

NFPA No.

513

MOTOR FREIGHT TERMINALS 1973



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**NATIONAL FIRE PROTECTION ASSOCIATION
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**Standard for
Motor Freight Terminals**

NFPA No. 513 — 1973

1973 Edition of No. 513

The 1973 edition of the Standard for Motor Freight Terminals was prepared by the Committee on Motor Vehicle and Highway Fire Protection and adopted by the National Fire Protection Association at the 1973 NFPA Annual Meeting.

Origin and Development of No. 513

The first edition of the Standard for 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.

Amendments Adopted in 1973

The 1973 edition is a complete revision and reorganization of the 1971 edition.

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Chapter 1. General Information

Explanation of Standard Format. The appendix material at the bottom of each page utilizing the prefix "A" contains information to explain the standard and additional safe practices and recommendations. This appendix material is not a part of NFPA No. 513.

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 handling areas of a terminal, to administrative offices, employee facilities, and to vehicle maintenance shops and repair operations.

1-1.3 This standard applies to motor truck terminals handling freight of various types, including ordinary combustible materials and materials classified as hazardous by the U.S. Department of Transportation, except as noted in sections 1-1.4 and 1-1.5.

1-1.4 Truck transportation of explosives shall be in accordance with the *Code for the Manufacture, Transportation, Storage, and Use of Explosive Materials*, NFPA No. 495-1973, and the *Standard for Explosive Motor Vehicle Terminals*, NFPA No. 498-1970.

1-1.5 This standard does not specifically apply to bulk handling in terminals of liquids, solids and gases. Bulk shipments of flammable and combustible liquids shall comply with the *Flammable and Combustible Liquids Code*, NFPA No. 30-1973. Bulk shipments of LP-Gas shall comply with the *Standard for the Storage and Handling of Liquefied Petroleum Gases*, NFPA No. 58-1972.

1-1.6 This standard does not cover buildings where commodities are left for storage or storage-in-transit, rather than transhipment. See the *Standard for Indoor General Storage*, NFPA No. 231-1972.

1-1.7* This standard does not cover fire protection for property-carrying motor vehicles.

1-1.8 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 means acceptable to the authority having jurisdiction over design, equipment, installation or intended use as required by this standard. Devices having been tested and accepted for a specific purpose by a nationally recognized testing laboratory may be deemed to be acceptable.

Class I Liquid means a liquid having a flash point below 100° F.

Explosives and Other Dangerous Articles means all materials listed as such in the *Commodity List of Hazardous Materials* of the U.S. Department of Transportation. See *Code of Federal Regulations, Title 49, Transportation, Part 172*.

Fire Area means 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 the *Standard for Fire Doors and Windows*, NFPA No. 80-1973.

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

Motor Freight Terminal means 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 un-

Appendix A

A-1-1.7 Fire protection for property-carrying motor vehicles is the subject of *Recommended Good Practices for Truck Fire Protection*, NFPA No. 512-1970.

delivered freight or damaged goods pending settlement of claims; rest rooms; a dormitory for drivers; locker rooms and meal facilities.

Office Area means that part of the motor freight terminal used for administrative and general offices.

Parking Area means the lot or areas of the building used to park motor vehicles.

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

Vehicle Maintenance Area means the area wherein vehicles are repaired.

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 fire walls having a fire resistance rating of not less than two hours. The requirement need not only apply to small offices located within the vehicle maintenance area.

2-1.2 Fire walls shall be parapeted at least three feet 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.

2-1.3* If doors and other openings are necessary in fire walls, they shall be provided with approved self-closing or automatic fire doors or dampers installed in accordance with the *Standard for Fire Doors and Windows*, NFPA No. 80-1973, or the *Standard for the Installation of Air Conditioning and Ventilating Systems*, NFPA No. 90A-1973.

2-1.4 Stairways and other vertical shafts shall be enclosed with construction specified in *Standard Types of Building Construction*, NFPA No. 220-1961, 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 the *Code for Safety to Life from Fire in Buildings and Structures*, NFPA No. 101-1973.

Appendix A — (continued)

A-2-1 Freight transfer and administration buildings should be of fire-resistive or noncombustible construction as defined in the *Standard Types of Building Construction*, NFPA No. 220-1961.

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-2-1.3 Fire walls should preferably be without openings.

A-2-1.5 The referenced sections of NFPA No. 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.

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 non-combustible construction.

2-1.8 Rooms for the storage, charging and servicing of batteries shall comply with Article 480, of the *National Electrical Code*, NFPA No. 70-1971. "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 fire walls and fire doors as indicated in Sections 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 non-combustible 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.

Appendix A (continued)

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.

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 the *Code for Safety to Life from Fire in Buildings and Structures*, NFPA No. 101-1973.

2-3 Employee Facilities

2-3.1 Dormitories, employee locker rooms, recreation rooms and rest rooms shall be separated from surrounding areas by walls, floors or partitions having a fire resistance rating of not less than one hour. Protection of openings between the separated areas shall afford an equivalent degree of protection to that of the wall, floor, or partition, and doors shall have approved self-closing devices.

2-3.2 Exits and other life safety features of dormitory buildings and dormitory sections of buildings shall comply with the requirements of Section 11-4 of the *Code for Safety to Life from Fire in Buildings and Structures*, NFPA No. 101-1973.

Appendix A (continued)

A-2-2.5 Section 15-2 of NFPA No. 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.

Chapter 3. Building Services

3-1 Electricity.

3-1.1 All electrical installations shall be in accordance with the provisions of the *National Electrical Code*, NFPA No. 70-1971.

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.

3-2 Heat.

3-2.1 Heating equipment shall be installed to conform with the Standards of the National Fire Protection Association as applicable: *Standard for Installation of Air-Conditioning and Ventilating Systems*, NFPA No. 90A-1973; *Standard for the Installation of Oil Burning Equipment*, NFPA No. 31-1972; *Standard for the Installation of Gas Appliances and Gas Piping*, NFPA No. 54-1969; *Standard for Chimneys, Fireplaces and Venting Systems*, NFPA No. 211-1972, *Standard on Incinerators*, NFPA No. 82-1972.

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 eight feet 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 the *National Electrical Code*, NFPA No. 70-1971.

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 inches above the floor and the heating equipment is protected from physical damage.

Table 3-1.2
Electrical Equipment Hazardous Areas
**(Extracted from Flammable and Combustible Liquids Code,
 NFPA No. 30-1973)**

Location	NEC Class I, Group D Division	Extent of Classified Area
UNDERGROUND TANK		
Fill Opening	1	Any pit, box or space below grade level, any part of which is within the 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.
DISPENSING UNITS		
Pits	1	Any pit, box or space below grade level, any part of which is within the Division 1 or 2 classified area.
Dispenser Enclosure	1	The area 4 feet vertically above base within the enclosure and 18 inches horizontally in all directions.
Outdoor	2	Up to 18 inches above grade level within 20 feet horizontally of any edge of enclosure.
Indoor with Mechanical Ventilation	2	Up to 18 inches above grade or floor level within 20 feet horizontally of any edge of enclosure.
with Gravity Ventilation	2	Up to 18 inches above grade or floor level within 25 feet horizontally of any edge of enclosure.

Table 3-1.2 — Continued

Location	NEC Class I, Group D Division	Extent of Classified Area
Remote Pump — Outdoor	1	Any pit, box or space below grade level if any part is within a horizontal distance of 10 feet from any edge of pump.
	2	Within 3 feet of any edge of pump, extending in all directions. Also up to 18 inches above floor or grade level within 10 feet horizontally from any edge of pump.
Remote Pump — Indoor	1	Entire area within any pit.
	2	Within 5 feet of any edge of pump, extending in all directions. Also up to 3 feet above floor or grade level within 25 feet horizontally from any edge of pump.
Lubrication or Service Room	1	Entire area within any pit.
	2	Area up to 18 inches above floor or grade level within entire lubrication room.
Dispenser for Class I Liquids	2	Within 3 feet of any fill or dispensing point, extending in all directions.
Special Enclosure Inside Building Per Section 7120 of NFPA No. 30	1	Entire enclosure.
Sales, Storage and Rest Rooms	Ordinary	If there is any opening to these rooms within the extent of a Division 1 area, the entire room shall be classified as Division 1.

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 eight feet above the floor.

3-2.7 Electrical heating equipment shall be installed in accordance with the provisions of Article 74 of the *Flammable and Combustible Liquids Code*, NFPA No. 30-1973.

3-3 Ventilation.

3-3.1 Vehicle Maintenance and Repair Areas. All vehicles 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 $\frac{3}{4}$ cubic foot of air per minute for each square foot of floor area. An approved means shall be provided for introducing an equal amount of outdoor air. The exhaust gases of motor vehicle engines being tested shall be discharged to the outdoors through a duct of noncombustible material of suitable size attached as an extension of the motor vehicle's exhaust pipe.

Exception. If the repair stalls are located adjacent to the outside wall so that ten feet or less of extension duct reaches the outdoors through wall openings at a height of not more than one foot above floor level, no mechanical exhaust system need be used.

Each stall shall be provided with a suitable exhaust extension duct connected to a mechanical exhaust system having a capacity of 300 CFM for each repair stall.

3-3.2 Mechanical ventilating systems shall be installed in accordance with the *Standard for the Installation of Air-Conditioning and Ventilating Systems*, NFPA No. 90A-1973. When blower and exhaust systems are installed for vapor removal, the system shall be installed in accordance with the *Standard for Blower and Exhaust Systems*, NFPA No. 91-1973.

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* Freight classified as a hazardous material by the regulations of the U.S. Department of Transportation shall be handled in accordance with the *Code of Federal Regulations, Title 49, Chapter I, Parts 170-179*.

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 inches clearance between sprinkler deflectors and top of storage shall be maintained. In non sprinklered buildings at least 36 inches 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 the *Manual on Clearances for Heat Producing Appliances*, NFPA No. 89M-1971. Adequate clearance shall be maintained between incandescent lamps and combustible stock.

Appendix A — (continued)

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 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 a fire to guard against column failure.

A-4-1.5 Surface temperature of lamps is discussed in the *NFPA Fire Protection Handbook, 13th edition*, page 9-123, Figure 9-3FF and Table 9-3H. Reference is also made to the *IES Handbook, 4th edition*, of the Illuminating Engineering Society.

4-1.6 A clearance of 24 inches 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 inches 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 the *Standard for the Use, Maintenance, and Operation of Industrial Trucks*, NFPA No. 505-1972, in accordance with the hazards of the location in which they are used.

4-2.2 Maintenance and operation of electric, liquid and gaseous fueled industrial trucks shall be in accordance with Chapters 2 and 3 of the *Standard for the Use, Maintenance, and Operation of Industrial Trucks*, NFPA No. 505-1972.

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.

Appendix A — (continued)

A-4-3.1 In case of fire, there is a potential for mutual exposure between the terminals and vehicles parked adjacent to it. 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.

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 the *Standard for Spray Finishing Using Flammable and Combustible Materials*, NFPA No. 33-1973, and to the *Standard for Ovens and Furnaces*, NFPA No. 86A-1973.

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 the *National Electrical Code*, NFPA No. 70-1971.

Exception: If gasoline is dispensed, Article 514 of NFPA No. 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.

Appendix A — (continued)

A-5-3 Pits used to service gasoline-fueled vehicles should be provided with an individual ventilating system capable of providing four cubic feet of air per minute per square foot of floor area. Such pits should have the floor pitched one inch for each ten feet 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.

5-4 Repair of Fuel Tanks.

5-4.1 Repair work on fuel tanks of vehicles shall be in accordance with the *Standard Procedures for Cleaning or Safeguarding Small Tanks and Containers*, NFPA No. 327-1970, and the *Standard for the Storage and Handling of Liquefied Petroleum Gases*, NFPA No. 58-1972.

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 Solvents, whether in pressurized equipment or at atmospheric pressure, having a flash point of less than 140° F shall not be employed for the cleaning of parts. Adequate ventilation shall be provided.

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 the *Standard for Fire Prevention in Use of Cutting and Welding Processes*, NFPA No. 51B-1971.

5-6.2 Welding equipment shall conform to Article 630 of the *National Electrical Code*, NFPA No. 70-1971, and the welding operations shall conform to the *Standard for the Installation and Operation of Oxygen-Fuel Gas Systems for Welding and Cutting*, NFPA No. 51-1973.

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 the *Flammable and Combustible Liquids Code*, NFPA No. 30-1973. The storage and handling of liquefied petroleum gas shall be in compliance with the *Standard for the Storage and Handling of Liquefied Petroleum Gases*, NFPA No. 58-1972.