

## Aluminum Ladder Specification

Aluminum ladder shall be "TUFLADDER" as manufactured by Thompson Fabricating, LLC (Birmingham, AL.) or approved equal.

### Rung Description

The rung shall be designed to provide a non-slip, "power grip" surface with a 1" wide striated top surface and a semi-circular bottom. The straight sides and semi-circular bottom shall have striations at approximately 5/16" centers for enhanced gripping. The rung shall be an aluminum extrusion, alloy 6063-T6, of sufficient section modulus and moment of inertia to withstand the design loads.

### Side Rail Description

The side rails shall be 1 1/2" schedule 40 aluminum pipe, alloy 6105-T5, 6063-T6 or 6061-T6. The pipe shall conform to ASTM B-429 or B-221.

### Codes

The ladder shall meet the requirements of OSHA and ANSI A14.3

### Design Loads

- a) Ladder rungs shall be designed to withstand a concentrated load of 250 pounds plus 30% impact. Maximum rung deflection shall not exceed  $L/360$ . The design load shall be applied to a 4" wide area.
- b) Ladder side rails shall be designed to withstand a minimum live load of two (2), 250 pound loads plus 30% impact concentrated between any two consecutive attachments.

### Testing

Submit test reports for the Engineer's approval to verify design loads and deflections on the rungs and rung to side rail attachments. Testing to be verified by an independent testing laboratory. The design load, 325 pounds (250 x 1.3), shall be applied at the center of the rung on an area 4" wide. The test rung will be attached to the side rails in the same manner as the production ladder. Design loads shall be applied and released a minimum of 200,000 times to demonstrate fatigue resistance and a safe extended service life. Deflection shall be checked periodically and shall not exceed  $L/360$  at any time under full design load. At completion of testing the rung and attachments to the side rail shall be inspected for cracks, looseness, distortion, bending (permanent set) or other obvious damage.

### Finish

Pipe for side rails shall have the same finish as the handrail if the ladder is located at an opening in the handrail. Rungs, cage and brackets are to be "mill" finish.

**Guarding Floor and Wall Openings and Holes [OSHA 1910.23(a)(2)]**

*The ladder walk through may require a self closing gate in accordance with OSHA 1910.23*

Every ladderway floor opening or platform shall be guarded by a standard railing with standard toeboard on all exposed sides (except at the entrance to the opening), with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening. Self-closing gates are required only where shown on the plans.

**Aluminum Ladder Cage**

- a) General cage design and size shall be in accordance with ANSI A14-3. The cage shall be shipped knocked down for field assembly.
- b) The prefabricated horizontal bands shall be aluminum bars, alloy 6061-T6, 3"x1/4" for the top and bottom bands and 2"x1/4" for the intermediate bands.
- c) The pre-cut, pre-drilled vertical bars shall be aluminum alloy 6061-T6, 1 1/2"x3/16".
- d) All hardware necessary for the assembly of the cage and erection of the ladder shall be furnished by the ladder manufacturer. All hardware shall be stainless steel type 303.
- e) Cages are required on ladders only where shown on the plans.