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GLOSSARY

BALUSTER

Upright pieces that run between handrail and tread or shoerail.

CONTINUOUS RAIL

System where handrail runs over the top of posts. Rail is connected with fittings (return, bends, easing, etc.) to form one, long run.

EASING

Continuous rail fitting used to help make transition from rail to newel, often used with gooseneck fittings.

FINIAL

Turned, decorative cap, or knob, that attaches to the top of the post.

GOOSENECK

Continuous rail fitting used to make transition from stairway to landing.

HANDRAIL

Rail that is grasped for support when using a stairway.

NEWEL

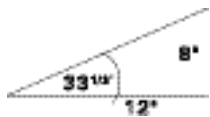
Main posts, or uprights, that support the handrail.

NOSING

Rounded projection of the tread beyond the face of the riser.

PITCH

The angle of ascent or rise of a stairway, defined either in degrees (34?) or in rise over a given run (8" up in a 12" run).



POST TO POST

Rail system where handrail is comprised of discrete sections that butt into the side of finial topped posts.

TREAD

The step or walking surface of the stairway.

TURNOUT

A smaller volute supported by newel and two balusters.

VOLUTE

The spiraled end of the railing that is commonly used on the starting step supported by a post and four or five balusters.

- This is by no means a complete guide to code requirements, it is intended only as a guide in selecting and ordering materials.

STAIRWAY INSTALLATION

GENERAL REQUIREMENTS

1. All risers must be equal in height for the entire run of the stairway. Treads must be equal in width. A tolerance of less than $\frac{1}{8}$ " must be kept. This requirement alone means extra care must be taken in planning and laying out.
2. Watch headroom clearances on interior stairs.
3. Tread width must be at least 9".
4. Rise, not riser, cannot exceed 8".
5. Tread overhang (nosing) should not exceed $1\frac{1}{2}$ ".
6. The ideal rise to run ratio is 7 to 11 or, "the sum of 2 risers and 1 tread should equal 25". The proper rise to run ratio is important in making a stair comfortable to travel.
7. Stairways should be at least 36" wide.

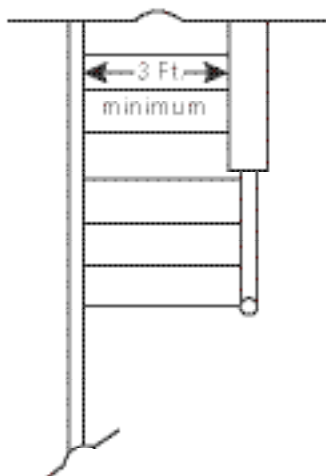
Handrails should be:

- a. 42" high on outdoor decks, landings, balconies.
- b. 36"- 42" high on interior landings, lofts, balconies.
- c. 34"- 39" on stairs, measured from nose to tread.
- d. At least $1\frac{1}{2}$ " away from walls (2" is better).
- e. Constructed so that a 4" sphere cannot pass through the balustrade at any point.

The following are general guidelines designed to help plan your stairway and to simplify installation. We have other publications available for detailed construction guidance.

GUIDELINES FOR STAIRWAY INSTALLATION

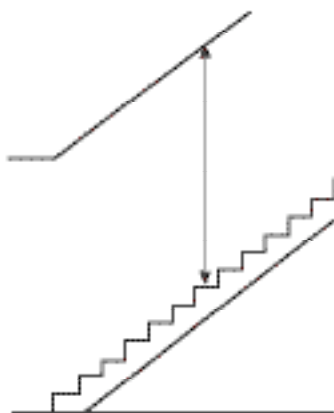
STEP 1



Determine Stair Width

The width should be at least 3' 6".

STEP 2



Measure Stair Headroom

Minimum of 6'6".

STEP 3



Too Shallow



Too Steep

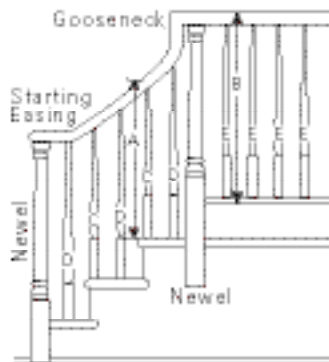


Correct

Determine Proper Stair Rise and Run

Stairways should not have risers of more than $7\frac{3}{4}$ " and not less than 7". Tread width (run) should not be less than $9\frac{1}{2}$ ", not including nosing. The degree of angle (pitch) of a stairway should be between $32\frac{1}{2}^\circ$ and 37° for safety.

STEP 4

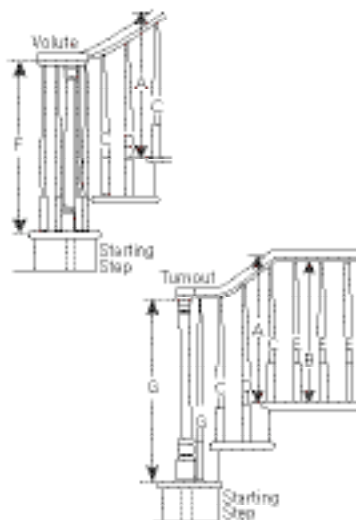


Determine Rail Heights

Code Requirements:

- A. 34" to 38" -- we recommend 34" to 36"
- B. 36" to 42" -- we recommend 36"

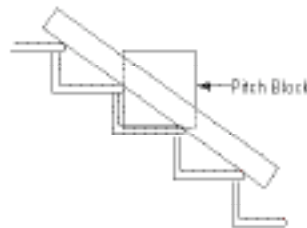
Most codes now use 36" as their minimum.



General Requirements:
(letters are keyed to illustration)

- A: 34" - 38"
- B: 36" - 42" (36" interior, 42" exterior)
- C: 34" Baluster
- D: 36" Baluster
- E: 39" or 41" Baluster
- F: 39" - 41" Baluster (under Volute, Turnout)

STEP 5



To Find the Pitch:

1. Cut a square piece of plywood to a dimension slightly larger than the tread width and riser height.
2. Obtain a straight edge 4" or longer.
3. Place the straight edge on the stairway (or nosing) of 4 or more treads (excluding the first tread).
4. Cut the plywood square along this line to form the 'pitch block.'

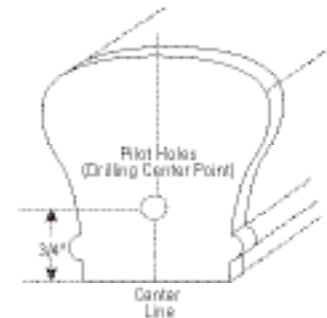
STEP 6



To Cut Fittings to Attach to Handrail:

Place fitting and pitch block on a flat surface. Move the pitch block to the fitting to the point they touch, and mark this point. Turn the pitch block upright, mark cutting line, and make cut square to the rail. Cut the rail to length after fittings are cut and placed. All rail cuts are square.

STEP 7

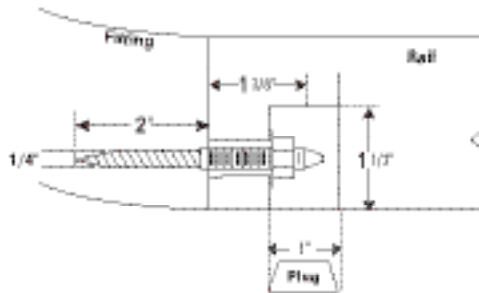


Make a Template:

1. Cut a piece of rail approximately 1/4" thick.
2. Drill a 1/4" hole on center line and drill up 3/4" from the bottom.
3. Mark one side 'fitting' and the other side 'rail.'

STAIRWAY INSTALLATION

STEP 8



Drill Holes in Fittings and Rail:

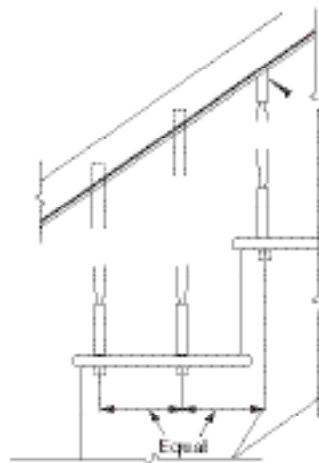
After fittings have been cut to the proper pitch:

1. Take drilling template and place side marked "fitting" on the fitting and mark center hole.
2. Drill a $1/4"$ hole into the fitting 2" deep.
3. Place drilling template side marked "rail" on the rail and mark center hole.
4. Drill a $3/8"$ hole into rail at least $1\ 1/2"$ deep.
5. Drill a 1" hole centered on the bottom, $1\ 1/2"$ setback.
6. Install rail bolt and plug. Use "vise grips" to insert lag screw end into 2" fitting. Insert machine thread end through oversized hole in the end of the rail. Put nut and washer on bolt through 1" bottom hole and finger tighten, align rail and fitting and finish tightening with $1/2"$ box end wrench. Sand joint between fitting and rail until you can't feel the joint. Insert taper plug, but do no glue. Tightening may be required later.

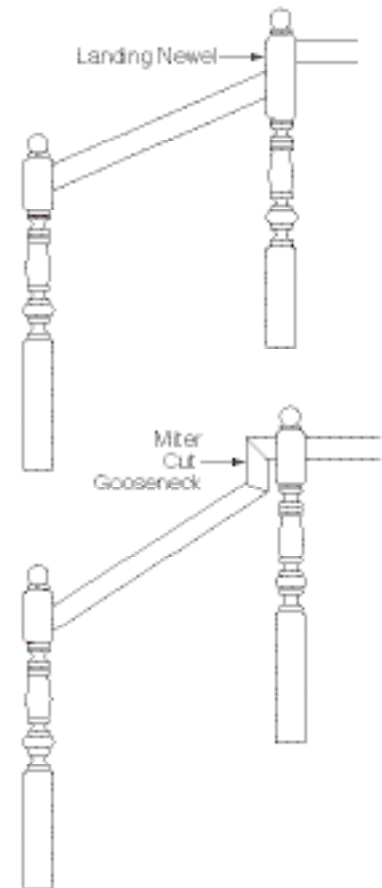
STEP 9

Drill Treads and Rail for Balusters:

By locating equal centers on the treads, use a level or plum to locate centers underneath rail. Drill $5/8"$ holes in treads and rail on the center marks. A speed bore (butterfly) bit is recommended. Drill rail hole approximately $1\ 1/2"$ deep so that baluster can be lifted enough to allow dowels to drop into tread holes. Use glue in both holes. Line up bottom squares before glue sets. If square top balusters are used, toe nail the "up" side as shown. Balusters are made to cut up to 3" off the top without changing the sizes.



STEP 10



In Post-to-Post Installations, either:

1. Use landing newels (with longer square top sections) to make transition from stair rail to landing rail.
- OR**
2. Make rail goosenecks by miter cutting rail as shown (or use stock fittings when using 6010 rails).



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