

NFPA 170

Firesafety Symbols

1991 Edition



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The Board of Directors reaffirms that the National Fire Protection Association recognizes that the toxicity of the products of combustion is an important factor in the loss of life from fire. NFPA has dealt with that subject in its technical committee documents for many years.

There is a concern that the growing use of synthetic materials may produce more or additional toxic products of combustion in a fire environment. The Board has, therefore, asked all NFPA technical committees to review the documents for which they are responsible to be sure that the documents respond to this current concern. To assist the committees in meeting this request, the Board has appointed an advisory committee to provide specific guidance to the technical committees on questions relating to assessing the hazards of the products of combustion.

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NFPA 170
Standard for
Firesafety Symbols
1991 Edition

This edition of NFPA 170, *Standard for Firesafety Symbols*, was prepared by the Technical Committee on Firesafety Symbols and acted on by the National Fire Protection Association, Inc. at its Fall Meeting held November 12-14 in Miami, FL. It was issued by the Standards Council on January 11, 1991, with an effective date of February 8, 1991, and supersedes all previous editions.

The 1991 edition of this document has been approved by the American National Standards Institute.

Changes other than editorial are indicated by a vertical rule in the margin of the pages on which they appear. These lines are included as an aid to the user in identifying changes from the last approved editions of NFPA 171, 172, 174 and 178.

Origin and Development of NFPA 170

This 1991 (and first) edition of NFPA 170 represents an effort to combine four previously independent documents that covered firesafety symbols for different purposes. The NFPA Standards Council established the Firesafety Symbols Project in June 1977 to develop standard symbology.

The Committee on Firesafety Symbols believes that placing all firesafety symbols in one document will make it easier for users of symbols to find the one(s) most appropriate for their application. Placing symbols within one document will also help eliminate duplication among these four documents, as well as any variations with other NFPA documents. Further integration of material to aid users will be considered in future editions.

In making NFPA 170 a standard, the Committee on Firesafety Symbols believes it is now necessary to require standardization of these important symbols.

For this 1991 edition, several new symbols have been added in Chapters 3, 4, 5 and 6. These include exiting from below grade (Chap. 3, Symbol 7), not using elevators in an emergency (Chap. 3, Symbol 8), fire pump test headers (4-3.7), dry pipe valves (4-4.2.6 and 4-4.2.7), agent storage containers (4-9.1), and gas shutoff valves (Chap. 6, Symbol 7). Supplementary indicators have been added for many symbols to increase their effectiveness. New recommended symbology for pre-fire planning is now included in Appendix C-6-4. Several symbols have been revised to reflect current practices.

The following is a description of how each of the four documents developed between 1977 and 1986 addressed a particular subject.

Chapter 3 (Formerly NFPA 171, *Public Firesafety Symbols*)

The first (and only) edition of NFPA 171 in 1986 was the culmination of efforts by the Committee to develop standardization to improve communication whenever symbols are used. The symbols in 171 were intended to provide information for the general public during fire and life safety emergencies. The symbols were tested and found to be understandable with members of the general public.

A reasonable degree of international acceptance of the symbols was achieved by coordinating these activities with eleven member countries of the International Standards Organization (ISO).

Chapter 4 (Formerly NFPA 172, *Fire Protection Symbols for Architectural and Engineering Drawings*)

NFPA 172 was the result of a concerted effort to establish a logical set of symbols that was consistent with a majority of standards-making organizations and could fit into an overall scheme of symbols required for use on architectural and engineering drawings.

The 1980 edition of this standard was the result of several years of research by fire protection specialists from the U.S.A., Canada, and Europe. A reasonable degree of international acceptance of the symbols was achieved by coordinating these activities with eleven member countries of the International Standards Organization (ISO).

The 1986 edition included revisions to symbols and deletion of alternative symbols, in addition to a new chapter on smoke/pressurization control.

Chapter 5 (Formerly NFPA 174, *Fire Protection Symbols for Risk Analysis Diagrams*)

This document originated with a news release, distributed to publishers of over 1,500 technical periodicals worldwide, calling for input to this work. Replies were received from ninety-five organizations interested in fire protection symbols standardization. For each "referent" selected, inconsistencies frequently were found in the use of symbols. In some cases several different symbols were being used by different organizations for the same referent. Nevertheless, it was widely recognized that information for fire protection analysis of building and plant layout, basic building construction, operation of structures, divided and undivided areas, and locations of protection systems could not be conveyed as clearly by other methods as it could be in a properly drawn diagram.

The 1980 edition of this standard was the result of a concerted effort to establish a logical set of symbols that could fit into an overall scheme of symbols for fire risk analysis diagrams.

The 1986 edition updated and partially revised the 1980 edition.

Chapter 6 (Formerly NFPA 178, *Symbols for Fire Fighting Operations*)

NFPA 178 was based on coordination with other agencies, both domestically and internationally. The 1980 edition was the culmination of efforts by the Committee to develop such standardization to ease communication whenever symbology was employed to provide information to fire fighters in locating fire fighting equipment and utilities.

Minor changes were made for the 1986 edition, including the revision of the directional arrow symbols to match DOT signage, and the addition of more appendix material.

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NFPA 170**Standard for Firesafety Symbols****1991 Edition**

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates explanatory material on that paragraph in Appendix A.

Information on referenced publications can be found in Chapter 7 and Appendix B.

Chapter 1 General

1-1 Scope. The scope of this standard consists of the scopes included at the beginning of Chapters 3 through 6.

1-2 Purpose. The purpose of this standard is to bring into one document all the standards under the jurisdiction of the Firesafety Symbols Committee.

1-3 Units. Metric units of measurement used in this standard are in accordance with the International System of Units (SI). One unit (liter), outside of but recognized by SI, is commonly used in international fire protection. For conversion factors, see Appendix C-5.2.

Chapter 2 Definitions**2-1 Official NFPA Definitions.**

Approved. Acceptable to the “authority having jurisdiction.”

NOTE: The National Fire Protection Association does not approve, inspect or certify any installations, procedures, equipment, or materials nor does it approve or evaluate testing laboratories. In determining the acceptability of installations or procedures, equipment or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization concerned with product evaluations which is in a position to determine compliance with appropriate standards for the current production of listed items.

Authority Having Jurisdiction. The “authority having jurisdiction” is the organization, office or individual responsible for “approving” equipment, an installation or a procedure.

NOTE: The phrase “authority having jurisdiction” is used in NFPA documents in a broad manner since jurisdictions and “approval” agencies vary as do their responsibilities. Where public safety is primary, the “authority having jurisdiction” may be a federal, state, local or other regional department or individual such as a fire chief, fire marshal, chief of a fire prevention bureau, labor department, health department, building official, electrical inspector, or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the “authority having jurisdiction.” In many circumstances the property owner or his designated agent assumes the role of the “authority having jurisdiction”; at government installations, the commanding officer or departmental official may be the “authority having jurisdiction.”

Labeled. Equipment or materials to which has been attached a label, symbol or other identifying mark of an organization acceptable to the “authority having jurisdiction” and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

Listed. Equipment or materials included in a list published by an organization acceptable to the “authority having jurisdiction” and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.

NOTE: The means for identifying listed equipment may vary for each organization concerned with product evaluation, some of which do not recognize equipment as listed unless it is also labeled. The “authority having jurisdiction” should utilize the system employed by the listing organization to identify a listed product.

Shall. Indicates a mandatory requirement.

Should. Indicates a recommendation or that which is advised but not required.

Standard. A Document containing only mandatory provisions using the word “shall” to indicate requirements. Explanatory material may be included only in the form of “fine print” notes, in footnotes, or in an appendix.

2-2 Definitions of Terms Used in the Standard.

Referent.* An object or concept (message) represented by a symbol.

Supplementary Indicators.* Figures, numbers, subscripts for letter abbreviations used to enhance the effectiveness of symbols.

Symbol.* A graphic representation of a referent.

Chapter 3 Public Firesafety Symbols

3-1 Introduction.

3-1.1 Scope. This chapter provides referents and symbols for fire prevention and visual alerting for fire and related life safety emergencies.

3-1.2 Purpose.

3-1.2.1 The purpose of this chapter is to provide uniform firesafety symbols to improve communication wherever signs and symbols are employed to provide firesafety information.

3-1.2.2 This chapter provides uniformity in the selection of symbols designed to assist in locating exits, firesafety alerting equipment, and safe areas.

3-1.2.3* The fundamental imagery for symbols, as well as their background color and shape, is designated in this chapter.

3-1.2.4* This chapter does not specify viewing distance, size, or optimal combinations of symbols, words, or other presentations.

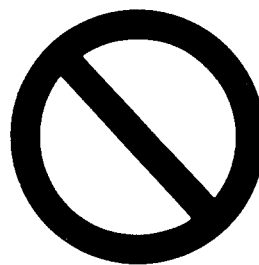
3-1.3 Symbol Presentation.

3-1.3.1 Orientation for prohibition symbols shall not be altered from this chapter.

3-1.3.2 The symbol background shape shall be square.

Exception: For prohibition symbols a circle and diagonal slash (at 45° from upper left to lower right) shall be used.

Example:



3-1.3.3 Symbol Color. The symbol color shall meet the requirements of ANSI Z53.1-1979, *Safety Color Code for Marking Physical Hazards*.

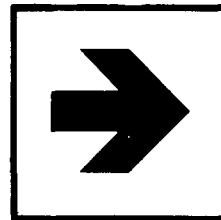
3-2 Public Firesafety Symbols.SYMBOL
NUMBER

Symbol

1



2



Referent

Emergency Exit

Emergency Exit
Route

Characteristics

Square Field;
Background
Green; Door
Opening White;
Image in Green
or BlackSquare Field;
Background
Green; Door
Opening White;
Image in Green
or Black

Application†

The identifica-
tion and loca-
tion of an emer-
gency exit.The identifica-
tion and loca-
tion of a route
to be used in an
emergency.Example:
The location of
exit for use in a
fire emergency.Example:
The direction to
a fire exit.

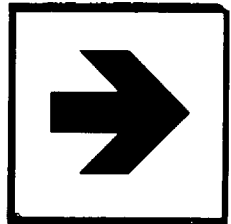
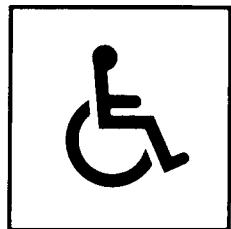
† Use is not restricted to the examples cited.

SYMBOL
NUMBER

Symbol

3

4



Referent

Handicapped
Emergency Exit

Handicapped
Emergency Exit
Route

Characteristics

Square Field;
Background
Green; Door
Opening White;
Image in Green
or Black

Square Field;
Background
Green; Door
Opening White;
Image in Green
or Black

Application†

The identifica-
tion of an emer-
gency exit that
is accessible to
handicapped
users, as
specified by
ANSI A117.1.

The identifica-
tion of a route
that leads to an
emergency exit
that is accessible
to handicapped
users.

Example:
The location of
a fire exit that is
accessible to
handicapped
users.

Example:
The location of
the route toward
a fire exit that is
accessible to
handicapped users.

† Use is not restricted to the examples cited.

SYMBOL
NUMBER

5

6

7

Symbol



Referent

Not an Exit

Use Stairs in
Case of FireUse Stairs in
Case of Fire

Characteristics

Square Field;
Red Circle and
Slash; Black Im-
age; White Back-
groundSquare Field;
Red Flame;
Black Figure;
White Back-
groundSquare Field;
Red Flame;
Black Figure;
White Back-
ground

Application†

The identifica-
tion of doors
that do NOT
lead to an exit.An instruction
to the user to
use stairs
(downward egress)
in case of fire.An instruction
to the user to
use stairs
(upward egress)
in case of fire.Example:
The location of
an interior door
such as one
leading to a
closet, interior
courtyard, or
basement.Example:
The identifica-
tion that stairs
are to be used in
case of fire.Example:
The identifica-
tion that stairs
are to be used in
case of fire.

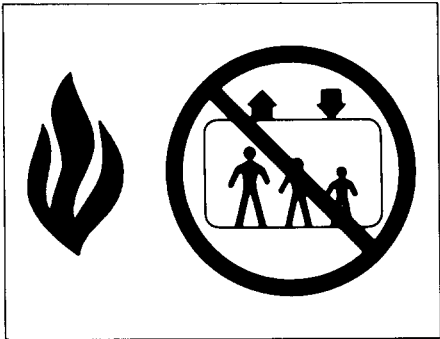
† Use is not restricted to the examples cited.

SYMBOL
NUMBER

8

9

Symbol



Referent

Do not use
elevator in case
of fire.

NO SMOKING

Characteristics

Square Field;
Red Flame;
Black Figures;
White Back-
ground;
Red Circle and
Slash

Circular Field;
Red Circle and
Slash; Black Im-
age; White
Background

Application†

An instruction
to not use
elevators in
case of fire

The identifica-
tion of areas in
which smoking
is prohibited.

Example:
Posted near
elevator call
button.

Example:
Identification of
areas, such as
those for flam-
mable liquid
storage, where
smoking could
lead to fire or
explosion.

† Use is not restricted to the examples cited.

Chapter 4 Fire Protection Symbols for Architectural and Engineering Drawings¹

4-1 Introduction.

4-1.1 Scope.

4-1.1.1 This chapter presents fire protection symbols for the architectural, engineering, and allied design fields.

4-1.1.2 Devices infrequently used in a given set of drawings are not standardized by this document. They usually are accompanied by narrative description, either on the drawing or in specifications.

4-1.2 Purpose*. This chapter provides uniformity in the preparation of documents by standardizing symbols to be used by designers of appropriate trades for working drawings of fire detection, fire suppression, and related systems.

4-1.3 Symbol Presentation.

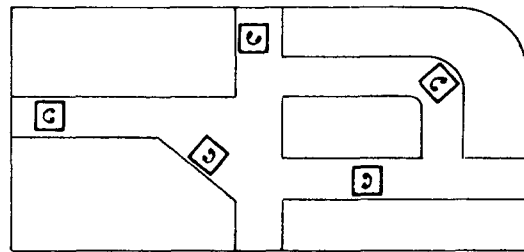
4-1.3.1 Symbol Shapes. Basic fundamental shapes are the primary emphasis of this chapter. Drawing scale, line thickness, etc., are the subject of standards on drawing practice.

4-1.3.2 Symbol Scale. Scale of the symbol is important in that the symbols shall all be used in the same relative size on any one drawing.

4-1.3.3 Symbol Orientation.

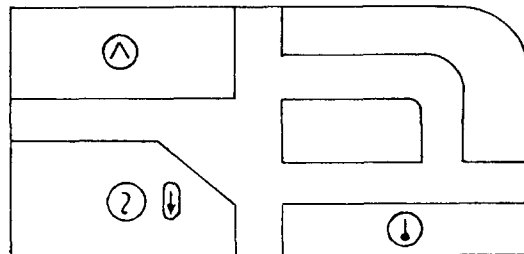
4-1.3.3.1 Orientation of some symbols shall always be changed. These symbols must always be oriented to the walls, piping, electrical lines, etc., to which they are attached. (See *Example 1*.)

Example 1:



4-1.3.3.2 Orientation of some symbols shall not be changed. These symbols shall be indicated with a dagger (†) in the standard. (See *Example 2*.)




















Example 2:







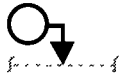








4-1.3.4 Screened Lines. Screened lines on the standard are not to be considered part of the symbol, but are used to represent the piping, wiring, or mounting surface associated with the symbol.

¹ This chapter on architectural/engineering symbols draws heavily on the symbols already developed by various societies, agencies, and industry.




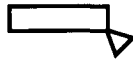
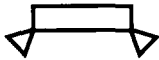


4-2 Fire Alarm and Emergency Communication Symbols.


	Referent (Synonym)	Symbol	Comments
4-2.1	Signal Initiating Devices and Switches.		
4-2.1.1	Manual Stations (Call Point)		<div> <div> H</div> <div> <div> C</div> <div> <div> D</div> <div> <div> F</div> <div> <div> W</div> </div> </div> </div> </div> </div>
4-2.1.1.1	Manual Alarm Box (Pull Station and Pull Box)		
4-2.1.1.2	Telephone Station (Telephone Call Point)		
4-2.1.1.3	Abort Switch		
4-2.1.2	Automatic Detection and Supervisory Devices		General
4-2.1.2.1†	Heat Detector (Thermal Detector)		<div> <div> R/F</div> <div> <div> R/C</div> <div> <div> F</div> <div> <div> R</div> </div> </div> </div> </div>
4-2.1.2.2†	Smoke Detector		<div> <div> P</div> <div> <div> I</div> </div> </div>
(a)	Smoke Detector in Duct		

†Symbol orientation must not be changed.



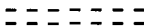








Referent (Synonym)	Symbol	Comments
4-2.1.2.3 Gas Detector		
4-2.1.2.4† Flame Detector (Flicker Detector)		Includes ultraviolet, infrared and visible radiation type detectors
4-2.1.2.5 Flow Detector/ Switch		
4-2.1.2.6† Pressure Detector/ Switch etc.		Alternate term: Pressure switch-air, water,
4-2.1.2.7† Level Detector/ Switch		
4-2.1.2.8 Tamper Detector/ Switch		Alternate term: Tamper switch
4-2.1.2.9 Valve with Tamper Detector/Switch		
4-2.2 Alerting Devices.		
4-2.2.1 Audible Type (Sounder)		
4-2.2.1.1 Speaker/Horn (Electric Horn)		 Mini Horn
4-2.2.1.2 Bell (Gong)		
4-2.2.1.3 Water Motor Alarm (Water Motor Gong)		Shield optional
4-2.2.1.4 Horn with Light (Horn with Strobe)	 	Horn with light as separate assembly Horn with light as one assembly.





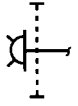



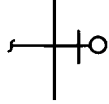

†Symbol orientation must not be changed.

	Referent (Synonym)	Symbol	Comments
4-2.2.2	Visual Type		
4-2.2.2.1	Light (Lamp, Signal Light, Indicator Lamp, Strobe)		
4-2.2.2.2	Illuminated Exit Sign		
4-2.2.2.3	Illuminated Exit Sign with Direction Arrow		
4-2.3	Emergency Illumination Symbols.		
4-2.3.1	Emergency Light, Battery Powered, one lamp		
4-2.3.2	Emergency Light, Battery Powered, two lamps		
4-2.3.3	Emergency Light, Battery Powered, three lamps		
4-2.4	Control and Supervisory Devices.		
4-2.4.1	Control Panel		<div>FCP Fire Alarm Control Panel</div> <div>FSA Fire System Annunciator</div> <div>FTR Fire Alarm Transponder or Transmitter</div> <div>ESR Elevator Status/Recall</div> <div>FAC Fire Alarm Communicator</div> <div>HCP Halon Control Panel.</div>

	Referent (Synonym)	Symbol	Comments
4-2.4.2	Door Holder		

4-3 Water Supply and Distribution Symbols.

	Referent (Synonym)	Symbol	Comments
4-3.1	Mains, Pipe.		
4-3.1.1	Public Water Main		Indicate pipe size
4-3.1.2	Private Water Main		Indicate pipe size
4-3.1.3	Water Main Under Building		Indicate pipe size
4-3.1.4	Suction Main		Indicate pipe size
4-3.1.5	Riser		
4-3.2	Valves. (See also Section 4-2.)		
4-3.2.1	Post Indicator Valve		Indicate valve size
4-3.2.2	Key-Operated Valve		Indicate valve size
4-3.2.3	OS & Y Valve (Outside Screw and Yoke, Rising Stem)		
4-3.2.4	Indicating Butterfly Valve		Indicate valve size
4-3.2.5	Nonindicating Valve (Nonrising-Stem Valve)		
4-3.2.6	Valve in Pit		Indicate valve size

	Referent (Synonym)	Symbol	Comments
4-3.2.7	Check Valve		Indicate valve size
4-3.3	Hydrants.		
4-3.3.1	Private Hydrant, One Hose Outlet		Indicate size**
4-3.3.2	Public Hydrant, Two Hose Outlets		Indicate size**
4-3.3.3	Public Hydrant, Two Hose Outlets and Pumper Connection		Indicate size**
4-3.3.4	Wall Hydrant, Two Hose Outlets		Indicate size**
4-3.3.5	Private Housed Hydrant, Two Hose Outlets		Indicate size**
4-3.4	Fire Department Connections (Siamese).		
4-3.4.1	Two-Way Fire Department Connection (Siamese Connection)		Specify type, size, and angle
4-3.4.2	Free Standing Fire Department Connection (Siamese Connection)		Sidewalk or pit type, specify size
4-3.4.3	One-way Fire Department Connection		Specify type, size, thread, and angle
4-3.5	Stored Water.		
4-3.5.1†	Water Tower or Tank Aboveground Horizontal		Indicate type, construction, size and height via notations

†Symbol orientation must not be changed.

**Symbol elements may be utilized in any combination to fit the type of hydrant.

	Referent (Synonym)	Symbol	Comments	
4-3.5.2	Water Tower or Tank Aboveground Vertical		Indicate type, construction, size, and height via notations	
4-3.5.3†	Pressure Tank		Indicate type, construction, size, and height via notations	
4-3.6	Thrust Block			
4-3.7	Fire Pump Test Header		Free standing	Specify number and sizes of outlets
			Wall	





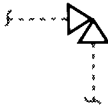




4-4 Automatic Sprinkler System Symbols.




	Referent (Synonym)	Symbol	Comments
4-4.1	Sprinklers.		
4-4.1.1	Sprinkler, General		Note 1
4-4.1.2	Upright Sprinkler		Note 1
4-4.1.3	Pendent Sprinkler		Notes 1, 2
4-4.1.4	Upright Sprinkler, Nippled Up		Note 1
4-4.1.5	Pendent Sprinkler, on Drop Nipple		Notes 1, 2
4-4.1.6	Sprinkler, With Guard		Note 1
4-4.1.7	Sidewall Sprinkler		Note 1

†Symbol orientation must not be changed.







NOTE 1: Temperature rating of sprinkler and other characteristics may be shown via legends when a limited number of an individual type of sprinkler is called for by the design.

NOTE 2: Can notate "DP" on drawing and/or in specifications when dry pendent sprinklers are employed.












	Referent (Synonym)	Symbol	Comments
4-4.1.8	Outside Sprinkler		Open sprinkler (window or cornice). Specify type, orifice, size.
4-4.2	Piping, Valves, Control Devices, Hangers. (See also Section 4-3.)		
4-4.2.1	Sprinkler Piping and Branch Line		Indicate pipe size
4-4.2.2	Sprinkler Riser		Should not be confused with foam system symbol when shown only on sprinkler plans
4-4.2.3	Valve (General)		See also Section 4-3.2
4-4.2.3.1	Angle Valve (Angle Hose Valve)		Indicate size, type, and other required data
4-4.2.4	Check Valve (General)		See also 4-3.2.7
4-4.2.5	Alarm Check Valve		
4-4.2.6	Dry-Pipe Valve		
4-4.2.7	Dry-Pipe Valve with Quick Opening Device - Accelerator or Exhauster		







	Referent (Synonym)	Symbol	Comments
4-4.2.8	Deluge Valve		Specify size and type
4-4.2.9	Preaction Valve		Specify size and type
4-4.2.10	Pipe Hanger		This symbol is a diagonal stroke imposed on the pipe that it supports
4-4.3	Alarm/Supervisory Devices. (See 4-2.1.)		

4-5 Special Hazard Extinguishing System Symbols.¹






	Referent (Synonym)	Symbol	Comments
4-5.1	Water-based Systems.		
4-5.1.1	Wet (Charged) System.		
	(a) Automatically Actuated		
	(b) Manually Actuated		
4-5.1.2	Dry System.		
	(a) Automatically Actuated		
	(b) Manually Actuated		
4-5.1.3	Foam System.		
	(a) Automatically Actuated		
	(b) Manually Actuated		




¹ These symbols are intended for use in identifying the type of system installed to protect an area within a building.

	Referent (Synonym)	Symbol	Comments
4-5.2	Dry Chemical Systems.		
4-5.2.1	For Liquid, Gas, and Electrical Type Fires		
	(a) Automatically Actuated		
	(b) Manually Actuated		
4-5.2.2	For Fires of All Types (Except Metals)		
	(a) Automatically Actuated		
	(b) Manually Actuated		
4-5.3	Systems Utilizing a Gaseous Medium.		
4-5.3.1	Carbon Dioxide System		
	(a) Automatically Actuated		
	(b) Manually Actuated		
4-5.3.2	Halon System		
	(a) Automatically Actuated		
	(b) Manually Actuated		
4-5.4	Supplementary Symbols.		
4-5.4.1	Fully Sprinklered Space		
4-5.4.2	Partially Sprinklered Space		
4-5.4.3	Nonsprinklered Space		











	Referent (Synonym)	Symbol	Comments
4-6 Portable Fire Extinguisher Symbols.			
4-6.1	Basic Symbol.		
4-6.2	Water Extinguisher.		
4-6.3	Foam Extinguisher.		
4-6.4	Dry Chemical Extinguishers.		
4-6.4.1	For Fires of Liquid, Gas, Electrical Types		
4-6.4.2	For Fires of All Types, Except Metals		
4-6.5	CO ₂ Extinguishers.		
4-6.6	Halon Extinguishers.		






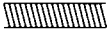
4-7 Fire Fighting Equipment Symbols.

	Referent (Synonym)	Symbol	Comments
4-7.1	Fire Fighting Equipment - General Symbol.		Generally for use with other symbols to represent specific devices
4-7.2	CO ₂ Reel Station.		
4-7.3	Dry Chemical Reel Station.		
4-7.4	Foam Reel Station.		
4-7.5	Hose Station, Dry Standpipe.		



	Referent (Synonym)	Symbol	Comments
4-7.6	Hose Station, Charged Standpipe.		
4-7.7	Monitor Nozzle, Dry.		
4-7.8	Monitor Nozzle, Charged.		

4-8 Smoke/Pressurization Control.

	Referent (Synonym)	Symbol	Comments
4-8.1	Purge Controls.		
4-8.1.1	Control Panel		 Control panel for heating, ventilation, air conditioning, exhaust, stairwell pressurization or similar equipment.
4-8.1.2	Manual Control		
4-8.2	Fans.		Arrow direction as required.
4-8.2.1	General		
4-8.2.2	Duct		
4-8.2.3	Roof		
4-8.2.4	Wall		
4-8.3	Dampers.		
4-8.3.1	Fire		
4-8.3.2	Smoke		
4-8.3.3	Fire/Smoke		

	Referent (Synonym)	Symbol	Comments
4-8.3.4	Barometric		
4-8.4	Pressurized Stairwell.		Orient as required for base or head injection
4-8.5	Ventilation Openings.		Orient as required for intake or exhaust
4-8.6	Smoke/Fire Barriers.		
4-8.6.1	Smoke Barrier		
4-8.6.2	Fire Rated Wall		
4-8.6.3	Combination Fire and Smoke Barrier		

4-9 Miscellaneous Symbols.

	Referent (Synonym)	Symbol	Comments
4-9.1	Agent Storage Container.		Specify type of agent and mounting
4-9.2	Special Spray Nozzle.		Specify type, orifice, size, other required data. (Shown here on pipe.)

Chapter 5 Fire Protection Symbols for Risk Analysis Diagrams

5-1 Introduction.

5-1.1 Scope.

5-1.1.1 This chapter presents fire protection symbols for diagrams employed in fire risk and loss analysis.

5-1.1.2 This chapter is not intended for the preparation of architectural and engineering drawings (*see Chapter 4*).

5-1.1.3 Devices infrequently used in diagrams are not standardized by this document. They usually are accompanied by narrative description, either on the drawing or in specifications.

5-1.2 Purpose.* The purpose of the chapter is to provide for uniform fire protection symbols to ease communication wherever symbology is employed in fire risk or loss analysis.

5-1.3 Application.* The symbols presented in this chapter are intended for use in fire risk analysis diagrams, including those that may be employed in fire protection consulting, fire insurance underwriting, or in fire loss analysis.

5-1.4 Symbol Presentation.

5-1.4.1* Symbol Shapes. Basic fundamental shapes are the primary emphasis of this chapter. Scale, line thickness, etc., are subjects of standards of drawing practice.

5-1.4.2 Screened Lines. Screened lines in the chapter are not to be considered part of the symbol, but are used to represent the piping, wiring, or mounting surface associated with the symbol.

5-1.4.3 Cross-Sectional View. A cross-sectional view of buildings may be shown. (*See 5-3.5.*)

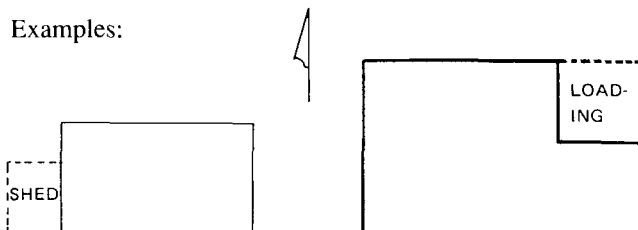
5-2 Symbols for Site Features.

5-2.1 Buildings.

(a) The exterior walls of buildings shall be outlined in single thickness lines if other than fire-rated and double thickness lines if fire-rated.

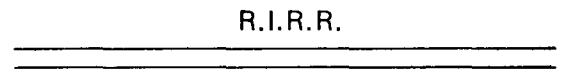
(b) The perimeter of canopies, loading docks, and other open walled structures shall be shown by broken lines.

Examples:



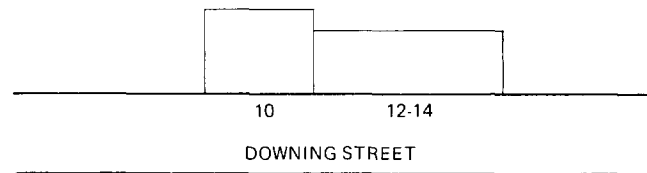
5-2.2 Railroad Tracks. Railroad tracks shall be shown by parallel lines.

Example:



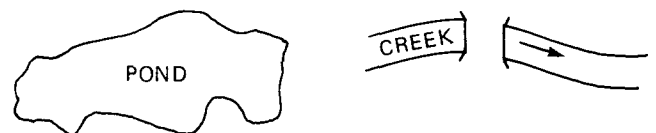
5-2.3 Streets. Streets shall be shown, usually at property lines.

Example:



5-2.4 Bodies of Water. Rivers, lakes, etc., shall be outlined.

Examples:

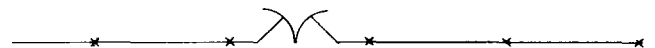


5-2.5 Fences.

5-2.5.1 Fences shall be shown by lines with "x's" every inch (25 mm).

5-2.5.2 Gates shall be shown.

Example of fence with gate:



5-2.6 Property Lines. The notation given below shall indicate property lines.



5-2.7 Fire Department Access. The symbol for fire department access shall be:



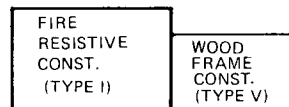
5-2.8 Other Site Features. For other fire protection site features, see Section 5-4.

5-3 Symbols for Building Construction.

5-3.1 Types of Building Construction. Types of construction shall be shown narratively.

NOTE: See NFPA 220, *Standard on Types of Building Construction*.

Example:



5-3.2* Height. Height shall be shown to indicate number of stories above ground, number of stories below ground, and height from grade to eaves. (See Figure A-5-3.2.)












5-3.3* Walls and Parapets.

5-3.3.1 Walls (see Figure A-3-3).

	Referent (Synonym)	Symbol	Comments
5-3.3.1.1	Fire-rated walls, extending the full height of the building		
5-3.3.1.2	Walls, other than fire-rated, extending the full height of the building		Indicate construction
5-3.3.1.3	Walls, partitions, not extending the full height of the building		
	(a) Fire-rated (story noted)		Construction and story may be indicated.
	(b) Other than fire-rated		

5-3.3.2 Parapets. The symbol for parapets utilizes one cross for each 6 in. (150 mm) that the parapet extends above the roof. The cross is drawn through an extension of the wall line for the parapeted wall (in plan view). See examples in Figure A-5-3.3.


5-3.4 Floor Openings, Wall Openings, Roof Openings, and Their Protection.

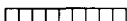
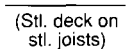
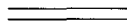





	Referent (Synonym)	Symbol	Comments
5-3.4.1	Opening in Wall		Indicate floors where found
5-3.4.2	Rated Fire Door in Wall (Less than 3 hours)		Indicate floors where found
5-3.4.3	Fire Door in Wall (3-hour rated)		Indicate floors where found
5-3.4.4	Elevator in Combustible Shaft		
5-3.4.5	Elevator in Non-combustible Shaft		
5-3.4.6	Open Hoistway		
5-3.4.7	Escalator		
5-3.4.8	Stairs in Combustible Shaft		
5-3.4.9	Stairs in Fire-rated Shaft		
5-3.4.10	Stairs in Open Shaft		
5-3.4.11	Skylight		

5-3.5* Special Symbols for Cross-Sections. (See Figure A-5-3.5.)







5-3.5.1 The following symbols shall indicate features of cross-sections. It is recognized that descriptive notes often are required.

5-3.5.2 Roof, Floor Assemblies.







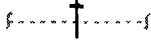


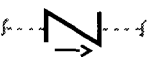


	Referent (Synonym)	Symbol	Comments
5-3.5.2.1	Fire-resistive Floor or Roof		




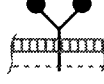





	Referent (Synonym)	Symbol	Comments
5-3.5.2.2	Wood Joisted Floor or Roof		
5-3.5.2.3	Other Floors or Roofs		Note construction
5-3.5.2.4	Floor/Ceiling or Roof/Ceiling Assembly		Details indicated, as necessary
5-3.5.2.5	Floor on Ground		
5-3.5.2.6	Truss Roof		
5-3.5.3	Walls, Partitions		
5-3.5.3.1	Fire-rated Wall		
5-3.5.3.2	Frame Partition		
5-3.5.3.3	Wall with Opening		

5-3.6 Miscellaneous Features. A number of features related to fire protection, which do not fall under Sections 5-3.1 through 5-3.5, are given below.


	Referent (Synonym)	Symbol	Comments
5-3.6.1	Boiler		
5-3.6.2	Chimney		May describe, including height and construction
5-3.6.3	Fire Escape		
5-3.6.4	Tank, Above Ground		
5-3.6.4.1	Horizontal		Indicate contents
5-3.6.4.2	Vertical		Indicate contents
5-3.6.5	Tank, Below Ground		Indicate contents






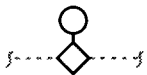



5-4 Symbols for Water Supply and Distribution.

	Referent (Synonym)	Symbol	Comments
5-4.1	Mains, Pipe.		
5-4.1.1	Public Water Main		Indicate pipe size, material
5-4.1.2	Private Water Main		Indicate pipe size, material
5-4.1.3	Water Main Under Building		Indicate pipe size, material
5-4.1.4	Suction Main		Indicate pipe size, material
5-4.2	Valves. (<i>See also 5-5.1.</i>)		
5-4.2.1	Post Indicator Valve		Indicate valve size
5-4.2.2	Key-operated Valve		Indicate valve size
5-4.2.3	OS & Y Valve (Outside Screw and Yoke, Rising Stem)		Indicate valve size
5-4.2.4	Nonindicating Valve (Non-rising-Stem Valve)		Indicate valve size
5-4.2.5	Valve in Pit (OS & Y Shown)		Indicate valve size
5-4.2.6	Check Valve		Arrow indicates direction of flow
5-4.3	Hydrants.		
5-4.3.1	Private Hydrant, One Hose Outlet		Indicate size
5-4.3.2	Public Hydrant, Two Hose Outlets		Indicate size

	Referent (Synonym)	Symbol	Comments
5-4.3.3	Public Hydrant, Two Hose Outlets and Pumper Connection		Indicate size
5-4.3.4	Wall Hydrant, Two Hose Outlets		Indicate size
5-4.3.5	Private Housed Hydrant, Two Hose Outlets		Indicate size
5-4.4	Fire Department Connections.		
5-4.4.1	Two-way Fire Department Connection (Siamese Connection)		Specify size and angle
5-4.4.2	Freestanding Fire Department Connection (Siamese Connection)		Sidewalk or pit type, specify size
5-4.5	Water Tower or Tank, Above Ground.		
5-4.5.1	Horizontal		Indicate type, construction, and size via notations. Symbol orientation shall not be changed.
5-4.5.2	Vertical		
5-4.6	Meter.		Indicate type
5-4.7	Fire Pump.		
5-4.7.1	Fire Pump With Drives		

5-5 Symbols for Sprinkler Systems.













	Referent (Synonym)	Symbol	Comments
5-5.1	Piping, Valves, Control Devices.		
5-5.1.1	Sprinkler Riser		






	Referent (Synonym)	Symbol	Comments
5-5.1.2	Check Valve		Arrow indicates direction of flow
5-5.1.3	Alarm Check Valve		Specify size
5-5.1.4	Dry Pipe Valve		Specify size
5-5.1.5	Dry Pipe Valve With Quick Opening Device (Accelerator or Exhauster)		Specify size and type
5-5.1.6	Deluge Valve		Specify size and type
5-5.2	Alarm/Supervisory Devices.		
5-5.2.1	Flow Detector/Switch (Flow Alarm)		Specify size
5-5.2.2	Pressure Detector/Switch		Specify type - water, low air, high air, etc.
5-5.2.3	Water Motor Alarm (Water Motor Gong)		Shield optional
5-5.2.4	Electric Alarm Bell (Electric Alarm Gong)		

5-6 Symbols for Extinguishing Systems.¹

	Referent (Synonym)	Symbol	Comments
5-6.1	Water-based Systems.		
5-6.1.1	Wet (Charged) System		

¹ These symbols are intended for use in identifying the type of installed system protecting an area within a building.

	Referent (Synonym)	Symbol	Comments
	(a) Automatically Actuated		
	(b) Manually Actuated		
5-6.1.2	Dry System		
	(a) Automatically Actuated		
	(b) Manually Actuated		
5-6.1.3	Foam System		
	(a) Automatically Actuated		
	(b) Manually Actuated		
5-6.2	Dry Chemical Systems.		
5-6.2.1	For Liquid-, Gas-, and Electrical-type Fires		
	(a) Automatically Actuated		
	(b) Manually Actuated		
5-6.2.2	For Fires of All Types, Except Metals		
	(a) Automatically Actuated		
	(b) Manually Actuated		
5-6.3	Systems Utilizing a Gaseous Agent.		
5-6.3.1	Carbon Dioxide System		
	(a) Automatically Actuated		
	(b) Manually Actuated		

	Referent (Synonym)	Symbol	Comments
5-6.3.2	Halon System		
	(a) Automatically Actuated		
	(b) Manually Actuated		
5-6.4	Supplementary Symbols.		
5-6.4.1	Fully Sprinklered Space		
5-6.4.2	Partially Sprinklered Space		
5-6.4.3	Nonsprinklered Space		

Chapter 6

Symbols for Fire Fighting Operations

and Pre-Fire Planning

6-1 Introduction.

6-1.1 Scope. This chapter presents standard referents and symbols for visually alerting fire fighters and other emergency responders during fire and related emergencies.

6-1.2 Purpose.

6-1.2.1 The purpose of this chapter is to provide uniform fire fighting symbols to improve communication whenever symbology is employed to provide information to fire fighters and other emergency responders.

6-1.2.2 This chapter provides uniformity in the selection of symbols intended to assist the fire fighter in locating utilities and fire fighting equipment.

6-1.2.3* Fundamental shapes of symbols as well as background color and shape are designated in this chapter.

6-1.3 Symbol Presentation.

6-1.3.1* Symbol Shapes. Basic fundamental symbol shapes are the primary emphasis of this chapter.

6-1.3.2 Symbol Background:

6-1.3.2.1 The background shall be square.

6-1.3.2.2 The background color shall be red or blue as designated and shall meet the requirements of American National Standards Institute Standard Z53.1-1979 for safety red and safety blue.

6-1.3.3 Symbol Color.

6-1.3.3.1 The symbol color shall be safety white and shall meet the requirements of ANSI Z53.1-1979 for safety white.

6-1.3.4 Symbol Orientation. Symbol orientation shall not be altered from this chapter.

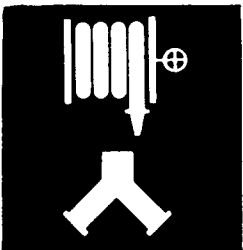
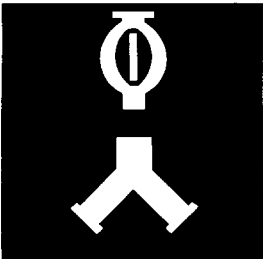
6-2 Standard Symbols for Fire Fighting Operations.

SYMBOL
NUMBER

Symbol

1

2



Referent

Fire Department
Automatic Sprinkler
Connection

Fire Department
Standpipe Connec-
tion

Characteristics

Square Field;
Red Background;
White Symbol

Square Field;
Red Background;
White Symbol

Application†

The identifica-
tion and loca-
tion of a fire
department automatic
sprinkler connection.

The identifica-
tion and loca-
tion of a fire
department stand-
pipe connection.

Examples:

- The location of automatic sprinkler connections on buildings.
- The location of free-standing automatic sprinkler connections.

Examples:

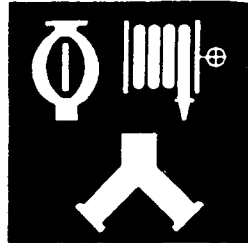
- The location of standpipe connections on buildings and structures such as bridges, overpasses or elevated highways
- The location of free-standing standpipe connections.

† Use is not restricted to the examples cited.

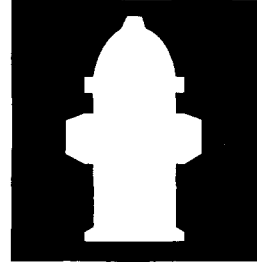
SYMBOL
NUMBER

Symbol

3



4



Referent

Fire Department
Combined Auto-
matic Sprin-
kler/Standpipe
Connection

Fire Hydrant

Characteristics

Square Field;
Red Background;
White Symbol

Square Field;
Red Background;
White Symbol

Application†

The identifica-
tion and loca-
tion of a fire
department combined
automatic sprinkler/
standpipe connection.

The identifica-
tion and loca-
tion of a fire
hydrant.

Examples:

- The location of combined sprinkler/standpipe connections on buildings.
- Free-standing combined sprinkler/standpipe connection locations.

Examples:

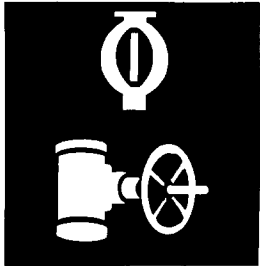
- The location of a fire hydrant or similar water supply.
- NOTE: The symbol may be of particular use where vehicles or snowfall frequently obscure hydrant locations.

† Use is not restricted to the examples cited.

SYMBOL
NUMBER

Symbol

5



6



Referent

Automatic Sprinkler
Control Valve

Electric Panel or
Electric Shut-off

Characteristics

Square Field;
Red Background;
White Symbol

Square Field;
Blue Background;
White Symbol

Application†

The identification
and location of auto-
matic sprinkler con-
trol valves.

The identification
and location of an
electrical panel or
other electric shut-
off device.

Examples:
•The location of
control valves for
automatic sprinkler
systems.
•On doors of rooms
containing control
valves.

Example:
•The location of
electric panels or
other electric con-
trol devices which
may be located in
basements or
mechanical rooms.

† Use is not restricted to the examples cited.

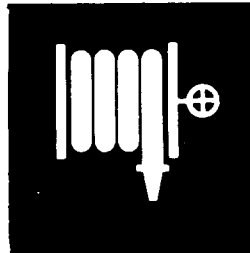
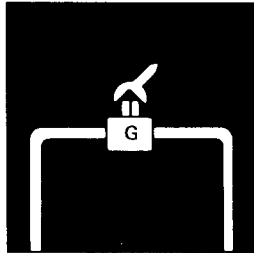
SYMBOL
NUMBER

7

8

9

Symbol



Referent

Gas Shutoff Valve

Fire Fighting
Hose or Standpipe
Outlet

Fire Extinguisher

Characteristics

Square Field;
Red Background;
White Symbol;
Red Letter GSquare Field;
Red Background;
White SymbolSquare Field;
Red Background;
White Symbol

Application†

The location of a
gas shut-off valve.The location of fire
fighting hose or a
standpipe outlet.The location of fire
extinguisher.

Examples:

- The location of gas shut-off valve(s) for gas supplies.
- On doors of rooms containing gas shut-off valves.

Examples:

- The location of interior fire fighting hose stations and standpipe outlets in buildings.
- The location on bridges or elevated highways.

Example:

- The location of a fire extinguisher in buildings and exterior locations.

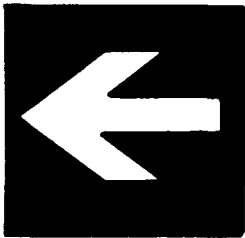
† Use is not restricted to the examples cited.

SYMBOL
NUMBER

10

11

Symbol



Referent

Directional Arrow

Diagonal Directional
Arrow

Characteristics

Square Field;
Background (Red or
Blue) to correspond
to accompanying
sign; White Symbol

Square Field;
Background (Red or
Blue) to correspond
to accompanying
sign; White Symbol

Application†

Direction to the lo-
cation of fire fight-
ing equipment or
utility. Must always
be used in conjunc-
tion with, and adja-
cent to, another
symbol indicating
the particular equip-
ment or utility.

Direction to the lo-
cation of fire fight-
ing equipment or
utility. Must always
be used in conjunc-
tion with, and adja-
cent to, another
symbol indicating
the particular equip-
ment or utility.

† Use is not restricted to the examples cited.

Chapter 7 Referenced Publications

7-1 The following documents or portions thereof are referenced within this standard and shall be considered part of the requirements of this document. The edition indicated for each reference is the current edition as of the date of the NFPA issuance of this document.

7-1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 220, *Standard on Types of Building Construction*, 1985 edition.

7-1.2 Other Publications.

7-1.2.1 ANSI Publications. American National Standards Institute, 1430 Broadway, New York, NY 10018.

ANSI Z53.1-1979, *Safety Color Code for Marking Physical Hazards*.

ANSI A117.1-1980, *Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People*.

Appendix A Explanatory Information

This Appendix is not a part of the requirements of this NFPA document, but is included for information purposes only.

A-2.2 Referent. A referent may be abstract such as a condition, concept, function, relationship, fact, or action.

A-2-2 Supplementary Indicators. Effectiveness of symbols can be supplemented by figures, numbers, subscripts or letter abbreviations. These supplementary indicators may be placed inside of or adjacent to the symbol as seen fit. A legend of these indicators, with their meaning, should accompany each set of documents on which they are used.

A-2.2 Symbol. Ideally, a symbol should be graphically simple, should be readily understood, should have a strong impact, and should be easily remembered.

A-3-1.2.3 Changes in line thickness, scale, or details are not recommended. In practice, symbols may be combined with other symbols or devices such as words and lighted panels to provide optimal visual alerting.

A-3-1.2.4 The reader is referred to other standards, such as those prepared by the NFPA Committee on Safety to Life and the ANSI Z535 Committee on Safety Signs and Colors, for such information.

A-4-1.2 The symbols in this chapter are intended to be simple, transferable by use of templates, and limited to those referents that are used repetitively in a set of drawings.

A-5-1.2 The symbols in this chapter are intended to be simple, transferable by use of templates, and limited to those referents that are used repetitively in a set of drawings.

A-5-1.3 The effectiveness of the symbols in this chapter may be enhanced by the use of supplementary figures, subscripts, numbers, or letter abbreviations.

A-5-1.4.1 Diagram Preparation and Contents. Where appropriate, diagrams include, but are not limited to, the following:

(a) Title block indicating:

1. Name of company or organization
2. Person making drawing and date of drawing
3. Name and location of facility involved.

(b) "North" direction arrow properly oriented to the position of buildings shown.

(c) Scale of diagram, if used, or "not to scale." Scale may be given with a bar measurement if reduction copies are to be made.

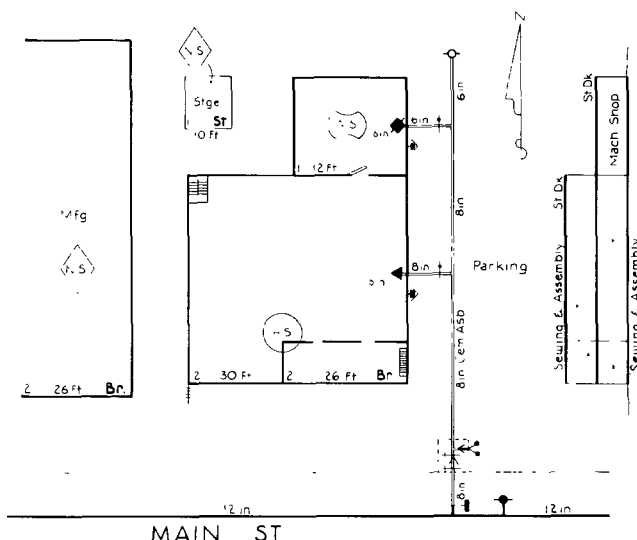


Figure A-5-1.4.1
Diagram to Exemplify the Use of Risk Analysis Symbols.

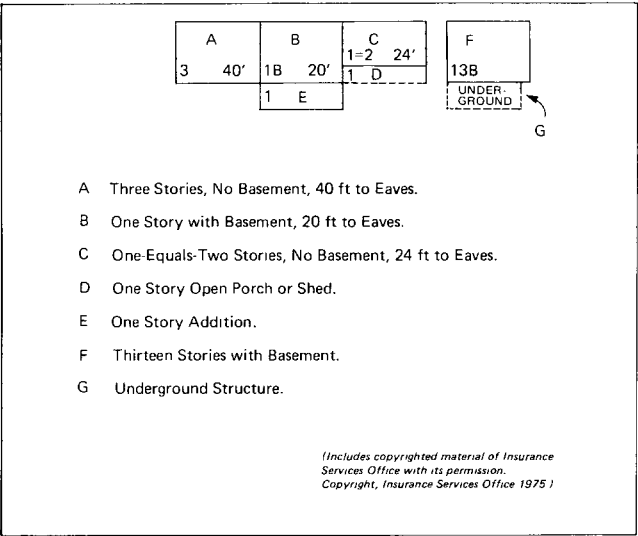


Figure A-5-3.2
Building Height Symbols Example.

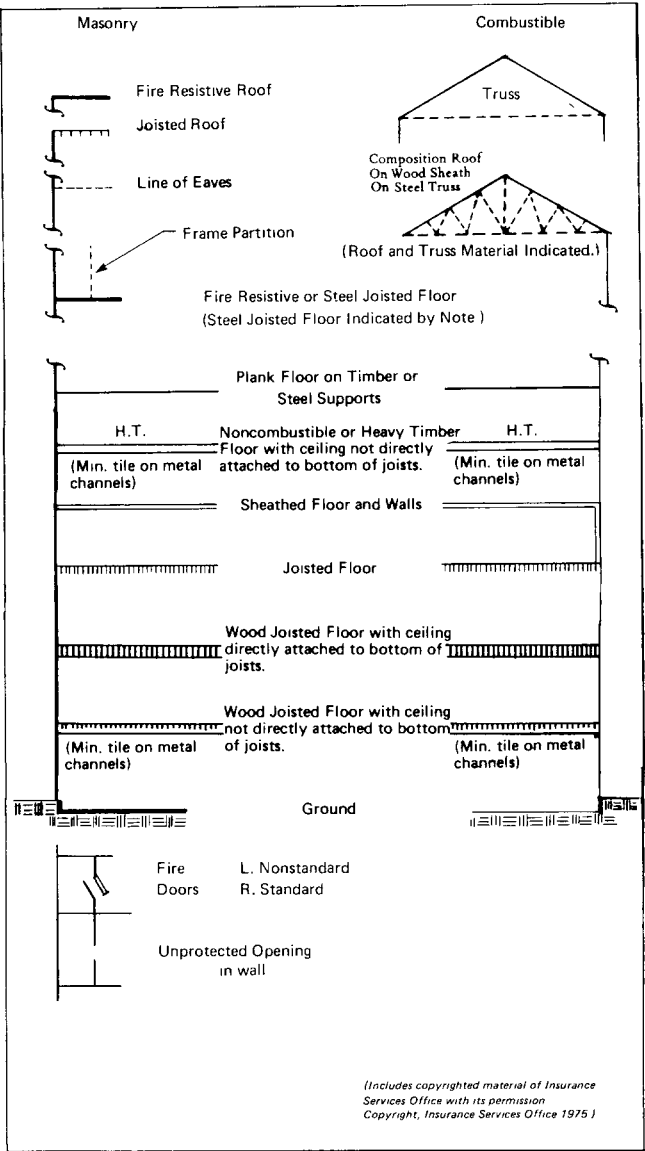


Figure A-5-3.5
Examples of Symbols and Notations Used
for Fire Risk Analysis Cross-Section.

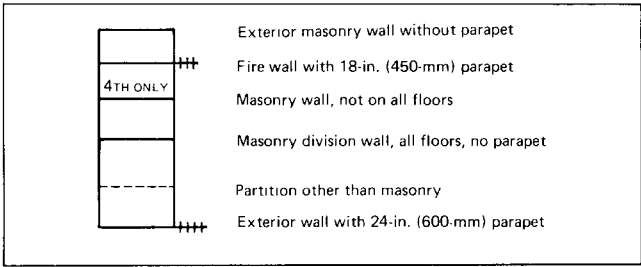


Figure A-5-3.3.1
Examples of Symbols for Walls and Parapets.

- |

A-6-1.2.3

In practice, symbols may be combined with other devices, such as words and lighted panels, to provide optimal alerting. This chapter does not specify viewing distance, size, or optimal combinations of symbols, words, and other presentations.
- |

A-6-1.3.1

Changes in line thickness, scale, or details are not recommended.

Appendix B Referenced Publications

B-1 The following documents or portions thereof are referenced within this standard for informational purposes only and thus are not considered part of the requirements of this document. The edition indicated for each reference is the current edition as of the date of the NFPA issuance of this document.

B-1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 101[®], *Life Safety Code*[®], 1991 edition.

B-1.2 Other Publications.

B-1.2.1 Not used.

B-1.2.2 Not used.

B-1.2.3 (For Chapter 3) (from former NFPA 171).

B-1.2.3.1 ANSI Publications. American National Standards Institute, 1430 Broadway, New York, NY 10018.

ANSI Z35.1-1972, *Specifications for Accident Prevention Signs*.

ANSI Z35.4-1973, *Specifications for Informational Signs Complementary to ANSI Z35.1-1972, Accident Prevention Signs*.

B-1.2.3.2 Other Publications.

Collins, B. L., *The Development and Evaluation of Effective Symbol Signs*. National Bureau of Standards, Building Science Series, BSS 141, May 1982.

Collins, B. L., *Use of Hazard Pictorials/Symbols in the Minerals Industry*. National Bureau of Standards, NBSIR 83-2732, September 1983.

Collins, B. L. and Lerner, N. D., *An Evaluation of Exit Symbol Visibility*. National Bureau of Standards, NBSIR 83-2675, March 1983.

Collins, B. L. and Lerner, N. D., "Assessment of Fire Safety Symbols." *Human Factors*, 1982, Vol. 24, pp. 75-84.

Collins, B. L., Lerner, N. D. and Pierman, B. C., *Symbols for Industrial Safety*. National Bureau of Standards, NBSIR 82-2485, April 1982.

Collins, B. L. and Pierman, B. C., *Evaluation of Safety Symbols*. NBSIR 79-1760, U.S. Department of Commerce, 1979.

Dreyfuss, H., "Case Study: Symbols for Industrial Use" in G. Kepes (ed.) *Sign, Image and Symbol*, New York: George Braziller, 1966, pp. 126-133.

Dreyfuss, H., *Symbol Sourcebook, An Authoritative Guide to International Graphic Symbols*. McGraw Hill, New York, 1972.

Easterby, R. S. and Swaga, H. I. G., "Evaluation of Public Information Symbols." ISO Tests: 1975 Series, AP Report 60, March 1976.

Freedman, M. and Berkowitz, M. S., Preliminary Report on Laboratory and Pilot Field Testing: Testing Criteria and Techniques of Evaluation for Passenger/Pedestrian Oriented Symbols for Use in Transportation Related Facilities. DOT-OS-60071. FIRL No. C4448, January 1977.

ISO 3461-1976(E), *Graphic Symbols—General Principles for Presentation*. Geneva: International Organization for Standardization, 1976.

ISO 3864-1984, *Safety Colors and Safety Signs*. Geneva: International Organization for Standardization. 1984-03-01.

Kolers, P. A., "Some Formal Characteristics of Pictograms." *American Scientist*, Vol. 57, No. 3, 1969, pp. 348-363.

Mead, M. and Modley, R., "Communication Among All People, Everywhere." *Natural History*, Vol. 77, No. 7, 1968, pp. 56-63.

Modley, R., "Graphic Symbols for World-Wide Communication," in G. Kepes (ed.) *Sign, Image and Symbol*, New York: George Braziller, 1966, pp. 108-125.

Modley, R. and Myers, W. R., *Handbook of Pictorial Symbols*. New York: Dover Publications, 1976.

B-1.2.4 (For Chapter 4) (from former NFPA 172).

Aetna Casualty and Life Company, "Plan Symbols," Hartford, CT, 1969.

American Institute of Architects, "A J Working Drawings Handbook - Technical Study 9," *The Architects' Journal*, May, 1977.

American National Standards Institute (ANSI Y32.2 - 1975), Canadian Standards Association (CSA Z99 - 1975), Institute of Electrical and Electronic Engineers IEEE (315 - 1975), "Graphic Symbols for Electrical and Electronics Diagrams" (adopted for mandatory use October 31, 1975 by Department of Defense, United States of America).

American Telephone and Telegraph Company, "Firesafety Symbols," Basking Ridge, NJ.

Atwell, Vogel & Sterling, Inc., "NFPA Diagram Symbols," (Template), 1976.

British Standards Institute, *Graphical Symbols and Abbreviations for Fire Protection Drawings*, B.S. 1635, London, England, 1970.

Brown & Root, Inc., "Firesafety Symbols," Houston, TX, 1978.

Canadian Standards Association, *Building Drawings*, (First Draft C.S.A. B78.3-M, Rexdale, Ontario, Canada, 1977.

Construction Publishing Co., Inc., "Electrical Estimating Handbook," 1975.

Dutch Standard N.E.N. 1413, The Netherlands, "Symbols for Protection Against Fire on Building Drawings."

Factory Mutual Insurance Co., "Graphic Symbols," Norwood, MA.

Fred S. James & Co., "Map Symbols," Chicago, IL.

Fremont, California Fire Department, "Fire Marshal's Office Standard Plan Symbols."

Grinnell Fire Protection Systems Company, Inc., "Graphical Standards."

Illinois Bell Telephone, "Fire Safety Symbols," Chicago, IL.

Improved Risk Mutuals, "Protection Symbols."

Industrial Risk Insurers, "The Insurance Plan," Hartford, CT, 1968.

Insurance Services Offices, "Standard Plan Symbols," Chicago, IL, 1956.

International Fire Service Training Association, "Fire Prevention and Inspection Practices," No. 110, Fourth Edition, Tulsa, OK.

International Electrotechnical Commission, Pub. 117-3, 1977, "Graphical Symbols."

International Standards Organization, ISO/DIS 40671/1, "Symbols for Plumbing, Heating, Ventilation and Ducting."

ISO/TC21/SC1/N18, "Working Draft - Graphical Symbols for Fire Protection Plans."

ISO/TC21/SC1 30E, "Proposal for Graphic Symbols."

ISO/TC21/SC1/WG1 - N27, "Graphical Symbols for Components of Automatic Fire Detection Systems."

Johnson Controls, Inc., "Abbreviations and Symbols," Milwaukee, WI.

Massachusetts Fire Alarms, Lowell, MA, "Fire Safety Symbols."

Nashville, Tennessee Metropolitan Fire Dept., "Building Symbols."

National Automatic Sprinkler and Fire Control Association, Inc., "Symbol Standards."

National Fire Protection Association, *Fire Protection Handbook*, Sixteenth Edition, 1987.

National Fire Protection Association, *NFPA Inspection Manual*, Fourth Edition, Charles A. Tuck, Editor.

National Electrical Manufacturers Association, NEMA Standard Pub. No. SB 1.1, 1969, "Symbols for Signaling, Protection and Communications Equipment."

New Zealand Proposed Standard, NZS 5902, "Symbols for Building Drawings," 1976.

Oklahoma State University, "OSU Safety Department Fire Alarm Symbols."

Phenix Technology, Inc., "Fire Pre-Planning Symbols."

Pyrotronics, Inc., Cedar Knolls, NJ, "Fire Alarm Symbols."

Salem, Massachusetts Fire Department, "Fire Alarm Symbols."

Signal Communications, Inc., "Fire Alarm Symbols."

Swiss Standard, "Symbols for Fire Protection Plans," November, 1977.

Taft Fire Control District, Taft, FL, "Standard Prefire Plan Symbols."

Texas Eastman Company, Longview, TX, "Symbols for Fire Protection Drawings."

University of Maryland, "Firemen's Training Course," Section II - Advanced, College Park, MD.

B-1.2.5 (For Chapter 5) (from former NFPA 174).

Aetna Casualty and Life Company, "Plan Symbols," Hartford, CT, 1969.

American Telephone and Telegraph, Proposed Bell System Practice 760-220-152, Building Planning, Basking Ridge, NJ, 1977.

Atwell, Vogel and Sterling, Inc., "NFPA Diagram Symbols" (Template), 1976.

Baltimore Fire Department, Manual of Procedure, "Prefire Planning Sketches," Baltimore, MD, 1974.

Brand-Verhutungs-Dienst, "Symbols for Fire Protection Plans," Zurich, Switzerland, 1976.

British Standards Institute, Graphic Symbols and Abbreviations for Fire Protection Drawings, B. S. 1635, London, England, 1970.

Brown and Root, Inc., "Firesafety Symbols," Houston, TX, 1978.

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Industrial Risk Insurers, "Insurance Plan, The," Hartford, CT, 1968.

Insurance Services Office, "Standard Plan Symbols," Chicago, IL, 1956.

Insurers' Advisory Organization of Canada, "Standard Key of Signs," Toronto, Ontario, Canada, 1977.

International Fire Service Training Association, Fire Prevention and Inspection Practices, Fourth Edition, Tulsa, OK.

International Fire Service Training Association, Fire Problems in High Rise Buildings, Tulsa, OK.

Metropolitan Government of Nashville and Davidson County, "Building Symbols," 1978.

National Fire Protection Association, *Fire Protection Handbook*, 16th Edition, Quincy, MA, 1986.

National Fire Protection Association, *Inspection Manual*, Sixth Edition, Quincy, MA, 1989.

National Fire Protection Association, *National Fire Codes®*, Quincy, MA, 1991.

New Zealand Standard Association, "Building Drawing Practice — Engineering Services Maintenance and Fire Control Drawings" (proposed Part V of N.Z.S. 5902), Wellington, New Zealand.

Santa Clara County, Procedures Manual, "F.M.O. Standard Plan Symbols," Santa Clara County, CA, 1973.

"Symbols for Protection Against Fire on Building Drawings," Dutch Standard N.E.N. 1413, Antwerp, Belgium, 1974.

Taft Fire Control District, "Standard Prefire Plan Symbols," Taft, FL.

University of Maryland, Firemen's Training Course (Section II), College Park, MD.

B-1.2.6 (For Chapter 6) (from former NFPA 178).

B-1.2.6.1 ANSI Publications. American National Standards Institute, 1430 Broadway, New York, NY 10018.

ANSI Z35.1-1972, *Specifications for Accident Prevention Signs*.

ANSI Z35.4-1973, *Specifications for Informational Signs Complementary to ANSI Z35.1-1972, Accident Prevention Signs*.

B-1.2.6.2 Other Publications.

Collins, B. L. and Pierman, B. C., *Evaluation of Safety Symbols*, NBSIR 79-1760, U.S. Department of Commerce, 1979.

Dreyfuss, H., Case Study: Symbols for Industrial Use in G. Kepes (ed.) *Sign, Image and Symbol*, New York: George Braziller, 1966, pp. 126-133.

Dreyfuss, H., *Symbol Sourcebook, An Authoritative Guide to International Graphic Symbols*, McGraw Hill, New York, 1972.

Easterby, R. S. and Zwaga, H. I. G., *Evaluation of Public Information Symbols. ISO Tests: 1975 Series*, AP Report 60, March 1976.

Freedman, M. and Berkowitz, M. S., *Preliminary Report on Laboratory and Pilot Field Testing: Testing Criteria and Techniques of Evaluation for Passenger/Pedestrian Oriented Symbols for Use in Transportation Related Facilities*, DOT-OS-60071. FIRL No. C4448, January 1977.

ISO 3461-1976(E), *Graphic symbols—General principles for presentation*. Geneva: International Organization for Standardization, 1976.

ISO/DIS 3864.3, *Safety Colors and Safety Signs*. Geneva: International Organization for Standardization, 1984-03-01.

Kolers, P.A., "Some Formal Characteristics of Pictograms," *American Scientist*, 57, 3, 1969, pp. 348-363.

Mead, M. and Modley, R., "Communication Among All People, Everywhere," *Natural History*, Vol. 77, No. 7, 1968, pp. 56-63.

Modley, R., "Graphic Symbols for World-Wide Communication," in G. Kepes (ed.) *Sign, Image and Symbol*, New York: George Braziller, 1966, pp. 108-125.

Modley, R. and Myers, W. R., *Handbook of Pictorial Symbols*, New York: Dover Publications, 1976.

Appendix C Additional Explanatory Information on Chapters 3 through 6

This Appendix is not a part of the requirements of this NFPA document, but is included for information purposes only.

C-1 Not used.

C-2 Not used.

C-3 Additional Explanatory Information on Chapter 3.

C-3.1 Symbol Testing (formerly Appendix B of NFPA 171).

Two or more versions of a symbol were developed for the referents listed in Chapter 3. The effectiveness of each of these symbols was evaluated by testing its meaningfulness (understandability) with groups of different participants. On the basis of these results, a symbol was selected for each referent. In some cases the symbols were refined graphically to incorporate modifications suggested by the test results. Symbol development and refinement included the efforts of research psychologists, graphic designers, safety engineers, and fire professionals.

The life safety symbols were tested in the course of several different research projects during a 7-year period. These results are referenced in a series of publications by the National Bureau of Standards. (See Appendix B-1.2.3.2.)

While a variety of testing procedures was used to assess understandability, the basic method consisted of asking people either to write down short definitions or to pick the correct definition from a set of carefully selected choices. In several studies, data on symbol preference and rated effectiveness also were obtained.

In these efforts, one set of participants consisted of 222 industrial personnel and 78 students; another set consisted of 271 miners and mine personnel; and another set consisted of 94 paid volunteers. No major differences between participant groups were observed for the symbols selected for Chapter 3 (formerly NFPA 171).

In addition to the studies of understandability, a detailed assessment was made of exit symbol visibility. This study used a laboratory optical viewing system to present a set of exit symbols included in a much larger set (108) of safety and information symbols. Three viewing conditions that simulated smoke were used (luminance of 0.085, 0.060, and 0.032 cd/m²). Forty-two participants were familiarized with a randomly selected set of exit symbols to identify the separate effects of understandability and visibility. The symbol given in Chapter 3 was that symbol which was identified correctly most frequently under all three viewing conditions. In addition, the identification data were virtually the same whether participants had been familiarized with the symbol or not — suggesting that the symbol has high initial understandability. (This suggestion is reinforced by the high percentages of correct identification found in those studies that evaluated understandability.)

The results of the visibility testing program are important because an exit symbol must be both well understood and visible when under degraded viewing conditions (such as smoke).

The goal of the overall testing program was to identify versions or elements of symbols for the selected referents that appeared to be most effective in communicating the intended message. It is recognized that further education and/or supplemental word messages may be useful in optimizing the effectiveness of these symbols with the general public. Nevertheless, the symbols selected have demonstrated good initial understandability. Symbols for the referents generally showed good understandability (better than 85 percent correct identification). Symbols that presented some understandability problems included "No Exit" and "Fire Alarm Call Point." The examples shown herein, however, represent the imagery that was best understood. It is hoped that use of these images will strengthen public recognition.

It also should be noted that the symbol for handicapped accessibility was not tested in this program. It is, however, in an existing ANSI standard (A117.1) and has achieved wide use and good recognition.

C-4 Additional Explanatory Information on Chapter 4.

C-4.1 Symbol Selection Procedure (formerly Appendix B of NFPA 172.)

