

FALL PROTECTION LADDERS/RAILS TECHNICAL SPECIFICATIONS

1.0 Scope: Fall protection ladders and rails with safety sleeves and appropriate mounting hardware to be installed on all elevated structures. This is an OSHA requirement designed to protect personnel as they ascend and descend ladders installed in the elevated structures. All components are pre-cut, bundled and labeled according to the needs of each structure.

2.0 Specifications:

Design -- OSHA 1910.27
 ANSI A14.3
 Fed Std RR-S-001301
 MIL-S-87966

Material -- Extruded 6061-T6 Aluminum

3.0 Materials:

- A. Aluminum Ladders – All materials in the fabrication of the ladder shall be made from extruded 6061-T6 aluminum. All surfaces must be smooth and free from holes or notches. Ladder rails shall have a design capable of mounting a safety device on either sides of the ladder. There shall be no serrations or indentations that may collect ice, dirt, or particles of any type that might cause the rail to be a different shape than originally extruded causing the safety device to work improperly. Rungs shall be provided with non-skid surfaces, not less than 1-1/4 inches wide, spaced 12 inches on-center. Rungs shall be welded appropriately to ladder to prevent shifting, movement, or separation from sides. Length shall not exceed twenty (20) feet and consistence shall be maintained in design to allow splicing two or more ladder sections together.
- B. Ladder Hardware – All floor support plates and anchors shall be stainless steel. All bolts, nuts and washers shall also be stainless steel. All splice and standoff brackets shall be made of extruded 6061-T6 aluminum. Wall supports with or without a splice shall be set at five-foot centers on both sides of rails with a minimum of six (6) supports per twenty-foot section.\
- C. Aluminum Carrier Rails – All material in the fabrication of the carrier rail shall be smooth surface made from extruded 6061-T6 aluminum. Carrier rails shall be capable of mounting to various types of fixed climbing surfaces as specified. There shall be no serrations or indentations that may collect ice, dirt, or particles of any type which would cause the rail to be a different shape than originally extruded causing the safety device to work improperly.

- D. Carrier Rail Hardware – All rung clamps shall be extruded 6061-T6 aluminum. All bolts, nuts and washers shall also be stainless steel. Rung clamps for the rail system shall be available in various sizes for fixed climbing ladders as specified.
- E. Safety Device – The sleeve shall be cam activated only and be cast from A356 aluminum alloy. Cam pivots shall be machined from 316 stainless steel with a bronze bushing. The cam must have stainless steel internal parts and must be enclosed in the body of the safety sleeve. All sleeves must be serialized and traceable to the manufacturer. All external surfaces must be smooth to touch and free of any sharp edges. Safety devices must be free of components that will lock or freeze up upon exposure to any elements. The maximum length of movement of the safety sleeve along the surface, during testing or accidental fall, shall not exceed three inches. Each device shall be accompanied by a manufacturer installed carabiner.

4.0 Test Requirement:

Each safety device shall meet the following load tests:

- A. Dynamic Strength Test – Equipment shall be able to absorb the impact of a solid object weighting at least 500 pounds in a free fall of eighteen (18) inches in accordance with ANSI Z359.1-2007 section 7.5.2.
- B. Static Strength Test – Equipment shall be able to support a static load of not less than 1,000 pounds in accordance with ANSI Z359.1-2007 section 7.5.3.
- C. Connectors – All Carabiners utilized to secure a body harness to the safety rail device shall be capable of meeting ANSI Z359.1-2007.\
- D. Dynamic Performance Test - Using a test torso meeting ANSI Z359.1-2007. Test the ladder safety system in accordance with ANSI Z359.1-2007 section 7.5.4