

NFPA No.

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Standard for Safeguarding

BUILDING CONSTRUCTION OPERATIONS

May
1958



Thirty-five cents*

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NATIONAL FIRE PROTECTION ASSOCIATION

International

60 Batterymarch Street, Boston 10, Mass.

National Fire Protection Association

International

Executive Office: 60 Batterymarch St., Boston 10, Mass.

The National Fire Protection Association was organized in 1896 to promote the science and improve the methods of fire protection and prevention, to obtain and circulate information on these subjects and to secure the cooperation of its members in establishing proper safeguards against loss of life and property by fire. Its membership includes two hundred national and regional societies and associations (list on outside back cover) and seventeen thousand individuals, corporations, and organizations. Anyone interested may become a member; membership information is available on request.

This pamphlet is one of a large number of publications on fire safety issued by the Association including periodicals, books, posters and other publications; a complete list is available without charge on request. All NFPA standards adopted by the Association are published in six volumes of the **National Fire Codes** which are re-issued annually and which are available on an annual subscription basis. The standards, prepared by the technical committees of the National Fire Protection Association and adopted in the annual meetings of the Association, are intended to prescribe reasonable measures for minimizing losses of life and property by fire. All interests concerned have opportunity through the Association to participate in the development of the standards and to secure impartial consideration of matters affecting them.

NFPA standards are purely advisory as far as the Association is concerned, but are widely used by law enforcing authorities in addition to their general use as guides to fire safety.

Definitions

The official NFPA definitions of shall, should and approved are:

SHALL is intended to indicate requirements.

SHOULD is intended to indicate recommendations, or that which is advised but not required.

APPROVED refers to approval by the authority having jurisdiction.

Units of measurements used here are U. S. standard. 1 U. S. gallon = 0.83 Imperial gallons = 3.785 liters.

Approved Equipment

The National Fire Protection Association does not "approve" individual items of fire protection equipment, materials or services. The standards are prepared, as far as practicable, in terms of required performance, avoiding specifications of materials, devices or methods so phrased as to preclude obtaining the desired results by other means. The suitability of devices and materials for installation under these standards is indicated by the listings of nationally recognized testing laboratories, whose findings are customarily used as a guide to approval by agencies applying these standards. Underwriters' Laboratories, Inc., Underwriters' Laboratories of Canada and the Factory Mutual Laboratories test devices and materials for use in accordance with the appropriate standards, and publish lists which are available on request.

Standard for

Safeguarding Building Construction Operations

NFPA No. 241 — May 1958

This edition supersedes all previous editions of this Standard. It is a complete revision of the last previous edition issued in 1933.

Work on this subject commenced in 1930 when the NFPA Committee on Construction Operations developed "Recommended Good Practice Requirements for Building Construction Operations." This text was adopted by the National Fire Protection Association with revisions in 1933. In 1942 a tentative revision was submitted and while no official action was taken, the revision was published subsequently for information in the printing of the text in Volume III of the National Fire Codes published by the NFPA.

The NFPA Committee on Building Construction now has jurisdiction over this Standard and this edition is the result of activity by that Committee. A tentative text was adopted at the 1957 NFPA Annual Meeting and this text was unanimously approved by the NFPA in 1958.

COMMITTEE ON BUILDING CONSTRUCTION

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Theodore Irving Coe,* American Institute of Architects.

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STANDARD FOR SAFEGUARDING BUILDING CONSTRUCTION OPERATIONS

NFPA No. 241 — May 1958

Foreword

Fires during construction, major alteration or demolition of buildings are preventable or controllable. The danger from fire is usually greater during these operations than after completion. Opportunities for serious fires are present during these operations because of accumulations of combustible materials or debris and the presence of potential sources of ignition.

A study of a number of losses to buildings which were under construction showed that 60 percent of those where the cause could be ascertained originated from these three causes:

- (a) Salamanders or portable heating equipment (25 percent)
- (b) Cutting and welding operations (20 percent)
- (c) Matches and smoking (15 percent)

The lack of basic safeguards against these hazards, which should have been provided for in the planning of the project, is responsible for many of these losses. This standard is intended to indicate the measures which with some pre-planning will prevent fires or at least minimize damage when fires occur.

1. Scope

This standard is intended, where applicable, to apply to buildings in the course of erection, major alteration, or demolition.

2. Water Supply

(a) An adequate water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material accumulates. There shall be no delay in the installation of fire protection equipment.

(b) Where underground water mains are to be provided, they should be installed, completed, and made available for permanent use not later than the time at which 30 percent of the construction program has been completed.

3. First Aid Fire Equipment

(a) Hose and nozzles shall be provided and made ready for use as soon as either the temporary or permanent water supply is available. Signs designating the location of first aid fire equipment and standpipe connections should be conspicuously displayed.

(b) In every building operation wherever a tool house, a store-room, or other shanty is placed, or a room or space is used for storage, dressing room or workshop, at least one approved portable extinguisher shall be provided and maintained in an accessible location. At least one approved fire extinguisher shall also be provided on each floor which, in multi-story buildings, shall be located in plain sight of the working stairway where the majority of the workmen pass up and down. The suitability, distribution and maintenance of extinguishers shall be in accordance with NFPA Standard No. 10, Portable Fire Extinguishers.

4. Access for Fire Fighting

(a) Access for use of heavy fire fighting equipment shall be provided to the immediate job site at the start of construction and maintained until all construction is completed.

(b) Free access from the street to fire hydrants, and to outside connections for standpipes, sprinklers, or other fire extinguishing equipment, whether permanent or temporary, shall be provided and maintained at all times. No material or construction shall be placed within ten feet of such hydrants or connections, nor between it and the center line of the street.

(c) During building operations, free access to permanent, temporary, or portable first aid fire equipment shall be maintained at all times.

(d) In all buildings over 50 feet in height, at least one stairway shall be provided in usable condition at all times. This stairway shall be extended upward as each floor is installed.

(e) Arrangements shall be made so that firemen will have access to the premises when called to a fire.

5. Supervision and Watch Service

(a) A capable person having the necessary authority shall be placed in charge of fire protection. His responsibilities shall in-

clude maintenance and location of fire protective equipment, general supervision of safeguards and location of salamanders or portable heating equipment, and the establishment and maintenance of safe cutting and welding operations.

(b) The buildings should be patrolled at all times when construction operations are not in progress by a competent watchman or watchmen registering to approved watchman's clock from stations covering all parts of the building.

(c) There should be a fire alarm box near the premises or telephone service to the fire department.

6. Sprinkler Protection

If automatic sprinkler protection is to be provided, the installation should closely follow the construction and be placed in service before or immediately following completion of each story, and before any occupancy is moved into a completed area. Details of installation should be in accordance with NFPA Standard No. 13, Installation of Sprinkler Systems.

7. Standpipes

In all buildings in which standpipes are required, such standpipes shall be carried up as the construction progresses, in such a manner that they are always ready for fire department use on the topmost floor that has been installed. The standpipes shall be provided with siamese fire department connections on the outside of the building at the street level, conspicuously marked, and have at least one standard hose outlet at each floor. Pipe sizes, hose valves, hose, water supply, and other details, shall be in accordance with NFPA Standard No. 14, Standpipe and Hose Systems.

8. Cutting and Welding Operations

(a) A permit system shall be used for cutting and welding operations on the job site under the supervision of the construction superintendent or the person in charge of fire protection. This permit system shall be applicable to subcontractors' personnel as well as the contractors. A permit shall not be issued until (1) it has been determined cutting and welding can be safely conducted at the desired location, (2) combustibles have been moved away or safely covered, and (3) a fire watchman with extinguisher is posted for the duration of the work, and for 30 minutes thereafter, to see that sparks or drops of hot metal do not start fires.

(b) All gas operated cutting and welding equipment and operations shall be in accordance with NFPA Standard No. 51, Welding and Cutting.

9. Temporary Heating Equipment

(a) Steam heaters, approved electric heaters, approved gas and oil fired space heaters, or indirect fired gasoline heaters located outside the building, should be used in preference to salamanders burning solid fuel.

(b) Flue pipes, where required from direct fired heaters, shall be maintained at least 18 inches from combustibles.

(c) Oil fired heaters shall comply in design and installation features with NFPA Standard No. 31, Oil Burning Equipment.

(d) Liquefied petroleum gas fired heaters shall comply with NFPA Standard No. 58, Storage and Handling of Liquefied Petroleum Gases.

(e) Refueling operations for oil burning equipment and liquefied petroleum gas burning equipment shall be safely conducted, removing the heater to a safe location and waiting for it to cool prior to refueling.

(f) Where salamanders are used, they shall be on a solid base or floor so they are not likely to overturn. They shall be of substantial construction with an ash receiving metal bottom, legs at least 6 inches high and either a solid or wire mesh top. They shall be placed on either a noncombustible floor or on floors protected with hollow masonry not less than 4 inches thick, laid with ends unsealed and joints matched to permit free circulation of air through the masonry. The hollow masonry support for the salamanders should have noncombustible sheets above or noncombustible material below to prevent sparks or coals which might fall into joints from reaching combustible floor constructions. Coal and coke should be the only fuels used with solid fuel salamanders.

(g) Where salamanders are used, they shall be so located that there is a clearance of not less than 6 feet above nor less than $2\frac{1}{2}$ feet on all sides, between such device and unprotected woodwork or combustible material, equipment, or construction.

(h) A capable employee shall be on duty at all times whenever temporary heating equipment is being utilized to supervise the operation and maintenance of the equipment.

10. Smoking

Smoking shall be prohibited in the vicinity of hazardous operations or locations.

11. Disposal of Waste

(a) Waste material and rubbish shall not be stored nor allowed to accumulate within the building or in the immediate vicinity, but shall be removed from the premises at least daily.

(b) Rubbish shall not be burned on the premises except when permit is first obtained from the local fire department.

12. Flammable Liquids

(a) Flammable liquids and other hazardous materials such as paints, flammable thinners, gasoline, asphalt and tar should be stored in small detached structures or out in the open and not inside main buildings. Low flash point liquids used within buildings shall be handled only in approved safety cans. Flammable liquid storage should be in accordance with NFPA Standard No. 30, Flammable Liquids Code.

(b) Adequate ventilation shall be provided for paint spraying operations and operations involving the application of materials utilizing adhesives containing flammable solvents. Such operations shall be conducted remote from any potential source of ignition.

(c) Asphalt and tar kettles shall be located in a safe place outside of the building or on a noncombustible roof at a point where they avoid danger of ignition of combustible material below. Continuous supervision shall be maintained while kettles are in operation and metal covers shall be provided for all kettles to smother out flames in case of fire.

(d) Used roofing mops shall be stored outside the building and away from other combustible materials.

13. Construction Offices and Sheds

(a) Construction offices and sheds for the storage of tools and materials, when located within the building, or on the sidewalk bridging or within 30 feet of the buildings should be of noncombustible construction or protected with automatic sprinklers. When located 30 feet or more from the building and constructed of combustible materials, it is desirable to separate them into small detached units.

(b) Only approved and safely installed heating devices shall be used in construction offices and sheds. Ample clearance shall be provided around stoves and heaters and all flue pipes to prevent ignition of adjacent combustible construction. Where smoking is permitted, safe receptacles shall be provided for smoking materials.

14. Temporary Enclosures

(a) Flameproofed tarpaulins or materials of equivalent fire hazard characteristics shall be used. The flameproofing treatment for the tarpaulins shall comply with NFPA Standard No. 701, Flameproofed Textiles.

(b) When used to enclose buildings temporarily, the enclosing material should be fastened securely or guarded by construction so they cannot be blown against salamanders and heaters by the wind.

15. Scaffolding, Shoring and Forms

(a) Steel scaffolding or fire retardant lumber and planking should be used on both the outside and the inside of the building. The fire retardant treated lumber and planking used should be that treated by the pressure impregnation process.

(b) Unnecessary accumulation of combustible forms or form lumber shall be avoided. Those portions of the building where forms are in place should not be used for the storage of combustible building supplies.

16. Electrical Wiring and Equipment

Electrical wiring and equipment for light, heat, or power purposes shall be installed in compliance with the requirements of NFPA No. 70, National Electrical Code or of the inspection department having jurisdiction.

17. Construction Equipment

Gasoline powered air compressors, hoists, derricks, pumps, etc., shall be so located that the exhausts are well away from combustible materials. When the exhausts are piped to outside the building under construction, a clearance of at least 6 inches shall be maintained between such piping and combustible material.

POCKET EDITIONS OF NFPA STANDARDS

Standards published in 4 1/4 x 7 1/4 in. size, revised as of June 2, 1958. For complete list of publications write National Fire Protection Assn., 60 Batterymarch St., Boston 10, Mass.

0 Series: Administration

1-L Fire Prevention Bureau Ordinance, 1925	.25
3 Fire Casualty Definition, 1953	.25
6M Fire Safety in Industry, '55	.35

10 Series: Extinguishing Appliances

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