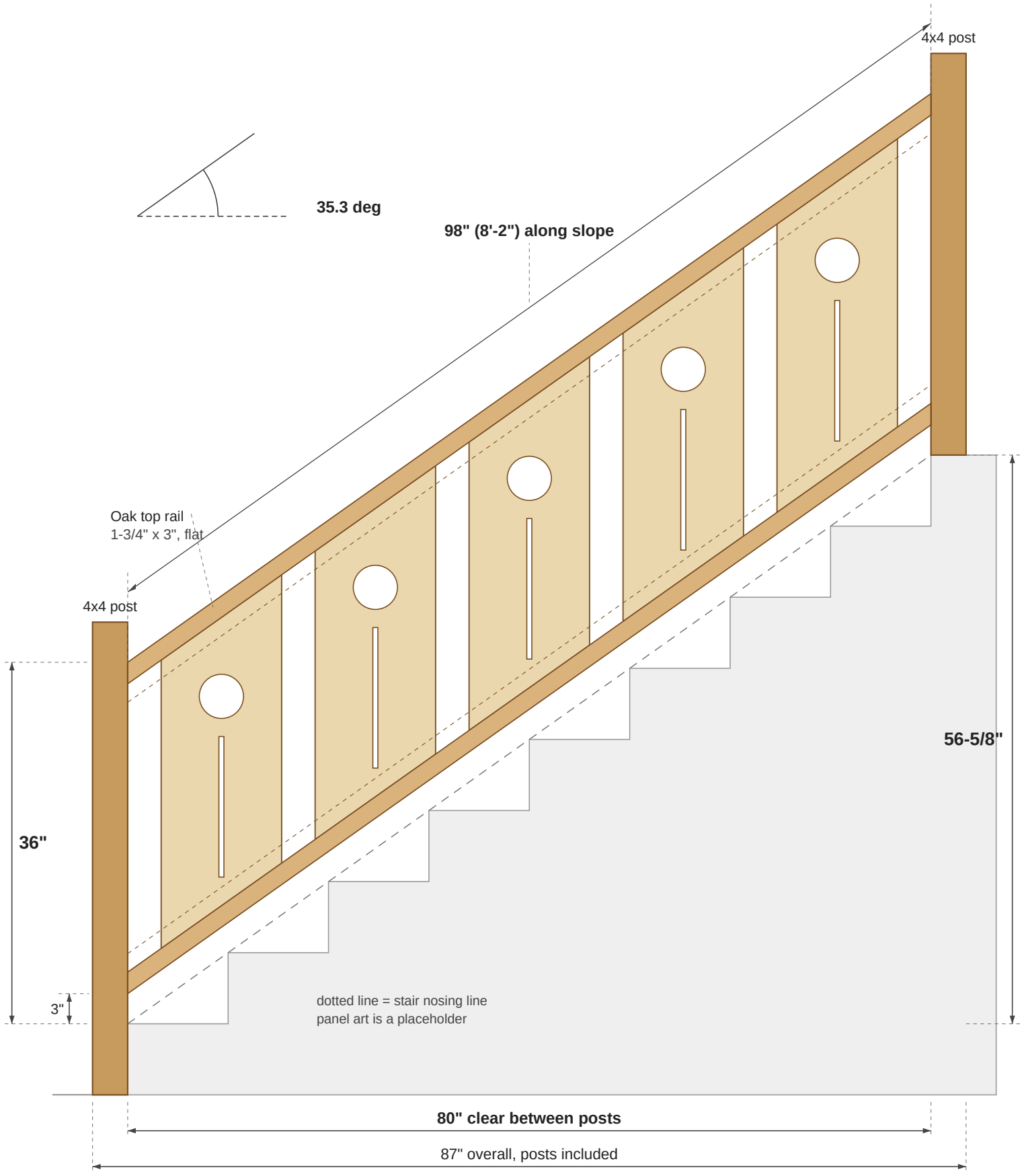
STAIR RAILING - SIDE ELEVATION

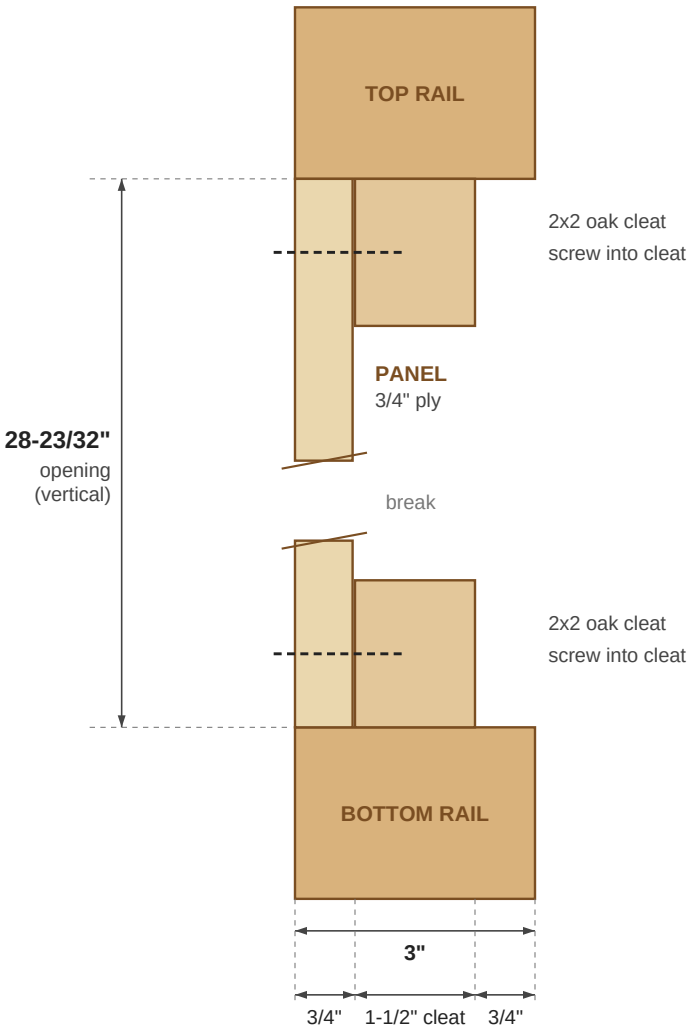
White oak S3S, rails with cleat-mounted panel infill. Slope 35.3 deg (measured). Page 1 of 2.



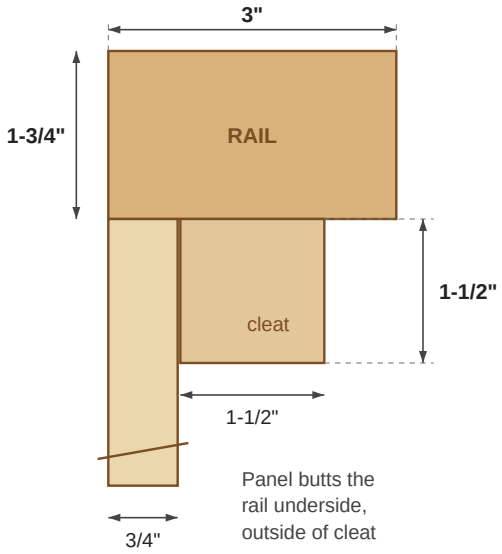
Assumes 7-1/16" riser and 10" tread (35.3 deg slope). Verify on your stair. Dashed lines show the hidden cleats behind the panels.
5 panels, 12" wide, gaps 3-1/3" each (all under 4"). Measure your real art openings against a 4" sphere.
Top of top rail is 36" above the nosing line. Use stainless or coated fasteners with white oak (tannin staining).

CLEAT-MOUNTED PANEL DETAIL

Vertical section across the stair (left) and true rail section (right). Outside of stair is at left. Page 2 of 2.



Top rail assembly, true section



Bottom rail is the mirror image: cleat sits on top of the rail.

Cleat placement

Set each cleat 3/4" in from the outside edge of its rail. That leaves a 3/4" ledge on the outside for the panel, so the panel face ends up flush with the rail edge.

Fasteners

Glue each cleat to its rail and add a 2-1/2" stainless screw every 12", driven through the cleat into the rail. Fasten panels with three 1-5/8" screws into each cleat, counter-sunk and plugged or left as accents.

Fit

Panels go in last from the outside. Cut them 1/32" short (28-11/16") and trim to fit.

Break shortens the panel for drawing; heights are not to scale between the break lines.
Rail and cleat thicknesses read longer here (2-9/64", 1-27/32") because the rails slope; true sizes are on the right.

CUT LIST

Part	Qty	Size (inches)	Notes
Post, bottom	1	3-1/2 x 3-1/2 x 47-1/16	Two 8/4 laminated. Stands on floor; top 40" above nosing line.
Post, top	1	3-1/2 x 3-1/2 x 40	Stands on landing; top 40" above landing.
Rail, top and bottom	2	1-3/4 x 3 x 98	Ends 35.3 deg off square, parallel. Laid flat.
Cleat	2	1-1/2 x 1-1/2 x 98	Ripped from 8/4. Ends match rails. 3/4" in from outside edge.
Panel	5	3/4 ply x 12 x 28-11/16	Vertical sides 28-11/16"; top/bottom edges 35.3 deg off square.

ASSEMBLY ORDER

1. Rip and plane rails to 1-3/4 x 3 and cleats to 1-1/2 x 1-1/2. Cut all ends at 35.3 deg, parallel.
2. Mark a line 3/4" in from the outside edge of each rail. Glue and screw the cleats on: under the top rail, on top of the bottom rail.
3. Anchor the posts plumb. Fit both rail-and-cleat assemblies between them and fasten each end with two 3-1/2" stainless screws, pre-drilled and plugged.
4. From the outside, set the panels against the cleats, trim to fit, and screw them into the cleats.
5. Add a separate graspable handrail (1-1/4" to 2" wide) at 34-38" above the nosing line if code requires one.