

**Recommended
Good Practice Requirements
for the
OPERATION OF MARINE TERMINALS.**

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Price: Ten Cents

**National Fire Protection Association
International
60 Batterymarch Street
Boston, Mass., U.S.A.**

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INTERNATIONAL.

The National Fire Protection Association was organized in 1896 to promote the science and improve the methods of fire protection and prevention, to obtain and circulate information on these subjects and to secure the cooperation of its members in establishing proper safeguards against loss of life and property by fire. Its membership includes over a hundred national and regional societies and associations and four thousand individuals, corporations, and organizations. This pamphlet is one of a large number of publications on fire safety issued by the Association.

The N.F.P.A. Marine Section Committee on Operation of Marine Terminals, was appointed in 1935. These recommended good practice requirements prepared by this committee were discussed over a period of two years and were finally adopted by the National Fire Protection Association at the 1937 annual meeting. (See Proceedings 1936, p. 55, and 1937, p. 64.)

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INTRODUCTION.

1. Piers and wharves may be considered as warehouses for merchandise, from the time such merchandise is unloaded from a vessel until it is removed by a land carrier, and, conversely, from the time it is brought to the pier or wharf by a land carrier until it is loaded on a vessel.

2. The merchandise passing over piers and wharves consists of every conceivable kind of material, possessing all degrees of fire hazard, and frequently runs into very high values. Under ideal conditions the pier or wharf would act only as the facility for transferring merchandise from one vehicle to another, and the merchandise would pass over the pier without stopping. Obviously such system would be impractical because of the impossibility of shippers or consignees meeting ship schedules exactly, and, in respect to imports, the time necessary to clear goods through customs. A certain period therefore is allowed during which time the merchandise is actually stored upon the pier, awaiting the convenience of the owners, the shipper, consignee, or shipowner. This period should be reduced to a comparatively short time or the pier or wharf enters the realm of the storage warehouse. Since the construction and operation of piers and of storage warehouses differ widely because of the purposes they are intended to serve, the protection of merchandise with respect to safety from fire in a warehouse is much superior to that provided by a pier or wharf. It follows therefore that if merchandise is allowed to accumulate upon a pier or wharf, it will be more or less improperly stored and eventually may pass beyond a critical point. In case of fire, the loss would be excessive and far more than that ordinarily anticipated.

3. During the period merchandise remains upon the pier, however, it should be protected against damage by fire as much as it is practical to do. The recommended Good Practice Requirements for the Construction and Protection of Piers and Wharves, detail structural and protection requirements to reduce to a minimum fire losses attributable to the piers and wharves themselves, but, in order to entirely cover the subject, it is necessary to consider pier and wharf operation and management from a fire safety viewpoint in respect to their contents. Too frequently, thought is not given to this feature, and it is to cover this feature that these regulations have been formulated. They are intended to provide a systematized method of pier operation, giving consideration to fire prevention, that will help considerably in reducing pier and wharf losses.

4. These regulations are not intended to apply to marine oil terminals, such terminals being already covered by the Recommended Good Practice Requirements for Marine Oil Terminals.

CARGO PLACING.

11. A definite system for placing cargo on piers should be established and instructions given to pier superintendents, dockmasters, stevedores, and checkers as to how and where to put cargoes.

Aisles.

12. Cargo spaces should be marked out on the floor of the pier by white paint lines at least three inches wide and all cargo should be stored

within these lines. When marking the lines, the following aisle spaces should be provided:

(a) At least one center aisle extending the entire length of the pier should be maintained except where cargo is transferred direct to railroad cars and it is unnecessary to use automobile trucks within the pier structure. This aisle should be at least twenty feet in width and at intervals of about 150 feet its width should be increased by eight feet for a distance of twenty feet on one side.

(b) Four foot aisle spaces should be established between cargo piles extending from the center aisle to the pier sides. These aisles should be so arranged that besides segregating the cargo piles, they will give ready access to standpipe stations and first aid fire extinguishing equipment.

(c) Two foot aisle spaces should be maintained between cargo piles and the sides of the pier, fire walls or fire stops in enclosed piers.

Cargo Piles, Size and Clearance.

13. Piles of cargo should not exceed sixteen feet in height nor the width of door bay, but in no event more than twenty feet in width. When cargo is piled beneath trusses, beams, girders or other structural members of the pier, a clearance of not less than thirty-six inches should be maintained.

14. Cargo should not be stored or placed so as to interfere with the closing of fire doors, cargo or other openings or any auxiliary fire extinguishing equipment.

15. When the quantity of cargo stored upon a pier is small, as generous a distance as possible should be maintained between the piles, and material of a readily combustible nature should be placed near the shore end. Where the quantity of cargo is large, piles of quick burning material should be interspersed as much as possible by piles of less combustible material.

16. Cargo possessing particularly hazardous qualities in itself or that which may produce hazardous compounds or mixtures if it should come in contact with other materials, should be segregated. Such merchandise should be placed near the shore end of the pier in a location where it will be readily accessible to the Fire Department and where it may be quickly removed from the pier.

Skidding.

17. Merchandise susceptible to water damage should be placed upon substantial wood skids so that it will be raised above the pier deck or floor at least four inches.

Separation of Passenger and Freight Service.

18. Where piers are used for both passenger and freight service the sections used for the different services should be segregated from each other.

Floor Load.

19. Under no circumstances should the weight of merchandise placed upon the pier or wharf exceed the specified floor load of the structure. Allowable floor loads shall be posted.

MOVEMENT OF CARGO.

Time Limitation of Storage.

21. Cargo of any character should not be permitted to accumulate upon the pier. Uncalled for cargo of any character should be removed from the pier not later than the fifth day. Cargo possessing a distinct fire hazard, such as explosives and dangerous chemicals, should be moved as quickly as possible and in any event within two days.

Trucks.

22. Transient trucks and automobiles should be allowed to remain on piers and wharves only long enough to load and unload cargo. The number of vehicles permitted upon the pier at any one time should be limited to a pre-determined number and such vehicles should not be permitted to block the central aisle. They should be turned as soon as possible so that they will face the land end of the pier and can be driven off the pier in the event of emergency. The motors of trucks should be stopped while the truck is being loaded or unloaded. The replenishing of the fuel supply or making repairs should be prohibited upon the pier or wharf. Any truck whose fuel supply has become exhausted or needs repairs should be towed from the pier.

Railroad Equipment.

23. Locomotives using coal as fuel should be prohibited from entering upon the pier or wharf. The handling of cars should be effected by the use of a sufficient number of additional cars so as to make it unnecessary for locomotives to enter upon the pier or wharf. Cars should not be allowed to remain in the openings of fire walls or fire divisions longer than the time actually necessary for the manipulation of the cars, and the cars should be kept coupled.

Vessels.

24. In removing cargo to or from ships or lighters substantial nets should be erected beneath the swing of derricks to catch any cargo that may be dropped in the hoisting process. Only those cargo doors actually in use should be allowed to remain open and when the work of loading or unloading is completed all doors should be tightly closed.

25. Ships, lighters, barges or other vessels should be moored in an orderly manner with forethought to their rapid removal, in the event of fire, either on the pier or vessel. Space should be maintained for the manipulation and operation of fireboats.

26. When vessels are refueled alongside of piers or wharves, the number of barges or tankers should be limited to the minimum required for economical operation. Additional barges or tankers should not be brought or moored to the pier or wharf until those being unloaded are nearly empty. Unloaded fuel vessels should be removed as soon as possible.

27. When vessels are fueled through pipe lines on the pier or wharf, flexible hose connections should be used and care taken to prevent leakage at joints. At each fueling connection a substantially constructed hose derrick securely mounted on the pier deck to support the flexible hose connections should be provided.

MECHANICAL EQUIPMENT.

31. Tractors, tractor cranes, lumber carriers, tiering machines and similar equipment operated by internal combustion engines that are part of the pier and wharf equipment should be of approved construction. They should not be stored, repaired, serviced or have their fuel supply replenished upon the pier, unless this is done in an approved garage space. Each machine should be equipped with an approved one quart fire extinguisher suitable for use on oil fires.

32. Electric tractors, tiering machines and similar equipment should be of approved construction. They should not be stored, repaired, or have their energy supply replenished upon the pier or wharf unless it is done in an

approved garage space. Each machine should be equipped with an approved one quart fire extinguisher.

FIRE ORGANIZATION.

Fire Warden.

41. A competent man should be appointed as fire warden and placed in charge of all standpipe equipment, sprinkler equipment, first aid appliances and all other auxiliary fire extinguishing or protective equipment. He should be thoroughly instructed in the maintenance and operation of such equipment and become familiar with the location of all valves, alarm boxes, standpipe hose stations, first aid appliances and auxiliary equipment. He should know the fire hazard qualities of the merchandise upon the pier and the location of all cargo that is exceptionally hazardous. He should enforce the "No Smoking" regulations, maintain the cleanliness of the property, instruct employees in the proper use of alarm boxes and where advisable establish a Fire Brigade.

Fire Brigade.

42. A private fire brigade should be organized among the employees on each pier in localities where municipal protection is either inadequate or remote. The Suggestions for the Organization Drilling and Equipment of Private Fire Brigades as recommended by the National Fire Protection Association should be followed.

Watchmen.

43. Watchmen should be regularly employed on piers and wharves. They should be able bodied men of normal intelligence and should be thoroughly instructed in the operation of fire alarm boxes, standpipe system and first aid fire extinguishing appliances. They should be familiar with the location of all such equipment, as well as other characteristics of the property relating to fire protection, such as fire doors, deck openings and sub-structure division walls. Watchmen should be specifically instructed to notify the Municipal Fire Department immediately upon the discovery of fire and have the method by which they would send the alarm definitely fixed in their minds by repeated drills. They should be impressed with the rule that they are not to attempt to fight the fire until AFTER they have sent in the alarm.

MAINTENANCE OF FIRE PROTECTIVE EQUIPMENT.

51. Automatic sprinkler systems, standpipe systems, fire pumps and first aid appliances should be maintained as required in paragraphs 901 to 926 inclusive of the Good Practice Requirements for the Construction and Protection of Piers and Wharves of the National Board of Fire Underwriters, as recommended by the National Fire Protection Association. Standpipe systems should not be used for watering vessels, and drain valves should not be permitted to run in lieu of the required protection to prevent freezing.

MAINTENANCE OF STRUCTURE.

61. Piers and wharves having combustible sub-structures should be inspected regularly at periods not exceeding six months to determine the condition of the sub-structure members. Any such members or piling when found to be infected with rot, shattered, split, or otherwise readily susceptible to fire should be repaired or replaced. Heavy incrustations of oil should be removed. Covers of openings in the pier deck for fire protection

equipment should be kept well greased, so that they will not become rusted in place and may be removed readily.

62. Rails installed for the use of special nozzle systems of protection should be kept in order by systematic inspection of the installing company. Fire wall doors should be inspected weekly and kept in perfect working order. Care should be taken to prevent cargo obstructing the operation of fire doors and guard racks kept in condition.

SPECIAL PROCESSES.

71. Cleaning processes involving flammable solvents should be prohibited.

72. Ripening or coloring of fruits or vegetables, cleaning of cocoa bean or other sweepings and fumigating should not be carried on upon the pier or wharf, unless the process is enclosed in a proper room. Before such work is done, the inspection department having jurisdiction should be consulted.

HOUSEKEEPING.

81. Piers and wharves shall be kept free of rubbish and waste materials. Such materials should be kept in metal containers removed at sufficiently frequent intervals to prevent dangerous accumulations. Particular attention should be directed to keeping clean the depressions between tracks, areas under stairways, special rooms and enclosures and all out of the way places. Ashes should be wet down in the ash pit immediately after being drawn from the fire and placed in metal cans or on a fire-resistive floor. Smoke pipes should be thoroughly cleaned at least once each year, preferably in the spring.

Trusses, girders and other structural members should be cleaned regularly to eliminate accumulations of flammable dust. Such cleaning should preferably be done by the vacuum method.

Smoking.

82. Smoking should be prohibited. "No Smoking" signs in languages understood by pier workers should be displayed in conspicuous places. Pier superintendents and all foremen should be impressed with the necessity of seeing this is strictly obeyed.

Sampling.

83. Sampling of merchandise by consignees should be restricted to a minimum and should only be carried on under the supervision of a competent representative of the pier or wharf operator. Care should be taken to see that all packages are securely closed after sampling and that the material sampled has not been disturbed in a way that may cause fire. Refuse caused by sampling should be removed immediately.

SPECIAL HAZARDS.

Portable Lanterns.

91. Where portable lights are necessary, hand electric lights should be used. On all piers where combustible fibre and flammable liquids are stored only electric lights should be used. When oil lanterns are used they should be of the safety type, with non-removable metal fonts, carefully protected by rod guards and otherwise substantially constructed for portable use. Lanterns should be inspected, filled, and cleaned daily in the lamp room by daylight only.