapter 4-6 | Signs for Water Supply Pumps..... | No Change | - |
| Chapter 4-7 | Hydraulic Design Information Sign..... | No Change | - |
| **Chapter 5** | **Design** | | |
| Chapter 5-1 | General..... | No Change | - |
| Chapter 5-2 | Pressure Limitation..... | No Change | - |
| Chapter 5-3 | Location of Hose Connections..... | No Change | - |
| Chapter 5-4 | Number of Standpipes..... | No Change | - |
| Chapter 5-5 | Interconnection of Standpipes..... | No Change | - |
| Chapter 5-6 | Minimum Sizes for Standpipes..... | No Change | - |
| Chapter 5-7 | Minimum Pressure for System Design and Sizing of Pipe..... | No Change | - |
| Chapter 5-8 | Maximum Pressure for Hose Connections..... | No Change | - |
| Chapter 5-9 | Minimum Flow Rates for Hydraulically Designed Systems..... | No Change | - |
| Chapter 5-10 | Equivalent Pipe Lengths of Valves and Fittings for Hydraulically Designed.Systems.... | No Change | - |
| **Chapter 5-11** | **Drains and Test Riser.....** | **Modified** | **17** |
| **Chapter 5-12** | **Fire Department Connections.....** | **No Change** | **-** |
| Chapter 6 | Plans And Calculations | | |
| **Chapter 6-1** | **Plan and Specifications.....** | **No Change** | **-** |
| **Chapter 6-2** | **Hydraulic Calculations.....** | **No Change** | **-** |
| Chapter 7 | Water Supplies | | |
| **Chapter 7-1** | **Required Water Supply.....** | **Modified** | **17** |
| **Chapter 7-2** | **Minimum Supply for Class I and Class III Systems.....** | **No Change** | **-** |
| **Chapter 7-3** | **Minimum Supply for Class II Systems.....** | **No Change** | **-** |
| **Chapter 7-4** | **Standpipe System Zones.....** | **No Change** | **-** |
| **Chapter 8** | **System Acceptance** | | |
| **Chapter 8-1** | **General.....** | **No Change** | **-** |
| **Chapter 8-2** | **Flushing of Piping.....** | **Modified** | **18** |
| Chapter 8-3 | Hose Threads..... | No Change | - |
| Chapter 8-4 | Hydrostatic Tests..... | Modified | 18 |
| Chapter 8-5 | Flow Tests..... | No Change | - |
| Chapter 8-6 | Manual Valve Test..... | No Change | - |
| Chapter 8-7 | Alarm Supervision Tests..... | No Change | - |
| Chapter 8-8 | Instructions..... | No Change | - |
| Chapter 8-9 | Signs..... | No Change | - |
| **Chapter 9** | **Buildings Under Construction** | | |
| Chapter 9-1 | General..... | No Change | - |
| Chapter 9-2 | Fire Department Connections..... | No Change | - |
| Chapter 9-3 | Other System Features..... | No Change | - |
| Chapter 9-4 | Support of Piping..... | No Change | - |
| Chapter 9-5 | Hose Connections..... | No Change | - |
| Chapter 9-6 | Extension of System Piping..... | No Change | - |

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|---|---|---|---|
| Chapter 9-7 | Temporary Installations..... | No Change | - |
| Chapter 9-8 | Timing of Water Supply Installation..... | No Change | - |
| Chapter 9-9 | Protection of Hose Connections and Fire Fire Department Connections..... | No Change | - |
| **Chapter 10** | **Referenced Publications.....** | **No Change** | **-** |
| Appendix A | ..... | No Change | - |
| Appendix B | Referenced Publications..... | No Change | - |

5.2 Detailed Modifications of NFPA 14

The following paragraph numbers refer to NFPA 14, which is part of this standard. The text in each paragraph below is an addition, exception, modification, or deletion to NFPA 14 as noted. Paragraph numbers not appearing in NFPA 14 are new paragraphs to be inserted in numerical order.

Chapter 1 (NFPA 14)
General Information

1-4 Definitions. Replace the definition of "Authority Having Jurisdiction" by the statements 1-4.1.1, 1-4.1.2, 1-4.1.3, and 1-4.1.4 listed under the Section 4.2 (Detailed Modification of NFPA 13) of this standard.

Chapter 2 (NFPA 14)
System Components And Hardware

2.2.1 (Exception) Replace the section including Table 2-2.1 by the requirements of 2-3.1, 2-3.1.1, 2-3.1.2, Table 2-3.1(A) and Table 2-3.1(B) listed under Section 4.2 (Detailed Modification of NFPA 13) of this standard.

2-2.2, 2-2.3 2-2.4 and 2-2.5 Deleted.

2-2.6 (Exception) Exclude copper pipes.

2-3.1 (Exception) Replace the section including Table 2-3.1 by the requirements of 2-4.1 (Exception), Table 2-4.1(A) and Table 2-4.1(B) listed under Section 4.2 (Detailed Modification of NFPA 13) of this standard.

2-3.2 Deleted.

2-4.1.1 (Addition) Threaded connection requirements shall be the same as of paragraph 2-5.1.1 of Section 4.2 (Detailed Modification of NFPA 13) of this standard.

2-4.1.2. (Addition) Joints for copper- nickel pipe shall be made as per paragraph 2-5.1.2 and 2-5.1.3 listed under the Section 4.2 (Detailed Modification of NFPA 13) of this standard.

2-4.2.1 (Addition) Joints for cement-lined pipes and fittings, and FBE-lined pipes and fittings shall be made as per paragraph 2-5.2.1.

2-4.4, 2-4.4.1 and 2-4.4.2 Deleted.

2-4.5 Other joint types shall be approved by the Chief Fire Prevention Engineer of the Loss Prevention Dept., and the Chairman of the Plumbing and Utility Standards Committee.

2-6 (Addition) All valves shall comply with the provisions of SAES-L-008.

2-9.2 (Exception) The fire department connection shall comply with SAES-B-017.

Chapter 3 (NFPA 14)
System Requirements

Chapter 4 (NFPA 14)
Installation Requirements

4-1.2.4 (Exception) Replace the section by the requirements of 4-6.4.2.1, 4-6.4.2.3 and 4-6.4.2.4 listed under Section 4.2 (Detailed Modification of NFPA 13) of this standard.

Chapter 5 (NFPA 14)
Design

5-11.2 (Addition) Indirect connection and underground drain pipe shall be in accordance with SAES-S-060.

Chapter 7 (NFPA 14)
Water Supplies

7-1.1 (Addition) Underground water supply piping material shall be in accordance with the requirements of 7-1.2.2 listed under Section 4.2 (Detailed Modification of NFPA 13) of this standard.

Chapter 8 (NFPA 14)
System Acceptance

8-2.2 (Addition) Disposal of water used for flushing and testing the piping system shall be in accordance with GI-0432.000.

8-4.1 (Exception) Replace the statement by the requirements of 8-2.2.1 and 8-2.2.5 listed under Section 4.2 (Detailed Modification of NFPA 13) of this standard.

**Revision Summary**

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| 5 February 2006 | Revised the "Next Planned Update". Reaffirmed the contents of the document, and reissued with no other changes. |