

## Section 4.8. Piers and Wharves

### 4.8.1. Scope

#### 4.8.1.1. Application

1) This Section applies to *flammable liquid* and *combustible liquid* installations on piers and wharves, but does not include *marine fuel-dispensing stations*.

### 4.8.2. General

#### 4.8.2.1. Clearances

1) Piers and wharves where cargos of *flammable liquids* or *combustible liquids* are transferred in bulk quantities to or from tanks of marine vessels shall be not less than 30 m from

- a) any bridge over a navigable waterway, and
- b) an entrance to a superstructure of any vehicular or railroad tunnel under a waterway.

2) The termination of fixed piping for loading and unloading *flammable liquids* or *combustible liquids* shall be not less than 60 m from a bridge or from an entrance to a tunnel.

#### 4.8.2.2. Construction

1) The substructure and deck of a pier or wharf shall be designed for its intended use and shall be constructed of heavy timber or material that will provide adequate flexibility, resistance to shock, durability, strength and fire resistance.

### 4.8.3. Storage Tanks

#### 4.8.3.1. Installation

1) Except as permitted in Sentences (2) and (3), *storage tanks* shall be installed on shore in conformance with Subsections 4.3.2. to 4.3.7.

2) *Storage tanks* are permitted to be located in *buildings* on piers and wharves of solid-fill or *noncombustible construction* provided they conform to Subsections 4.3.13. to 4.3.15.

3) *Storage tanks* are permitted to be buried in piers and wharves of the solid-fill type provided they conform to Subsections 4.3.8. to 4.3.12.

### 4.8.4. Piping, Valves and Fittings

#### 4.8.4.1. Installation and Materials

1) The method of installation and materials used for piping, valves and fittings shall conform to Section 4.5.

#### 4.8.4.2. Pipe Supports

1) Piping shall be properly supported and arranged to prevent excessive vibration or strain on equipment connected to it.

2) Piping supports shall consist of

- a) wood having no dimension less than 150 mm,
- b) steel, or
- c) concrete.

3) Where pipe is supported more than 1.2 m above the pier deck, piping supports shall have a minimum *fire-resistance rating* of 2 h.

**4.8.4.3. Guards**

1) In areas where general cargo is handled or where piping might be subject to physical damage from vehicles, watercraft or floatplanes, the piping shall be protected by means of guarding devices.

**4.8.4.4. Flexible Connections**

1) Piping between the shore and piers or wharves shall be provided with swing joints or flexible connections designed in conformance with good engineering practice to permit the independent movement of the pier or wharf and shore piping without strain on the pipe.

**4.8.4.5. Shut-off Valves**

1) A readily accessible valve to shut off the supply from shore shall be provided in each pipeline within 7.5 m of piers and wharves.

**4.8.4.6. Access Openings for Inspection**

1) Access openings for inspection purposes below deck shall be provided for valves required in Article 4.8.4.5. and for connections to pipelines, and suitable signs shall be posted indicating their locations.

2) No freight or materials shall be placed on piers and wharves in such a manner as to obstruct the access openings required in Sentence (1).

**4.8.4.7. Identification**

1) Identification tags or labels of metal or other material impervious to water and to the *flammable liquids* or *combustible liquids* being transferred shall be attached to and maintained on all pipelines and control valves to designate their use.

**4.8.4.8. Leakage Testing**

1) Piping systems shall be tested for leakage in conformance with Section 4.4. before being put into service and before reactivation when used on a seasonal basis.

2) Underground piping systems referred to in Sentence (1) shall be tested at intervals no greater than 12 months.

**4.8.5. Bonding and Grounding****4.8.5.1. Bonding and Grounding**

1) Railway tracks on piers and wharves shall be bonded throughout their length and permanently grounded in conformance with TC SOR/82-1015, "Railway Prevention of Electric Sparks Regulations."

2) Insulating joints shall be placed in all rails where entering upon the pier or wharf.

**4.8.6. Fire Protection****4.8.6.1. Portable Extinguishers**

1) Portable extinguishers having a rating of 40-B:C shall be provided in the vicinity of Class I liquid pumps and fuel dispensers.

2) Portable extinguishers shall be kept in the pump house or other suitable location where they will be accessible in the event of an emergency, but not accessible to the public.

3) Where marine vessels are loading or unloading *flammable liquids* or *combustible liquids* or are being refuelled, portable extinguishers with a rating of not less than 40-B:C shall be placed on the pier or wharf in the vicinity of loading or unloading operations so that they are accessible in the event of a fire emergency.

4) Portable extinguishers provided in conformance with Sentence (3) shall be in addition to those provided on board the marine vessels.

**4.8.6.2. Training**

- 1) Operating personnel shall be trained on how to summon the nearest fire department in the event of fire.

**4.8.7. Bulk Transfer Stations****4.8.7.1. Location**

- 1) Except as permitted in Sentence (2), the bulk transfer of *flammable liquids* or *combustible liquids* shall be permitted only on piers and wharves used exclusively for that purpose.
- 2) Where it is not practicable to locate bulk transfer stations on separate piers and wharves, such stations are permitted to be located on general purpose piers and wharves provided that guards or fences are installed around valves or pumping equipment to prevent entry of unauthorized personnel.

**4.8.7.2. Leakage and Spill Control**

- 1) Measures to accommodate possible leakage or spillage from hose couplings shall be provided in conformance with Subsection 4.1.6.
- 2) Provision shall be made to prevent spillage resulting from the disconnection of hoses.

**4.8.7.3. Hose Connections**

- 1) Except as provided in Sentence (2), hose connections on piping shall be of the bolted flange type, and all such connections shall be provided with shut-off valves.
- 2) The use of cam-locking connections up to 100 mm in size shall be permitted.
- 3) Hose connections shall not project beyond the face of piers and wharves.

**4.8.8. Cargo Hose****4.8.8.1. Cargo Hose**

- 1) The transfer of *flammable liquids* or *combustible liquids* between tanks of marine vessels and piers or wharves shall be through
  - a) flexible cargo hose designed in conformance with good engineering practice (see Note A-4.8.8.1.(1)(a)), or
  - b) jointed tubing or piping
    - i) suitable for the cargo to be transferred, and
    - ii) designed to withstand the maximum design working pressure.

**4.8.8.2. Maintenance and Testing**

- 1) Cargo hose shall be maintained in satisfactory operating condition and be pressure tested, at intervals not greater than 12 months, to 1.5 times the maximum working pressure but not less than 350 kPa (gauge).

**4.8.8.3. Supports**

- 1) Cargo hose shall be supported where it is not run on a solid foundation.

**4.8.9. Cargo Pumps****4.8.9.1. Pressure Relief**

- 1) Cargo pumps capable of producing pressures in excess of the safe working pressure of the cargo hose shall be provided with pressure relief devices such as return lines or relief valves.

**4.8.9.2. Location**

- 1) Except as permitted in Sentence (2), cargo pumps shall be located
  - a) on shore or on piers and wharves either of *noncombustible construction* or of the solid-fill type, and
  - b) not less than 3 m from other *buildings* or structures.
- 2) Where it is not practicable to install cargo pumps as required in Sentence (1), they are permitted to be installed on piers and wharves of *combustible construction* if located in pump houses
  - a) conforming to Subsection 4.8.10., and
  - b) located not less than 3 m from other *buildings*.

**4.8.10. Pump Houses****4.8.10.1. Construction**

- 1) Pump houses shall be of *noncombustible construction* with floors that are chemically resistant to the liquid being handled, liquid-tight and equipped with curbs or flashings around the base of the wall not less than 100 mm in height to contain any spilled liquid.

**4.8.11. Transfer Operations****4.8.11.1. Supervision**

- 1) Transfer operations shall be carried out only under the continuous supervision of a person qualified to supervise such operations.
- 2) Cargo shall not be transferred to or from the tank of a marine vessel unless sufficient personnel are on board to control the operation.
- 3) The person responsible for directing the operations shall
  - a) prior to the transfer of cargo, ascertain that no unauthorized repair work is being carried out on the pier or wharf and that there are no open flames in the vicinity,
  - b) during the transfer of cargo, monitor the progress of the loading and unloading to prevent overflow, and
  - c) inspect the hose and connections for leakage and, if leakage occurs, stop the operations.

**4.8.11.2. Bonding and Grounding**

- 1) Tanks of marine vessels shall be electrically connected to the shore piping prior to the connection of cargo hose, except when cathodic protection facilities are operating.
- 2) Electrical connections to tanks of marine vessels shall be maintained until the cargo hose has been disconnected and any spillage has been removed.

**4.8.11.3. Equipment**

- 1) Cargo hose shall be of adequate length to allow for movement of the marine vessel.
- 2) Gaskets shall be used in all hose joints and pipe couplings to prevent leakage.
- 3) Flanged joints shall be tightly bolted to prevent leakage.
- 4) Drip pans shall be placed under hose connections on piers and wharves, except where a sump pit or settling basin is provided.

**4.8.11.4. Spill Control**

- 1) When transfer operations are completed,
  - a) the valves on the hose connections shall be closed, and
  - b) unless the cargo hose is equipped with a device that automatically prevents liquid from draining from the hose upon its disconnection, the hose shall be drained so as not to create a fire or explosion hazard.
- 2) Care shall be taken that no liquid is discharged on a pier or wharf or overboard during draining and emptying operations.