NFPA No.

513

MOTOR FREIGHT TERMINALS 1971

$1.00

NATIONAL FIRE PROTECTION ASSOCIATION
International
60 Batterymarch Street, Boston, Mass. 02110

4M-6-71-WP-FP
Printed in U.S.A.

Official NFPA Definitions

Adopted Jan. 23, 1964: Revised Dec. 9, 1969. Where variances to these definitions are found, efforts to eliminate such conflicts are in process.

SHALL is intended to indicate requirements.

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

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*Among the laboratories nationally recognized by the authorities having jurisdiction in the United States and Canada are the Underwriters' Laboratories, Inc., the Factory Mutual Research Corp., the American Gas Association Laboratories, the Underwriters' Laboratories of Canada, the Canadian Standards Association Testing Laboratories, and the Canadian Gas Association Approvals Division.

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AUTHORITY HAVING JURISDICTION: The organization, office or individual responsible for "approving" equipment, an installation, or a procedure.

Statement on NFPA Procedures

This material has been developed in the interest of safety to life and property under the published procedures of the National Fire Protection Association. These procedures are designed to assure the appointment of technically competent Committees having balanced representation from those vitally interested and active in the areas with which the Committees are concerned. These procedures provide that all Committee recommendations shall be published prior to action on them by the Association itself and that following this publication these recommendations shall be presented for adoption to the Annual Meeting of the Association where anyone in attendance, member or not, may present his views. 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.

Standard for

Motor Freight Terminals

NFPA No. 513 — 1971

1971 Edition of No. 513

The 1971 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 1971 NFPA Annual Meeting.

Origin and Development of No. 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 scope of the Committee was greatly expanded at the time of the reorganization (see page 513-2 for the present scope). The reorganized Committee prepared the 1971 edition.

Amendments Adopted in 1971

The 1971 edition is a complete revision and reorganization of the 1959 edition.

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SCOPE: To develop standards and recommended practices covering motor vehicle fire prevention and protection measures to reduce loss of life and property damage in the operation and maintenance (repair) of such vehicles (except as specified herein), to provide fire prevention and protection recommendations for motor freight terminals, to recommend protection for tunnels, air-tight structures and bridges, and to recommend protection facilities on limited-access highways. Included as motor vehicles are trucks, buses, taxicabs, limousines, and passenger cars. Excluded are the design, fire protection, and operational procedures for fire apparatus, mobile homes and travel trailers, tank vehicles of all kinds for handling flammable and combustible liquids and liquefied petroleum gases, and vehicles transporting explosives and other hazardous chemicals. The construction and protection of garages are handled by the NFPA Committee on Garages.

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Standard for
Motor Freight Terminals

NFPA No. 513 — 1971

Chapter 1. General Information

11. Application

111. This Standard contains recommendations for the prevention of loss of life and property damage from fires in motor freight terminals.

12. Scope

121. This Standard applies to the freight handling of a terminal, to administrative offices, rest areas, and to vehicle maintenance and repair operations.

122. This Standard applies to motor truck terminals handling freight of various types, including bulk shipments except as noted in 123, ordinary combustible materials and materials classified as hazardous by the U. S. Department of Transportation, except for the following:

EXPLOSIVES. See NFPA No. 495, Code for the Manufacture, Transportation, Storage, and Use of Explosives and Blasting Agents, and NFPA No. 498, Standard for Explosives, Motor Vehicle Terminals.

123. This Standard does not specifically apply to terminals handling liquids, solids, and gases shipped in bulk. Sections of this Standard are applicable to these operations and should be followed. Reference should be made to NFPA No. 30, Flammable and Combustible Liquids Code, for standards on bulk handling of flammable and combustible liquids.

124. This Standard does not cover buildings where commodities are left for storage or storage-in-transit, rather than transshipment. See NFPA No. 231, Standard for Indoor General Storage.

125. Fire protection for property-carrying motor vehicles is the Subject of NFPA No. 512, Recommended Good Practices for Truck Fire Protection.

13. Definitions

APPROVED — 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.

EXPLOSIVES AND OTHER DANGEROUS ARTICLES — Include all materials listed as such in the Commodity List of Hazardous Materials of the Department of Transportation.*

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.**

FREIGHT TRANSFER AREA (Freight Platform; Freight Dock) — The area wherein freight is received, sorted, shipped and held for distribution.

GENERAL CARGO — All generally nonhazardous types of material including everything except materials classified as dangerous articles or explosives.

MOTOR FREIGHT TERMINAL — 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 park 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.

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*See Code of Federal Regulations, Title 49, Transportation, Part 172

**See NFPA No. 80, Standard for Fire Doors and Windows

Chapter 2. Construction — Building Arrangement

21. Freight Transfer and Administration Buildings

211. Freight transfer and administration buildings should be of fire-resistive or noncombustible construction as defined in NFPA No. 220, Standard Types of Building Construction.

212. Fire areas of freight transfer facilities should be restricted in size to maintain the total value of the freight within reasonable limits.

NOTE: Factors to be considered when determining maximum size of undivided fire areas are: (a) Type of automatic fire protection provided (b) Mechanical conveying equipment such as drag-line operations (c) Surveillance of goods to prevent possible theft.

213. If not in separate buildings, vehicle maintenance and service facilities shall be cut off from freight transfer and office areas by two-hour fire walls. The requirement need not apply to small offices located within the vehicle maintenance area.

214. Fire walls shall be parapeted at least three feet above the building roof, except the parapet may be omitted where the wall fits tightly to the underside of a fire-resistive roof deck. Fire walls should preferably be without openings, but if openings are necessary they shall be provided with self-closing or automatic fire doors on each side of the wall. Such doors shall be approved for Class A openings.

215. Stairways and other vertical shafts shall be enclosed with construction specified in NFPA No. 220, Standard Types of Building Construction, or sealed off at each floor level with construction having the same fire resistance rating as the floor.

216. 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 No. 101, Code for Safety to Life from Fire in Buildings and Structures.

NOTE: 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.

217. 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.

218. The floor of the freight transfer area shall be of noncombustible construction without cracks or openings into which trash or other combustible material can fall and any open space beneath the floor shall be enclosed with noncombustible construction.

219. Rooms for the storage, charging and servicing of batteries shall comply with Article 480, NFPA No. 70, National Electrical Code. "No Smoking" signs shall be posted at the exterior doors.

22. Vehicle Maintenance and Service Buildings

221. 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 non-combustible construction. When such service areas are not detached, they shall be separated from other terminal operations by walls and partitions having a fire resistance rating of not less than 2 hours.

222. Maintenance and service area floors shall be noncombustible. Where concrete is used for the floor surface, it should be finished to facilitate cleaning. Floors shall be graded and equipped with drains so as to minimize the possibility that water or fuel will stand on the floor.

223. 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.

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

a. 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.

b. Ventilation and drainage of pits shall be in accordance with Section 531.

225. Exits from vehicle maintenance and service areas shall comply with the requirements of Section 15-2 of NFPA No. 101, Code for Safety to Life from Fire in Buildings and Structures.

NOTE: Section 15-2 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.

23. Employee Facilities

231. Dormitories, employees' 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 1 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.

232. 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 No. 101, Code for Safety to Life from Fire in Buildings and Structures.

Chapter 3. Building Services

31. Electricity

311. All electrical installations shall be in accordance with the provisions of NFPA No. 70, the National Electrical Code.

312. For the purposes of determining the extent of the hazardous area where flammable liquids are stored or handled, Section 74 of NFPA No. 30, Flammable and Combustible Liquids Code, shall be used.

32. Heat

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

322. All heating equipment shall be of a type approved by the authority having jurisdiction. Improvised furnaces, salamanders or space heaters shall not be used.

323. No heater employing an open flame or glowing element shall be installed in vehicle maintenance and service areas, except as hereinafter specifically provided.

324. 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.

325. Location of heating equipment. Heating equipment, other than suspended unit heaters, should be installed in a detached building or in a room separated from other areas by at least one hour fire-resistive construction. The building or room shall not be used for combustible storage.

a. Heating equipment may be installed in motor vehicle maintenance and service areas where there is no dispensing or transferring of Class I flammable liquids (as defined in NFPA No. 30, Flammable and Combustible Liquids Code) or liquefied petroleum gas, provided the bottom of the combustion chamber is at least 18 inches above the floor and the heating equipment is protected from physical damage by vehicles. Heating equipment may be installed where Class I flammable liquids are dispensed provided the equipment is installed at least eight feet above the floor.

326. Warm Air Heating Warm air heating systems may be designed to furnish a mixture of recirculated and outdoor air. The recirculated air shall not be taken from any floors below the grade

level and the quantity of outside air being supplied to the system shall be sufficient to replace that which is being exhausted from the building and shall be at a rate of not less than ¾ cubic foot of air per minute for each square foot of floor area.

a. In motor vehicle maintenance, repair and storage areas, heated air supply grilles shall be located above vehicle height.

b. Return air openings in motor vehicle maintenance, repair or storage areas shall be not less than 18 inches above the floor level measured to the bottom of the openings.

c. It is recommended that the fans for such systems be arranged to shut down automatically by the operation of any type of automatic fire protection system. One or more manual shutoff switches should also be provided. Where provided, shutoff switches shall be readily accessible and clearly placarded. Personnel should be fully instructed that in event of a serious gasoline or similar flammable liquid spill, the fans should be shut off.

d. Gravity warm air heating systems shall not be used in motor vehicle maintenance, repair or storage areas.

33. Ventilation

331. Vehicle Maintenance and Repair Areas. All vehicle maintenance and repair areas when in operation shall be continuously ventilated by a mechanical ventilating system having positive means for exhausting indoor air at a rate of not less than ¾ 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. If the repair stalls are located adjacent to an 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. If the repair stalls are not so located, 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.

332. Mechanical ventilating systems shall be installed in accordance with NFPA No. 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems, and in accordance with the provisions of Article 32. When blower and exhaust systems are installed for vapor removal, the systems shall be installed in accordance with NFPA No. 91, Standard for Blower and Exhaust Systems.

Chapter 4. Freight Handling Operation

41. Freight Transfer

411. Freight shall have adequate aisles to keep all portions of the freight handling areas readily accessible for fire fighting and to minimize the spread of fire.

412. Certain commodities have inherent characteristics which cause them to be specially classified as hazardous materials. As such, they are subject to special regulations of the U.S. Department of Transportation governing handling, storage and transportation. If handled improperly, such commodities can, by themselves, by contact with other hazardous materials, or by contact with materials which are normally non-hazardous, cause explosions, fires, the release of noxious or toxic fumes, or other dangerous conditions. Rule 177.848, the Loading and Storage Guide of the DOT regulations, sets forth those hazardous materials which must not be loaded or stored together or with certain other types of freight. Compliance with these restrictions is essential. It should be noted that while certain hazardous materials cannot be loaded or transported in the same vehicle, they can be stored in the same terminal so long as they are not adjacent to each other. Insofar as practicable, hazardous materials should be stored separately from other freight in the terminal.

413. Combustible contents should not be piled in contact with columns that are not of fire-resistive construction. This is necessary to permit water to wet columns during a fire to guard against column failure.

414. 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 should be maintained between the top of storage and the roof or ceiling construction in order to allow sufficient space for effective use of hose streams.

415. Adequate clearance shall be maintained around lights and heating units to prevent ignition of combustible commodities.

416. A clearance of 24 inches shall be maintained around the path of travel of fire doors unless a barricade is provided, in which case no clearance is needed. Commodities shall not be stored within 36 inches of a fire door opening.

42. Mechanical Handling Equipment

421. Power-operated industrial trucks shall be a type designated in Standard No. 505, Part A, Standard for the Use, Maintenance, and Operation of Industrial Trucks, in accordance with the hazards of the location in which they are used.

422. Maintenance and operation of electric, liquid and gaseous-fueled industrial trucks shall be in accordance with NFPA No. 505, Parts B and C, Standard for the Use, Maintenance and Operation of Industrial Trucks.

43. Motor Vehicles at Docks

431. Parking of vehicles in terminals shall be in compliance with applicable local, state, and federal regulations. In case of fire, there is a potential for mutual exposure between the terminal and vehicles parked adjacent to it. 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 area longer than necessary. Consistent with operating conditions and security requirements, consideration should be given to minimizing the potential exposure by not leaving any vehicle parked at the dock longer than necessary (see also Section 66).

Chapter 5. Vehicle Maintenance and Service

51. General

511. Major maintenance and servicing of motor vehicles should not be performed on floors below grade level and should be restricted to areas specifically designated for such purposes.

52. Spray Painting and Undercoating

521. Spray painting, drying, and undercoating should conform to NFPA No. 33, Standard for Spray Finishing Using Flammable and Combustible Materials and to NFPA No. 86A, Standard for Ovens and Furnaces.

53. Inspection and Repair Pits, Hoists, and Trestles

531. Hoists or elevated trestles are preferable for this service. Pits used to service gasoline fueled vehicles shall 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 shall have the floor pitched one inch for each ten feet and the exhaust air opening shall 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. Use of approved portable lights shall be minimized by fixed lighting fixtures of the approved types installed in all pits and on trestles or hoists in accordance with Article 511 of NFPA No. 70, the National Electrical Code.

b. No drainage should be provided for inspection or repair pits unless such drainage is connected to a sump or pit especially provided and not connected in any manner to a storm or sanitary sewer system.

c. Smoking in pits shall be prohibited.

532. A scheduled maintenance program for the collection and removal of oil from oil separators and traps should be initiated to prevent it from being carried into the sewers.

54. Repair of Fuel Tanks

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

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

55. Parts Cleaning

551. 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.

56. Welding and Open Flame Operations

561. 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 No. 51B, Standard for Fire Protection in Use of Cutting and Welding Processes.

562. Welding equipment and operations shall conform to NFPA No. 70, the National Electrical Code and to NFPA No. 51, Standards for the Installation and Operation of Oxygen-Fuel Gas Systems for Welding and Cutting.

57. Storage and Handling of Flammable and Combustible Liquids

571. The storage and handling of flammable and combustible liquids shall be in accordance with NFPA No. 30, Flammable and Combustible Liquids Code. The storage and handling of liquefied petroleum gas shall be in compliance with NFPA No. 58, Standard for the Storage and Handling of Liquefied Petroleum Gases.

58. Fueling of Vehicles

581. The design and installation of equipment used for the dispensing of flammable and combustible liquids shall be in accordance with Sections 72 and 74 of NFPA No. 30, Flammable and Combustible Liquids Code.

a. Approved dispensing units of the dead stick type incorporating a fusible link may be located inside vehicle maintenance and repair buildings upon specific approval of the authority having jurisdiction. The dispensing area shall be separated from motor vehicle maintenance and repair areas in a manner approved by the authority having jurisdiction. The dispensing unit and its piping shall be protected against physical damage by vehicles either by mounting on a concrete island or by equivalent means and shall be located in a position where it cannot be struck by a vehicle descending a ramp or other slope out of control. The dispensing area shall be provided with an approved mechanical or gravity ventilation system. When dispensing units are located below grade only approved mechanical ventilation shall be used and the entire

dispensing area shall be protected by an approved automatic sprinkler system. The ventilating system shall be electrically interlocked with the dispensing units so that the dispensing units cannot be operated unless the ventilating fan motors are energized.

b. In fuel dispensing, consideration should be given to "dry break" or "tite fill" features that include venting all displaced gases back to the tank.

582. Facilities for filling LP-Gas fuel tanks shall be located outside of any building. For requirements for LP-Gas fueling, see NFPA No. 58, Standard for the Storage and Handling of Liquefied Petroleum Gases.