24
NFPA® 24
Standard for the Installation
of Private Fire Service Mains
and Their Appurtenances
Handbook 2013
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# NFPA® 24 Standard for the Installation of Private Fire Service Mains and Their Appurtenances Handbook 2013

Annotated by Matthew J. Klaus



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# NFPA<sup>®</sup> 24

# Standard for the

# **Installation of Private Fire Service Mains and Their Appurtenances**

#### 2013 Edition

This edition of NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*, was prepared by the Technical Committee on Private Water Supply Piping Systems and released by the Technical Correlating Committee Automatic Sprinkler Systems. It was issued by the Standards Council on May 29, 2012, with an effective date of June 18, 2012, and supersedes all previous editions.

This edition of NFPA 24 was approved as an American National Standard on June 18, 2012.

#### Origin and Development of NFPA 24

In 1903, the NFPA Committee on Hose and Hydrants first presented *Specifications for Mill Yard Hose Houses*, taken substantially from a standard published by the Eastern Factory Insurance Association. This text was revised and adopted in 1904. The NFPA Committee on Field Practice amended the Specifications in 1926, published as NFPA 25.

In 1925, the Committee on Field Practice prepared a *Standard on Outside Protection, Private Underground Piping Systems Supplying Water for Fire Extinguishment*, which was adopted by NFPA. It was largely taken from the 1920 edition of the NFPA *Automatic Sprinkler Standard*, Section M on Underground Pipes and Fittings. In September 1931, a revision was made, with the resulting standard designated as NFPA 24. In the 1981 edition the title was changed from *Standard for Outside Protection* to *Standard for the Installation of Private Fire Service Mains and Their Appurtenances.* 

In 1953, on recommendation of the Committee on Standpipes and Outside Protection, the two standards (NFPA 24 and NFPA 25) were completely revised and adopted as NFPA 24. Amendments were made leading to separate editions in 1955, 1959, 1962, 1963, 1965, 1966, 1968, 1969, 1970, 1973, 1977, 1981, 1983, and 1987.

The 1992 edition included amendments to further delineate the point at which the water supply stops and the fixed fire protection system begins. Minor changes were made concerning special topics such as thrust restraint and equipment provisions in valve pits.

The 1995 edition clarified requirements for aboveground and buried piping. Revisions were made to provide additional information regarding listing requirements, signage, valves, valve supervision, hydrant outlets, system attachments, piping materials, and thrust blocks. User friendliness of the document was also addressed.

The 2002 edition represented a complete revision of NFPA 24. Changes included reorganization and editorial modifications to comply with the *Manual of Style for NFPA Technical Committee Documents*. Additionally, all of the underground piping requirements were relocated into a new Chapter 10.

The 2007 edition was revised in five major areas: Chapter 10 was editorially updated and minor technical changes were made. In addition, newly established leakage test criteria, as well as updated requirements for thrust blocks and restrained joints were added to Chapter 10. Two annexes were new to this edition: Annex C, *Recommended Practice for Five Flow Testing*, and Annex D, *Recommended Practice for Marking of Hydrants*. These two annexes were developed based on the 2002 edition of NFPA 291.

The 2010 edition was revised in three major areas: the provisions for location and identification of fire department connections, valves controlling water supply, and protection of fire service mains entering the building.

The 2013 edition of NFPA 24 includes clarifications on the requirements for running piping under buildings, including annex figures depicting clearances. The Contractors Material and Test Certificate for Underground Piping (*Figure 10.10.1*) was modified to include confirmation that the forward flow test of the backflow preventer has been conducted. A provision requiring the automatic drip valve to be located in an accessible location that permits inspections in accordance with NFPA 25 was also added.

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NFPA 2013 Edition

# NFPA 24

# Standard for the

# Installation of Private Fire Service Mains and Their Appurtenances

### 2013 Edition

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Information on referenced publications can be found in Chapter 2 and Annex E.

#### ▲ Chapter 1 Administration

#### 1.1 Scope.

**1.1.1** This standard shall cover the minimum requirements for the installation of private fire service mains and their appurtenances supplying the following:

- (1) Automatic sprinkler systems
- (2) Open sprinkler systems
- (3) Water spray fixed systems
- (4) Foam systems
- (5) Private hydrants
- (6) Monitor nozzles or standpipe systems with reference to water supplies
- (7) Hose houses

**1.1.2** This standard shall apply to combined service mains used to carry water for fire service and other uses.

1.1.3 This standard shall not apply to the following situations:

- (1) Mains under the control of a water utility
- (2) Mains providing fire protection and/or domestic water that are privately owned but are operated as a water utility

**1.1.4** This standard shall not apply to underground mains serving sprinkler systems designed and installed in accordance with NFPA 13R that are under 4 in. (102 mm) in size.

- ▲ 1.1.5 This standard shall not apply to underground mains serving sprinkler systems designed and installed in accordance with NFPA 13D.
- ▲ 1.2 Purpose. The purpose of this standard shall be to provide a reasonable degree of protection for life and property from fire through installation requirements for private fire service main systems based on sound engineering principles, test data, and field experience.
- ▲ 1.3 Retroactivity. The provisions of this standard reflect a consensus of what is necessary to provide an acceptable degree of protection from the hazards addressed in this standard at the time the standard was issued.

**1.3.1** Unless otherwise specified, the provisions of this standard shall not apply to facilities, equipment, structures, or installations that existed or were approved for construction or installation prior to the effective date of the standard. Where specified, the provisions of this standard shall be retroactive.

**1.3.2** In those cases where the authority having jurisdiction determines that the existing situation presents an unacceptable degree of risk, the authority having jurisdiction shall be permitted to apply retroactively any portions of this standard deemed appropriate.

**1.3.3** The retroactive requirements of this standard shall be permitted to be modified if their application clearly would be impractical in the judgment of the authority having jurisdiction and only where it is clearly evident that a reasonable degree of safety is provided.

▲ 1.4 Equivalency. Nothing in this standard is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this standard. Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency. The system, method, or device shall be approved for the intended purpose by the authority having jurisdiction.

#### 1.5 Units.

**1.5.1** Metric units of measurement in this standard shall be in accordance with the modernized metric system known as the International System of Units (SI). Liter and bar units are not part of, but are recognized by, SI and are commonly used in international fire protection. These units are shown in Table 1.5.1 with conversion factors.

Table 1.5.1 Conversion Table for SI Units

Name of Unit	Unit Symbol	<b>Conversion Factor</b>
Liter	L	1 gal = 3.785 L
Liter per minute per square meter	$(L/min)/m^2$	$1 \text{ gpm/ft}^2 = (40.746 \text{ L/min})/\text{m}^2$
Cubic decimeter	$dm^3$	$1 \text{ gal} = 3.785 \text{ dm}^3$
Pascal	Pa	1 psi = 6894.757 Pa
Bar	bar	1  psi = 0.0689  bar
Bar	bar	$1 \text{ bar} = 10^5 \text{ Pa}$

Note: For additional conversions and information, see IEEE/ASTM-SI-10.