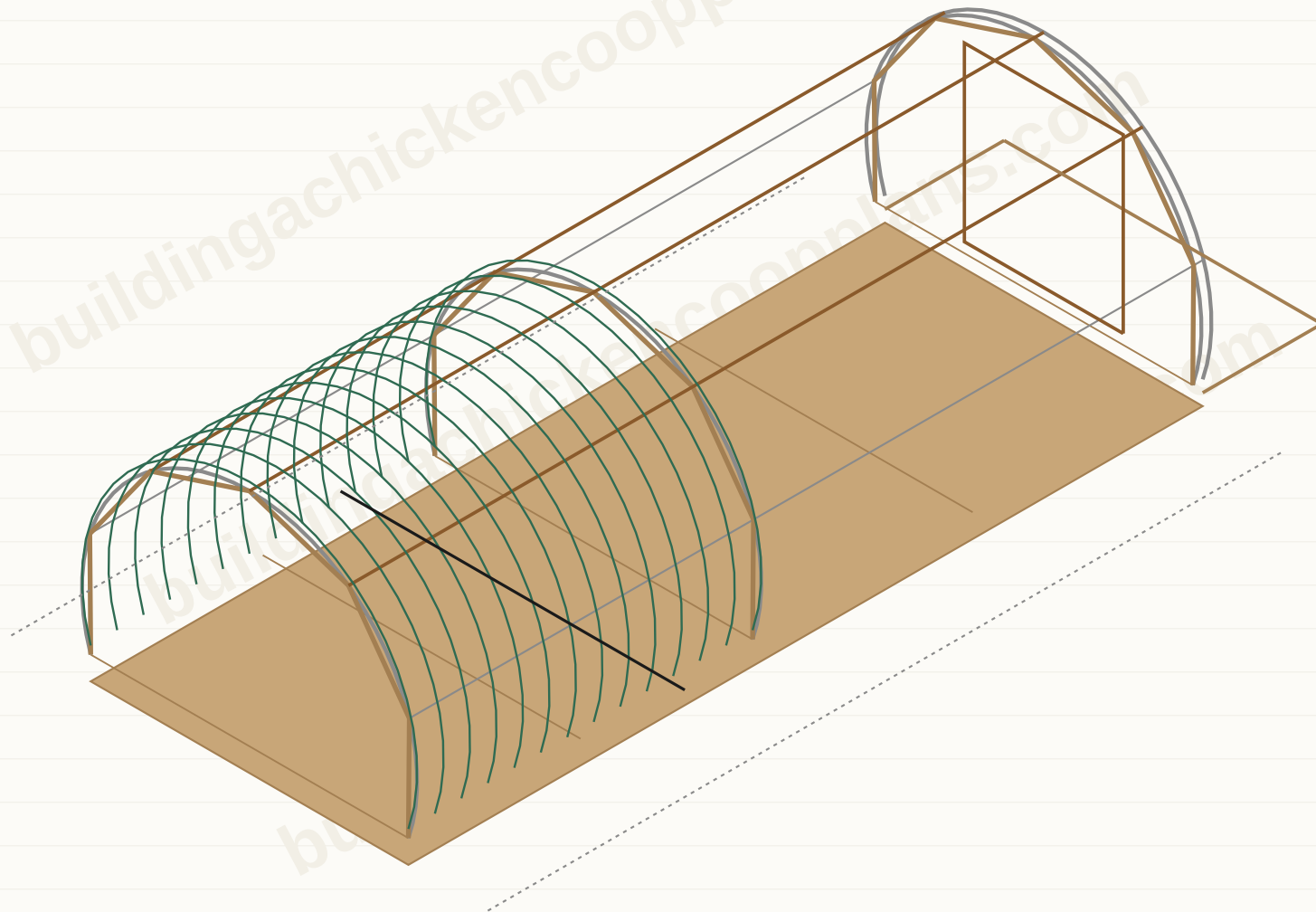


4X10 CATTLE-PANEL HOOP CHICKEN TRACTOR

14 sq ft coop · 20 sq ft run · 2-4 hens

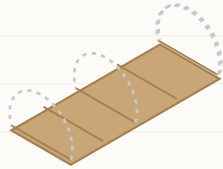


Revision 1.0 · July 2026 · corrections and updates: buildingachickencoopplans.com/errata
Check the revision before you cut. If yours is older than the one on that page, something in it has been corrected.

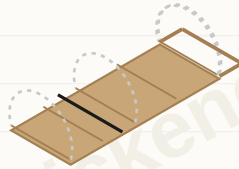
FINISHED

THE BUILD, STAGE BY STAGE

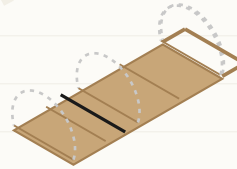
14 stages, in order. Solid is what you have built by the end of that step; the dotted outline is what is still to come. Check your work against the matching picture before you move on — it is much cheaper to notice a wall in the wrong place here than three steps later.



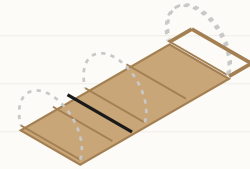
1. Base frame — two skids and two transoms



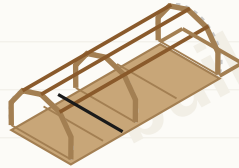
2. Wheels on flip-down arms, and arches



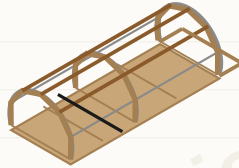
3. The arch — six straight sticks



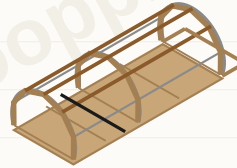
4. Setout — how to check the arch



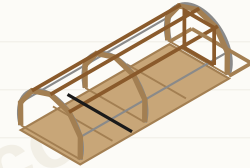
5. Stand the arches and run the transoms



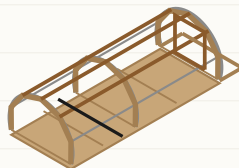
6. Bend the panels on and tie them



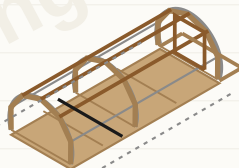
7. Sheathe both ends



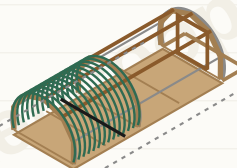
8. The door



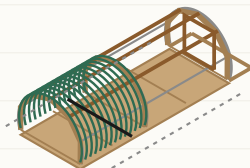
9. Hardware cloth — the part that is not the door



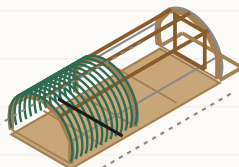
10. Anti-dig skirt — the tractor wheel



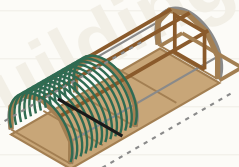
11. Tarp the closed end, leave the other end open



12. Nest bank at the closed end



13. Roost on the centreline



14. Stake it down before you wall it

CONTENTS

1	4x10 Cattle-Panel Hoop Chicken Tractor	33	Important — please read before building
2	The build, stage by stage	34	Important — please read (continued)
3	Contents	35	Plans complete
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28	Step 10: Anti-dig skirt — the tractor's answer to a buried a...		
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32	Step 14: Stake it down before you walk away		

35 pages. Read the whole set once before the first cut.

BEFORE YOU BEGIN

Wear safety gear

Safety glasses, gloves and ear protection. A circular saw and a framing nailer both throw debris.

Read the whole plan first

Understand every step and have the full material list on hand before the first cut.

Check your local rules

The number a building department measures is the BUILDING FOOTPRINT: 40 sq ft for the coop, or 60 sq ft if your jurisdiction counts the covered run. That is NOT the same as the capacity figure on the cover. Many jurisdictions require a permit past 100, 120 or 144 sq ft of footprint, and most require a setback from property lines. Confirm both before you buy lumber.

Work on a level base

Set the four posts plumb and the base ring level. Every error here compounds through the walls and the roof.

Use hardware cloth, never chicken wire

Chicken wire keeps chickens in. It does not keep raccoons, weasels or foxes out. Quarter-inch 19-gauge hardware cloth, stapled and then screwed through fender washers. Quarter-inch, not half: a least weasel gets through a half-inch opening and does not get through a quarter-inch one.

Cut one, test-fit, then batch

Cut a single instance of each part, fit it, confirm it against the drawing, and only then cut the rest.

TOOLS YOU WILL NEED

Nothing in this plan needs a table saw, a compound mitre saw, or pocket-hole joinery.

ESSENTIAL

Circular saw	Every cut in this plan. A sharp 24-tooth framing blade is enough.
Drill / driver	Two is better than one - one drilling pilot holes, one driving.
Tape measure	25 ft. Check it against a second tape before you start.
Speed square	Marking square cuts and the 45-degree rafter cuts.
4 ft level	The base ring and the first wall decide everything after them.
Hammer	Staples, adjustments, persuasion.
Tin snips	Cutting hardware cloth. Wear gloves - the cut edges are vicious.
Staple gun	Tacking hardware cloth before you screw the washers.
Safety glasses, gloves, ear protection	Non-negotiable with a circular saw.

MAKES IT MUCH EASIER

Mitre saw	The repetitive stud and rafter cuts go 3x faster and squarer.
Impact driver	Driving several hundred screws by drill is punishing.
Sawhorses (pair)	Cutting on the ground is slow and inaccurate.
Clamps (4+)	Holding a wall square while you fasten it.
Chalk line	Siding courses and deck fastening lines.
Carpenter's pencil + marking knife	A pencil line is 1/32 wide; that adds up.

ONLY IF YOU ARE DOING THE OPTIONAL EXTRAS

Angle grinder / metal blade	Trimming corrugated roof panels to length.
Post-hole digger	Only if you set the posts in the ground rather than on pier blocks.

NOTES ON LUMBER DIMENSIONS

Nominal vs actual

The material list uses nominal sizes (2x4, 4x4). The drawings use actual finished sizes: a 2x4 really measures 1-1/2" x 3-1/2", and a 4x4 measures 3-1/2" x 3-1/2".

Measure your own stock

Mills vary. Check the lumber you actually bought against the drawings before cutting; a sixteenth of an inch compounds fast across an 8-foot wall.

Buy a little extra

The material list has no waste allowance. Add two or three 2x4s if you are new to framing.

Crown matters

Sight down every joist and rafter and mark the crown. Install them all crown-up.

MATERIAL LIST

Material	Size	Quantity	Find it
1x2 lumber	12 feet	4 pcs	search Home Depot ■
1x2 lumber	8 feet	3 pcs	search Home Depot ■
1x3 lumber (purlins)	12 feet	3 pcs	
2x2 lumber	8 feet	2 pcs	search Home Depot ■
2x4 lumber	12 feet	2 pcs	search Home Depot ■
2x4 lumber	8 feet	7 pcs	search Home Depot ■
Cattle panel, 10-line galvanised	192" x 50"	2 pcs (cut each in half	
1/2" plywood, exterior grade (end panels, door, guss	4' x 8'	1 pcs (~12 sq ft of par	search Home Depot ■
1/2" hardware cloth, 19 ga	36" roll	25 ft + 25 ft (39 ft ne	search Home Depot ■
Fender washers + screws for cloth	1" washer	156 pcs	search Home Depot ■
Fence staples, galvanised	1-1/2"	53 pcs (1 lb box)	search Home Depot ■
Hog rings + pliers, panel lap joints	—	24 rings	
Galvanised tie wire	14 ga, 25 ft	1 roll	
Tarp, heavy duty with reinforced hem	96" x 52" min	1 pc (35 sq ft over the	
Lawnmower wheels, sealed bearing	8" dia, 1/2in bore	2 pcs	
Arm pivot bolts + nyloc nuts	3/8" x 4"	2 + 2	
Drop pins on lanyards (arms up / arms down)	5/16" x 3"	2 pcs	
Steel axle rod	1/2" x 54"	1 pc	
Axle washers + cotter pins	1/2in	4 + 4	
Angle brackets, arch feet	3" galvanised	6 pcs	
Steel stakes + strap plates, one per corner	18" U-stake	4 + 4 (ATTRA: staking i	
2-1/2" exterior screws	5 lb box	1 boxes	search Home Depot ■
1-1/4" exterior screws	5 lb box	1 box	search Home Depot ■
1/4" x 3-1/2" lag screws (handles)	—	8 pcs	

MATERIAL LIST (CONTINUED)

Material	Size	Quantity	Find it
Exterior primer + paint	1 qt each	1 + 1	search Home Depot ■
Hinges	—	4 (2 openable parts)	search Home Depot ■
Barrel bolts, door top and bottom	4"	2 pcs	

Estimated materials cost at 2026 big-box prices: \$1,000-\$1,300. This is priced off THIS list — every line above, including piers, gravel, run surface, fasteners, caulk and paint. Every line links to a Home Depot SEARCH, not to a product page — item numbers change and a dead link is worse than none, but the search terms keep working. Two specs are worth knowing about before you go: 1/4in hardware cloth is widely stocked in 23 gauge and you want 19, which is usually a special order or online; and corrugated panels are sold 26in wide (24in of coverage) in even foot lengths, not in 4x8 sheets.

MASTER CUT LIST

Every cut in the build, grouped by stock. Take this to the saw. The board-count buy list follows it.

1/2" PLYWOOD

Part	Step	Qty	Length	Note
Arch gusset	3	15	7" x 9"	
End sheathing, closed end	7	1	48" x 33-3/8", cut to the arch	
End sheathing, door end	7	1	48" x 33-3/8", door opening cut out	
Door slab	8	1	23-1/2" x 25-1/2"	
Nest bank floor	12	1	24-1/2" x 13"	
Nest bank back	12	1	24-1/2" x 15-1/2"	
Nest divider	12	1	12" x 13"	
Nest end	12	2	13" x 15-1/2"	
Nest lid	12	1	26" x 14"	
Nest litter lip	12	1	24-1/2" x 4"	
Roost hanger	13	2	6" x 8"	gusset, screwed to the arch crown

1X2

Part	Step	Qty	Length	Note
Cloth batten	9	4	120"	traps the cloth on the skid
Tarp batten	11	2	52"	screwed over the tarp edge
Door stop	7	2	26"	inside the opening
Door head stop	7	1	24"	
Door ledge	8	2	23-1/2"	top and bottom
Door brace	8	1	34-11/16" , cut to fit corner to corner	

2X4

Part	Step	Qty	Length	Note
Skid	1	2	120"	on edge, full length, crown up
Base rung	1	5	45"	on edge, between the skids, flush at the top
Lift handle	2	2	42"	lagged to the skid, 4 lags each
Arch segment	3	18	15-3/4"	18.1 deg BOTH ends, cuts CONVERGING; 15-3/4" long po
Wheel arm	2	2	14"	pivot bolt one end, 1/2in axle hole the other
Arm pivot block	2	2	6"	outside the skid

2X2

Part	Step	Qty	Length	Note
Roost bar	13	1	46-1/2"	top two corners eased, centreline of the hoop
Grip bar	2	1	45"	between the handle ends

MASTER CUT LIST (CONTINUED)

2X2 (CONTINUED)

Part	Step	Qty	Length	Note
Roost prop	13	1	20"	mid-span, down to the base rung
Nest leg	12	2	3"	keeps the floor off the grass

HARDWARE CLOTH

Part	Step	Qty	Length	Note
Hoop cloth course	9	3	36" x 120"	
End cloth	9	2	48" x 33-3/8", cut to the arch	
Skirt cloth	10	2	12" x 120"	
Skirt cloth, ends	10	2	12" x 48"	

1X3

Part	Step	Qty	Length	Note
Ridge purlin	5	1	120"	on the crown joint, full length
Side purlin	5	2	120"	one each side, on a chord joint

ANGLE BRACKET

Part	Step	Qty	Length	Note
Arch foot bracket	3	6	3"	

CATTLE PANEL

Part	Step	Qty	Length	Note
Cattle panel half	6	3	50" x 96" arc	

FENCE STAPLES

Part	Step	Qty	Length	Note
Fence staple	6	1	53 ct, 1-1/2"	

STEEL

Part	Step	Qty	Length	Note
Axle rod	2	1	1/2" x 54"	

MASTER CUT LIST (CONTINUED)

STEEL STAKE

Part	Step	Qty	Length	Note
Stake	14	4	18"	through the skid, one per corner

STRAP

Part	Step	Qty	Length	Note
Stake plate	14	4	2" x 6" galv.	

TARP

Part	Step	Qty	Length	Note
Tarp / roll roofing	11	1	96" x 52"	

TIE WIRE

Part	Step	Qty	Length	Note
Panel tie wire	6	1	14 ga, 25 ft	

41 part lines in total — if your copy shows fewer, a page is missing.

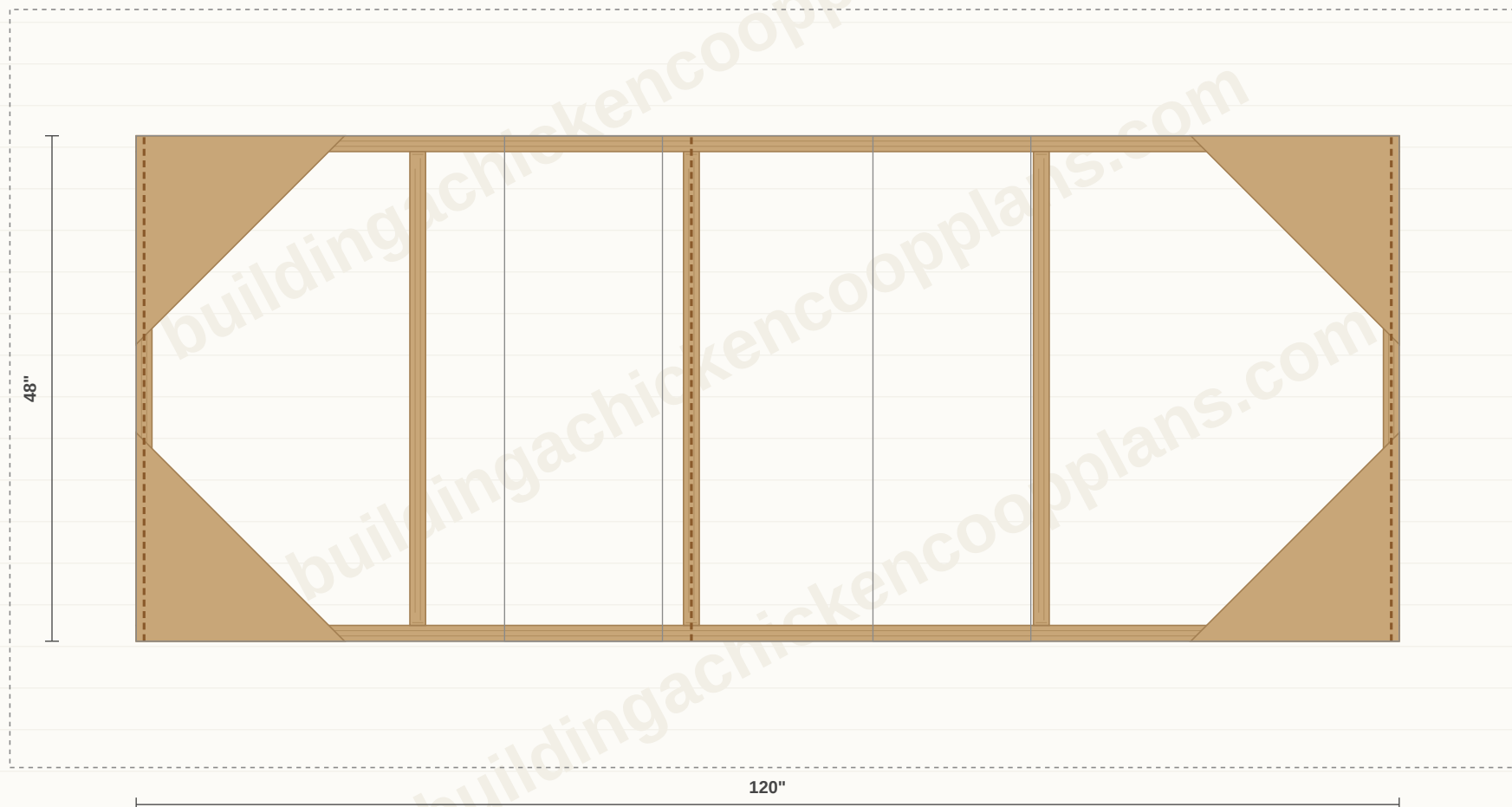
WHAT TO BUY - BOARD COUNT

These counts come from actually packing the cut list onto real stock, allowing 1/8 inch per saw kerf and 4 inches of margin on any cut over 8 feet. **The material list on page 7 is generated from this same packing**, so the two pages cannot disagree — they used to, by sixteen boards on the 2x4 line and by a three-board shortfall on the 4x4.

Stock	Buy this length	How many	Longest cut on it	Note
1x2	12 ft	4	120"	cut from full-length stock
1x2	8 ft	3	52"	general framing
1x3	12 ft	3	120"	cut from full-length stock
2x2	8 ft	2	46-1/2"	general framing
2x4	12 ft	2	120"	cut from full-length stock
2x4	8 ft	7	45"	general framing

Buy two or three extra 2x4s beyond this count if you are new to framing — one bad cut costs less than a second trip to the yard. Sheet goods, mesh, fasteners and hardware are all on the material list and already carry their allowances.

MAIN DIMENSIONS: PLAN VIEW

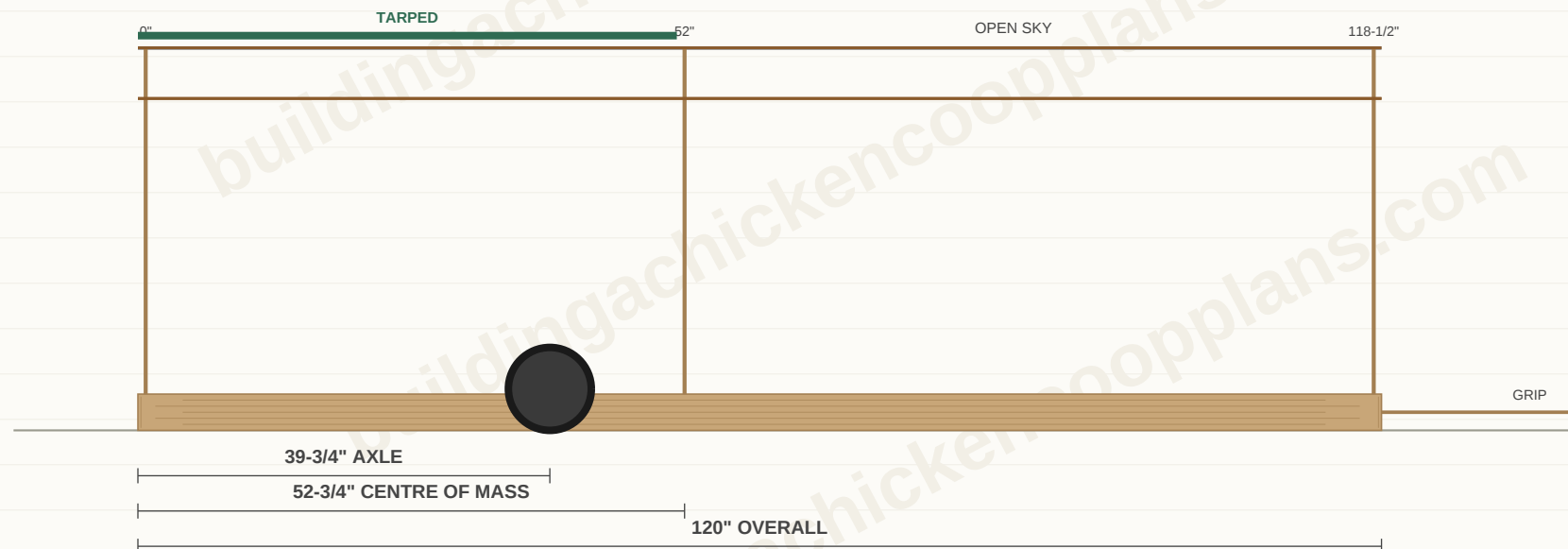


120" x 48" over the skids. Closed section 52", open run 65".

3 panel halves, 50" each, lapped 15". Dashed line = a wooden arch.

Skirt 12" all round, lying flat on the grass.

MAIN DIMENSIONS: SIDE ELEVATION

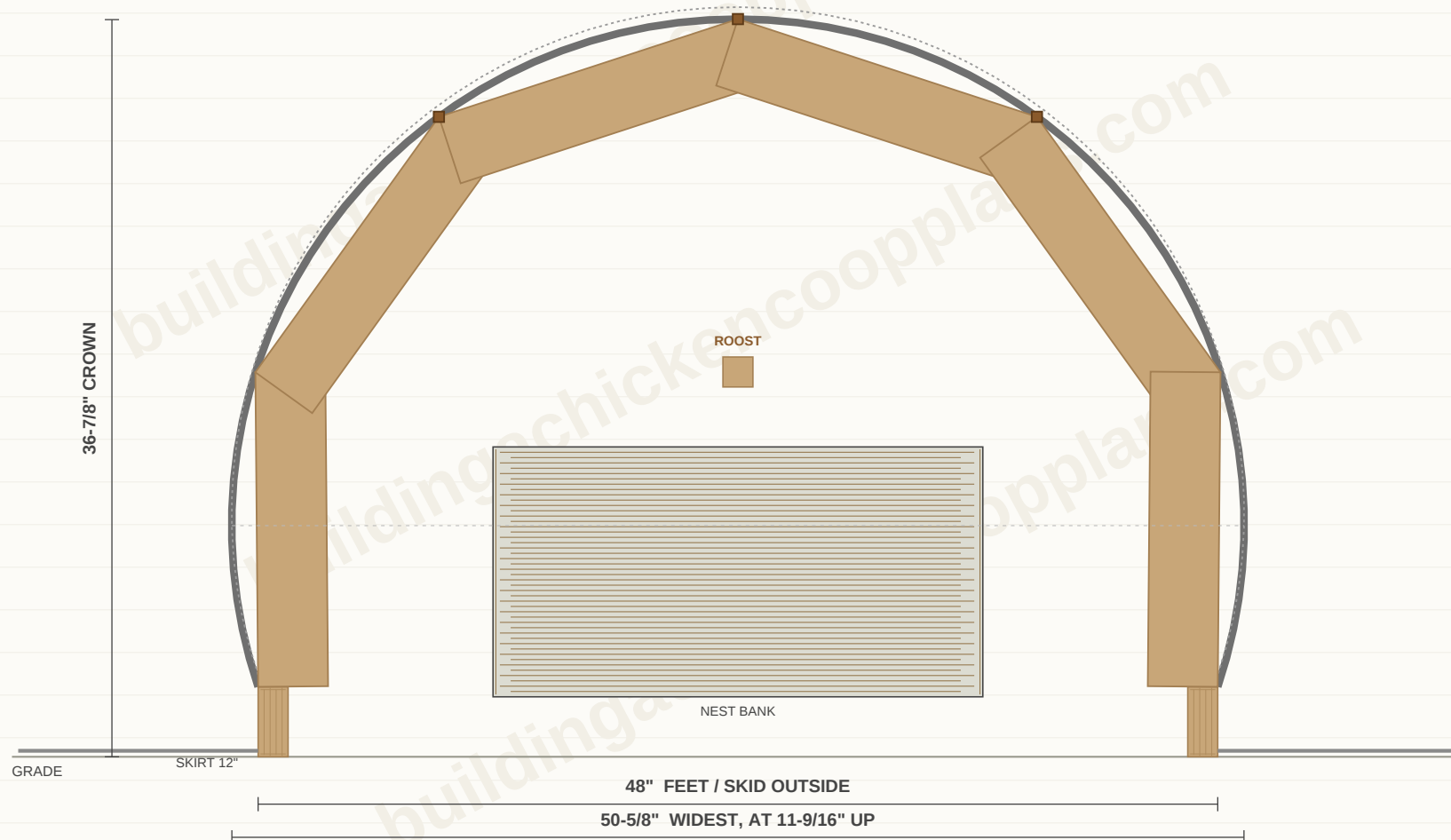


Crown 36-7/8" above grass, flat the whole length — a hoop has no ridge slope and no gable.

Arches at 0", 52", 118-1/2".

Estimated 310 lb; about 41 lb at the grip.

MAIN DIMENSIONS: CROSS SECTION



Chord 48" at the feet, 50-5/8" at the belly 11-9/16" up. Measure your gate.

Crown 36-7/8"; roost 20" with 16-7/8" over the bird.

No floor and no joists. The birds stand on grass; that is the archetype.

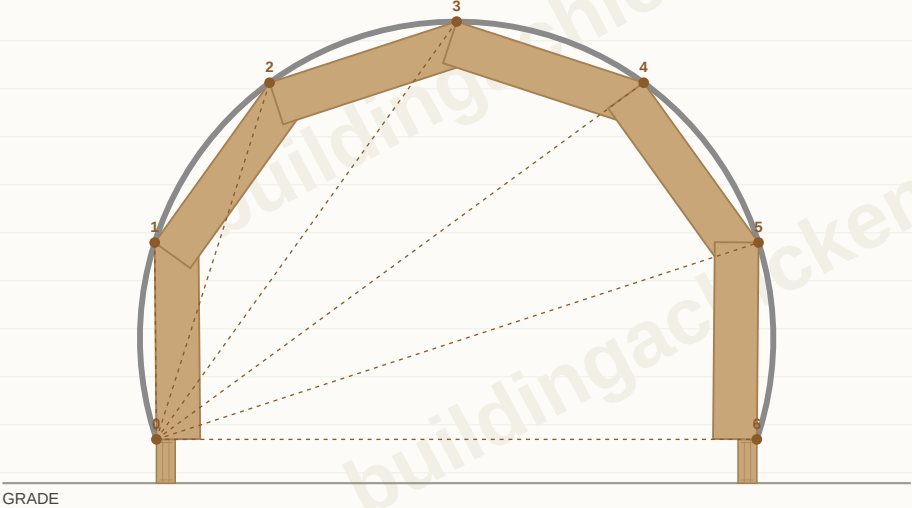
ARCH SETOUT AND PURLIN LINES

SETOUT — EVERY NUMBER IS A STRAIGHT TAPE PULL

STN	STAY	ALONG PANEL	X FROM SKID	HEIGHT	CHORD FROM FOOT
0	0	0"	0"	0"	0"
1	2	16"	-1/8"	15-3/4"	15-3/4"
2	4	32"	9-1/16"	28-1/2"	29-15/16"
3	6	48"	24"	33-3/8"	41-1/8"
4	8	64"	38-15/16"	28-1/2"	48-1/4"
5	10	80"	48-1/8"	15-3/4"	50-5/8"
6	12	96"	48"	0"	48"

WHY THE PANEL IS LONGER THAN THE FRAME

6 chords x 15-3/4" = 94-1/2" of straight 2x4.
The panel over them is 96" of arc — longer by 1-1/2".
So the panel stands 1-1/4" off the middle of every segment.
Tie it at the JOINTS. Tie it mid-segment and you pull a flat spot into the hoop.
Height above grass at the crown 36-7/8"; at 12in in from a skid 33-7/8".



DASHED = CHORD FROM THE LEFT FOOT, ONE TAPE PULL EACH

WHAT THE WORDS MEAN

Every term this plan uses that is not ordinary English. If a step says something you do not recognise, it is on this page — you should not have to leave the document to understand it.

Bird's mouth

The notch cut in the underside of a rafter so it sits flat on the wall plate instead of on one corner. Two cuts: a flat SEAT that lands on the plate, and a vertical HEEL against its outside face.

Cap plate

The third plate, laid over the top plate. It is there to LAP the corner and tie the four walls into one ring — not for extra strength.

Cripple

A short stud filling the gap above a header or below a window sill. Same spacing as the common studs it lines up with.

Crown

The natural bow along a board's edge. Sight down it, mark the high side, and install every piece with the crown the same way.

Eave

The lower edge of a roof, where it meets the wall. On a shed roof one long wall is the LOW eave and the other is the HIGH eave.

Header

The beam over a door or window that carries the load the missing studs would have carried. Doubled, with a 1/2in plywood spacer to make it 3-1/2in thick.

Jack stud (trimmer)

The short stud under each end of a header. It is what actually holds the header up, and it defines the width of the opening.

Kerf

The width of material a saw blade removes — about 1/8in. It matters when you cut several pieces from one board.

King stud

The full-height stud beside each jack, running plate to plate. It stops the opening racking.

Lap

Where one piece runs past another and they overlap, rather than meeting end to end.

On centre (OC)

Spacing measured from the CENTRE of one stud to the centre of the next, not the gap between them. 16in OC means centres 16in apart.

Pier block

A precast concrete block the posts stand on, so no wood touches soil. Set on 6in of compacted gravel.

Plumb / level / square

Plumb is vertical, level is horizontal, square is a true 90 degrees. Check square by measuring both diagonals of a rectangle — equal diagonals means square.

Proud

Standing out past the surface beside it, deliberately, to be trimmed later.

Rake

The sloping top edge of a wall that follows the roof. RAKE STUDS are the short studs that fill the triangle; the RAKE PLATE caps them.

Rough opening (R.O.)

The framed hole, measured between the jack studs and from the sill to the underside of the header. Always bigger than the door or window that goes in it.

Scribe

To mark a piece by holding it in place and tracing the thing it must fit, rather than measuring.

Toe-screw

To drive a screw at an angle through the end of one piece into the face of another, where you cannot get at it straight on.

CUT PLAN — WHAT TO CUT FROM EACH BOARD

Label every board as you pick it up, then cut it in the order shown. This is the same packing the buy list is counted from, so if you follow it you will not run out and you will not be left holding offcuts you needed. Waste is what is left after the last cut on that board.

1x2 8ft #1	52"	26"			17-3/4" left
1x2 8ft #2	52"	26"			17-3/4" left
1x2 8ft #3	24"	23-1/2"	23-1/2"		24-5/8" left
2x2 8ft #1	46-1/2"	45"	3"		1-1/8" left
2x2 8ft #2	20"	3"			72-3/4" left
2x4 8ft #1	45"	45"			5-3/4" left
2x4 8ft #2	45"	45"			5-3/4" left
2x4 8ft #3	45"	42"	6"		2-5/8" left
2x4 8ft #4	42"	15-3/4"	15-3/4"	15-3/4"	15-3/4" 1/8" left
2x4 8ft #5	15-3/4"	15-3/4"	15-3/4"	15-3/4"	15-3/4" 1/8" left
2x4 8ft #6	15-3/4"	15-3/4"	15-3/4"	15-3/4"	15-3/4" 1/8" left
2x4 8ft #7	15-3/4"	15-3/4"	15-3/4"	15-3/4"	15-3/4" 1/8" left

STEP 1: BASE FRAME — TWO SKIDS AND THE RUNGS

The base is the foundation, the tie that stops the hoop from spreading, and the thing you drag. There are no piers and no floor: the birds stand on grass, which is the entire point.

Cut two **skids** 120" long and stand them on edge 48" apart, measured OUTSIDE to OUTSIDE. That 48" is the chord of every arch in this plan, so it is the one dimension that has to be right. Cut 5 **rungs** 45" long and screw them between the skids, on edge, flush with the skid tops — one under each wooden arch at 0", 52", 118-1/2" from the closed end, and the rest mid-bay so the skids cannot spring.

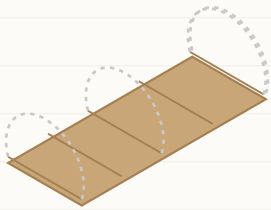
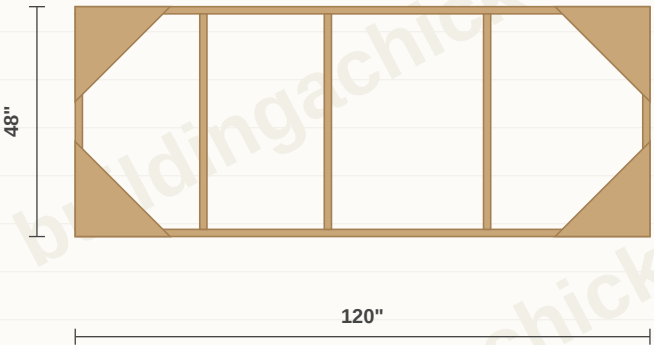
Run the skids **crown up** . They drag on wet grass for years and a cupped skid holds water in the hollow and rots from the top face down.

Part	Qty	Length	Stock	Note
Skid	2	120"	2x4	on edge, full length, crown up
Base rung	5	45"	2x4	on edge, between the skids, flush at the top

STOP AND MEASURE BEFORE THE NEXT STEP

Diagonal to diagonal across the finished base, corner to corner

equal within 1/8in



AFTER STEP 1

WATCH OUT

! Every arch, every panel mark and the door are cut to the 48" the base actually ends up, not the 48" on the paper. Square it now.

Skids on edge, 48" OUTSIDE to OUTSIDE — this is the chord of every arch in the plan.

Rungs under each arch at 0", 52", 118-1/2", plus mid-bay.

Corner braces 28", 45 degrees both ends. They stiffen the base against the panel's spring and they are what the tow rope ties to.

STEP 2: WHEELS ON FLIP-DOWN ARMS, AND THE LIFT HANDLE

The wheels go on before anything heavy does.

Each wheel hangs off a **wheel arm** 14" long, bolted through a **pivot block** on the outside of the skid. Flip the arms DOWN and pin them and the closed end rises onto the wheels; flip them UP and pin them and it settles back onto both skids with the tyres 3/4" clear of the grass.

That is worth two extra parts. Wheels bolted permanently below the skids hold one end off the ground all night — a gap 48" wide under the end the birds sleep in, which is an invitation. Wheels bolted level with the skids never touch the ground at all: lift one end of a rigid frame and it pivots about the other end, so a wheel in the middle only rises.

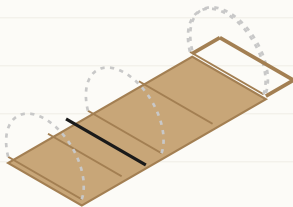
Set the arms so the wheels touch down 39-3/4" from the closed end. The finished centre of mass works out at 52-3/4" and the wheels have to land AHEAD of it. At the far end, lag a **handle** 42" long to the outside of each skid, projecting 18" past it, and join the two with a **grip bar** .

Part	Qty	Length	Stock	Note
Wheel arm	2	14"	2x4	pivot bolt one end, 1/2in axle hole the other
Arm pivot block	2	6"	2x4	outside the skid
Lift handle	2	42"	2x4	lagged to the skid, 4 lags each
Grip bar	1	45"	2x2	between the handle ends
Axle rod	1	1/2" x 54"	Steel	

STOP AND MEASURE BEFORE THE NEXT STEP

Underside of both wheels to the ground, arms UP, sitting on the skids

3/4"



AFTER STEP 2

WATCH OUT

!

Estimated finished weight off the bill of materials is 310 lb, and with the wheels here the lift at the grip bar is about 41 lb.

!

About 66 lb of that is steel panel. This is a heavier machine than a plywood A-frame of the same footprint and it is stiffer for the same reason.

STEP 3: THE ARCH — SIX STRAIGHT STICKS, NO CURVE

This is the step the whole plan is built around, so read it before you cut.

You cannot measure an arc with a tape and you cannot cut a curve in a 2x4. So the wooden arches are not curved. Each one is 6 straight **arch segments** that sit on the arch as chords — a 6-sided piece of a polygon that the bent panel lies across.

Every segment is the same part, and that is not a coincidence: equal steps around a circle subtend equal chords. Cut 18 of them, **15-3/4" on the LONG point** , with **both ends at 18.1 degrees off square** and the two cuts **CONVERGING** — the piece is a shallow trapezoid, not a parallelogram. The short point measures 13-7/16". Set the saw once.

Lay the first arch out flat on the ground, on the setout drawn on the next page. Butt the segments long-point to long-point and screw an **arch gusset** across every joint on one face — 5 per arch. The gussets are the joint; butted end grain carries nothing.

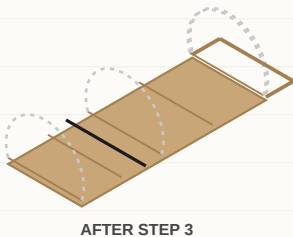
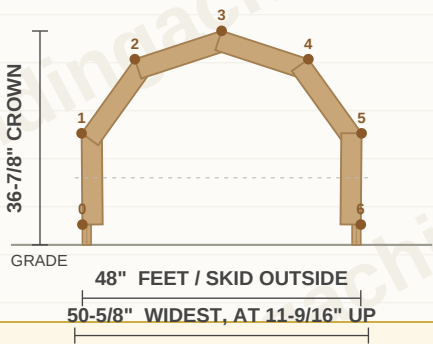
The frame turns 36.2 degrees at each joint and sweeps 217 degrees in total, which is why a finished arch is 50-5/8" across its belly and only 48" across its feet.

Part	Qty	Length	Stock	Note
Arch segment	18	15-3/4"	2x4	18.1 deg BOTH ends, cuts CONVERGING; 15-3/4" long...
Arch gusset	15	7" x 9"	1/2" plywood	
Arch foot bracket	6	3"	Angle bracket	

STOP AND MEASURE BEFORE THE NEXT STEP

Foot to foot across a finished arch, outside to outside

48"



WATCH OUT

! Both ends at 18.1 degrees CONVERGING. Mirror the cuts instead and the six pieces close into a flat hexagon on the floor rather than standing up.

! If an arch measures short across the feet, the miters are not meeting. Do not pull it to width with the gussets — it springs back and pushes the skids apart for the life of the coop.

6 identical segments, 15-3/4" long point / 13-7/16" short point, both ends 18.1 deg CONVERGING.

Frame turns 36.2 deg per joint, 217 deg in total.

Gusset every joint — 5 per arch, 3 arches.

STEP 4: SETOUT — HOW TO CHECK THE ARCH WITHOUT MEASURING A CURVE

Before the arches leave the ground, check them against the table on this page.

Every number in it is a **straight tape pull** . The arch is sampled at 7 stations; for each one the table gives the offset from the outside of the left skid, the height above the skid top, and — the useful one — the **chord** , which is the direct hook-to-station distance from the left foot. Hook the tape on the left foot, pull it to a joint, and read one number.

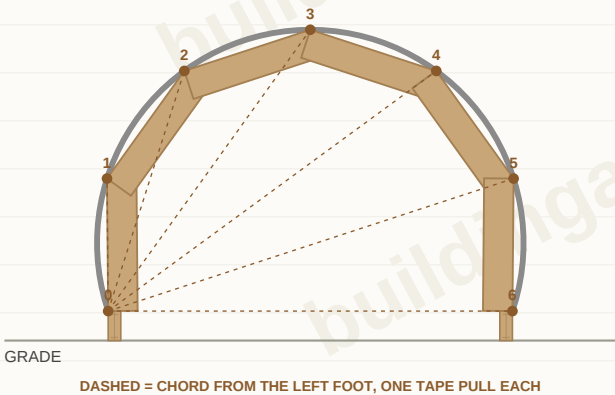
The same stations mark the **panel** . A cattle panel has a welded stay every 8" along its 192" length, so the stations are whole wires: count 2 stays per station and tie the panel to the arch there. You never measure the curve. You count wires.

One number in the table is deliberately not tidy. The six chords add up to 94-1/2", but the panel lying over them is 96" long — the arc is **1-1/2" longer** than the frame under it. That is the sagitta, it is supposed to be there, and it is why the panel stands 1-1/4" off the middle of each straight segment. Tie the panel at the **JOINTS**, never in the middle of a segment, or you will pull a flat spot into it.

STOP AND MEASURE BEFORE THE NEXT STEP

Left foot to the crown joint, straight line, on a finished arch

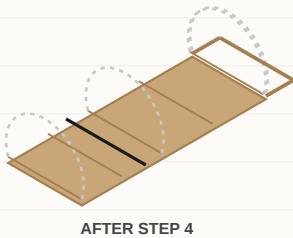
41-1/8"



SETOUT — EVERY NUMBER IS A STRAIGHT TAPE PULL

STN	STAY	ALONG PANEL	X FROM SKID	HEIGHT	CHORD FROM FOOT
0	0	0"	0"	0"	0"
1	2	16"	-1/8"	15-3/4"	15-3/4"
2	4	32"	9-1/16"	28-1/2"	29-15/16"
3	6	48"	24"	33-3/8"	41-1/8"
4	8	64"	38-15/16"	28-1/2"	48-1/4"
5	10	80"	48-1/8"	15-3/4"	50-5/8"
6	12	96"	48"	0"	48"

WHY THE PANEL IS LONGER THAN THE FRAME
6 chords x 15-3/4" = 94-1/2" of straight 2x4.
The panel over them is 96" of arc — longer by 1-1/2".
So the panel stands 1-1/4" off the middle of every segment.
Tie it at the **JOINTS**. Tie it mid-segment and you pull a flat spot into the hoop.
Height above grass at the crown 36-7/8"; at 12in in from a skid 33-7/8".



WATCH OUT

! Check one arch against every row of the table, then use that arch as the pattern for the other two. Do not check all three against the paper — check two against the first one.

STEP 5: STAND THE ARCHES AND RUN THE PURLINS

Stand the 3 arches on their rungs, feet flush with the outside of the skids, and fix each foot with an **arch foot bracket** plus one screw skewed through the bevel. Brace them upright as you go.

They go at 0", 52", 118-1/2" from the closed end: the closed end, the coop/run partition, and the door end. There are no arches in between and there do not need to be — see the note below.

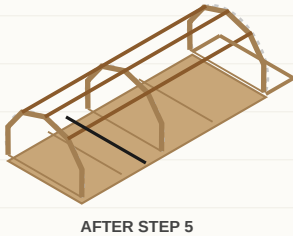
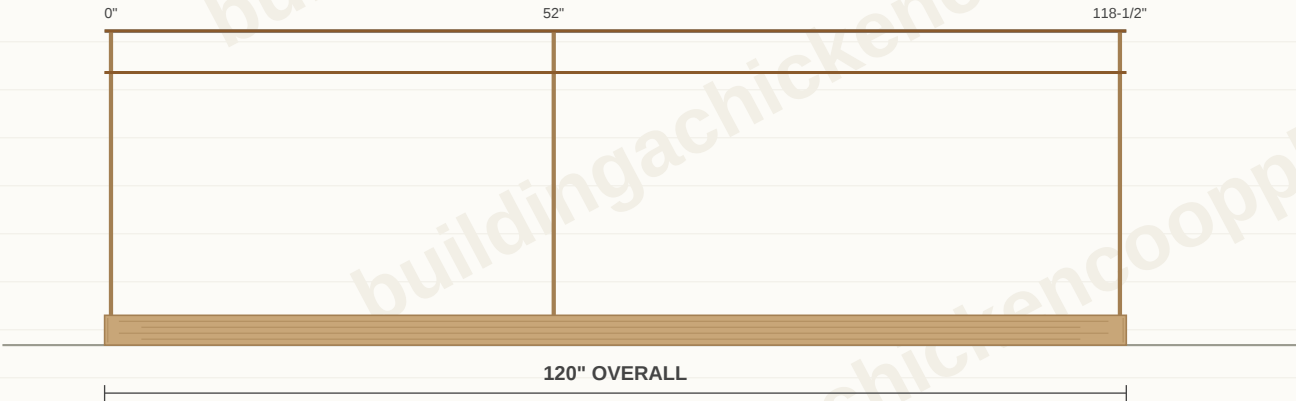
Then run the **ridge purlin** and two **side purlins** the full 120", screwed to the OUTSIDE face of the arches at the chord joints. On the joints, not mid-segment: mid-segment there is a 1-1/4" gap between the frame and where the panel wants to sit, and a purlin there bears on nothing.

Part	Qty	Length	Stock	Note
Ridge purlin	1	120"	1x3	on the crown joint, full length
Side purlin	2	120"	1x3	one each side, on a chord joint

STOP AND MEASURE BEFORE THE NEXT STEP

Crown of the closed-end arch to the crown of the door-end arch, along the ridge purlin

120"



WATCH OUT

!

Why only 3 arches over 120", when the A-frame in this same set puts a rib every 24"? Because there the rib is the only thing holding the skin up. Here the skin is a welded steel arch in compression that holds itself up, and the wooden arches are there to close the two ends and to carry the partition. The three purlins are what stop the panel racking along its length.

!

Sight down the ridge before the purlins go on. After they are screwed down, whatever lean the arches had is permanent.

3 wooden arches only: closed end, partition, door end.

Three purlins full length at chord joints — ridge plus one each side.

Purlins land ON joints. Mid-segment there is a 1-1/4" gap and nothing to bear on.

STEP 6: BEND THE PANELS ON AND TIE THEM OFF

Two 16-ft cattle panels, cut in half, make the 3 hoops this tractor needs with **no offcut** — that is why the arc is 96" and not something rounder.

Read this before you buy: a **whole** 16-ft panel will not do this job. Bent so its feet land 48" apart it sweeps 284 degrees and balloons to 77-9/16" across its belly — half a metre wider than the frame it is supposed to sit on. Cut in half it sweeps 217 degrees, which is the hoop drawn in this plan.

Cut each panel at the middle stay with bolt cutters and leave the stub wires long; they become the tie points. Stand a half panel on the base with one edge against the closed-end arch, walk the two feet apart until they land on the outside faces of the skids, and staple. It takes two people and it fights back — the panel is a spring until both feet are down.

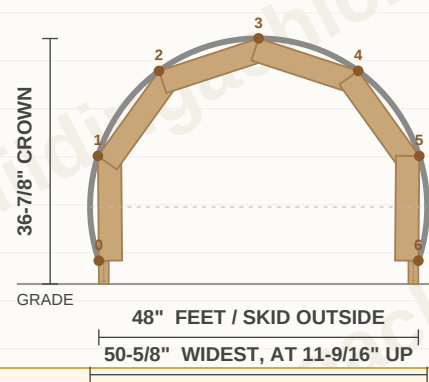
Fasten a **fence staple** at every stay along both skids, and wire the panel to every chord joint on every arch. Lap the next piece 15" over the first and wire the lap together at every crossing. The lap is the stiffest part of the whole hoop; do not trim it out to save an inch.

Part	Qty	Length	Stock	Note
Cattle panel half	3	50" x 96" arc	Cattle panel	
Fence staple	1	53 ct, 1-1/2"	Fence staples	
Panel tie wire	1	14 ga, 25 ft	Tie wire	

STOP AND MEASURE BEFORE THE NEXT STEP

Outside of skid to outside of skid at the belly of the hoop, 8-1/16" up

50-5/8"



WATCH OUT

! The hoop is 50-5/8" wide at 8-1/16" above the skid and 48" at the feet. Measure your gate before you build it.

! Bolt cutters, not an angle grinder. A grinder burns the galvanising off both sides of every cut and those are the wires that sit in wet grass.

3 half-panels (2 whole panels cut at the middle stay), lapped 15" and hog-ringed through the lap.

A WHOLE 16-ft panel on this 48" base would balloon to 6 ft 5 in across. That is why it is cut.

Fence staple at every stay along both skids; wire to every chord joint.

STEP 7: SHEATHE BOTH ENDS

Both ends get 1/2" plywood cut to the arch — a 6-sided shape, not a curve, so it scribes off the frame you already built. Lay the sheet against a standing arch, trace the segments, cut on the lines.

The **closed end** is solid. That is the end the nests and the roost live in and it is the end the weather comes from; park the tractor with it into the wind.

The **door end** gets the same sheet with a 24" x 26" opening cut out of it, centred. Check the corners, not the middle: the opening is a rectangle and the hoop over it is round, so the top corners are the tight spot at 33-7/8" above the grass with 36-7/8" available at the crown.

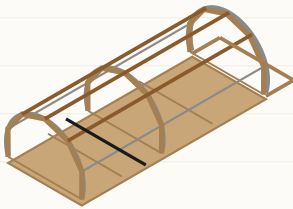
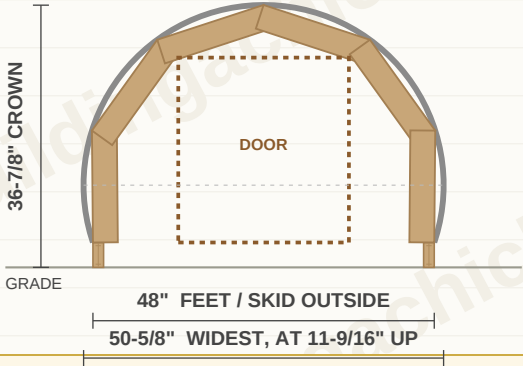
Screw **door stops** round the inside of the opening for the door to close against.

Part	Qty	Length	Stock	Note
End sheathing, closed end	1	48" x 33-3/8", cut to the arch	1/2" plywood	
End sheathing, door end	1	48" x 33-3/8", door opening 24" x 26"	1/2" plywood	
Door stop	2	26"	1x2	inside the opening
Door head stop	1	24"	1x2	

STOP AND MEASURE BEFORE THE NEXT STEP

Top corner of the door opening to the grass, both corners

29-1/2"



WATCH OUT

! Scribe both ends off the same arch and cut them as a pair, taped together. Three arches built to the same setout are still three arches; the sheets will not swap.

Both ends scribed off a standing arch — a 6-sided shape, not a curve.

Door opening 24" x 26", centred. Top corners clear at 33-7/8"; the crown is 36-7/8".

Closed end solid. Park it into the wind.

STEP 8: THE DOOR

Every opening in this plan gets something that closes it, and this is the big one.

The **door slab** is 23-1/2" x 25-1/2" — a quarter inch of gap all round, which is the difference between a door and a door that binds the first wet week. Two **ledges** across the back and one diagonal **brace** running from the bottom hinge corner UP to the top latch corner. That direction, not the other one: the brace works in compression and a brace running the wrong way just hangs there while the door sags.

Hinge it on the left, two 3in strap hinges through the door stop into the arch segment behind it. Latch it with a **barrel bolt top and bottom** , not one in the middle. A raccoon opens a single centre latch; two bolts at opposite ends of a door need two hands and an opposable thumb.

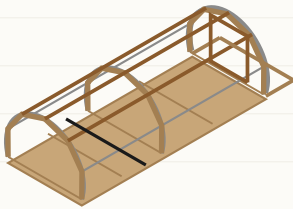
It swings **OUT**. A door swinging in sweeps the ground the birds are standing on, and in a hoop the wall it would swing against is curved.

Part	Qty	Length	Stock	Note
Door slab	1	23-1/2" x 25-1/2"	1/2" plywood	
Door ledge	2	23-1/2"	1x2	top and bottom
Door brace	1	34-11/16" , cut to fit corner to corner	1x2	

STOP AND MEASURE BEFORE THE NEXT STEP

Gap round the closed door, all four edges

1/4in, even



AFTER STEP 8

WATCH OUT

! Hang the door before the hardware cloth goes on. Cloth first and the hinge screws land on wire.

Two bolts at opposite ends, not one in the middle. A raccoon opens a single centre latch.

Swings **OUT** — an inward door sweeps the ground the birds stand on.

1/4in gap all round. Hang it before the hardware cloth goes on.

STEP 9: HARDWARE CLOTH — THE PART THAT IS ACTUALLY THE BARRIER

The cattle panel is not a fence. Its grid is about 6in x 8in. A hen walks out through that and a raccoon walks in. The steel is structure; the cloth is the barrier, and if you skip this step you have built a very strong open-air perch.

Run 36" 1/2in hardware cloth in 3 courses up and over the hoop, each course the full 120", lapping 2" onto the one below and wired at every 4in along the lap.

Half inch, and here is the actual source, because most of what is written about mesh sizes is retailer copy. The wildlife-damage handbook chapter on weasels (Henderson, 1994) says to close every opening larger than ONE inch and to do it with 1/2in hardware cloth; the same one-inch figure covers mink. Colorado State, writing about chicken tractors by name, says 1x2in welded wire or smaller. Kentucky's extension hoop pen uses 1x2in 14 ga. So 1/2in cloth is at or inside every sourced recommendation. What you will NOT find behind the usual advice is a number for how far a raccoon can reach through wire — nobody has published one.

Trap the bottom edge under a cloth batten screwed to the skid rather than relying on staples. A predator pulls; a staple lets go and a screwed batten does not.

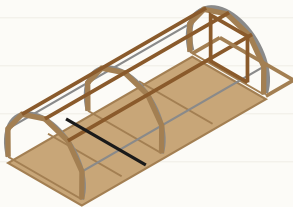
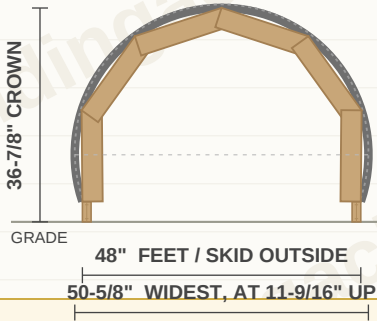
Cut the end cloth to the same scribed arch shape as the plywood and fit it over the door opening as well — the door gets its own piece on the back of the slab.

Part	Qty	Length	Stock	Note
Hoop cloth course	3	36" x 120"	Hardware cloth	
End cloth	2	48" x 33-3/8", cut to the arch	Hardware cloth	
Cloth batten	4	120"	1x2	traps the cloth on the skid

STOP AND MEASURE BEFORE THE NEXT STEP

Lap between hardware cloth courses, measured anywhere along the hoop

2"



WATCH OUT

- ! This is 116.0 sq ft of cloth and it is the single biggest line in the budget. It is also the only line on this plan that decides whether the flock is alive in the morning.
- ! Gloves. Cut hardware cloth leaves a hundred spikes per edge and every one of them finds a knuckle.

3 courses of 36" cloth, each 120" long, lapped 2" and wired every 4in along the lap.

The panel grid is about 8in x 6in. The panel is structure; THIS is the barrier.

Bottom edge trapped under a screwed batten, not staples. A predator pulls.

STEP 10: ANTI-DIG SKIRT — THE TRACTOR'S ANSWER TO A BURIED APRON

A stationary run gets a buried apron. This thing moves every morning, so nothing can be buried, and a floorless coop sitting on open grass is exactly the case a digging predator is built for.

Read the honest version first. The two things that ARE sourced for a pen that moves are on the next step and in step 9: wire carried tight down to a solid base rail (Kentucky ASC-189, which is the extension design this archetype descends from), and a stake at each corner (ATTRA, which prescribes U-shaped rebar and says it stops digging AND stops wind moving the pen). ASC-189 itself specifies no ground skirt at all.

The **skirt** below is builder practice, not extension guidance, and we mark it that way: 12" of hardware cloth screwed along the outside of each skid and each end, bent out flat so it lies ON the grass rather than going down into it. The reasoning is that a digger starts at the wall it can see, hits wire a foot out, and does not know to back up and start again. That reasoning is sound and it is not evidence, so build it if your ground pressure warrants it and skip it if it does not — the wire-to-rail detail and the corner stakes are the part this plan will not let you skip.

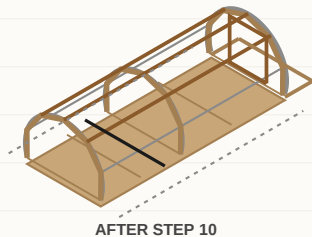
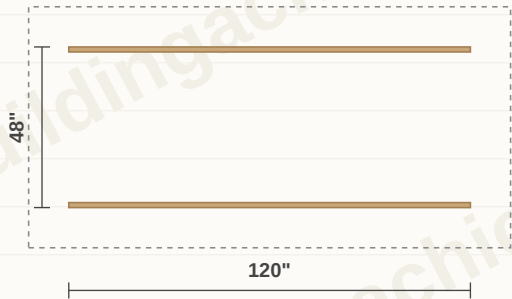
Lay the skirt flat and let the grass grow through it. It stays put under its own weight and it drags without catching.

Part	Qty	Length	Stock	Note
Skirt cloth	2	12" x 120"	Hardware cloth	
Skirt cloth, ends	2	12" x 48"	Hardware cloth	

STOP AND MEASURE BEFORE THE NEXT STEP

Skirt width lying flat on the grass, measured out from the skid

12"



WATCH OUT

! The skirt is the one part of this coop that gets dragged over stones every day. Check the leading end of it monthly and re-screw what has torn.

12" of hardware cloth lying FLAT on the grass, all four sides.
Not buried — this coop moves every morning, so a buried apron is not available.
A digger starts at the wall it can see, hits wire a foot out, and does not know to back up.

STEP 11: TARP THE CLOSED END, LEAVE THE RUN OPEN

A bare hoop is a sieve, which is right over the run and wrong over the roost.

Cover the closed 52" — 34.7 sq ft — with a tarp or roll roofing, over the top and down both sides to the skid, and trap both long edges under a **tarp batten** screwed through into the panel line. Grommets and bungees flog themselves to pieces in a month on something this shape.

Leave the other 65" bare. That is the run and it is meant to be open sky — it is what the birds are out there for, and an entirely covered hoop is a greenhouse with chickens in it.

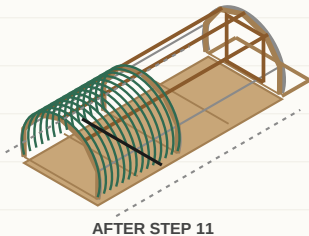
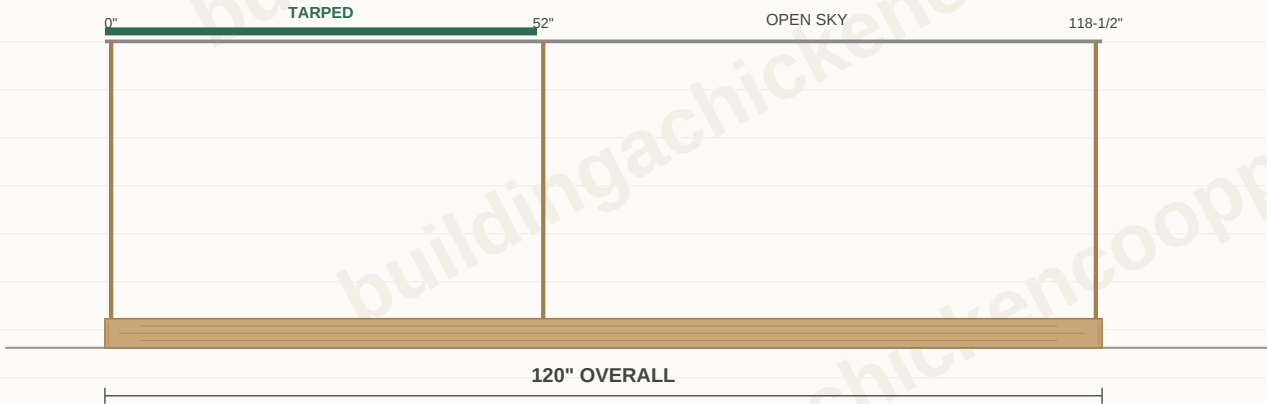
The uncovered/covered joint is the ventilation. There is no vent to cut and none to screen: the closed end is open along its whole cross section into the run.

Part	Qty	Length	Stock	Note
Tarp / roll roofing	1	96" x 52"	Tarp	
Tarp batten	2	52"	1x2	screwed over the tarp edge

STOP AND MEASURE BEFORE THE NEXT STEP

Tarp overhang past the partition arch, onto the run side

2"



WATCH OUT

! Park it closed-end into the prevailing wind. A hoop is a wing, and the end you leave facing the weather is the end that decides whether it stays put.

Tarp the closed 52" only — 34.7 sq ft.

The open 65" is the run. An entirely covered hoop is a greenhouse with chickens in it.

Both long edges trapped under a batten. Grommets and bungees flog to pieces.

STEP 12: NEST BANK AT THE CLOSED END

2 boxes, 12" clear each, 13" deep, 12" of clear height, standing on **legs** 3" tall.

On legs, not on the ground. There is no floor in this coop and the ground under it is the wet grass you parked it on this morning.

It goes hard against the closed end, which is the dark end — hens want dark to lay and the whole rest of this coop is see-through. A sloped **lid** over the top on a piano hinge is the egg access; it lifts from inside the door.

A 4" **litter lip** across the front keeps the bedding in when the tractor is dragged. Everything in a tractor slides forward every single morning, which is a thing stationary coop plans never have to think about.

Part	Qty	Length	Stock	Note
Nest bank floor	1	24-1/2" x 13"	1/2" plywood	
Nest bank back	1	24-1/2" x 15-1/2"	1/2" plywood	
Nest divider	1	12" x 13"	1/2" plywood	
Nest end	2	13" x 15-1/2"	1/2" plywood	
Nest lid	1	26" x 14"	1/2" plywood	
Nest leg	2	3"	2x2	keeps the floor off the grass
Nest litter lip	1	24-1/2" x 4"	1/2" plywood	

STOP AND MEASURE BEFORE THE NEXT STEP

Nest floor to the grass

3"

WATCH OUT

! Total nest bank footprint is 24-1/2" x 13" and it is subtracted from the coop floor area before the capacity on the cover page is worked out. It is not floor the birds get.

STEP 13: ROOST ON THE CENTRELINE

One **roost bar** , 46-1/2" long, 2x2, running the LENGTH of the closed section on the centreline of the hoop at 20" above the grass.

Along the length, not across the width, and this is the one thing the hoop shape gives you free. The crown is the only place with full headroom. A bar on the centreline is under the crown for its whole length, so every bird on it has 16-7/8" over her head. Run the same bar across the width instead and the birds at the ends of it are under 29-3/8" of hoop.

Hang it off **roost hangers** screwed to the crown joint of the closed-end arch and the partition arch, with a **prop** down to the base rung at mid-span.

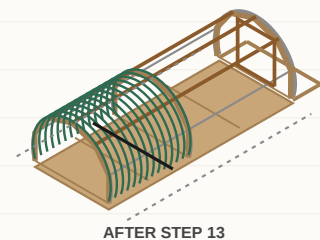
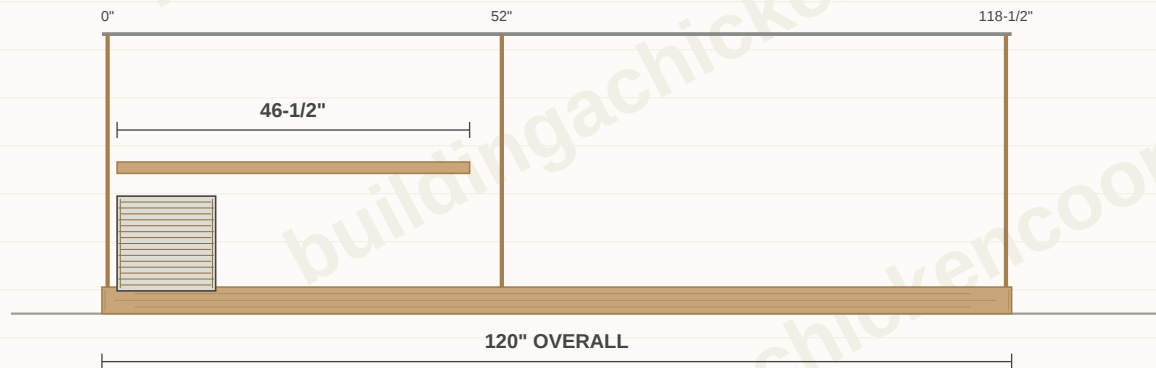
At 10" of bar per bird this roost seats 4, which is at or above the 4 the floor area allows — the floor is the binding constraint here, as it should be.

Part	Qty	Length	Stock	Note
Roost bar	1	46-1/2"	2x2	top two corners eased, centreline of the hoop
Roost hanger	2	6" x 8"	1/2" plywood	gusset, screwed to the arch crown
Roost prop	1	20"	2x2	mid-span, down to the base rung

STOP AND MEASURE BEFORE THE NEXT STEP

Top of the roost bar to the grass, at both ends

20"



WATCH OUT

! 20" is a choice inside a sourced band, not a rule: 16-40in (Kentucky ASC-246), 18-24in (Penn State), never above 4 ft (Penn State, leg injury). Bar per bird is published as 6, 7, 8-10 and 12in by different extension services; this plan uses 10.

! "The roost must sit above the nest boxes" is not in any extension publication or welfare standard we could find. What is sourced: close the nests at night (ATTRA), slope the nest lid (Colorado State) — this plan does both — and 4 ft of horizontal separation (Penn State), which a 52" coop section has not got.

! Ease the top two corners of the bar. A sharp edged roost is a humblefoot complaint waiting to happen.

One bar 46-1/2" on the CENTRELINE, running the length — the crown is the only place with full headroom.

20" above the grass, 16-7/8" of clear over the bird.

Seats 4 at 10" per bird; the floor allows 4, so the floor is the binding constraint.

STEP 14: STAKE IT DOWN BEFORE YOU WALK AWAY

A hoop is a wing. 34.7 sq ft of tarp on a curved surface will lift a 310 lb tractor in a gust, and it does not have to lift it far to roll it.

Drive a **stake** through a **stake plate** at each corner, into the ground outside the skid, every time you move it. Four stakes, eighteen inches, thirty seconds.

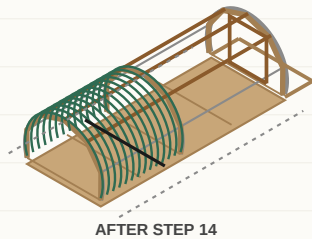
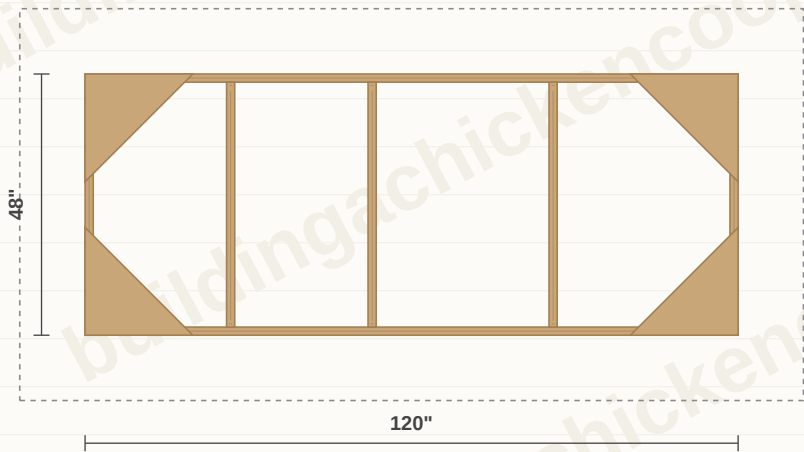
This is the step everyone skips and it is the step that writes off the coop. The stakes are also what stops the whole machine sliding downhill on wet grass with the birds shut in it overnight.

Part	Qty	Length	Stock	Note
Stake	4	18"	Steel stake	through the skid, one per corner
Stake plate	4	2" x 6" galv.	Strap	

STOP AND MEASURE BEFORE THE NEXT STEP

Stake driven below grade

14"



WATCH OUT

! Keep the stakes clipped to the grip bar so they move with the coop. Stakes left in the last spot are stakes that never get used again.

Four stakes, one per corner, driven outside the skid every time it moves.

A hoop is a wing. 34.7 sq ft of tarp on a curve will lift 310 lb in a gust — it does not have to lift it far to roll it.

Clip the stakes to the grip bar so they travel with the coop.

IMPORTANT — PLEASE READ BEFORE BUILDING

What these plans are

This design is framed to published prescriptive span tables — the American Wood Council's DCA6 deck guide and the International Residential Code joist and rafter tables. Floor joists, girders, rafters, studs and top plates are all sized against those published

What these plans are NOT

They are not stamped engineered drawings. No licensed professional engineer has reviewed, sealed or certified this design, and it is not site-specific. Prescriptive tables are conservative by design, but they are not a substitute for an engineer's analysis of your particular soil, snow load, wind exposure and seismic conditions.

You are responsible for local code and permits

Building codes, permit thresholds, setbacks, frost depth, snow load and livestock ordinances vary by state, county, city and HOA, and they change. The IRC exempts detached accessory structures under 200 sq ft from a building permit, but many jurisdictions tighten that to 100, 120 or 144 sq ft, and zoning setbacks are entirely local. Confirm with your building department and zoning office BEFORE you buy materials.

Heat is a design load too

An uninsulated metal roof in desert or deep-south sun is the most common way a flock gets hurt in a coop that is otherwise built correctly. Hens have no sweat glands and start to suffer above about 85F. If that is your summer: use a light-coloured or reflective roof panel rather than a dark one, add a radiant barrier or rigid foam under the deck, shade the run with cloth or a vine, put the waterers in the shade and add a second one, and consider leaving the top of one gable-end bay permanently open as extra cross-ventilation. None of this is in the framing above because it is climate-specific — but in the wrong climate it matters more than anything that is.

Snow, wind and seismic loads are your call

The rafter sizing here assumes a moderate roof load. If your ground snow load exceeds 30 psf, or you are in a high-wind or seismic zone, have the roof and anchorage reviewed locally — upsizing rafters is cheap; a collapsed roof in February is not.

Build safely

Power tools cause serious injury. Wear eye, ear and hand protection, use tools only as the manufacturer intends, and get help lifting walls and roof panels. If a step is beyond your skill or equipment, hire it out.

Verify before you cut

Check every dimension against your own materials before cutting. Lumber varies between mills and nominal sizes are not actual sizes. We have checked these numbers carefully, but you are the last line of defence against an error.

Limitation of liability

These plans are provided "as is," without warranty of any kind, express or implied, including any implied warranty of merchantability or fitness for a particular purpose. To the fullest extent permitted by law, buildingachickencoopplans.com and its authors accept no liability for any loss, injury, property damage, animal loss, code violation or cost arising from the use of these plans. By building from them you accept full responsibility for the finished structure and for compliance with all applicable laws.

IMPORTANT — PLEASE READ (CONTINUED)

Animal welfare

Capacity assumes 4 sq ft of coop floor per standard-breed hen — comfortably inside the 3-4 sq ft that Virginia Cooperative Extension and Oregon State give for birds WITH run access. This coop gives 14 sq ft of bird floor for 4 hens.

Outdoors, the run is 20 sq ft, or 5.1 sq ft per bird. Extension services genuinely disagree here: Cornell says 4-5 sq ft is enough, Virginia says 10. We are comfortably over the first and under the second. If you want to meet the stricter figure, either build the run longer or keep 2 birds rather than 4.

The number that actually bites is winter. Where birds are shut in for days at a time, Oregon State escalates to 8-10 sq ft of INDOOR floor per bird — for 4 hens that is 32-40 sq ft, and this coop has 14. In a climate with long confinement, size the flock off the indoor figure, not the summer one: 1 hens, not 4. Crowding causes feather-pecking, disease and ammonia problems. Fewer birds is always safe; more is not.

PLANS COMPLETE

You're done. A few things worth doing before the birds move in.

- Feeder and waterer: hang or stand them so the lip is at the birds' back height (about 8in off the floor for standard breeds) — it stops them scratching bedding into the feed. Allow 4in of feeder edge and 1in of drinker edge per bird: for 4 hens that is one 30in tube feeder and two 3-gallon founts, sited AWAY from under the roosts.
- Bedding: 4 to 6 inches of pine shavings or chopped straw, never cedar. Stir it weekly, top it up rather than replacing it, and strip it out when it stops smelling of nothing.
- Give them a dust bath — a shallow box of dry soil with a little wood ash or sand, kept under cover so it stays dry. It is how a hen treats her own mites, and there is nowhere in this coop to do it unless you build one.
- Keep one spare crate or a corner of the feed room free. You will need somewhere to isolate a sick bird or a new one, and working that out on the day is too late.
- Run a bead of exterior caulk anywhere siding meets trim, and prime every cut end.
- Fit two-action latches on the pop door and every people-door. Raccoons are dextrous and keepers widely report them working simple hooks and slide bolts open, so a latch that needs two different motions is cheap insurance.
- Bury the hardware-cloth apron 12 inches down and 12 inches out before you add bedding.
- Confirm the vents are above roosting height so moisture leaves without drafting the birds.
- Give the flock a week to learn the coop before you let them into the run unsupervised.

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