

utilized in lieu of guards or rails, they shall be not less than 1.1m (42 in.) in height. [NFPA 54:9.4.3.3]

**505.3.4 Lighting.** Permanent lighting shall be provided at the roof access. The switch for such lighting shall be located inside the building near the access means leading to the roof. [NFPA 54:9.4.3.4]

#### **505.4 Appliances in Attics.**

**505.4.1 Attic Access.** An attic in which an appliance is installed shall be accessible through an opening and passageway not less than as large as the largest component of the appliance, and not less 56cm x 76cm (22 in. x 30 in.). [NFPA 54:9.5.1]

**505.4.2 Passageway Clearance.** Where the height of the passageway is less than 1.8m (6 ft.), the distance from the passageway access to the appliance shall not exceed 6m (20 ft.) measured along the centerline of the passageway. [NFPA 54:9.5.1.1]

**505.4.3 Passageway Dimension.** The passageway shall be unobstructed and shall have solid flooring not less than 60cm (24 in.) wide from the entrance opening to the appliance. [NFPA 54:9.5.1.2]

**505.4.4 Work Platform.** A level working platform not less 76cm x 76cm (30 in. x 30 in.) shall be provided in front of the service side of the appliance. [NFPA 54:9.5.2]

**505.4.5 Lighting and Convenience Outlet.** A permanent 120-volt receptacle outlet and a lighting fixture shall be installed near the appliance. The switch controlling the lighting fixture shall be located at the entrance to the passageway. [NFPA 54:9.5.3]

## **PART II**

### **Solar Thermal Energy for Solar Space Heaters and Solar Water Heating.**

#### **506.0 Thermal Storage or Heat Exchanger Tank Construction.**

**506.1 General.** Plans for tanks shall be submitted to the Authority Having Jurisdiction for approval, unless listed by an approved listing agency. Such plans shall show dimensions, reinforcing, structural calculations, and such other pertinent data as required.

**506.1.1** Tanks shall be constructed of materials in accordance with nationally recognized standards, not subject to corrosion or decay and shall be water-tight. Such tank and tank covers shall be structurally designed to withstand all anti-

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pated loads and pressures, and shall be installed level and on a solid base.

**506.1.2** Prefabricated tanks shall be listed as required by the Authority Having Jurisdiction.

**506.1.3** Tanks shall be permitted to be buried underground when listed and constructed for such burial.

**506.1.4** Devices attached to or within the tank shall be accessible for repair and replacement.

**506.1.5** Each gravity tank shall be equipped with an overflow opening Internal Pipe Size (IPS) of not less than 50mm (2 in.). The openings shall be above ground and equipped with a screened return bend.

**506.1.6** Solar energy systems used for heating potable water shall comply with Part II of this chapter for cross-connection or protection of the potable water supply system required in this code.

**506.2 Concrete.** The walls and floor of each poured-in-place, concrete tank shall be monolithic. The exterior walls shall be double-formed so as to provide exposure of the exterior walls during the required water test. The minimum compressive strength of any concrete tank wall, top and covers, or floor shall be 172bar (2,500 psi). The concrete shall be sulfate resistant (Type V Portland Cement).

#### **507.0 Expansion Tanks.**

**507.1 General.** Hot water heating systems shall be provided with an air expansion tank securely fastened to the structure. Supports shall be adequate to carry twice the weight of the tank filled with water without placing any strain on connecting piping.

**507.2 Systems with Open Expansion Tanks.** Systems equipped with an open expansion tank for thermal water expansion shall be provided with an indoor overflow from the upper portion of the expansion tank in addition to an open vent. The indoor overflow shall discharge within the building to an approved location to prevent structural damage.

**507.3 Closed-Type Systems.** Systems of the closed type shall have an air-tight tank or other suitable air cushion that will be consistent with the volume and capacity of the system, and shall be suitably designed for a hydrostatic test pressure of 2-1/2 times the allowable working pressure of the system. Expansion tanks for systems designed to operate at or above 2bar (30 psi) shall be constructed in accordance with nationally recognized standards approved by the Authority Having Jurisdiction. Provisions shall be made for draining the tank without emptying the system, except for pressurized tanks.