

**FALL PROTECTION LADDERS/RAILS**  
**TECHNICAL SPECIFICATIONS**

1.0 Scope: Fall protections ladders and rails with safety sleeves and appropriate mounting hardware to be installed on all lift stations. This is an OSHA requirement designed to protect personnel as they climb up and down ladders installed in the lift station. All components are pre-cut, bundled and labeled according to the needs of each station.

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 both sides of the ladder. They shall be no serrations or indentations that might 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 consistency 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 stand-off brackets shall be made of extruded 6061-T6 aluminum. Wall supports with or without 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 Rails – All material in the fabrication of the rails shall be smooth surface made from extruded 6061-T6 aluminum. Rails shall be capable of mounting to various types of fixed climbing apparatus as specified. There shall be no serrations or indentations that might 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.

- D. Rail Hardware – All rung clamps shall be stainless steel. All bolts, nuts and washers shall also be stainless steel. Rungs clamps for the rail system shall be available in various types of fixed climbing apparatus 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 device must be free of any 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. No special equipment or instruments shall be required to ensure that the safety sleeve is in operational condition before each use. Each device shall be accompanied by a double-locking safety hook.

#### 4.0 Test Requirements:

Each safety device shall meet the following load tests:

- A. Live Load – Equipment shall be able to support a live load of not less than 250 pounds.
- B. Static Load – Equipment shall be able to support a static load of not less than 2,000 pounds.
- C. Impact Load – Equipment shall be able to absorb the impact of a solid object weighing at least 500 pounds in a free fall of twelve inches.
- D. Tensile Load – All snaps, locking pawls, sleeves, and other hardware utilized to secure a body to the rail shall be capable of undertaking a tensile loading of 4,000 pounds without fracturing, warping, breaking, or permanent deformation.