

# NFPA 513

## Motor Freight Terminals

### 1990 Edition



## NOTICE

All questions or other communications relating to this document should be sent only to NFPA Headquarters, addressed to the attention of the Committee responsible for the document.

For information on the procedures for requesting Technical Committees to issue Formal Interpretations, proposing Tentative Interim Amendments, proposing amendments for Committee consideration, and appeals on matters relating to the content of the document, write to the Secretary, Standards Council, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

A statement, written or oral, that is not processed in accordance with Section 16 of the Regulations Governing Committee Projects shall not be considered the official position of NFPA or any of its Committees and shall not be considered to be, nor be relied upon as, a Formal Interpretation.

Users of this document should consult applicable Federal, State and local laws and regulations. NFPA does not, by the publication of this document, intend to urge action which is not in compliance with applicable laws and this document may not be construed as doing so.

### Policy Adopted by NFPA Board of Directors on December 3, 1982

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.

---

**Licensing Provision** — This document is copyrighted by the National Fire Protection Association (NFPA)

---

**1. Adoption by Reference** — Public authorities and others are urged to reference this document in laws, ordinances, regulations, administrative orders or similar instruments. Any deletions, additions and changes desired by the adopting authority must be noted separately. Those using this method are requested to notify the NFPA (Attention: Secretary, Standards Council) in writing of such use. The term "adoption by reference" means the citing of title and publishing information only.

**2. Adoption by Transcription** — **A.** Public authorities with lawmaking or rule-making powers only, upon written notice to the NFPA (Attention: Secretary, Standards Council), will be granted a royalty-free license to print and republish this document in whole or in part, with changes and additions, if any, noted separately, in laws, ordinances, regulations, administrative orders or similar instruments having the force of law, provided that: (1) due notice of NFPA's copyright is contained in each law and in each copy thereof; and, (2) that such printing and republication is limited to numbers sufficient to satisfy the jurisdiction's lawmaking or rulemaking process. **B.** Once this NFPA Code or Standard has been adopted into law, all printings of this document by public authorities with lawmaking or rulemaking powers or any other persons desiring to reproduce this document or its contents as adopted by the jurisdiction in whole or in part, in any form, upon written request to NFPA (Attention: Secretary, Standards Council), will be granted a nonexclusive license to print, republish, and vend this document in whole or in part, with changes and additions, if any, noted separately provided that due notice of NFPA's copyright is contained in each copy. Such license shall be granted only upon agreement to pay NFPA a royalty. This royalty is required to provide funds for the research and development necessary to continue the work of NFPA and its volunteers in continually updating and revising NFPA standards. Under certain circumstances, public authorities with lawmaking or rulemaking powers may apply for and may receive a special royalty when the public interest will be served thereby.

**3. Scope of License Grant** — The terms and conditions set forth above do not extend to the index to this document.

(For further explanation, see the Policy Concerning the Adoption, Printing and Publication of NFPA Documents which is available upon request from the NFPA.)

---

### Statement on NFPA Procedures

This material has been developed under the published procedures of the National Fire Protection Association, which are designed to assure the appointment of technically competent Committees having balanced representation. While these procedures assure the highest degree of care, neither the National Fire Protection Association, its members, nor those participating in its activities accepts any liability resulting from compliance or noncompliance with the provisions given herein, for any restrictions imposed on materials or processes, or for the completeness of the text.

NFPA has no power or authority to police or enforce compliance with the contents of this document and any certification of products stating compliance with requirements of this document is made at the peril of the certifier.

Copyright © 1990 NFPA, All Rights Reserved

**NFPA 513**  
**Standard for**  
**Motor Freight Terminals**  
**1990 Edition**

This edition of NFPA 513, *Standard for Motor Freight Terminals*, was prepared by the Technical Committee on Motor Vehicle and Highway Fire Protection and acted on by the National Fire Protection Association, Inc. at its Fall Meeting held November 13-15, 1989 in Seattle, WA. It was issued by the Standards Council on January 12, 1990, with an effective date of February 5, 1990, and supersedes all previous editions.

The 1990 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 previous edition.

**Origin and Development of NFPA 513**

The first edition of the standard was prepared by the NFPA Committee on Truck Transportation. It was tentatively adopted in 1958 and adopted by the Association as an official NFPA Standard in 1959. In 1967 the Committee was reorganized as the Committee on Motor Vehicle and Highway Fire Protection.

The 1973 edition was a complete revision and reorganization of the 1971 edition. The 1973 edition was partially revised in 1975, 1978 and 1984. This 1990 edition contains minor changes such as updated Table 3-1.2 extracted from NFPA 30.

**Technical Committee on Motor Vehicle and Highway Fire Protection**

**Wesley L. D. Chisholm, Chairman**

Liberty Mutual Insurance Co.

Rep. Alliance of American Insurers

**Neill Darmstadter**, American Trucking Assn., Inc.

**A. L. Elliott**, Sacramento, CA

**Clifford J. Harvison**, Nat'l Tank Truck Carriers,  
Inc.

**M. R. Kraus**, Ansul Co.

Rep. Fire Equipment Manufacturers Assn.

**Enoch Lipson**, Port Authority of NY & NJ

**George E. Ralph**, Southport, ME

**Aaron Small**, Metro Safety

Rep. NFPA Fire Service Section

**Michael P. Wilson**, American Insurance Services  
Group Inc.

**Alternates**

**A. B. Rosenbaum III**, Nat'l Tank Truck Carriers,  
Inc.

(Alternate to C. J. Harvison)

**Raymond D. Scanlon**, Port Authority of NY & NJ

(Alternate to E. Lipson)

**Bruce A. Warner**, ICI Americas Inc.

(Alternate to M. R. Kraus)

**Richard L. Ortisi-Best**, NFPA Staff Liaison

*This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred.*

NOTE: Membership on a Committee shall not in and of itself constitute an endorsement of the Association or any document developed by the Committee on which the member serves.

**Contents**

<b>Chapter 1 General Information</b> . . . . .	<b>513- 5</b>
1-1 Application and Scope. . . . .	<b>513- 5</b>
1-2 Definitions. . . . .	<b>513- 5</b>
<b>Chapter 2 Construction and Building Arrangement</b> . . . . .	<b>513- 6</b>
2-1 Freight Transfer and Administration Buildings. . . . .	<b>513- 6</b>
2-2 Vehicle Maintenance and Service Buildings. . . . .	<b>513- 6</b>
2-3 Employee Facilities. . . . .	<b>513- 6</b>
<b>Chapter 3 Building Services</b> . . . . .	<b>513- 7</b>
3-1 Electricity. . . . .	<b>513- 7</b>
3-2 Heat. . . . .	<b>513- 9</b>
3-3 Ventilation. . . . .	<b>513- 9</b>
<b>Chapter 4 Freight Handling Operation</b> . . . . .	<b>513- 9</b>
4-1 Freight Transfer. . . . .	<b>513- 9</b>
4-2 Mechanical Handling Equipment. . . . .	<b>513- 9</b>
4-3 Motor Vehicles at Docks. . . . .	<b>513- 9</b>
<b>Chapter 5 Vehicle Maintenance and Service</b> . . . . .	<b>513-10</b>
5-1 General. . . . .	<b>513-10</b>
5-2 Spray Painting and Undercoating. . . . .	<b>513-10</b>
5-3 Inspection and Repair Pits. . . . .	<b>513-10</b>
5-4 Repair of Fuel Tanks. . . . .	<b>513-10</b>
5-5 Parts Cleaning. . . . .	<b>513-10</b>
5-6 Welding and Open Flame Operations. . . . .	<b>513-10</b>
5-7 Storage and Handling of Flammable and Combustible Liquids. . . . .	<b>513-10</b>
5-8 Fueling of Vehicles. . . . .	<b>513-10</b>
<b>Chapter 6 Fire Protection</b> . . . . .	<b>513-11</b>
6-1 Automatic Sprinklers. . . . .	<b>513-11</b>
6-2 Portable Fire Extinguishers. . . . .	<b>513-11</b>
6-3 Standpipes. . . . .	<b>513-11</b>
6-4 Alarm Service. . . . .	<b>513-11</b>
6-5 Outside Protection. . . . .	<b>513-11</b>
<b>Chapter 7 Referenced Publications</b> . . . . .	<b>513-11</b>
<b>Appendix A</b> . . . . .	<b>513-12</b>
<b>Appendix B Referenced Publications</b> . . . . .	<b>513-12</b>
<b>Index</b> . . . . .	<b>513-13</b>



**NFPA 513****Standard for****Motor Freight Terminals****1990 Edition**

NOTE: 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 Information****1-1 Application and Scope.**

**1-1.1** This standard contains requirements for the prevention of loss of life and property damage from fires in motor freight terminals.

**1-1.2** This standard applies to the freight transfer areas, offices, employee facilities, and to vehicle maintenance and service areas.

**1-1.3** This standard applies to motor freight terminals handling freight of various types, including ordinary combustible materials and materials classified as hazardous by the US Department of Transportation regulations (49 CFR Parts 100-199).

**1-1.3.1** Terminals for truck transportation of explosives shall be in accordance with NFPA 495, *Code for the Manufacture, Transportation, Storage, and Use of Explosive Materials*, and NFPA 498, *Standard for Explosives Motor Vehicle Terminals*.

**1-1.3.2** Terminals for bulk shipments of flammable and combustible liquids shall comply with NFPA 30, *Flammable and Combustible Liquids Code*.

**1-1.3.3** Terminals for bulk shipments of LP-Gas shall comply with NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*.

**1-1.4** For general storage buildings see NFPA 231, *Standard for General Storage*.

**1-1.5** For fire protection for property-carrying motor vehicles see NFPA 512, *Standard for Truck Fire Protection*.

**1-1.6** Where existing buildings, structures, and installations meet the applicable requirements of the edition of this standard in effect at the time of construction or installation, they may be continued in use provided they do not constitute a distinct hazard to life or adjoining property.

**1-2 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."

**Class I Liquid.** A liquid having a flash point below 100°F (37.8°C).

**Fire Area.** A portion of a building that is separated from other portions by construction with sufficient fire resistance to prevent fire of maximum anticipated severity from entering or leaving the area and with standard protection at all openings in the surrounding walls, floor, and ceiling. See NFPA 80, *Standard for Fire Doors and Windows*.

**Freight Transfer Area (Freight Platform; Freight Dock).** The area wherein freight is received, sorted, shipped and held for distribution.

**Hazardous Material.** A substance or material that has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and that has been so designated in US Department of Transportation Regulations (49 CFR, Parts 100-199).

**Motor Freight Terminal.** The area wherein the overall operation of freight transfer, vehicle repair and service, truck parking, and administrative functions are performed. The motor freight terminal may also include facilities for repair of crates, cases, barrels, cartons or damaged goods; a storage area for undelivered freight or damaged goods pending settlement of claims; rest rooms; a dormitory for drivers; locker rooms; and meal facilities.

**Office Area.** That part of the motor freight terminal used for administrative and general offices.

**Parking Area.** The lot or areas of the building used to part motor vehicles.

**Vehicle Maintenance Area.** The area wherein vehicles are repaired.

**Vehicle Service Area.** The area wherein vehicles are serviced, including refueling facilities. The area may include a lane in which vehicles are inspected before being dispatched.

## Chapter 2 Construction and Building Arrangement

### 2-1\* Freight Transfer and Administration Buildings.

**2-1.1** If not in separate buildings, freight transfer and office areas shall be cut off from vehicle maintenance and service facilities by walls constructed of noncombustible materials having a fire resistance rating of not less than two hours. The requirement need not apply to small offices 600 sq ft (54 m<sup>2</sup>) or less, located within the vehicle maintenance area.

**2-1.2** Walls required by 2-1.1 shall be parapeted at least 3 ft (0.9 m) above the building roof, except that the parapet may be omitted where the wall fits tightly to the underside of a fire-resistive roof deck constructed of noncombustible materials.

**2-1.3** Necessary door and other openings in the walls required by 2-1.1 shall be protected by fire doors having a fire protection rating of not less than 1½ hours, installed in accordance with NFPA 80, *Standard for Fire Doors and Windows*.

**2-1.4** Stairways and other vertical shafts shall be enclosed with construction specified in NFPA 220, *Standard on Types of Building Construction*, or sealed off at each floor level with construction having the same fire resistance rating as the floor.

**2-1.5\*** Exits and other life safety features of freight transfer and administration buildings and sections of buildings shall comply with the requirements of Sections 15-1 and 13-1, respectively, of NFPA 101®, *Life Safety Code*®.

**2-1.6** Power-operated doors that are installed in the terminals shall be arranged so that they can be operated manually from the floor in case of power failure.

**2-1.7** The floor of any freight transfer area shall be constructed of noncombustible materials without cracks or openings into which trash or other combustible material can fall. This provision shall not prohibit openings for integral freight handling equipment and appurtenances such as slots for the operation of draglines and platform scales. Any open space beneath the floor shall be enclosed with noncombustible material.

**2-1.8** Rooms for the storage, charging, and servicing of batteries shall comply with Article 480, NFPA 70, *National Electrical Code*®. "No Smoking" signs shall be posted at the entrance.

### 2-2\* Vehicle Maintenance and Service Buildings.

**2-2.1** Service areas that are not located in separate buildings shall be separated from other terminal operations by walls and fire doors as indicated in 2-1.2 and 2-1.3.

**2-2.2** Maintenance and service area floors shall be constructed of noncombustible material. Floors shall be graded and equipped with drains so as to minimize the possibility that water or fuel will stand on the floor.

**2-2.3** Floor drains shall be provided in areas where vehicles are maintained and serviced. Each floor drain shall be properly trapped and shall discharge through an oil separator to the sewer or outside vented sump.

**2-2.4** Pits and sub-floor work areas shall be constructed of masonry or concrete, and floors and piers shall be of suitable noncombustible material.

**2-2.4.1** Pits shall have adequate exits to prevent trapping of personnel in the event of fire. Steps shall be noncombustible and slip-proof and constructed with no accessible space underneath.

**2-2.4.2** Ventilation and drainage of pits shall be in accordance with Chapter 5.

**2-2.5\*** Exits from vehicle maintenance and service areas shall comply with the requirements of Section 15-2 of NFPA 101, *Life Safety Code*.

### 2-3 Employee Facilities.

**2-3.1** Fire resistance ratings of walls or partitions separating the following rooms from surrounding areas shall be:

Employee locker rooms	1 hr
Recreation rooms	1 hr
Sleeping facilities	2 hrs

**2-3.1.1** Door and other openings in the walls or partitions required by 2-3.1 shall be protected by self-closing fire doors having a fire protection rating of not less than 1 hour, installed in accordance with NFPA 80, *Standard for Fire Doors and Windows*.

*Exception:* Door and other openings in walls or partitions separating sleeping facilities from surrounding areas shall be protected by self-closing fire doors having a fire protection rating of not less than 1½ hours.

**2-3.2** Fire resistance ratings of floors separating employee locker rooms, recreation rooms, and sleeping facilities from surrounding areas shall be the same as required for walls or partitions in 2-3.1.

**2-3.2.1** Openings in floors between the separated areas shall be enclosed in shafts with enclosing walls or partitions having the same fire resistance ratings as required for the walls or partitions in 2-3.1, except that ducts for heating, ventilating, and air conditioning shall be installed in accordance with NFPA 90A, *Standard for the Installation of Air Conditioning and Ventilating Systems*.

**2-3.3** Exits and other life safety features of dormitory buildings and dormitory sections of buildings shall comply with the requirements of Section 11-4 of NFPA 101, *Life Safety Code*.

## Chapter 3 Building Services

### 3-1 Electricity.

**3-1.1** All electrical installations shall be in accordance with the provisions of NFPA 70, *National Electrical Code*.

**3-1.2** For the purposes of determining the extent of the hazardous area where flammable liquids are stored or handled, Table 3-1.2 shall be used.

**Table 3-1.2 Electrical Area Classifications**

Location	NEC Class I Division	Extent of Classified Area
Indoor equipment installed where flammable vapor-air mixtures may exist under normal operations	1	Area within 5 feet of any edge of such equipment, extending in all directions.
	2	Area between 5 feet and 8 feet of any edge of such equipment, extending in all directions. Also, area up to 3 feet above floor or grade level within 5 feet to 25 feet horizontally from any edge of such equipment.*
Outdoor equipment of the type where flammable vapor-air mixtures may exist under normal operation	1	Area within 3 feet of any edge of such equipment, extending in all directions.
	2	Area between 3 feet and 8 feet of any edge of such equipment, extending in all directions. Also area up to 3 feet above floor or grade level within 3 feet to 10 feet horizontally from any edge of such equipment.
Tank—Aboveground	1	Area inside dike where dike height is greater than the distance from the tank to the dike for more than 50 percent of the tank circumference.
Shell Ends, or Roof and Dike Area	2	Within 10 feet from shell, ends, or roof of tank.
Vent	1	Area inside dikes to level of top of dike.
	2	Within 5 feet of open end of vent, extending in all directions.
Floating Roof	2	Area between 5 feet and 10 feet from open end of vent, extending in all directions.
	1	Area above the roof and within the shell.
Underground Tank Fill Opening	1	Any pit, box, or space below grade level, if any part is within a Division 1 or 2 classified area.
	2	Up to 18 inches above grade level, within a horizontal radius of 10 feet from a loose fill connection, and within a horizontal radius of 5 feet from a tight fill connection.
Vent—Discharging Upward	1	Within 3 feet of open end of vent, extending in all directions.
	2	Area between 3 feet and 5 feet of open end of vent, extending in all directions.
Drum and Container Filling Outdoors, or Indoors with Adequate Ventilation	1	Within 3 feet of vent and fill openings, extending in all directions.
	2	Area between 3 feet and 5 feet from vent or fill opening, extending in all directions. Also, up to 18 inches above floor or grade level within a horizontal radius of 10 feet from vent or fill openings.
Pumps, Bleeders, Withdrawal Fittings, Meters and Similar Devices Indoors	2	Within 5 feet of any edge of such devices, extending in all directions. Also up to 3 feet above floor or grade level within 25 feet horizontally from any edge of such devices.
Outdoors	2	Within 3 feet of any edge of such devices, extending in all directions. Also up to 18 inches above grade level within 10 feet horizontally from any edge of such devices.

\*The release of Class I liquids may generate vapors to the extent that the entire building, and possibly a zone surrounding it, should be considered a Class I, Division 2 location.

Location	NEC Class I Division	Extent of Classified Area
<b>Pits</b>		
Without Mechanical Ventilation	1	Entire area within pit if any part is within a Division 1 or 2 classified area.
With Adequate Mechanical Ventilation	2	Entire area within pit if any part is within a Division 1 or 2 classified area.
Containing Valves, Fittings, or Piping, and not within a Division 1 or 2 Classified Area	2	Entire pit.
<b>Drainage Ditches, Separators, Impounding Basins</b>		
Outdoor	2	Area up to 18 inches above ditch, separator, or basin. Also up to 18 inches above grade within 15 feet horizontally from any edge.
Indoor		Same as pits.
<b>Tank Vehicle and Tank Car* Loading Through Open Dome</b>	1	Within 3 feet of edge of dome, extending in all directions.
	2	Area between 3 feet and 15 feet from edge of dome, extending in all directions.
<b>Loading Through Bottom Connections With Atmospheric Venting</b>	1	Within 3 feet of point of venting to atmosphere, extending in all directions.
	2	Area between 3 feet and 15 feet from point of venting to atmosphere, extending in all directions. Also up to 18 inches above grade within a horizontal radius of 10 feet from point of loading connection.
<b>Office and Rest Rooms</b>	Ordinary	If there is any opening to these rooms within the extent of an indoor classified area, the room shall be classified the same as if the wall, curb, or partition did not exist.
<b>Loading Through Closed Dome With Atmospheric Venting</b>	1	Within 3 feet of open end of vent, extending in all directions.
	2	Area between 3 feet and 15 feet from open end of vent, extending in all directions. Also within 3 feet of edge of dome, extending in all directions.
<b>Loading Through Closed Dome With Vapor Control</b>	2	Within 3 feet of point of connection of both fill and vapor lines, extending in all directions.
<b>Bottom Loading With Vapor Control Any Bottom Unloading</b>	2	Within 3 feet of point of connections, extending in all directions. Also up to 18 inches above grade within a horizontal radius of 10 feet from point of connections.
<b>Storage and Repair Garage for Tank Vehicles</b>	1	All pits or spaces below floor level.
	2	Area up to 18 inches above floor or grade level for entire storage or repair garage.
<b>Garages for Other Than Tank Vehicles</b>	Ordinary	If there is any opening to these rooms within the extent of outdoor classified area, the entire room shall be classified the same as the area classification at the point of the opening.
<b>Outdoor Drum Storage</b>	Ordinary	
<b>Indoor Warehousing Where There is No Flammable Liquid Transfer</b>	Ordinary	If there is any opening to these rooms within the extent of an indoor classified area, the room shall be classified the same as if the wall, curb, or partition did not exist.
<b>Piers and Wharves</b>		See Figure 5-3.5.6 in NFPA 30.

\*When classifying extent of area, consideration shall be given to fact that tank cars or tank vehicles may be spotted at varying points. Therefore, the extremities of the loading or unloading positions shall be used.

### 3-2 Heat.

**3-2.1** Heating equipment shall be installed to conform with the standards of the National Fire Protection Association as applicable: NFPA 90A, *Standard for Installation of Air Conditioning and Ventilating Systems*; NFPA 31, *Standard for the Installation of Oil Burning Equipment*; NFPA 54, *National Fuel Gas Code*; NFPA 82, *Standard for Incinerators, Waste, and Linen Handling Systems and Equipment*; NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances*.

**3-2.2** All heating equipment shall be of an approved type designed for the purpose. The use of makeshift or improvised heaters is prohibited.

**3-2.3** Fuels used shall be of the type and quality specified by the manufacturer of the heating appliance. Crankcase drainings shall not be used in oil-fired units.

**3-2.4** Heating equipment may be installed in a special room separated from an area classified as Class I, Division 1 or 2, by walls having a fire-resistive rating of at least one hour and without any openings in the wall within 8 ft (2.4 m) of the floor into the classified area. This room shall not be used for combustible storage, and all air for combustion purposes shall come from outside the building. In classifying the areas, Table 3-1.2 shall be used.

NOTE: The area classifications are defined in Article 500 of NFPA 70, *National Electrical Code*.

**3-2.5** Heating equipment using gas or oil fuel may be installed in maintenance service areas in which there is no dispensing or transferring of Class I liquids, provided that the bottom of the combustion chamber is at least 18 in. (457 mm) above the floor and the heating equipment is protected from physical damage.

**3-2.6** Gas or oil heating equipment approved for use in garages may be installed in the maintenance and service areas where Class I liquids are dispensed provided the equipment is installed at least 8 ft (2.4 m) above the floor.

**3-2.7** Electrical heating equipment shall be installed in accordance with the provisions of Section 7-5 of NFPA 30, *Flammable and Combustible Liquids Code*.

### 3-3 Ventilation.

**3-3.1 Vehicle Maintenance and Repair Areas.** All vehicle maintenance and repair areas when in operation shall be continuously ventilated by a ventilating system having positive means for exhausting indoor air at a rate of not less than  $\frac{3}{4}$  cu ft of air per minute for each sq ft of floor area. Exhaust duct openings for required ventilation shall be so located as to effectively remove vapor accumulations at floor level from all parts of the repair area. An approved means shall be provided for introducing an equal amount of outdoor air.

**3-3.2** Mechanical ventilating systems shall be installed in accordance with NFPA 90A, *Standard for the Installation of Air Conditioning and Ventilating Systems*. When blower and exhaust

systems are installed for vapor removal, the system shall be installed in accordance with NFPA 91, *Standard for Blower and Exhaust Systems*.

## Chapter 4 Freight Handling Operation

### 4-1 Freight Transfer.

**4-1.1** Aisles shall be provided to keep all portions of the freight handling areas readily accessible for fire fighting and to minimize the spread of fire.

**4-1.2\*** Hazardous materials shall be handled in accordance with the US Department of Transportation regulations (49 CFR Parts 100-199).

**4-1.3\*** Combustible contents shall not be piled in contact with columns that are not of fire-resistive construction.

**4-1.4** In sprinklered buildings, at least 18 in. (457 mm) clearance between sprinkler deflectors and top of storage shall be maintained. In non-sprinklered buildings at least 36 in. (914 mm) shall be maintained between the top of the storage and underside of the roof or ceiling in order to allow sufficient space for effective use of hose streams.

**4-1.5\*** Clearance shall be maintained between heat-producing appliances and combustible stock in accordance with NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances*. Adequate clearance shall be maintained between incandescent lamps and combustible stock.

**4-1.6** A clearance of 24 in. (610 mm) shall be maintained around the path of travel of fire doors.

*Exception: If a barricade is provided, no clearance is needed.*

**4-1.7** Commodities shall not be stored within 36 in. (914 mm) of a fire door opening.

### 4-2 Mechanical Handling Equipment.

**4-2.1** Power-operated industrial trucks shall be of a type designated in Chapter 1 of NFPA 505, *Firesafety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Maintenance, and Operation*, in accordance with the hazards of the location in which they are used.

**4-2.2** Industrial trucks, powered either by liquid or gaseous fuels, or electricity, shall be inspected and maintained in accordance with Chapters 3 and 4 of NFPA 505, *Firesafety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Maintenance and Operation*.

### 4-3 Motor Vehicles at Docks.

**4-3.1\*** Parking of vehicles in terminals shall be in compliance with applicable local, state, and federal regulations.

**4-3.2** Accessibility to terminals and vehicle parking areas for fire fighting purposes shall be provided at all times. Vehicles shall be parked so that they will not block fire department access.

**4-3.3** There shall be an emergency plan in effect for the removal of vehicles from the dock to a safe area to minimize fire exposure and loss, and to assure improved accessibility for the fire fighting equipment.

## **Chapter 5 Vehicle Maintenance and Service**

### **5-1 General.**

**5-1.1** Major maintenance and servicing of motor vehicles shall not be performed on floors below grade level. This requirement shall not prohibit the use of pits.

### **5-2 Spray Painting and Undercoating.**

**5-2.1** Spray painting, drying, and undercoating shall conform to NFPA 33, *Standard for Spray Application Using Flammable and Combustible Materials*, and to NFPA 86, *Standard for Ovens and Furnaces*.

### **5-3\* Inspection and Repair Pits.**

**5-3.1** Use of approved portable lights shall be minimized by installation of fixed lighting fixtures of the approved types in all pits in accordance with Article 511 of NFPA 70, *National Electrical Code*.

*Exception: If gasoline is dispensed, Article 514 of NFPA 70 shall apply.*

**5-3.2** Drainage from inspection or repair pits shall not enter a storm or sanitary sewer system, unless it has passed through a separator to prevent flammable and combustible liquids from entering the sewer.

**5-3.3** Smoking in pits shall be prohibited.

**5-3.4** A scheduled maintenance program for the collection and removal of oil separators and traps shall be initiated to prevent it from being carried into the sewers.

### **5-4 Repair of Fuel Tanks.**

**5-4.1** Repair work on fuel tanks of vehicles shall be in accordance with NFPA 327, *Standard Procedures for Cleaning or Safeguarding Small Tanks and Containers*, and NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*.

**5-4.2** Fuel drained from vehicle tanks and not discarded shall be stored in approved safety cans or returned to standard underground storage tanks.

### **5-5 Parts Cleaning.**

**5-5.1** Cleaning of parts shall be performed with nonflammable solvent.

*Exception: A combustible liquid with a flash point at or above 100°F (37.8°C) (closed cup) may be used for this purpose provided adequate ventilation is supplied and no sources of ignition are present in the cleaning area.*

### **5-6 Welding and Open Flame Operations.**

**5-6.1** All operations involving open flame or electric arcs, including fusion gas and electric welding, shall be restricted to the designated repair area. This provision includes, but is not limited to, fuel tank and radiator repairs. Responsibility for cutting and welding, and related fire prevention precautions shall be in accordance with requirements of NFPA 51B, *Standard for Fire Prevention in Use of Cutting and Welding Processes*.

**5-6.2** Welding equipment shall conform to Article 630 of NFPA 70, *National Electrical Code*, and the welding operations shall conform to NFPA 51, *Standard for the Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting and Allied Processes*.

### **5-7 Storage and Handling of Flammable and Combustible Liquids.**

**5-7.1** The storage and handling of flammable and combustible liquids shall be in accordance with NFPA 30, *Flammable and Combustible Liquids Code*. The storage and handling of liquefied petroleum gas shall be in compliance with NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*.

### **5-8 Fueling of Vehicles.**

**5-8.1\*** Gasoline dispensing units shall be of an approved type and shall be at least 20 ft (6 m) horizontally from any activity involving fixed sources of ignition.

**5-8.2** Approved dispensing units may be located inside buildings upon specific approval of the authority having jurisdiction. The dispensing area shall be separated from other areas in a manner approved by the authority having jurisdiction. The dispensing area shall be provided with an approved mechanical or gravity ventilation system.

**5-8.3** Class I liquids shall be transferred from tanks by means of fixed pumps designed and equipped to allow control of the flow and prevent leakage or accidental discharge.

**5-8.4** The dispensing unit and its piping, except those attached to containers, shall be mounted on a concrete island or protected against collision damage by suitable means. If located indoors the dispenser shall also be mounted on a concrete island or protected against collision damage by suitable means and shall be located in a position where it cannot be struck by a vehicle that is out-of-control descending a ramp or other slope.

**5-8.5** If dispensing of Class I liquids is to be done by a person other than the attendant, the hose nozzle valve shall be a listed automatic-closing type without a hold-open latch.

**5-8.6** One or more clearly identified and easily accessible switches or circuit breakers shall be provided at a location remote from dispensing devices, including remote pumping systems, to shut off the power to all dispensing devices in the event of an emergency. Controls shall not be more than 100 ft (30 m) from dispensers.

**5-8.7** Operating instructions and "No Smoking" signs shall be conspicuously posted in the dispensing area.

**5-8.8** The storage and handling of flammable and combustible liquids shall be in accordance with NFPA 30, *Flammable and Combustible Liquids Code*.

**5-8.9** Facilities for filling LP-Gas fuel tanks shall be located outside of any building. For requirements for LP-Gas fueling, see NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*.

## Chapter 6 Fire Protection

### 6-1\* Automatic Sprinklers.

**6-1.1** Where automatic sprinklers are provided, they shall be installed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*.

### 6-2 Portable Fire Extinguishers.

**6-2.1** Portable fire extinguishers shall be installed, inspected, maintained and used in accordance with NFPA 10, *Standard for Portable Fire Extinguishers*.

### 6-3 Standpipes.

**6-3.1** Where standpipe and hose systems are provided they shall conform to NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*.

### 6-4 Alarm Service.

**6-4.1\*** Where alarm service is provided, it shall be installed in accordance with the appropriate NFPA standard.

### 6-5 Outside Protection.

**6-5.1\*** The fire fighting needs of the terminal buildings and the requirements for fighting fires that might involve loaded and unloaded vehicles shall be considered when determining water supply and hydrant requirements.

**6-5.2** Where private underground supply mains and hydrants are necessary, they shall be installed in accordance with NFPA 24, *Standard for Private Fire Service Mains and Their Appurtenances*.

## 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 10-1988, *Standard for Portable Fire Extinguishers*

NFPA 13-1989, *Standard for the Installation of Sprinkler Systems*

NFPA 14-1990, *Standard for the Installation of Standpipe and Hose Systems*

NFPA 24-1987, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*

NFPA 30-1987, *Flammable and Combustible Liquids Code*

NFPA 31-1987, *Standard for the Installation of Oil Burning Equipment*

NFPA 33-1989, *Standard for Spray Application Using Flammable and Combustible Materials*

NFPA 51-1987, *Standard for the Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting and Allied Processes*

NFPA 51B-1989, *Standard for Fire Prevention in Use of Cutting and Welding Processes*

NFPA 54-1988, *National Fuel Gas Code*

NFPA 58-1989, *Standard for the Storage and Handling of Liquefied Petroleum Gases*

NFPA 70-1990, *National Electrical Code*

NFPA 80-1990, *Standard for Fire Doors and Windows*

NFPA 82-1990, *Standard on Incinerators, Waste and Linen Handling Systems and Equipment*

NFPA 86-1990, *Standard for Ovens and Furnaces*

NFPA 90A-1989, *Standard for the Installation of Air Conditioning and Ventilating Systems*

NFPA 91-1990, *Standard for the Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying*

NFPA 101-1988, *Code for Safety to Life from Fire in Buildings and Structures*

NFPA 211-1988, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances*

NFPA 220-1985, *Standard on Types of Building Construction*

NFPA 327-1987, *Standard Procedures for Cleaning or Safeguarding Small Tanks and Containers*

NFPA 495-1985, *Code for the Manufacture, Transportation, Storage, and Use of Explosive Materials*

NFPA 498-1986, *Standard for Explosives Motor Vehicle Terminals*

NFPA 505-1987, *Firesafety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Maintenance, and Operation*

**7-1.2 Other Publications.** US Department of Transportation Regulations, 49 CFR, Parts 100-199, as amended.

## Appendix A

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

**A-2-1** Freight transfer and administration buildings should be of fire-resistive or noncombustible construction as defined in NFPA 220, *Standard on Types of Building Construction*. Consideration should be given to limitation of undivided fire areas in freight transfer facilities.

Factors to be considered when determining maximum sizes of undivided fire areas are: (a) type of fire protection provided; (b) mechanical conveying equipment such as drag-line operations; (c) surveillance of goods to prevent possible theft.

**A-2-1.5** The referenced sections of NFPA 101 include requirements for types and capacity of exits, travel distances to exits, access to exits, exit lighting and signs, protection of vertical openings, interior finish, alarms, and air-conditioning equipment.

**A-2-2** Areas used for repairing and servicing vehicles should be located in separate buildings from the freight transfer building. These buildings should be of fire-resistive or noncombustible construction.

**A-2-2.5** Section 15-2 of NFPA 101 includes requirements for types and capacity of exits, travel distances to exits, access to exits, exit lighting and signs, protection of vertical openings, interior finish and alarms.

**A-4-1.2** Certain commodities have characteristics which cause them to be classified as hazardous materials. These commodities are subject to special regulations governing packaging, storage, and transportation. Failure to abide by these requirements increases the danger of explosion, fire, the release of noxious or toxic fumes, damage to other freight, or other dangerous conditions. Section 177.848 of the *Code of Federal Regulations*, the *Loading and Storage Guide*, sets forth those combinations of hazardous materials which may not be loaded or stored together, or with certain other types of freight, in the same vehicle. The *Loading and Storage Guide* does not prohibit the presence of these combinations of commodities in the same motor freight terminal so long as they are not stored adjacent to each other.

**A-4-1.3** This requirement is necessary to permit water to wet columns during fire suppression operations to guard against column failure.

**A-4-1.5** Surface temperature of lamps is discussed in the NFPA *Fire Protection Handbook*, 16th edition, page 8-23, Figure 8-2W and Table 8-2L. Reference is also made to the *IES Lighting Handbook*, 1984 Reference Volume, of the Illuminating Engineering Society.

**A-4-3.1** In case of fire, there is a potential for mutual exposure between the terminals and vehicles parked adjacent to them. Consistent with operating conditions and security requirements, consideration should be given to minimizing the potential exposure by not leaving any vehicles parked at

the dock longer than necessary. Priority should be given to the loading, unloading and dispatching of vehicles transporting hazardous materials so that such cargoes will not be in the terminal longer than necessary.

**A-5-3** Pits used to service gasoline-fueled vehicles should be provided with an individual ventilating system capable of providing 4 cu ft of air per minute per sq ft of floor area. Such pits should have the floor pitched 1 in. for each 10 ft, and the exhaust air opening should terminate in an air opening which is perpendicular to the floor with the bottom of the opening extending to the floor at the lowest end of the pit.

**A-5-8.1** In fuel dispensing consideration should be given to the vapor recovery requirements of the US Environmental Protection Agency. See B-2.

**A-6.1** Consideration should be given to sprinkler protection for:

(a) Freight transfer buildings and vehicle maintenance and service buildings.

(b) Truck loading areas. An open head deluge system or a closed head dry pipe or nonfreeze-solution wet system should be provided in colder regions. The purpose of this protection is to protect against the mutual fire exposure that can exist between terminals and vehicles parked adjacent to them. See Chapter 6, "Outside Sprinklers for Protection Against Exposure Fires," of NFPA 13, *Standard for the Installation of Sprinkler Systems*.

**A-6-4.1** Freight transfer facilities should be provided with one of the following types of alarm service: a) central station supervision of sprinkler system water-flow; b) central station supervision of automatic fire detection system; c) central station supervision of guard service. Details for the installation, maintenance and use of guard, fire alarm, and sprinkler supervisory systems will be found in several NFPA standards: NFPA 71, *Central Station Signaling Systems*; NFPA 72A, *Local Protective Signaling Systems*; NFPA 72B, *Auxiliary Protective Signaling Systems*; NFPA 72C, *Remote Station Protective Signaling Systems*; and NFPA 72D, *Proprietary Protective Signaling Systems*. Recommendations on the selection and training of persons to perform guard services will be found in NFPA 601, *Recommendations for Guard Service in Fire Loss Prevention*.

**A-6-5.1** Where an adequate water supply for fire hydrants and sprinkler protection cannot be made available from public water mains, the following NFPA standards should be consulted: NFPA 22, *Standard for Water Tanks for Private Fire Protection*, and NFPA 20, *Standard for the Installation of Centrifugal Fire Pumps*.

## 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. 9101, Quincy, MA 02269-9101.

NFPA 20-1990, *Standard for the Installation of Centrifugal Fire Pumps*

NFPA 22-1987, *Standard for Water Tanks for Private Fire Protection*

NFPA 30-1987, *Flammable and Combustible Liquids Code*

NFPA 71-1989, *Standard for the Installation, Maintenance and Use of Signaling Systems for Central Station Service*

NFPA 72A-1989, *Standard for the Installation, Maintenance and Use of Local Protective Signaling Systems for Guard's Tour, Fire Alarm and Supervisory Service*

NFPA 72B-1986, *Standard for the Installation, Maintenance, and Use of Auxiliary Protective Signaling Systems for Fire Alarm Service*

NFPA 72C-1986, *Standard for the Installation, Maintenance, and Use of Remote Station Protective Signaling Systems*

NFPA 72D-1986, *Standard for the Installation, Maintenance, and Use of Proprietary Protective Signaling Systems*

NFPA 88B-1985, *Standard for Repair Garages*

NFPA 220-1985, *Standard on Types of Building Construction*

NFPA 231-1987, *Standard for General Storage*

NFPA 512-1990, *Standard for Truck Fire Protection*

NFPA 601-1986, *Standard for Guard Service in Fire Loss Prevention*

*Fire Protection Handbook*, 1986, 16th edition.

## B-1.2 Other Publications.

U.S. Department of Transportation Code of Federal Regulations, Title 40, Section 50.

*IES Lighting Handbook*, Illuminating Engineering Society, 345 East 47th Street, New York, NY 10017, 1972, 1984 Reference Volume.

## Index

©1990 National Fire Protection Association, All Rights Reserved.

The copyright in this index is separate and distinct from the copyright in the document which it indexes. The licensing provisions set forth for the document are not applicable to this index. This index may not be reproduced in whole or in part by any means without the express written permission of the National Fire Protection Association, Inc.

### -A-

**Alarm service** ..... 6-4, A-6-4  
**Application of standard** ..... 1-1  
**Area** ..... see specific type such as Fire area

### -B-

**Building services** ..... Chap. 3  
**Buildings**  
     Construction and arrangement ..... Chap. 2, A-2  
     Existing ..... 1-1.6  
     Freight transfer and administration ..... 2-1, A-2-1  
     Vehicle maintenance and service ..... 2-2, A-2-2

### -E-

**Electrical area, classifications** ..... Table 3-1.2  
**Electrical installations** ..... 3-1  
**Employee facilities** ..... 2-3  
**Exits**  
     Dormitories ..... 2-3.3  
     Freight transfer and administration buildings ... 2-1.5, A-2-1.5  
     Vehicle maintenance and service areas ..... 2-2.5, A-2-2.5  
**Extinguishers, portable fire** ..... 6-2

### -F-

**Fire area**  
     Definition ..... 1-2  
**Fire protection** ..... Chap. 6  
     Outside ..... 6-5, A-6-5.1

**Flammable and Combustible Liquids, storage and handling of** . 5-7  
**Freight handling operations** ..... Chap. 4  
**Freight transfer** ..... 4-1, A-4-1  
**Freight transfer and administration buildings** ..... 2-1, A-2-1  
**Freight transfer area**  
     Definition ..... 1-2  
**Fueling of vehicles** ..... 5-8, A-5-8

### -H-

**Handling equipment, mechanical** ..... 4-2  
**Hazardous (classified) locations** ..... 3-1.2  
**Hazardous materials**  
     Definition ..... 1-2  
**Heating equipment** ..... 3-2

### -I-

**Inspection pits** ..... 5-3, A-5-3

### -L-

**Liquids**  
     Class I  
         Definition ..... 1-2  
         Flammable and combustible, storage and handling ..... 5-7

### -M-

**Mechanical handling equipment** ..... 4-2  
**Motor freight terminal**  
     Definition ..... 1-2

**-O-**

<b>Office area</b>	
Definition .....	1-2
<b>Open flame operations</b> .....	5-6

**-P-**

<b>Painting, spray</b> .....	5-2
<b>Parking area</b>	
Definition .....	1-2
<b>Parts, cleaning of</b> .....	5-5
<b>Pits, inspection and repair</b> .....	2-2.4, 5-3, A-5-3

**-S-**

<b>Scope of standard</b> .....	1-1
<b>Sprinklers, automatic</b> .....	6-1, A-6-1
<b>Standpipes</b> .....	6-3

**-T-**

<b>Tanks, fuel, repair of</b> .....	5-4
<b>Trucks, industrial</b> .....	4-2

**-U-**

<b>Undercoating</b> .....	5-2
---------------------------	-----

**-V-**

<b>Vehicle maintenance and service</b> .....	Chap. 5
<b>Vehicle maintenance and service buildings</b> .....	2-2, A-2-2
<b>Vehicle maintenance area</b>	
Definition .....	1-2
Ventilation .....	3-3.1
<b>Vehicle service area</b>	
Definition .....	1-2
Ventilation .....	3-3.1
<b>Vehicles</b>	
Fueling of .....	5-8, A-5-8
Motor, at docks .....	4-3, A-4-3.1
<b>Ventilation</b> .....	3-3

**-W-**

<b>Welding</b> .....	5-6
----------------------	-----

## **SUBMITTING PROPOSALS ON NFPA TECHNICAL COMMITTEE DOCUMENTS**

**Contact NFPA Standards Administration for final date for receipt of proposals  
on a specific document.**

### **INSTRUCTIONS**

**Please use the forms which follow for submitting proposed amendments.  
Use a separate form for each proposal.**

1. For each document on which you are proposing amendment indicate:
  - (a) The number and title of the document
  - (b) The specific section or paragraph.
2. Check the box indicating whether or not this proposal recommends new text, revised text, or to delete text.
3. In the space identified as "Proposal" include the wording you propose as new or revised text, or indicate if you wish to delete text.
4. In the space titled "Statement of Problem and Substantiation for Proposal" state the problem which will be resolved by your recommendation and give the specific reason for your proposal including copies of tests, research papers, fire experience, etc. If a statement is more than 200 words in length, the technical committee is authorized to abstract it for the Technical Committee Report.
5. Check the box indicating whether or not this proposal is original material, and if it is not, indicate source.
6. If supplementary material (photographs, diagrams, reports, etc.) is included, you may be required to submit sufficient copies for all members and alternates of the technical committee.
7. Type or print legibly in black ink.

**NOTE:** The NFPA Regulations Governing Committee Projects in Paragraph 10-10 state: Each proposal shall be submitted to the Council Secretary and shall include:

- (a) identification of the submitter and his affiliation (Committee, organization, company) where appropriate, and
- (b) identification of the document, paragraph of the document to which the proposal is directed, and
- (c) a statement of the problem and substantiation for the proposal, and
- (d) proposed text of proposal, including the wording to be added, revised (and how revised), or deleted.