

# Furniture as a workflow problem

Two design studies. A project-specific CAD-to-guide system. Explicit review boundaries.



Draft application evidence: design direction, AI-assisted development and computational review. Personal code authorship and physical-build outcomes require confirmation. No generated product photography.

# From geometry to a usable next action



## Existing implementation

JSCAD creates actual solids. Project metadata exposes part IDs, dimensions, hardware axes and routing relationships. Authored JavaScript templates interpolate those values; bespoke scenes and world-space labels teach each operation. There is no arbitrary-CAD importer and no runtime AI inference.

## Human judgment is part of the system

The applicant supplied design constraints, measured inputs and critiques of misleading drawings. Codex assisted implementation. Humans still choose joints, material behavior, assembly order and tools, measure purchased parts and release the design. Code-generation assistance is distinct from deterministic geometry and guide generation.

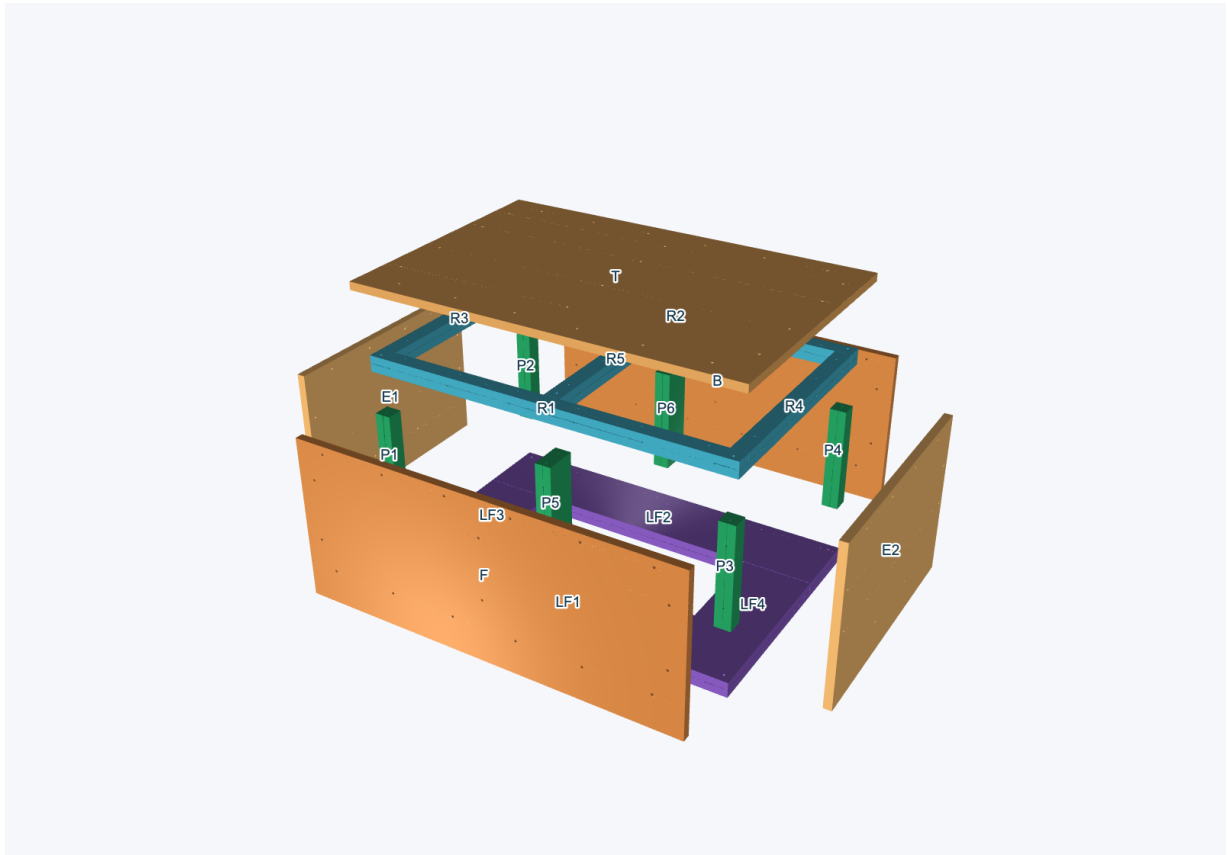
## Reproduction and verification

Preserved input parameters + source hashes → generated JSON and CAD scenes → original-viewer captures → PDF presentation export. The JSON/PDF export adapter was added for this package and is not claimed as an existing feature.

| Project      | Reproduced evidence                             | Boundary                                 |
|--------------|-------------------------------------------------|------------------------------------------|
| Coffee table | 16 steps; 35 cut layers; 94 wood screws         | Caster fit and physical build unverified |
| TV stand     | 20 pages × 3 stages; 60 stable scene signatures | Release holds remain open                |

Tests assess selected geometry and contracts, not structural safety or novice comprehension. The detailed validation ledger reports the gaps.

# Let the box become the skirt



## Constraint → decision

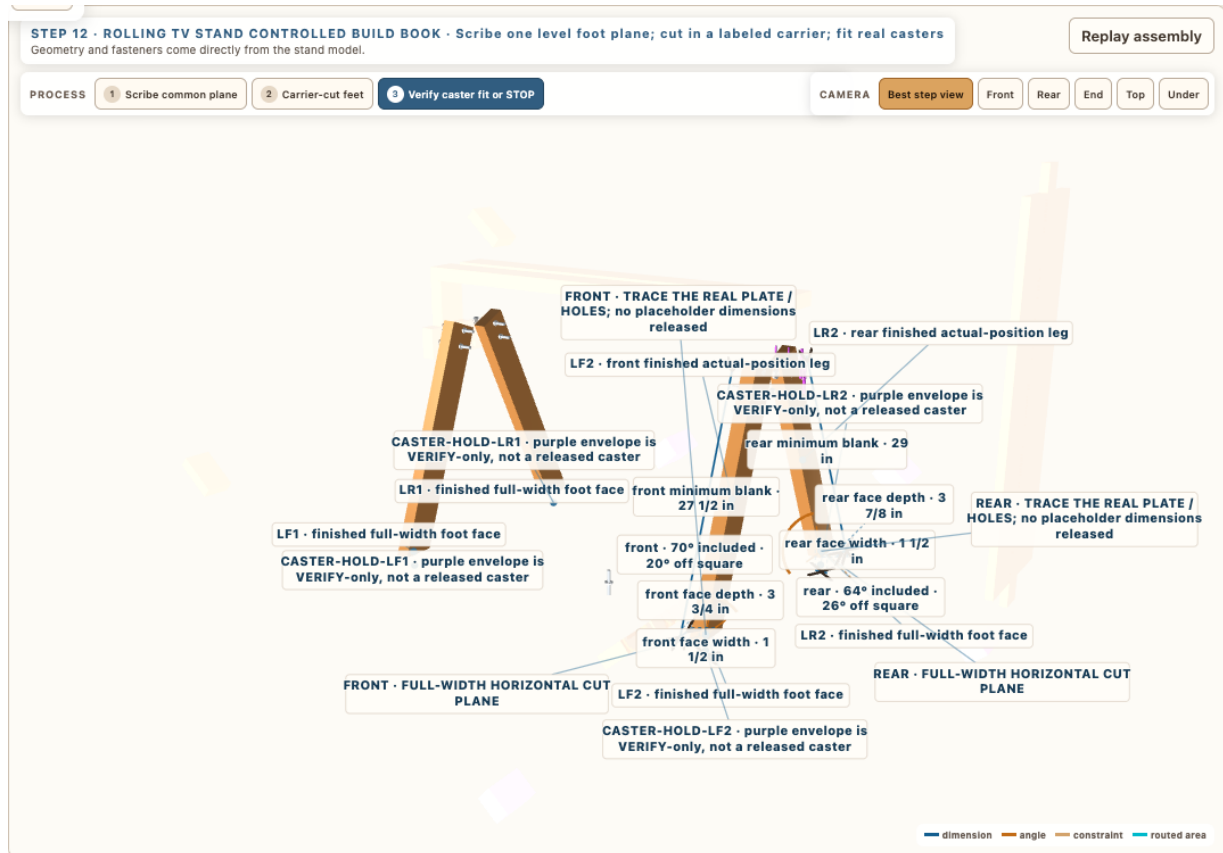
The user wanted to reuse square caster plates without a “box + casters” silhouette, and explicitly retained the outer box height. The chosen response mirrors the top framing below, widened and recessed. Posts bear on that frame.

## Recorded change

Git snapshots d709a15 → 48a8adb show the change from 27 to 35 wood layers and 72 to 94 wood screws. Default post length drops from 13.75 to 9.75 inches while the outer box stays 36 × 24 × 16 inches. The 4-inch caster height and plate are marked provisional.

Applicant: design direction and critique. Codex: implementation assistance. Exact personal code contribution and physical outcome await confirmation. The render uses unchanged CAD solids with presentation-only exploded translations.

# A foot cut must cross the whole foot



## Constraint → correction

The user identified a partial-looking caster-foot cut and asked for real CAD-based dimensions. Current legFootLayout() derives extra blank length from the sloped section so the horizontal cut crosses the full width. The guide distinguishes a 20°/26° crosscut line from the circular saw's 0° blade bevel.

## What is specifically verified

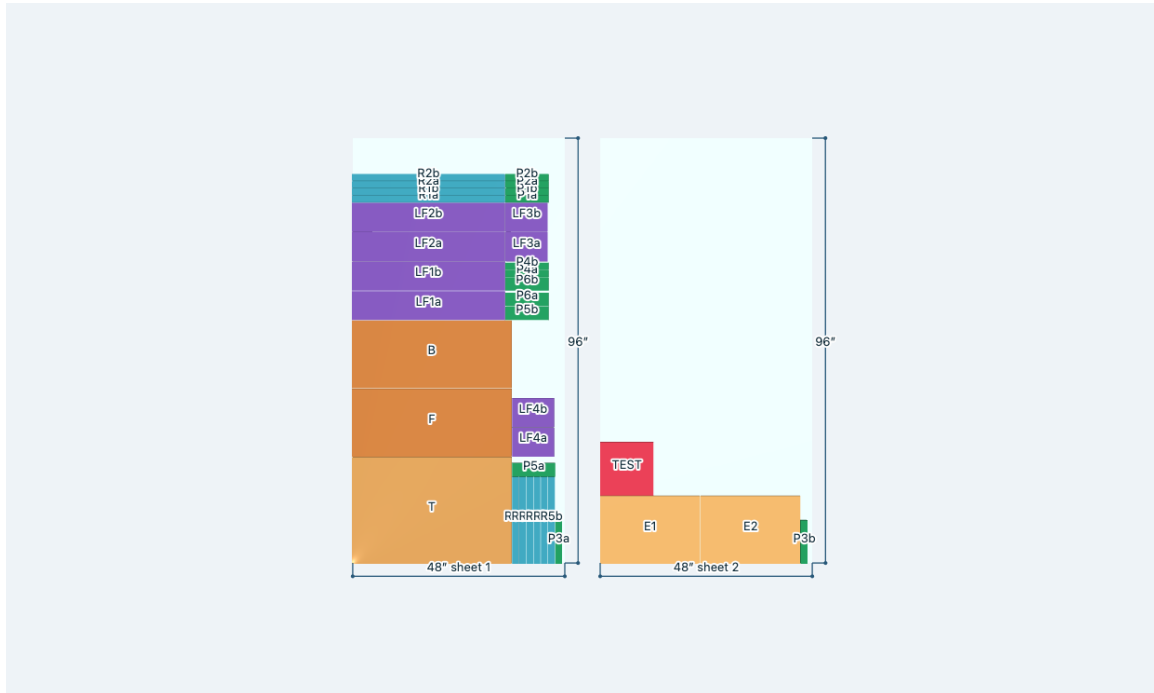
Minimum front/rear blanks are approximately 27.5571/28.9987 inches in the selected CAD. Dedicated process stages and test-stock allocation are present; existing scene contracts pass. Purchased caster fit remains a HOLD. No physical before/after or structural approval is claimed.

## Selected guide pages follow

The following pages are copied directly from the reproduced full-guide PDFs: coffee-table stock layout and frame assembly; TV routing detail and caster-foot step. Original page numbers identify where each belongs. Dense original callouts remain a usability limitation, disclosed in the ledger.

# Lay out all parts on the sheet

Tools: Tape; straightedge; square; pencil

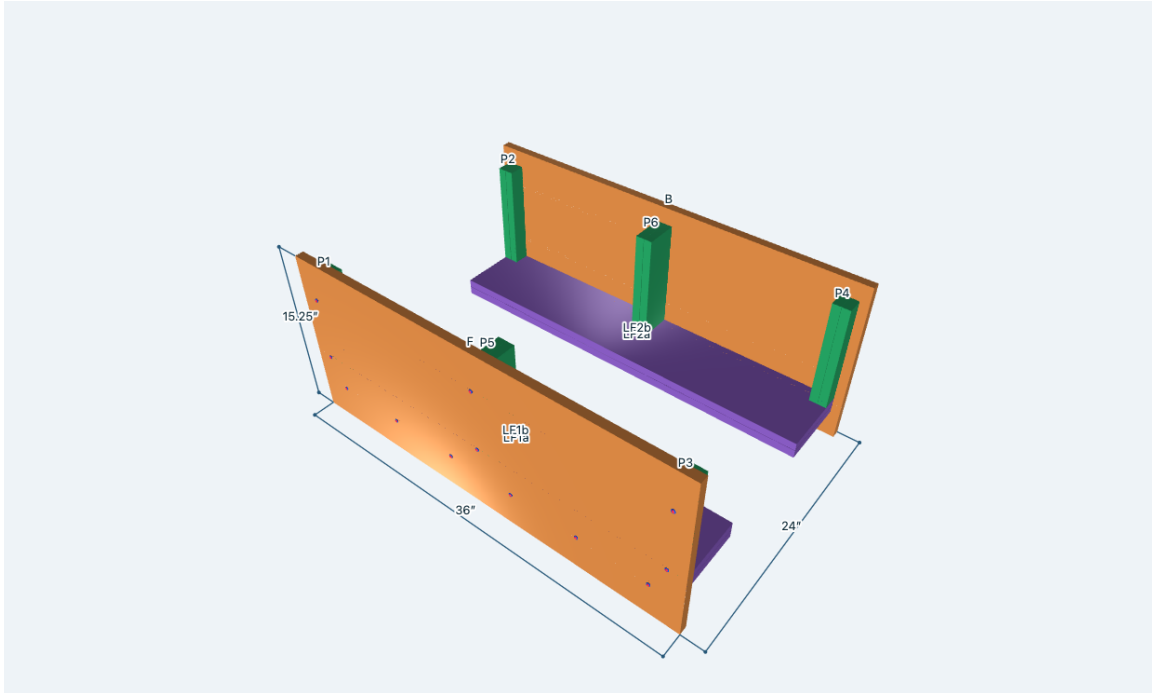


Actual CAD stage capture. Still image, not proof of the machining motion or build outcome.

1. The CAD stock view includes 35 individual cut pieces plus TEST. Each rectangle is a real part at its cut size; gaps reserve 0.125" kerf.
  2. Label F = front, B = back, E1/E2 = ends, T = top. P1–P4 are corner posts; P5/P6 are deeper center posts. R1/R2 are long rails, R3/R4 end rails, R5 center rail. Letters a/b identify the two glued layers. LF1/LF2 are the long lower-frame members; LF3/LF4 fit between them at the ends. Each has two layers.
  3. Mark on concealed faces. Mark one reference edge and one reference end on every blank; take later measurements from those same references.
  4. Use the cut list for finished sizes. Measure each new cut from a clean edge—do not simply make every next cut on the last pencil line. Verify the fit on your actual sheet before the first cut.
- CHECK / HOLD: Every piece and the TEST square fit, with kerf and no overlapping rectangles.

# Build the two long-wall frame assemblies

Tools: Square; tape; clamps; drill and driver; 1¾" flat-head wood screws; glue; 2½" wood screws



Actual CAD stage capture. Still image, not proof of the machining motion or build outcome.

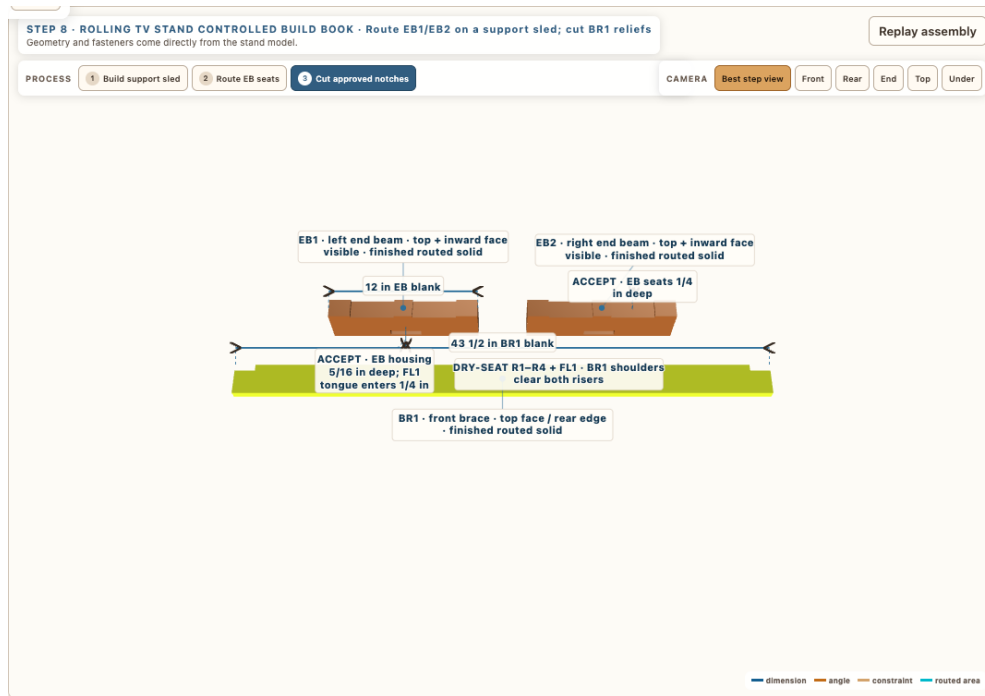
1. Lay F inside face up. Position LF1 with its underside 2.5" above the wall bottom and its top at 4". Place P1/P3/P5 with their bottoms bearing directly on LF1's top. Repeat with B, LF2 and P2/P4/P6. Corner posts begin 0.75" in from the wall ends. Their new cut length is 9.75".
2. The center post projects 3" inward. Its extra depth will support both the long rail and the end of the center rail. All post tops finish 1.5" BELOW the wall top.
3. Clamp each post in position. Mark its outline on the inside face and transfer the centerline to the outside face using the same reference end. The hole table lists every location from that reference.
4. At the two marks per post, drill the wall clearance holes and matching support pilot holes, countersink the outside, apply glue at the wall/post contact and drive the screws flush. Use the tested drilling method; do not drill blindly through both pieces with the same large bit.
5. Dry fit and mark the lower member and post footprints before gluing. Glue each post's bottom to the lower member, clearance-drill UP through both lower-member layers, pilot into the post, countersink underneath and drive the LP 2½" screws. The driver approaches from the open underside. These screws retain the joint; the post bears on the broad frame surface.
6. Glue the lower member to the wall and install the LW 1¾" screws through the outside wall into it. Use the listed lower-height marks. The broad LF surface, not the narrow post end, receives the caster plate later.

CHECK / HOLD: Stage total: 30 screws, including 12 wall/post, 6 lower-frame/post and 12 wall/lower-frame screws. Post bottoms bear on the lower frame, not on the floor.

# Route EB1/EB2 on a support sled; cut BR1 reliefs

Tools: Router + straight bit, EB support sled, exact-width jig, jigsaw, drill for starter holes, file/chisel, clamps

Setup: Bridge the narrow EB with equal-height sacrificial stock; clamp the bridge separately from the exact-width jig.



Actual CAD stage capture. Still image, not proof of the machining motion or build outcome.

Parts / constraints: EB carrier/support bridge; Exact-width router jig; Jigsaw + fine file/chisel; Board 6 route trial

1. Screw/clamp sacrificial boards beside each 1½"-wide EB top so the router rides on a broad coplanar surface; the support must not move.
2. Prove one 3½" × 1½" × ¼" seat and one 2½" × ¾" × 5/16" housing on Board 6 using the same jig, bit, feed direction, and pass depths.
3. Route four top riser seats and two inward-face floor housings from the coordinate table. Confirm every feature is on the correct face before powering the router.
4. For BR1, jigsaw from each brace end to the CAD inner shoulder at X -20.105" / 20.105", staying inside the waste for 0.5" from the rear edge. Finish to the line with a file/chisel; no closed inside-corner starter hole or ⅛" end nib remains.
5. Dry-seat R1–R4 and FL1. Mark each fitted pair and verify the 1/16" unglued clearance remains at each floor-housing bottom.

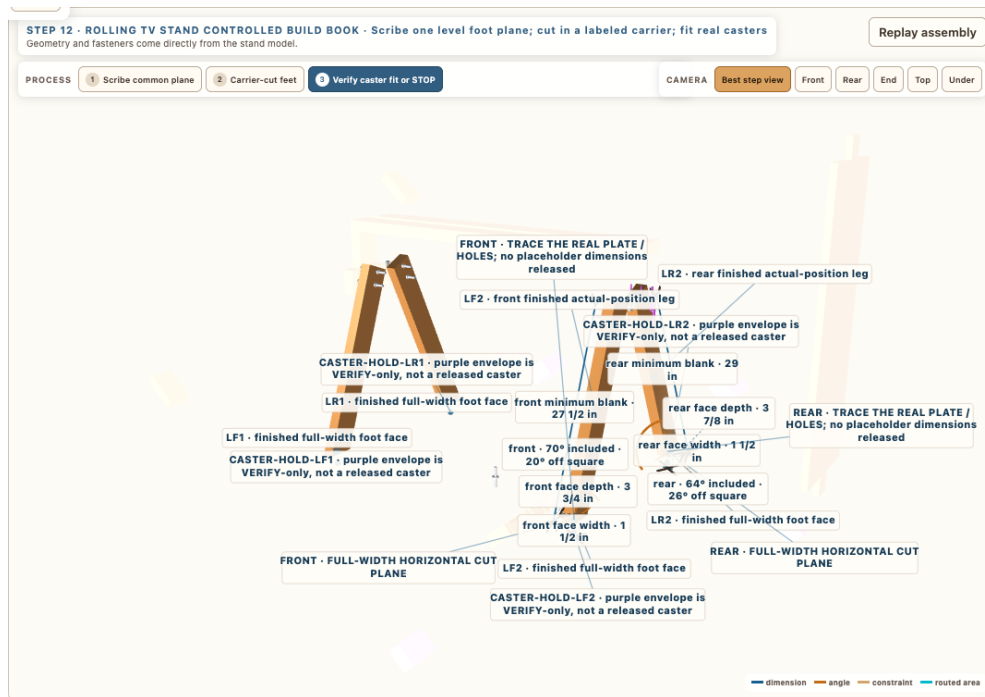
CHECK / HOLD: Output: two matched EBs and open-ended BR1 reliefs. Acceptance: risers bottom without rocking, floor tongue slides by hand, and BR1 shoulders clear the risers without a fragile end nib.

| ID / stock          | Description / feature    | Qty | Dimensions / specification                                                                                   |
|---------------------|--------------------------|-----|--------------------------------------------------------------------------------------------------------------|
| EB1/EB2 top         | Riser seats              | 4   | Centers 2½ front/rear of beam center; 3½ along beam × full 1½ width × ¼ deep                                 |
| EB1/EB2 inward face | FL1 tongue housing       | 2   | Centered on 12 beam; 2½ wide; Z ¼–1; ¾ high × 5/16 deep; ¼ engagement + 1/16 unglued clearance               |
| BR1 rear edge       | Open-ended riser reliefs | 2   | Inner shoulders X -20.105" / 20.105"; open through both brace ends; 0.5" from rear edge; through ¾ thickness |

# Scribe one level foot plane; cut in a labeled carrier; fit real casters

Tools: Real casters, level/story block, 20°/26° foot carrier, circular saw at 0° bevel, clamps, drill/approved pilot, depth stop

Setup: Update the cribbing height from real caster plate-top height. Scribe all four legs before removing any one leg.



Actual CAD stage capture. Still image, not proof of the machining motion or build outcome.

Parts / constraints: Real measured caster; Real plate-top height entered in CAD — HOLD until measured; CAD front face 1.5" × 3.725" at 20°; CAD rear face 1.5" × 3.894" at 26°; Purple CAD envelope means VERIFY — it is not released caster geometry; Circular saw remains at 0° bevel

1. First close the caster HOLD: update the CAD with actual overall mounting height, plate/hole pattern, swivel offset/envelope, lock access, and rating. Reject the foot or add a reviewed wider pad if the plate and safe pilots do not fit the 1½" face.
2. Crib and brace the square dry chassis at the updated final elevation. Use a level story block at the real caster plate-top height to scribe one floor-parallel plane completely across all four legs.
3. Make a foot carrier with a 20° front stop and 26° rear stop. Prove both settings on Board 6; the saw shoe stays at 0° bevel and the carrier turns the leg so a guided square-to-shoe cut creates the angled crosscut.
4. Remove one labeled leg at a time. Clamp it in the correct carrier orientation with the full 1½" thickness under the blade path; support the waste. Cut through the entire section, wait for blade stop, reinstall, and verify all four faces are coplanar.
5. Trace the real plate and holes. Use a center punch/awl, backer, depth stop, and manufacturer-approved pilot. Do not automatically use the old 1½" lag callout: the CAD models 1" screws and neither is released until the real angled path and edge margins pass.
6. Fit all four casters temporarily; check full bearing, 360° swivel clearance, lock access, bolt/lag paths, and four-point contact.

CHECK / HOLD: HOLD if any plate overhangs, pilot approaches an edge, a fastener may exit the sloped leg, a wheel hits the shell/leg, or the stand rocks.