

Periaktoi — build plan for four 4'×8' units

Andy Campbell's all-plywood method, sized so every face is one uncut 48"×96" sheet of luan. Four identical units, one per periakto on the ground plan (P1–P4).

The unit in one paragraph. Four equilateral plywood triangles — a solid top, two open toggles and a solid bottom — are notched at every corner and joined by three 8'-long plywood strips with a 30° bevel ripped on one edge. The strips rebuild each corner in long grain, so there is no stile-and-rail frame at all: the four plates and three strips are the whole structure. Three rigid casters bolt under the bottom plate, set tangent to the swing circle, and a 1½" hole at the centre of that plate drops over a short length of 1½" pipe lagged to the stage floor. The unit cannot roll anywhere; it can only turn on its pipe. Then three luan sheets glue on as skins. Frame side is **47-3/4"** — not 48" — so that each uncut 48" sheet runs ¼" past one corner and closes the corner over the next sheet's square-cut edge (a pinwheel), which is what lets the luan go on without a saw.

Key numbers

Faces	3 per unit, each one uncut 48×96 luan (5.2 mm, 0.205")
Frame side (outside of the strips)	47-3/4" — plate height 41-3/8", centre-to-corner 27-9/16", centre-to-face 13-13/16"
Height	96" skins and strips; 96-3/4" floor to top with a ¾" gap under the skins
Plates	4 per unit from 23/32" ply: top 0", toggles at 30-5/16" and 60-5/8", bottom at 90-15/16" (top faces, from the top)
Corner strips	3 per unit, 2½" × 96", 30° bevel one edge, 23/32" ply
Casters	3 rigid 4"×1½" per unit, 22" from the centre on each median, wheels tangent (base triangle inradius 11")
Pivot	1½" floor flange + 6" nipple lagged to the deck; 1½" hole in the bottom plate
Swing	Ø 55-15/16"; clears a square-set neighbour by ≈ 4-15/16" and the window unit by ≈ 2-3/4"; the two swing circles overlap by 1-15/16" — turn one at a time
Weight	≈ 125 lb per unit (luan is half of it)
Plywood	6 sheets of 23/32" for all four units (2 strips + 3 plates per sheet; 2 plates spare)

What is different from the video

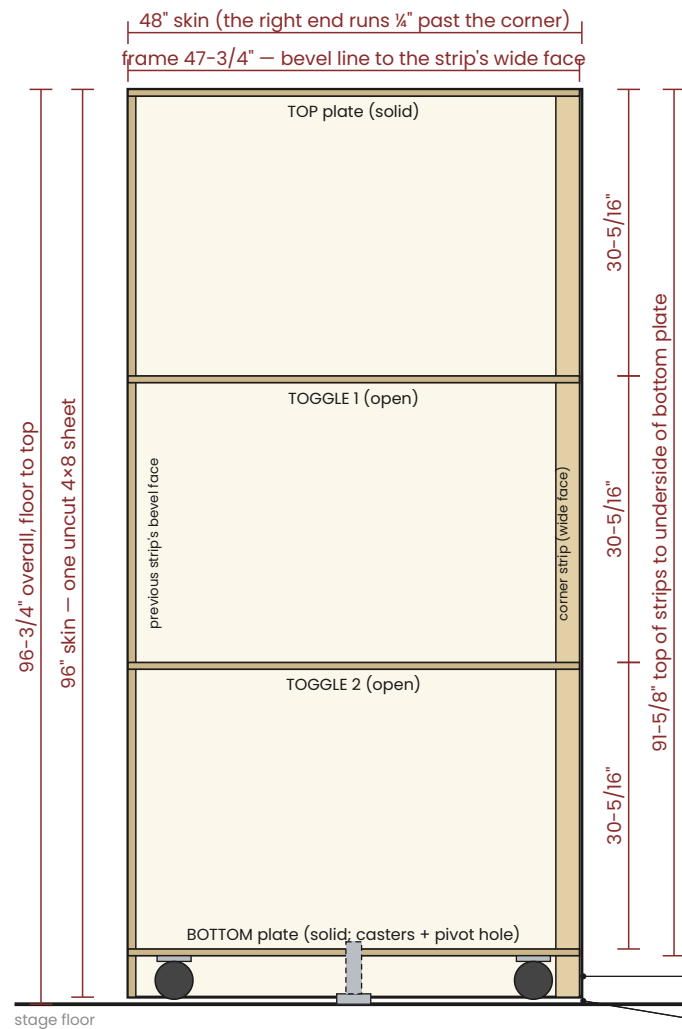
Andy's plans are drawn for units up to 3' wide, which is why he gets one unit per sheet (four triangles and three strips). At 4' the triangles are 41-3/8" tall, so a sheet holds three triangles and two strips — 1½ sheets per unit — laid out on Sheet 4. The frame is 47-3/4" rather than 48" so the skins can stay uncut (Sheet 3). Caster bolts are 5/16" to suit the Colson plate. Screws replace his #6 box nails and the shop's 16-ga stapler (with ¾" staples, his length) replaces his narrow-crown gun; the joints are still glue-first, as he insists. Strips are ripped at 2¾" and bevelled down to a 2½" wide face rather than bevelled from 2½" (a zero-width offcut is a kickback). Casters are set 22" out — as far as his pencil-width rule allows — for the widest base. The bottom-plate height is worked for the 5½" Colson caster; if you buy a different caster, re-figure it (caster height - ¾"). Everything else — notched corners, bevelled strips, rigid casters, nylocks, the flange-and-pipe pivot, the ¾" floor gap — is his method as shown.

Who does what

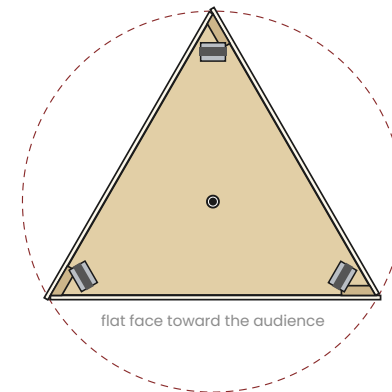
One adult on the table saw (all rips and bevels). Students: layout, circular-saw cuts on a clamped straightedge, notching, jigsaw work on the toggles, drilling, glue-up, casters, skinning, filling and sanding. Budget three after-school sessions for four units with a crew of four to six, plus a fourth for paint prep.

Sheets in this plan

1 unit overview · 2 plate · 3 corner detail · 4 cutting diagram · 5 floor pivot, casters and stage layout. Then the shopping list, the cut list, the step-by-step, tools and sources.



PLAN — bottom plate, looking down



swing $\varnothing$ 55-15/16" · pivot pipe at the centroid · casters 22" out
 3 RIGID casters, axles pointing at the pivot, so the unit can only turn
 (strips and skins drawn double thickness so they read)

Each face is one uncut 48"×96" luan sheet; the frame is 47-3/4" on a side so the capping edge of each skin runs 1/4" past the corner (pinwheel, Sheet 3).
 Weight $\approx$ 125 lb per unit — two people to stand it up, one to turn it.

4-3/8" skin hangs below the bottom plate

3/4" gap to the floor (pinch-safe)

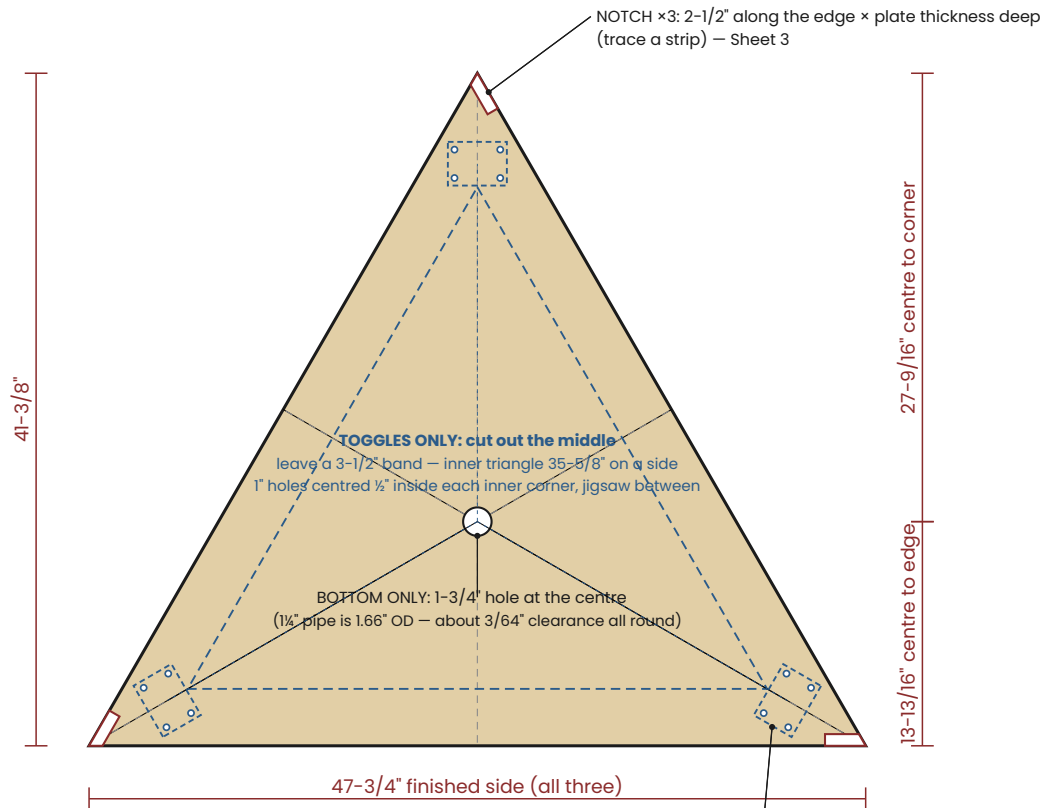
Bottom plate height = caster mounting height - 3/4". Drawn for a 5 1/4" caster (Colson 2 Series 4"×1 1/4" rigid); re-figure if you buy a different caster.

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Unit overview — one face seen square on (skins shown transparent) and the plan looking down

SHEET 1 — UNIT OVERVIEW

elevation 1:20 · plan 1:28 · inches · rev 2026-09-15



MAKE 16 (4 per unit) + 2 spares — 6-sheet layout, Sheet 4.
Every plate is the same triangle. Per unit: 2 solid (top, bottom) and 2 open (toggles).

Find the centre BEFORE notching: square a line in from the midpoint of two edges — they cross at the centre. Mark it on every plate; the bottom one gets the hole.

Notch all three corners with the SAME edge sense (clockwise from each tip, as drawn) so the strips run straight through the four plates.

60° corners: check with a speed square (30° off the edge). Make ONE plate perfect, then trace it — the video's rule.

Ease the notch shoulders with a file so the strip seats; a strip that has to be hammered in will split the ply.

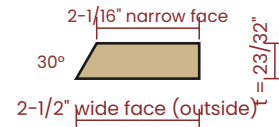
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Plate — the one triangle used four times per unit (top, bottom, two open toggles). Notch every corner the same way round.

SHEET 2 — PLATE (x4 PER UNIT)

1:11 (8.6 px = 1 in) · inches · rev 2026-09-15

STRIP — cross-section (2× full size)

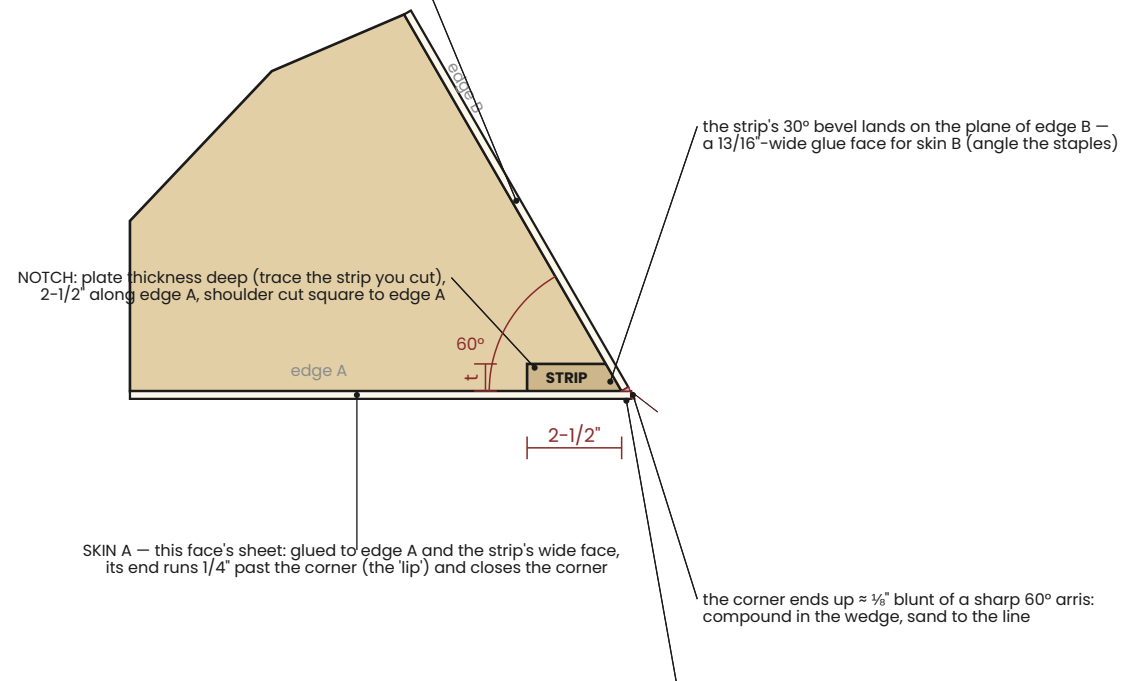


Rip the strips at 2-3/4" square first, then tilt the blade to 30° and rip the bevel with the fence set so the WIDE face nets 2 1/2" — never bevel a 2 1/2" strip to a zero-width sliver. Wide face down on the table. 12 strips for 4 units, all identical, bevel on ONE edge. No table saw: circular saw at 30° on a clamped straightedge; make one, try it in a notch, copy it.

SKIN B — the next face's sheet: glued to edge B and the strip's bevel face, square-cut, its edge flush with the corner, tucked behind skin A's lip

How the corner goes together

1. The strip sits in the notch: wide face flush with edge A, square edge against the shoulder.
2. Its bevel face is now flush with edge B — the plate corner is rebuilt in long grain, which is why the video notches instead of just gluing a block to the face.
3. Glue the notch; drive two #8 × 1 1/2" screws through the strip's wide face into the plate edge (pre-drill 7/64", aim for the middle of the plate's thickness, heads flush).
4. Skin A glues to edge A + the strip's wide face; its end runs 1/4" past the corner. 3/4" 16-ga staples, zig-zag, 6" o.c.
5. Skin B glues to edge B + the bevel face, its edge flush with the corner behind skin A's lip; staple the bevel at an angle so the staples stay in the strip.
6. Fasteners only hold the luan until the glue cures — be liberal with the glue, then leave it overnight.
7. Compound in the wedge; sand to a straight 60° arris.

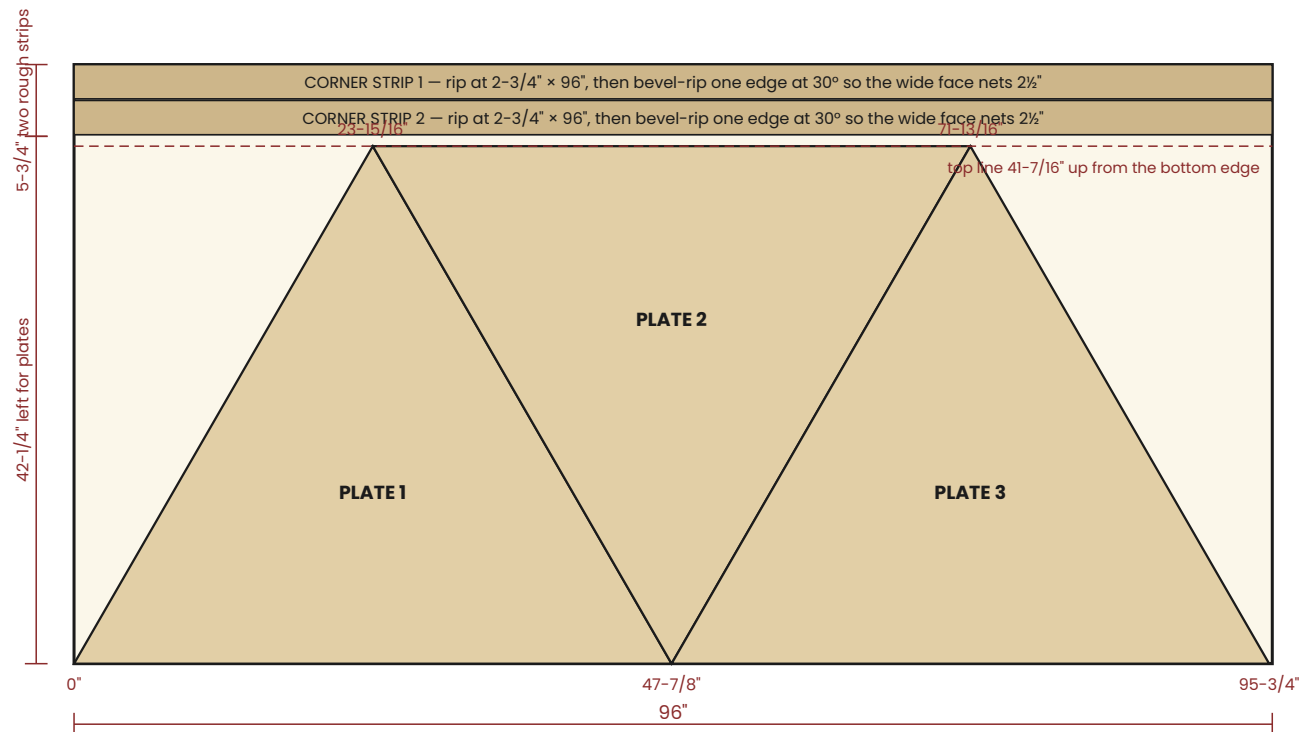


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Corner detail in plan, looking down at a plate's UP face — notched plate, bevelled strip, pinwheel skins (drawn 2× full size)

SHEET 3 — CORNER DETAIL

detail 20 px = 1 in · section 26 px = 1 in · inches · rev 2026-09-15



Lay out the plates at 47-7/8" nominal so they net $\approx 47-3/4"$ after the $\frac{1}{8}"$ kerf. Bottom marks: 0", 47-7/8", 95-3/4" · top marks: 23-15/16", 71-13/16" · top line 41-7/16" (kerf on the waste side, above it). Saw the four diagonals CENTRED on their lines (the kerf is shared by the two plates either side); saw the top line with the kerf in the strip-side waste. All three plates then come out the same size. Plate 3's tip lands $\frac{1}{4}"$ from the sheet end; a sheet that is short of 95 3/4" clips that tip, and the clipped sliver is inside the corner notch. Measure your sheets — the strips will be as long as the sheet. Order of work: (1) rip the two strips off one long edge, (2) snap the top line, (3) mark and cut the four diagonals with a circular saw on a straightedge, then the top line, (4) notch, (5) open the toggles.

YIELD

per sheet	2 strips + 3 plates
per unit	3 strips + 4 plates
6 sheets	12 strips + 18 plates = 4 units + 2 spare plates
buy	6 sheets, +1 spare recommended

PLYWOOD

23/32" BC sanded pine (Plytanium, HD #201428) or better. Sight down every sheet; reject any twist or 'potato chip'. Store flat — a flat sheet is the whole secret (the video's words). Actual thickness 23/32": notch depth = the strip you cut, not $\frac{3}{4}"$. Blade kerf $\frac{1}{8}"$ assumed throughout.

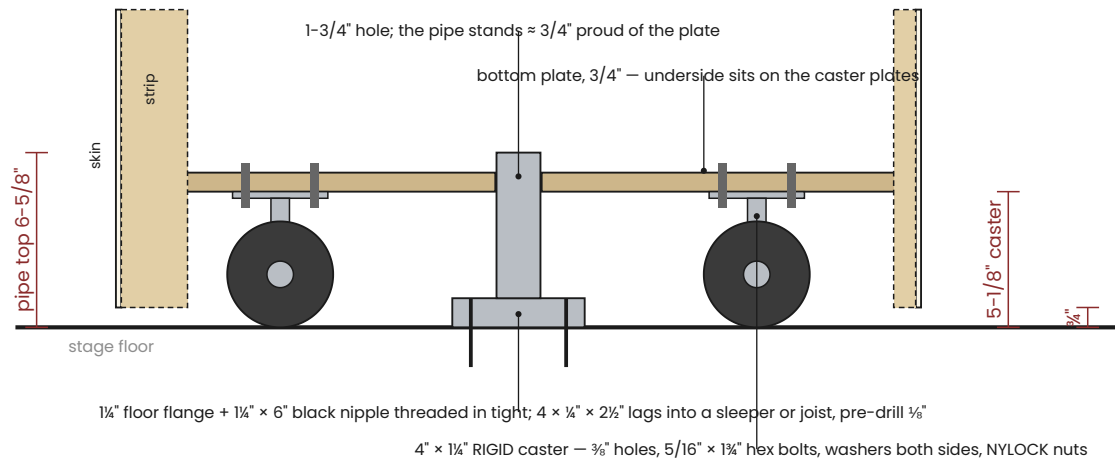
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Cutting diagram — one 48x96 sheet of 23/32" plywood yields 2 corner strips + 3 plates; 6 sheets make 4 units (+2 spare plates)

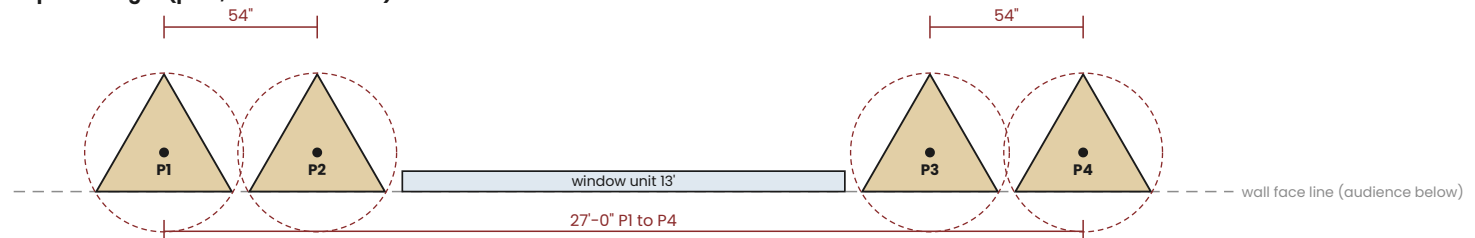
SHEET 4 — CUTTING DIAGRAM (x6 SHEETS)

1:14.5 (6.6 px = 1 in) · inches · rev 2026-09-15

Section on a line through the pivot and two casters (illustrative — wheels drawn side-on; in plan they sit tangent to the swing circle).



STAGE LAYOUT — the four pivot flanges (plan, audience below)



Flanges on a line 13 3/4" upstage of the wall face (the face line is 14'-0" upstage of the plaster line on the ground plan); P1/P2 and P3/P4 on 54" centres, the 13' window unit between.
Lag the flanges before the first rehearsal on the set and leave them for the run.

Swing $\varnothing$ 55-15/16". A turning unit clears a neighbour standing square on its pivot by ≈ 4 -15/16", and the end of the window unit by ≈ 2 -3/4"; but the two swing circles overlap by 1-15/16".

TURN ONE UNIT AT A TIME — never two neighbours together. Brace the window unit from ≥ 6 " inboard of its ends; keep jacks, cable and sandbags out of the swing circles.

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Floor pivot and casters — section through the bottom of a unit; and the four pivot positions on stage

SHEET 5 — FLOOR PIVOT, CASTERS, STAGE LAYOUT

section 14 px = 1 in · layout 1.5 px = 1 in · inches · rev 2026-09-15

BUY

Shopping list — four units

Prices checked 15 September 2026: Home Depot items at the Seneca store (Buffalo) with stock on hand that day; the Colson caster at Caster Specialists' web price. Prices move — treat these as this week's numbers.

Item	Qty	Each	Ext.	Priced at		Why / note
Plywood, 23/32" × 4×8 BC sanded pine Plytanium #201428 (or any FLAT ¾" sheet; cabinet-grade is nicer to cut)	6	\$49.33	\$295.98	Home Depot Seneca (Buffalo), 15 Sep 2026		plates + corner strips: 2 strips + 3 plates per sheet
— spare sheet (recommended) same	1	\$49.33	\$49.33			one bad rip or one twisted sheet and you'll want it
Luan / lauan, 5.2 mm (¼") × 4×8 SandePLY #479023, actual 0.205" — or the luan you already have	12	\$29.83	\$357.96	Home Depot Seneca, 15 Sep 2026		3 per unit, used UNCUT
Caster, 4" × 1¼" RIGID, Performa rubber Colson 2 Series 2.04208.445 — 300 lb, 5⅝" high, plate 3⅝×2 11/16, 5/16" bolts	12	\$12.89	\$154.68	casterspecialists.com (sale; list \$23.98); also accesscasters.com, BMI Supply		the video's caster; must be RIGID, never swivel
Floor flange, 1¼" black malleable Southland 521-606HN	4	\$13.14	\$52.56	Home Depot Seneca		one per unit, lagged to the deck
Pipe nipple, 1¼" × 6" black steel STZ 300 114X6	4	\$4.93	\$19.72	Home Depot Seneca		threads into the flange; OD 1.66"
Lag screws ¼" × 2½" + flat washers hex head (5/16" × 2½" if the flange holes take them)	16	\$0.45	\$7.20	any		4 per flange, into a sleeper or joist; pre-drill ⅛"
Hex bolts 5/16"–18 × 1¼" zinc	48	\$0.40	\$19.20	any		4 per caster (1½" leaves only two threads past the nylock)
Flat washers 5/16"	96	\$0.08	\$7.68	any		both sides of every caster bolt
NYLOCK nuts 5/16"–18 nylon-insert lock nuts	48	\$0.20	\$9.60	any		the video's rule: moving scenery gets nylocks
Screws #8 × 1½" 1 lb box (≈140)	1	\$9.00	\$9.00	any		strips to plates: 24 per unit
Staples, 16-ga × ¾" (for the shop's stapler) or 18-ga ¾" brads — NOT 1": that comes out the back of a 23/32" strip	1	\$12.00	\$12.00	any		skins to strips and plate edges
Wood glue, Titebond II 1 gallon (a quart does about 1½ units)	1	\$30.00	\$30.00	any		every joint, liberally
Joint compound or spackle 1 qt	1	\$8.00	\$8.00	any		corner wedges
Sandpaper 80 / 120	1	\$10.00	\$10.00	any		corners, hole chamfer, strip edges
Primer (latex, 1 gal)	1	\$25.00	\$25.00	any		the twelve faces before the paint call
Sandbags, 25 lb or stage weights	4	\$12.00	\$48.00	any		one on each bottom plate, inside, upstage corner — cheap tipping margin
Everything above			\$1,115.91	with the spare sheet and 12 new luan		
Without luan or the spare sheet			\$708.62	if the shop's existing luan covers the 12 skins		

Notes on the buying

Plywood. Sight down every sheet at the store and reject any with a twist or a "potato chip" — Andy's whole first chapter is about this. BC sanded pine is fine; if the store has a flat cabinet-grade or birch sheet for a few dollars more, it cuts cleaner and stays flatter. Store the sheets flat until they are cut. **Luan.** The shop's existing luan works if it is full 48×96 and roughly ¼" thick. The ¼" lip only has to reach past the next sheet's outer corner, which sits $t \times \cos 30^\circ$ past the frame corner — 0.18" for 0.205" luan, 0.22" for a true ¼" — so 47¾" holds for anything from ⅛" to ¼"; the corner just ends up a hair more or less blunt before the compound goes on. **Casters.** Order the twelve casters first; everything about the bottom plate waits on their real mounting height. Rigid (fixed) casters only. **Pipe.** Buy the flanges and nipples together and thread them at the store to check they mate; wire-brush and sand the outside of each nipple smooth. **Nylocks.** Not optional.

Cut list

ID	Part	per unit	×4	Stock	Finished size	Where it goes
A	Top plate (solid)	1	4	23/32" ply	equilateral, 47-3/4" sides, 41-3/8" high; 3 corner notches	flush with the top of the strips
B	Toggle (open)	2	8	23/32" ply	same triangle; inner cut-out 35-5/8" sides leaving a 3-1/2" band	top faces at 30-5/16" and 60-5/8" from the top
C	Bottom plate (solid)	1	4	23/32" ply	same triangle + 1-3/4" centre hole + 12 × 3/8" caster holes	UNDERSIDE at 91-5/8" from the top (top face ≈ 90-15/16")
D	Corner strip	3	12	23/32" ply	rip 2-3/4" × 96", then bevel one long edge 30° so the wide face nets 2-1/2" (narrow face 2-1/16")	wide face out; bevel lands on the next face
E	Skin	3	12	5.2 mm luan	48" × 96" — NOT CUT	pinwheel: one edge flush at the corner, the other runs 1/4" past
F	Caster, rigid	3	12	Colson 4"×1 1/4"	—	centred 22" from the centre on each median (5-9/16" in from the tip), wheel tangent
G	Floor pivot	1	4	1 1/4" flange + 6" nipple	—	lagged to the deck at the four spike marks (Sheet 5)

Layout marks for one 23/32" sheet (Sheet 4) — repeat on six sheets

Rip first, from one long edge	two strips at 2-3/4" (the strips zone uses 5-3/4" with kerfs); leaves 42-1/4". Bevel them later, down to a 2 1/2" wide face.
Top line	snap a line 41-7/16" up from the bottom edge of what is left; cut it with the kerf on the strip side of the line
Bottom-edge marks	0", 47-7/8", 95-3/4"
Top-line marks	23-15/16", 71-13/16"
Cuts	four diagonals connecting the marks in zig-zag order, sawn CENTRED on the line so the two plates either side share the kerf, plus the top line — five cuts, three plates (47-7/8" nominal, ≈ 47-3/4" finished)
Then	rip each strip's 30° bevel · notch every plate corner · cut the toggle openings in 8 of the 16 plates · drill the 4 bottom plates

Bottom plate drilling (Sheet 2)

Centre: 1-3/4" hole (hole saw or Forstner) — about 3/64" clearance round the pipe. Chamfer the underside 45° with a router if you have one; it helps the unit find the pipe. Casters: lay each caster on the underside with its plate centred 22" out from the centre along the median (that is 5-9/16" in from the corner tip), long side of the plate square to the median so the wheel rolls around the pivot; mark the four slots and drill 3/8". Check before drilling: the steel plate must sit at least a pencil's thickness (5/16") — Andy's rule — off every plate edge; at this position its corners sit about 9/16" off, 4-7/8" from the tip along the edge, so it is clear of the 2 1/2" notch and of the strip that runs down past the plate. The wheel ends up 1-1/4" inside the skin.

Toggle openings

On 8 plates, lay out an inner triangle 35-5/8" on a side (a 3-1/2" band all round), drill a 1" hole centred 1/2" inside each inner corner (tangent to both inner edges — don't eat into the band), jigsaw between. Optional — Andy calls it "not necessary but it makes it lighter" — it takes about 8 lb per plate out of the unit. Do not open the top or bottom plates.

Step by step

A. Plates and strips (per sheet)

1. Set the table saw fence to 2-3/4", blade square. Rip two strips from one long edge of the sheet (a full sheet on the saw needs outfeed support and two people). Set them aside — they are the corner strips.
2. Tilt the blade to 30°, wide face of the strip DOWN on the table, and rip the bevel on ONE long edge with the fence set so the wide face nets 2-1/2" (the 1/4" offcut is the waste; never try to bevel a 2 1/2" strip to nothing). Narrow face comes out 2-1/16". Make one, try it in a notch (step 6), then run the rest. Keep all twelve identical.
3. On the remaining 42-1/4"-wide panel snap the top line at 41-7/16" from the bottom edge and put the bottom marks (0", 47-7/8", 95-3/4") and top marks (23-15/16", 71-13/16") on it. Connect them zig-zag.
4. Cut the four diagonals with a circular saw against a clamped straightedge, blade centred on the line (the plates either side share the kerf); then the top line with the kerf on the strip side. Overcut the corners slightly so the plates come free cleanly. Stack the plates; they should all match when squared up on one another — that is the check.
5. **Find the centre of every plate now**, before any notching: square a line in from the midpoint of two edges; where they cross is the centre. Mark it with a cross.
6. Notch every corner: from the tip, 2-1/2" along the edge that runs *clockwise* from that tip (looking at the plate face you have marked "UP", the tips going top → lower-right → lower-left; Sheet 2), and as deep as your strip is thick — lay a strip on the corner and trace it, don't measure 3/4". Cut the shoulder square to the edge, then the long cut, with the circular saw; overcut for a clean inside corner and finish with a chisel. Make one perfect corner, then trace it onto every other corner of every plate.
7. On 8 plates cut the toggle openings. On 4 plates drill the 1-3/4" pivot hole and the twelve 3/8" caster holes (cut list, previous page). Mark each plate A/B/B/C.

B. Frame assembly (per unit, on a flat floor)

8. Mark the plate positions on all three strips, measuring from the SAME end (the top): top plate flush with the top; toggle 1 top face at 30-5/16"; toggle 2 top face at 60-5/8"; bottom plate UNDERSIDE at 91-5/8" (its top face then falls at ≈ 90-15/16"). The underside mark is the one that matters — it sets the 3/4" floor gap. Check it against the casters you actually bought: skin bottom to plate underside must equal caster height - 3/4".
9. Dry-fit the top plate in three strips. Every strip should seat in its notch with its wide face flush to the plate edge and its bevel flush with the next edge. Ease any tight notch with a file — a strip that has to be hammered in will split the ply.
10. Glue the three notches of the top plate, seat the strips, and drive two #8 × 1 1/2" screws through each strip's wide face into the plate edge (pre-drill 7/64"; aim for the middle of the plate's thickness so the screw cannot exit either face; heads flush or just below — the skin lies on that face). Check the strip ends are flush with the plate top.
11. Slide toggle 1 up the strips to its marks, glue and screw the same way; then toggle 2; then the bottom plate at its marks with the caster holes DOWN and the pivot hole in the middle. Sight down each strip — straight, no wind — before the glue grabs. Let it cure overnight before it goes upright.

C. Casters, skins, finish

12. Bolt the three casters to the underside of the bottom plate: 5/16" × 1 3/4" hex bolts, washer under the head, washer under the nut, NYLOCK nut, snug. Wheels tangent to the swing circle — sight from above: the axle of every wheel should point at the pivot hole.
13. Skins, one face at a time, in pinwheel order (Sheet 3). Spread glue liberally on the plate edges and the strip faces of that face. Lay the sheet on with its top edge flush with the top of the strips and one long edge *flush with the corner* where it lands on the bevel face; the other long edge runs 1/4" past the far corner. Staple 3/4" 16-ga into the strips 6" o.c. in a zig-zag and into every plate edge 4" o.c. (3/4" is Andy's length — 1" comes out the back of a 23/32" strip); on the bevel side drive the staples at an angle so they stay in the strip. The fasteners only hold the luan until the glue cures.
14. Go round to the next face: its flush edge tucks under the previous sheet's overhang. Three sheets, three corners, each sheet capping the one before it. Wipe glue squeeze-out; clamp any corner that does not sit with a caul and spring clamps.
15. Next day: each corner is a hair blunt of a sharp 60° arris — the lip's end face and a sliver of the next sheet show as a step about 1/8" wide (Sheet 3). Fill it with joint compound, sand to a straight line, then ease all three corners with 120 grit so a hand sliding down them does not catch. Nothing needs planing off. Prime.

On stage

D. Pivots and setting the units

16. Spike the four pivot centres from the ground plan (Sheet 5): on a line $13\frac{3}{4}$ " upstage of the wall-face line; P1/P2 and P3/P4 on 54" centres, 27'-0" P1 to P4. Find out what the deck is first — if it is ply or hardboard over sleepers, shift a spike an inch or two so the flange lands over a sleeper, or the lags are only holding in $\frac{3}{4}$ " of sheet. Lag a flange at each spike with $\frac{1}{4}$ " $\times$ $2\frac{1}{2}$ " lags (pre-drill $\frac{1}{8}$ "), thread a 6" nipple in tight, sand the pipe smooth. No grease — it is steel on wood.
17. Setting a unit on its pipe (three people): tilt it back a few degrees onto two casters so the hole rises off the floor, walk the base over the flange, line the hole up on the pipe, and let it down. Hands on the corners at waist height and one person steadying the top — never fingers under the skins (pinch hazard, as Andy says twice). It should drop on with about $3/64$ " all round and turn freely with one hand on a corner.
18. Rules for the crew: turn ONE unit at a time — a neighbour standing square on its pipe clears the swing by about $4-15/16$ ", but the two swing circles overlap by $1-15/16$ ". Turn from a corner at waist height; never push or lean on the top; never stand on the bottom plate. The base is a 22"-wide triangle under an 8' unit — the pipe stops a stumble, not a shove. A 25-lb sandbag laid on the bottom plate inside the upstage corner is cheap insurance. Nothing stored inside the swing circles. If a unit starts to bump or drag, stop — a screw or a chip is under a wheel; lift and clear it, don't force it.

Tools

Table saw (rips and the 30° bevels — the one tool Andy says makes the job "golden"); circular saw with a clamped straightedge (diagonals, notches); jigsaw (toggle openings, notch clean-up); drill/driver with $\frac{1}{8}$ ", $7/64$ " and $\frac{3}{8}$ " bits, a 1" spade or Forstner (toggle corners) and a $1\frac{1}{4}$ " hole saw or Forstner; framing square and speed square (60°/30° checks); chalk line; 25' tape; 4 bar clamps and a handful of spring clamps; the shop's 16-ga stapler with 1" staples; $\frac{1}{2}$ " and $7/16$ " sockets or wrenches ($5/16$ " bolts, $\frac{1}{4}$ " lags); block plane or sanding block; random-orbit sander; chisel and a flat file. Optional: router with a 45° chamfer bit for the pivot hole.

Time

Ripping and cutting six sheets: about 5 crew-hours. Notching 16 plates (48 corners): 3. Toggle openings: 3. Strip bevels: 1. Frame glue-ups: 6 (four units, four plates each). Casters: 1. Skins: 4. Filling, sanding, priming: 3. Roughly 26 crew-hours, or three after-school sessions with four to six students and one adult on the table saw, plus a session for paint prep — before the twelve faces are painted.

Safety notes the video makes

Circular saws only in trained hands. The $\frac{3}{4}$ " floor gap exists so fingers cannot be pinched under a turning unit; do not shrink it. Nylock every caster bolt — "anything that moves, anything above anyone's head, anything I'll never touch again gets a nylock." Never swivel casters: they steer against the pivot and try to walk the unit. Lowering onto the pipe is a pinch hazard; hands outside. Not in the video but true of any 8' unit on a 22"-wide base: it is pushed round from waist height, not the top.

Sources and the arithmetic

Sources

Method: Andy Campbell (Campbell TD), "The actual secret to making Periaktoi — free plans available", YouTube 0PWDdY6VdN4, 25:57, 2 Feb 2023 — transcript and plan sheets reviewed 15 Sep 2026. He will email his PDF plans: andy@campbellTD.com. Caster: Colson 2 Series 2.04208.445 rigid, Performa rubber, 300 lb, 5.13" mounting height, plate $3\frac{5}{8} \times 2\frac{11}{16}$, bolt pattern $1\frac{1}{4} \times 2\frac{13}{16}$ — $3\frac{1}{16}$, $5/16$ " bolts — casterspecialists.com product page, 15 Sep 2026 (\$12.89 on sale; \$23.98 list). Plywood and hardware prices: homedepot.com with the Seneca (Buffalo) store selected, 15 Sep 2026 — $23/32$ " Plytanium BC \$49.33; 5.2 mm Sandeply \$29.83 (actual 0.205"); Southland $1\frac{1}{4}$ " black floor flange \$13.14; STZ $1\frac{1}{4} \times 6$ " black nipple \$4.93. Fastener and consumable prices are typical big-box figures, unverified.

Arithmetic that matters

lip must reach the next sheet's outer corner: $t \times \cos 30^\circ = 0.205 \times 0.866 = 0.178"$ → any lip $\geq 0.18"$ works; chosen $\frac{1}{4}"$ → frame = $48 - 0.25 = 47\text{-}3/4"$
 a sharp 60° arris would need a lip of $t / \tan 30^\circ = 0.355"$; with $\frac{1}{4}"$ the corner is $0.105"$ blunt → compound
 plate height = $47.75 \times 0.866 = 41.35"$; $R = 47.75 / \sqrt{3} = 27.57"$; $r = R/2 = 13.78"$
 strip narrow face = $2.5 - 0.719 \times \tan 30^\circ = 2.085"$; bevel face = $0.719 / 0.866 = 0.830"$
 sheet: 2 strips (5.75") + plates (41.46" + kerf) = $47.34" \leq 48 \checkmark$; 3 plates across = $95.75" + 2 \text{ kerfs} = 96.00" \leq 96 \checkmark$
 bottom plate underside = $96 - (5.125 - 0.75) = 91.625"$; toggle gaps = $(90.19 - 2 \times 0.719) / 3 = 29.58"$
 caster centre $r = 22.00"$ → plate-corner clearance to edge = $0.5 \times (27.57 - 22.00 - 1.344) - 1.8125 \times 0.866 = 0.54"$ ($\geq 5/16 \checkmark$); max r for $5/16 = 22.46"$
 swing $\emptyset = 2 \times (27.57 + 2t) = 56.0"$; neighbour's nearest corner at $\sqrt{(29.9^2 + 13.8^2)} = 32.9"$ → clearance $5.0"$; window end at $\sqrt{(30^2 + 6.6^2)} = 30.7"$ → $2.7"$; circles overlap $55.96 - 54 = 1.96"$
 tipping: base inradius = $r \times \cos 60^\circ = 11.0"$; $\approx 125 \text{ lb}$ at $\sim 46"$ high → $\approx 15 \text{ lbf}$ at the top edge starts a tip (the pipe then takes it)