

# UTCA Safety Committee



## Job-Made Ladders - Double-Cleat

### Introduction

A double-cleat ladder is used where simultaneous two-way traffic is expected or where 25 or more workers need access to a working area.

The following information summarizes OSHA's job-made ladder assembly requirement for double-cleat ladders. The table below provides the design specifications for double-cleat job-made ladders.

### Materials

All wooden parts must be seasoned to a moisture content of not more than 19 percent, dressed on all sides and free from splinters and sharp edges. Fasteners must be driven full length and not countersunk more than 1/8 inch.

### Side Rails

Lumber for side rails must be of a species and a minimum grade specified in the ANSI standard (see references). Rails must be made of either 2×4-inch or 2×6-inch nominal size lumber, depending on the pitch and working length of the finished ladder.

Minimum Rail Size for Double-Cleat Ladders Working Length	1:8 Pitch	1:4 Pitch
12 feet	2×4-inch	2×4-inch
14 feet	2×4-inch	2×6-inch
16 feet	2×6-inch	2×6-inch
20 feet	2×6-inch	not allowed
24 feet (maximum)	2×6-inch	not allowed

### Splices

One splice per rail is permissible, if necessary, as near to the top point of bearing as possible.

On 2×4-inch side rails, a 30-inch overlap is required. Use five bolts, 6 inches apart, starting 3 inches from either end of the splice. Two splice plates must be provided for the center rail, with at least a 33-inch overlap spaced evenly over the rail's joint. Ten bolts should be used to secure the splice, five on either side of the rail's joint space 3 inches apart.

When 2×6-inch side rails are used, there must be a minimum 48-inch overlap on each side rail. Use eight bolts, 6 inches apart, starting 3 inches in from either side of the splice. Center rails must have two splice plates that are a minimum of 51 inches in length. Use 16 bolts evenly spaced starting at 3 inches in on each side of the splice plate and 3 inches between each bolt.

Bolts should be 1/2-inch common steel bolts, 4-1/2 inches long for side rail splices, and 6 inches long for center rail splices. In both cases, provide two bolts that are 1 inch in diameter, 3/32-inch thick washers, and a lock washer with each bolt.

**Date:** \_\_\_\_\_ **Attended By:** \_\_\_\_\_  
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## **Cleats**

Cleats may be a nominal size of 1×4 inches or 2×4 inches. The species of wood used must be of a type and grade listed in the ANSI standard (see references).

Materials used must be relatively free of knots. In each cleat not more than two knots more than 3/4 inch in diameter are permitted in the wide face of the cleat. Knots must be tight and sound. They must not be spaced closer than 6 inches apart and not less than 1 inch from an outer edge of the cleat.

Knots are not permitted in the narrow face of the cleat.

The slope of grain from the lower or upper edge of a cleat must not be steeper than 1:12.

The width of cleats must not be less than 18 inches or more than 22 inches and must be continuous across the ladder.

Cleats must be evenly spaced through the length of the ladder. Cleats must be spaced not more than 12 inches or less than 8 inches from the top edge of one cleat to the top edge of the next cleat.

Cleats constructed of 1×4-inch lumber must be fastened to the narrow face of each rail with three 3 1/4-inch 10-d common nails.

Cleats constructed of 2×4-inch lumber must be fastened to the narrow face of each rail with three 3 1/4-inch 12-d common nails.

Wood that has a tendency to split must have pre-drilled nail holes.

## **Filler Blocks**

Blocks the same thickness as the cleats should be inserted between the lower and upper edge of each cleat and butted tightly against the underside of each cleat.

Filler blocks must be fastened with two 3-inch 10-d common nails for a 1×2-inch block or two 3 1/4-inch 12-d common nails for a 2×2-inch block.

## **Installation**

The usual pitch for a ladder is approximately 1:4 (the distance from the supporting surface is 1/4 the working length of the ladder). When ladder rails have been spliced, the pitch cannot be flatter than 1:8.

Cleats must be removed above the landing level, and the ladder rails must extend 36 to 42 inches above the landing for safe mounting and dismounting.

Job-made ladders must be tied off by the rails at the top and secured at the base.

Ladders should not be painted with opaque coatings.

Ladders should be examined daily by the individuals who use them. A competent person must be assigned to inspect job-made ladders weekly.

## **References**

29 CFR part 1926 subpart X, Stairways and Ladders.

American National Standards Institute, Safety Requirements for Job-Made Wooden Ladders (ANSI A14.4-1992).