

THE WANDERER 8

The Wanderer design is intended as the largest trailer body that can be safely mounted on a Harbor Freight 4x8 utility trailer kit. The name comes from two designs that inspired it, the Wander Bug and Wander Pup, both in the T&TTT Vintage Plans.

Weight

The weight of the completed laden trailer has been estimated at about 1300lb for the 8 foot and 1400lb for the 10 foot body, which leaves a comfortable margin on the 1720lb payload rating (that is a 1980lb GVW rating when the trailer weight is added) of the HF 'super duty' 4x8 trailer. The 5.30-12 'C' range tires of this trailer have a capacity of 2100lb per pair.

This margin could be easily eaten up if the trailer is built any heavier than shown. There is a good area of structure in this design, compared to a teardrop, and increasing the thickness or adding extra layers will quickly push the weight over the capacity of the trailer. A trailer's weight is determined as much by how heavily each part is built as by the overall design and size, so do not build it any heavier than shown without working out the consequences.

The weight estimate can be downloaded as an Excel spreadsheet and used to test the effects of any changes in material thicknesses or sizes.

Size

This design provides just about standing headroom in the dropped footwell and this can hide how small this trailer really is. So let's be clear: only one person can stand up, they can't lift their arms without hitting something and they cannot get in/out of the trailer without bending over. This is a tiny trailer, not a small trailer!

The body is just wide enough to allow beds to set across the width of the trailer and this allows many different layouts to be used. Two different body lengths, 8 feet and 10 feet, are shown and the 8 foot length may suit some people, but the weight and cost penalty of building at 10 foot is so small that it seems the sensible choice.

But this remains a tiny trailer and that needs to always be remembered. One 10 foot variant is shown with a compartment that can house a porta-potty but there isn't standing headroom inside and there is no possibility of adding a shower.

The trailer without any roof vent is about 83" tall so it may fit in a standard 7 foot door. The underside of the dropped footwell is about 8.5" above the road – the same as the underside of the axle tube. Making the footwell 2" deeper and the body 2" lower would give the same headroom and allow a low profile roof vent to be added within the 83" height.

The trailer body may be tiny, but it's still quite a bit bigger than the HF trailer under it, so towing speeds should be limited in windy conditions.

Trailer Modifications

The Harbor Freight trailer kit does require several modifications for this design. These require cutting, drilling and bolting but welding is not required.

The axle is mounted above the springs, instead of below, in order to reduce the trailer deck height. To provide full bump clearance, part of the spring hangers must be cut away to allow the axle to nearly reach the frame rails.

In all layouts one or more cross-members are not fitted and the axle is not installed in the position originally intended by HF in order to give correct trailer balance.

In the 8 foot versions, the last 12" of the frame side rails are cut off and the rearmost cross-member relocated 12" forwards.

In the 10 foot versions, the trailer frame is lengthened 12" using two cross-members inserted inside the side rails. As the spring hanger will be fitted across the joint, some steel packing pieces may need to be added.

Body Construction

This design is unusual in that it is entirely single-skinned – this is to save weight and to allow a fairly tough 1/4" skin. Insulation can be added to the inside between framing and some upholstery fabric glued, pinned and/or stapled to the inside for appearance.

The body overhangs the trailer frame substantially, but the floor is 1/2" ply with no framing. The whole body is supported by two 1x6 beams that lie right on top of the front and back frame cross-members. These beams are a vital part of the structure and must not be left out, cut or laid flat. During construction, a couple of braces should be added to adjacent structure, to prevent the middle of the beams from twisting.

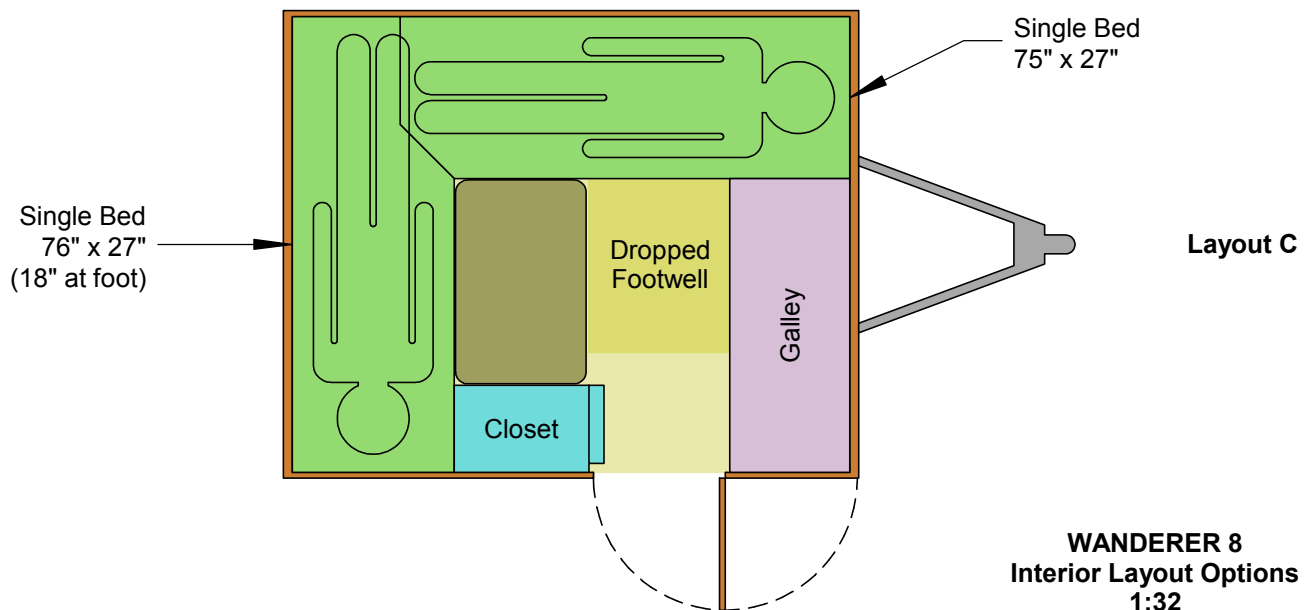
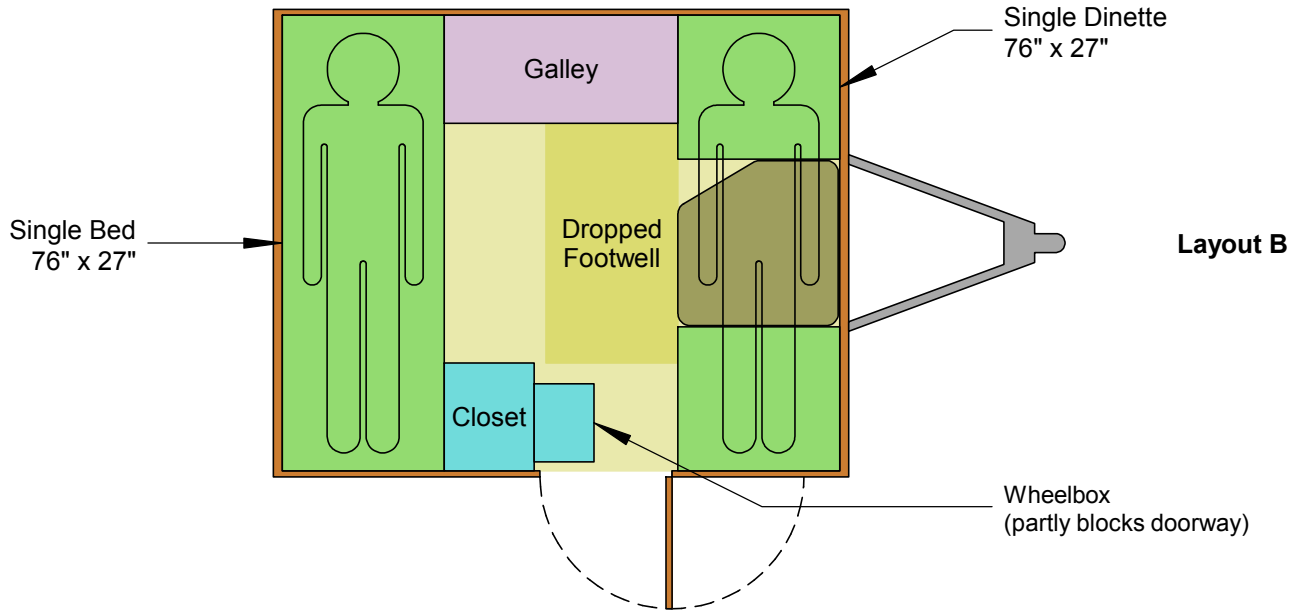
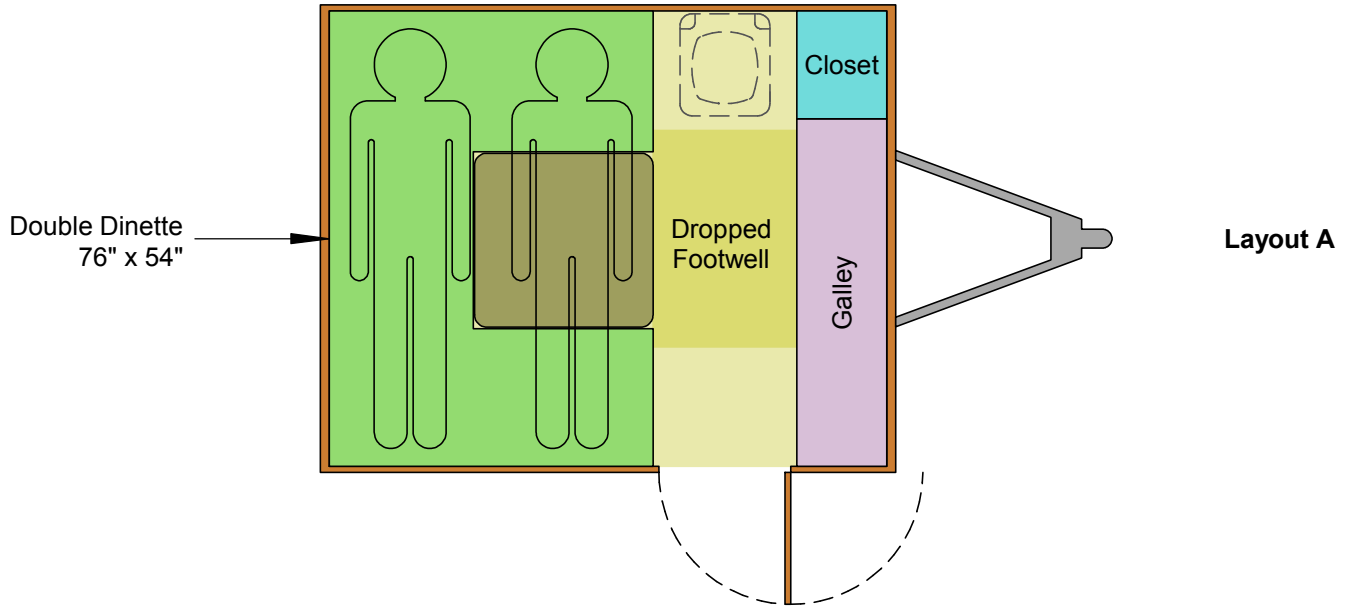
The sidewall framing is laid 'flat' to give the maximum internal width, except at the door where it is turned 'upright' to give the maximum strength. The roof spars must all be 'upright' to span the 78" width and 2x2 nominal spars are used where the roof panel joints fall. These are the only 2x2 timber in the body. Only 1x2 and 1x1 nominal timber can be used elsewhere or the estimated weight will be exceeded.

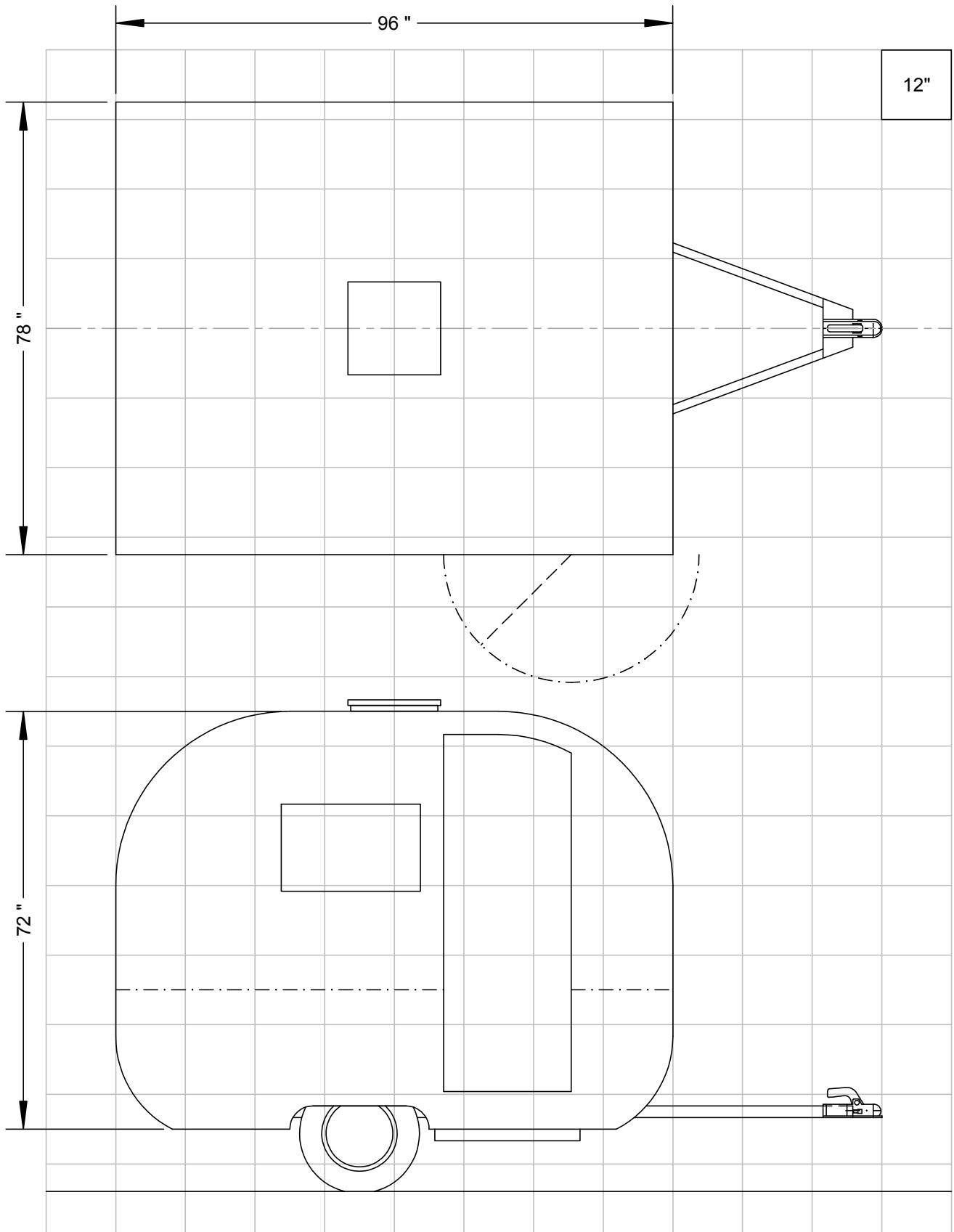
8 Foot Layouts

Layout A provides a 54" wide dinette which could be reduced to 48" with if more storage space is required. A porta-pottie fits in neatly, if required.

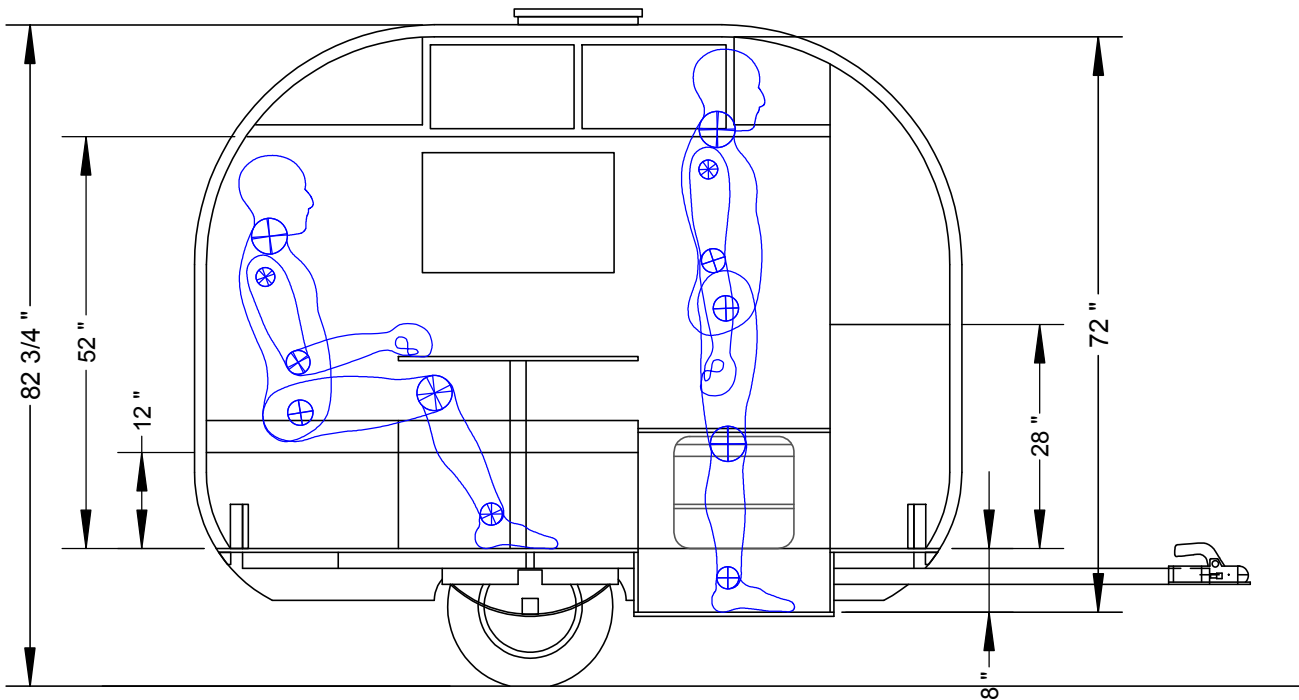
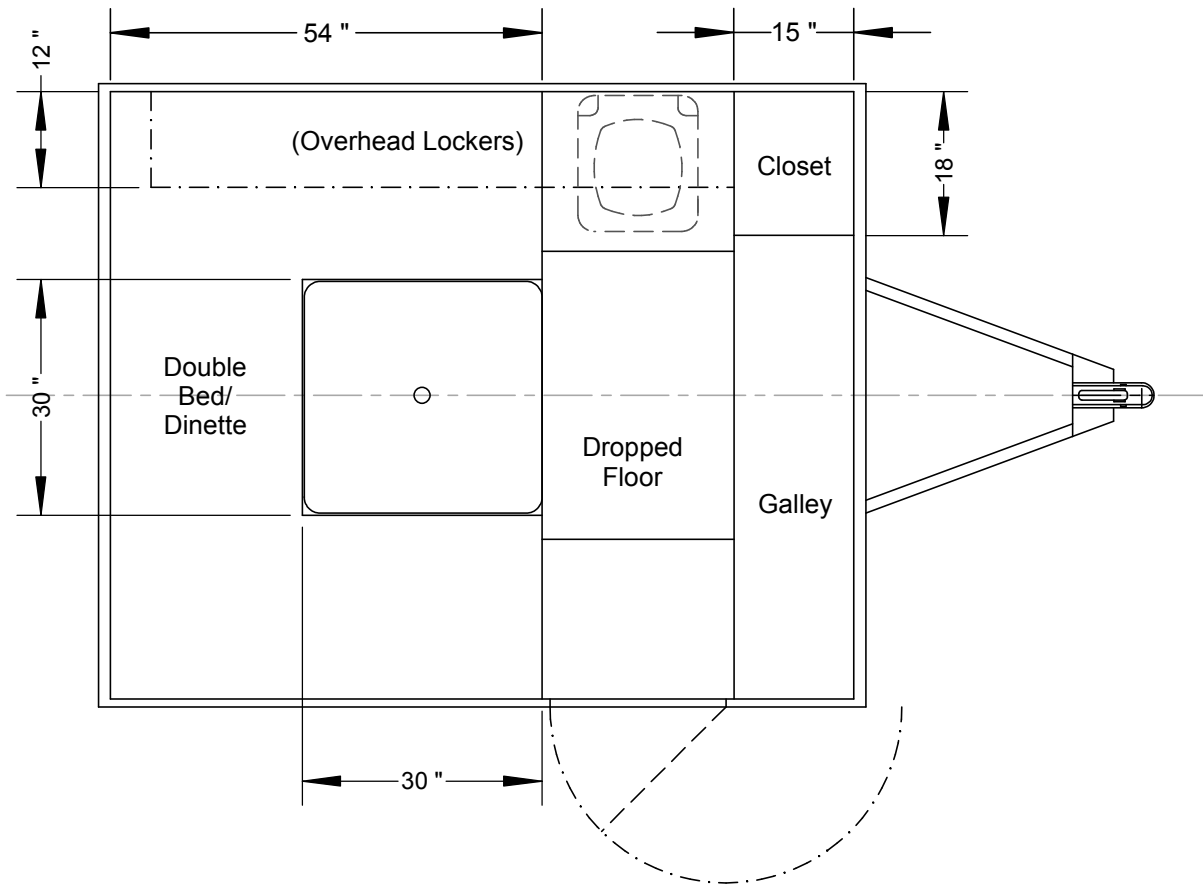
Layout B provides a bed and a dinette (or two beds) which may suit some users better. This design suffers from the wheelbox that half blocks the bottom of the doorway – this is still workable, if awkward.

Layout C also provides two separate beds, but the feet of the two sleepers will come into contact.

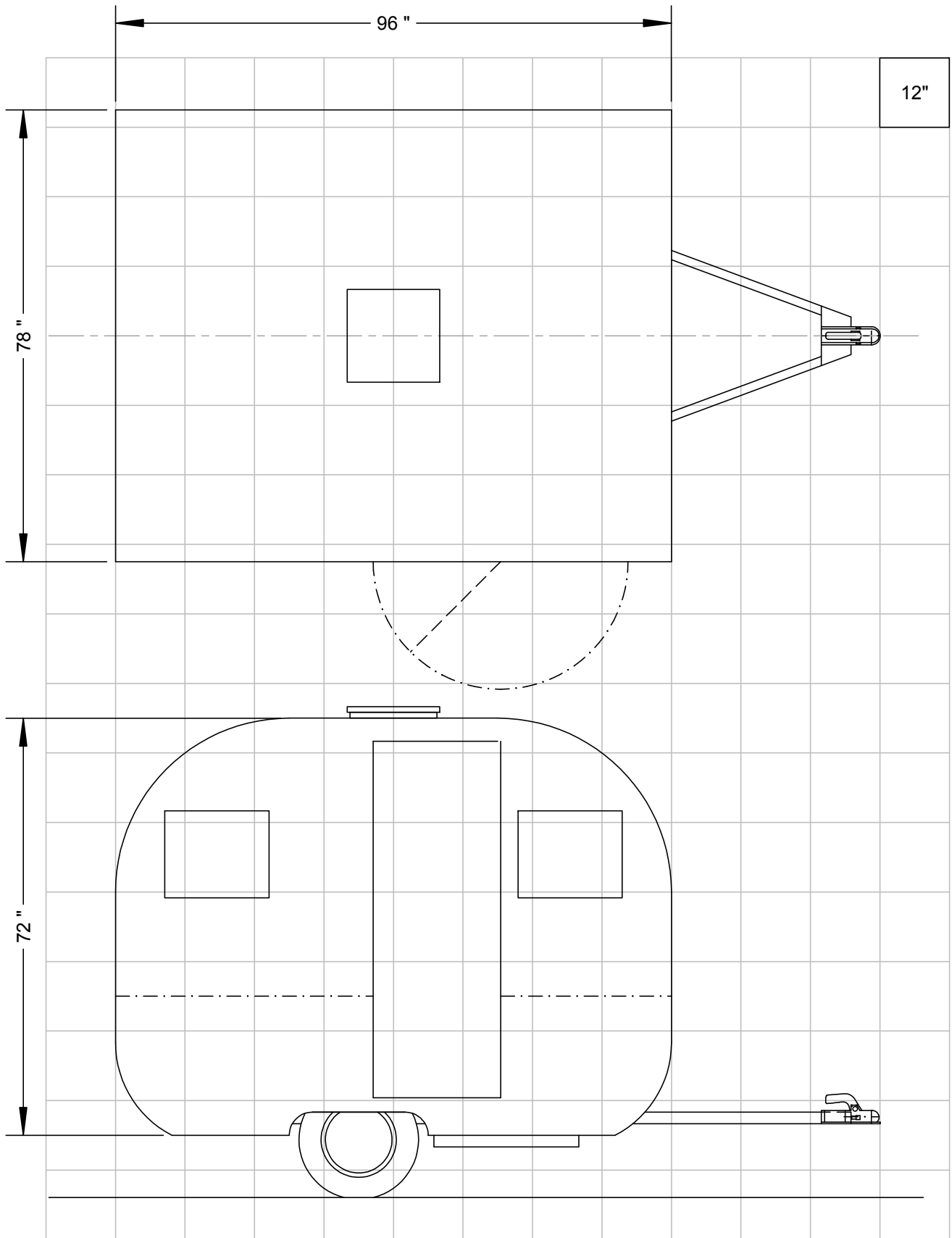




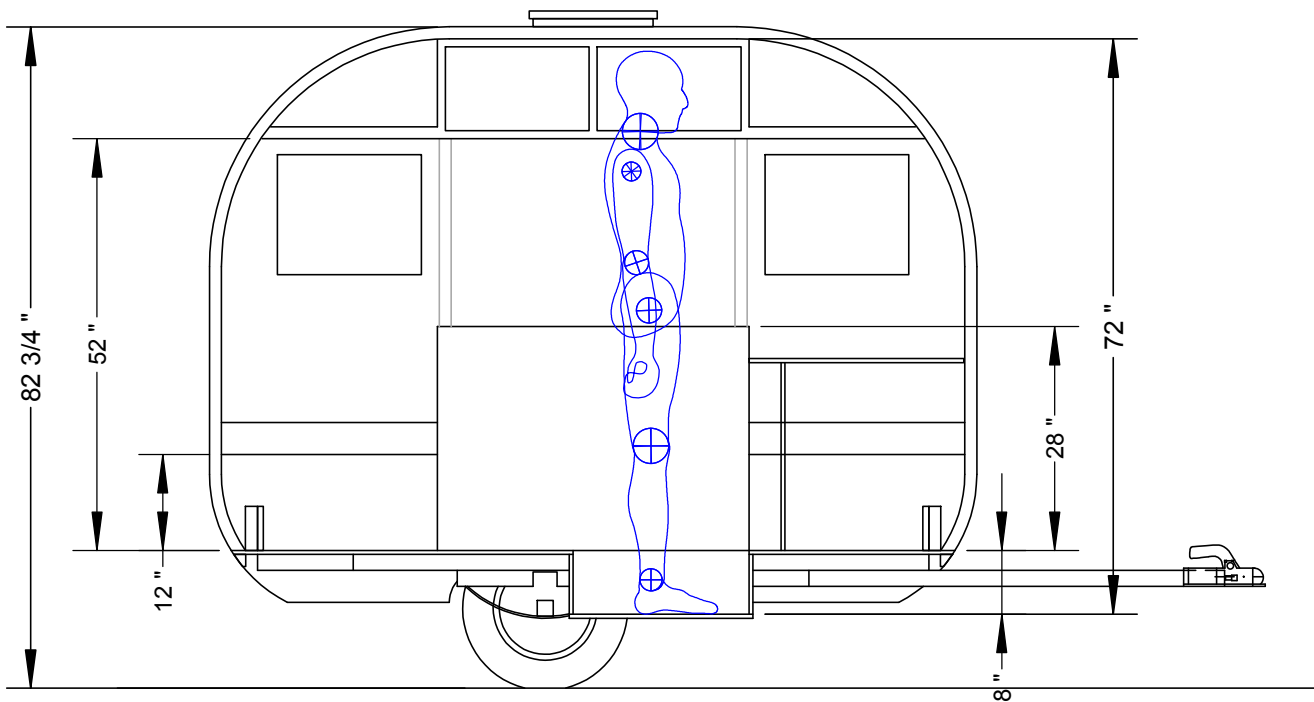
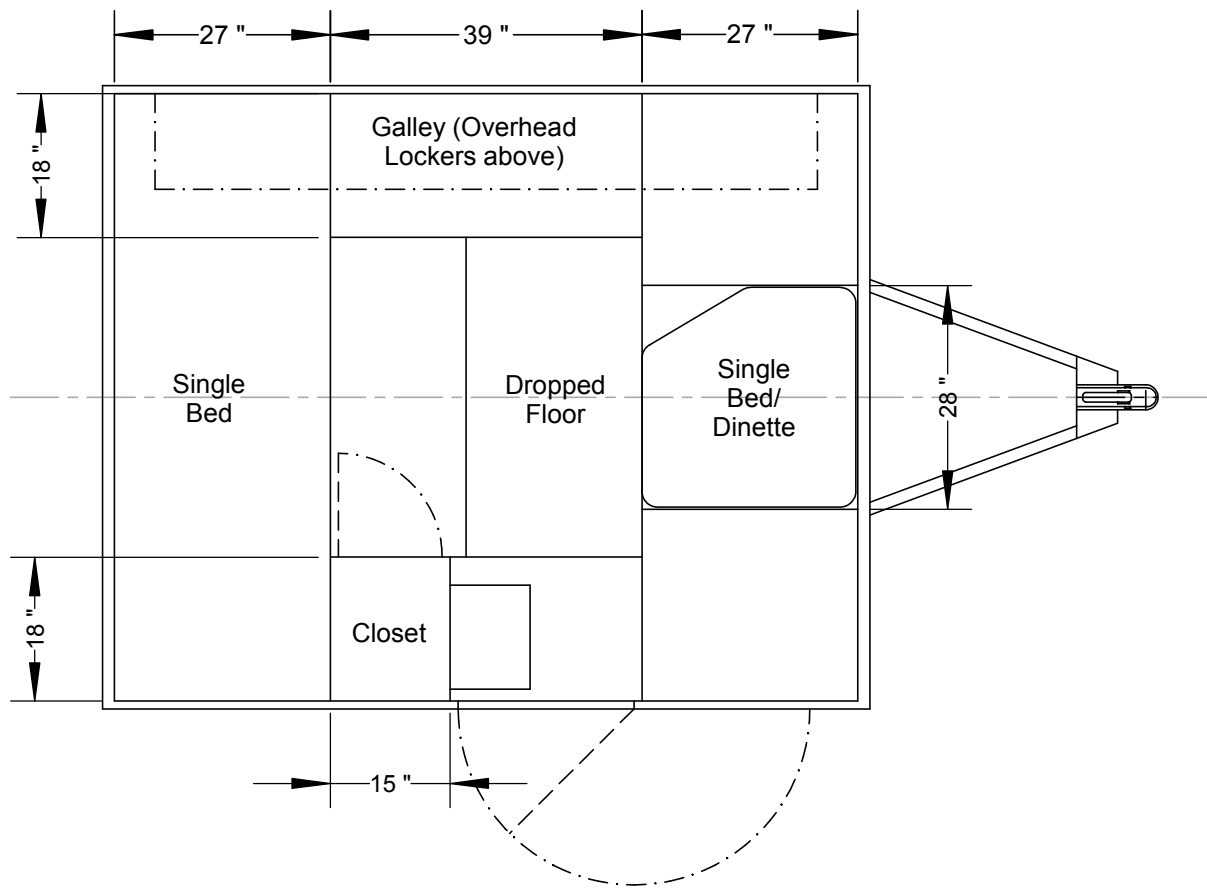
WANDERER 8 - Exterior - Layout A - 1:12



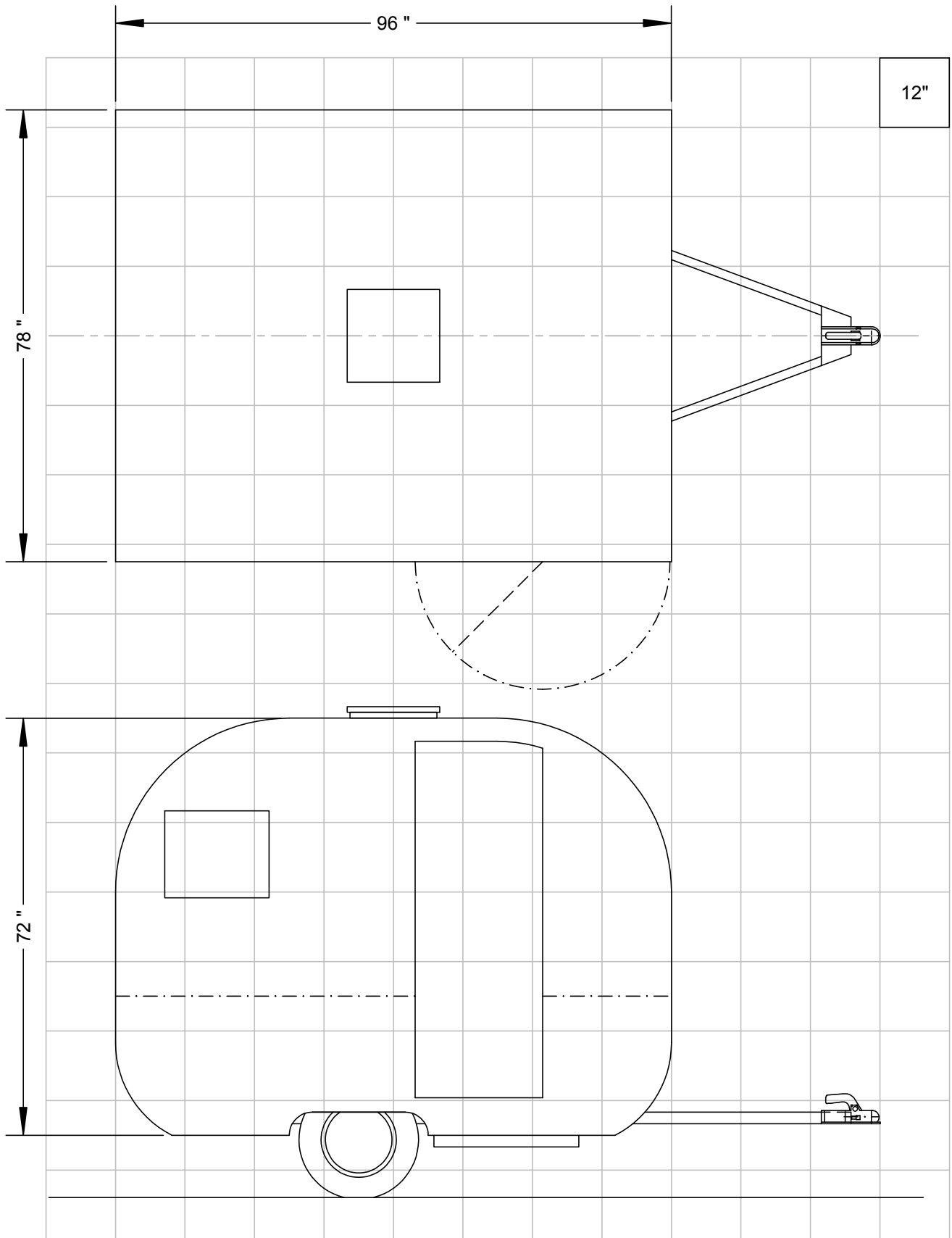
WANDERER 8 - Interior - Layout A - 1:12



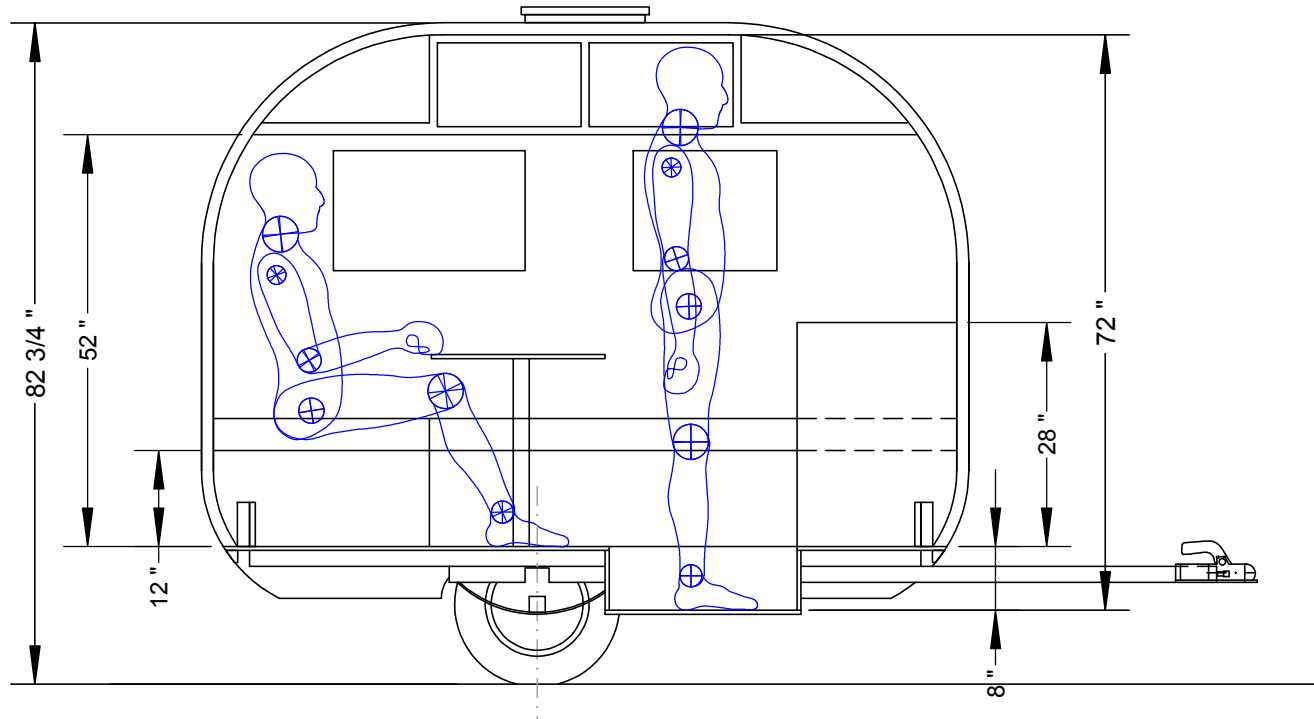
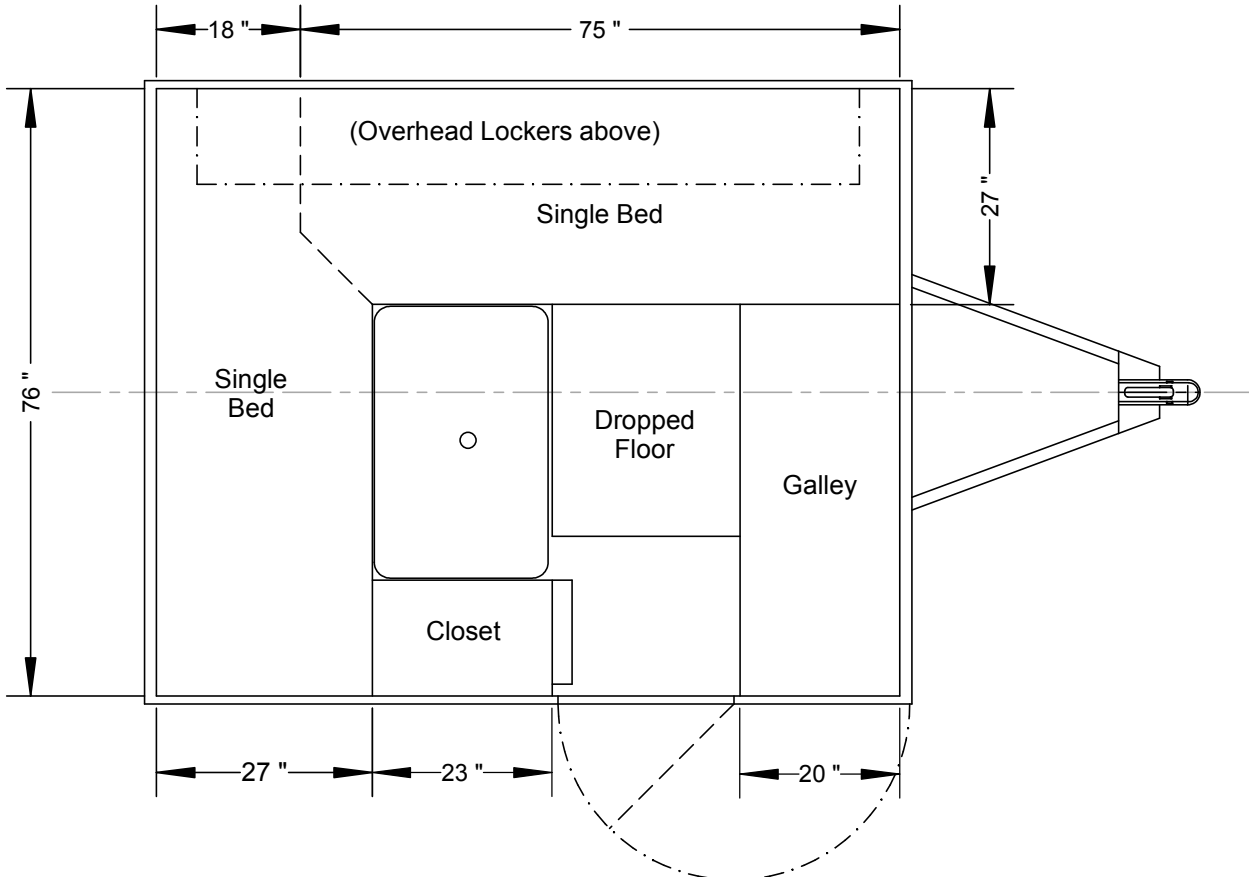
WANDERER 8 - Exterior - Layout B - 1:12



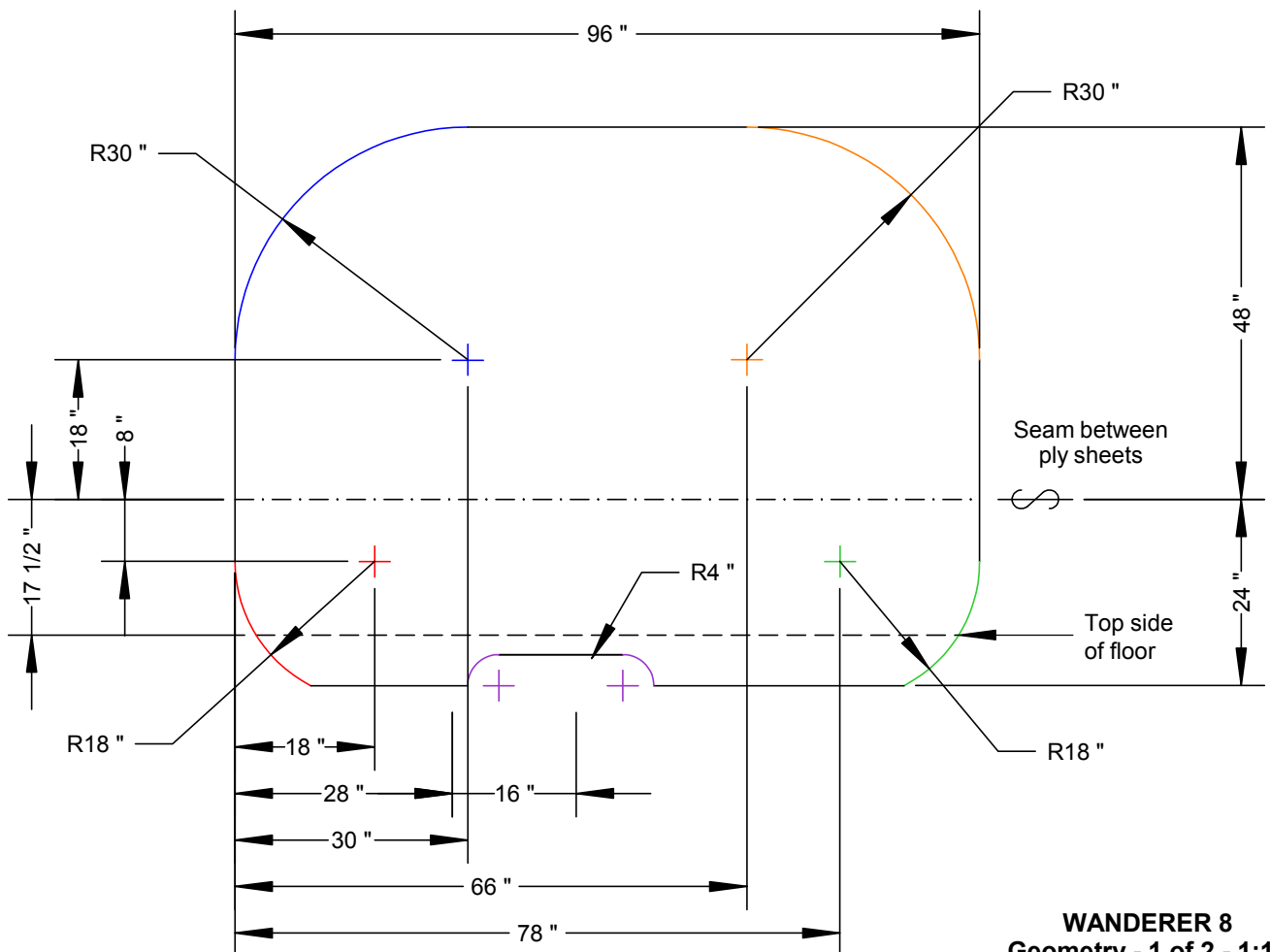
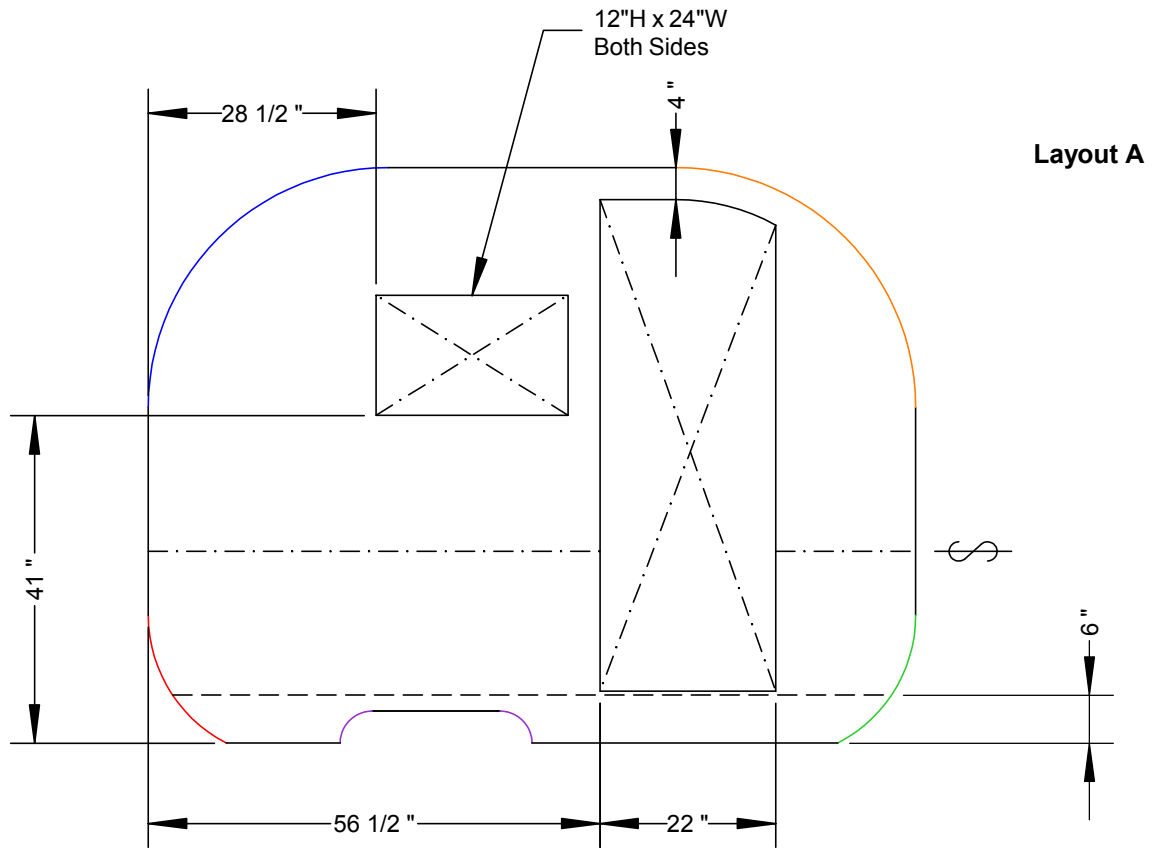
WANDERER 8 - Interior - Layout B - 1:12



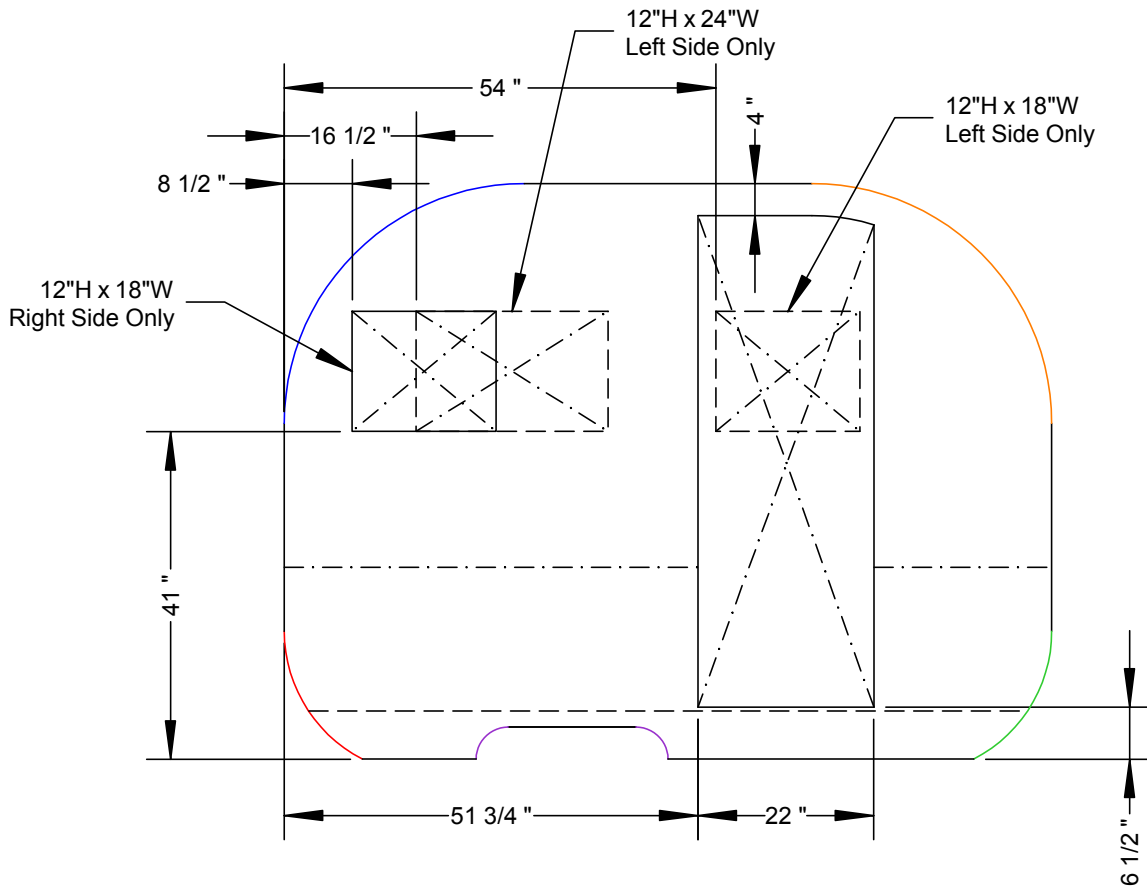
WANDERER 8 - Exterior - Layout C - 1:12



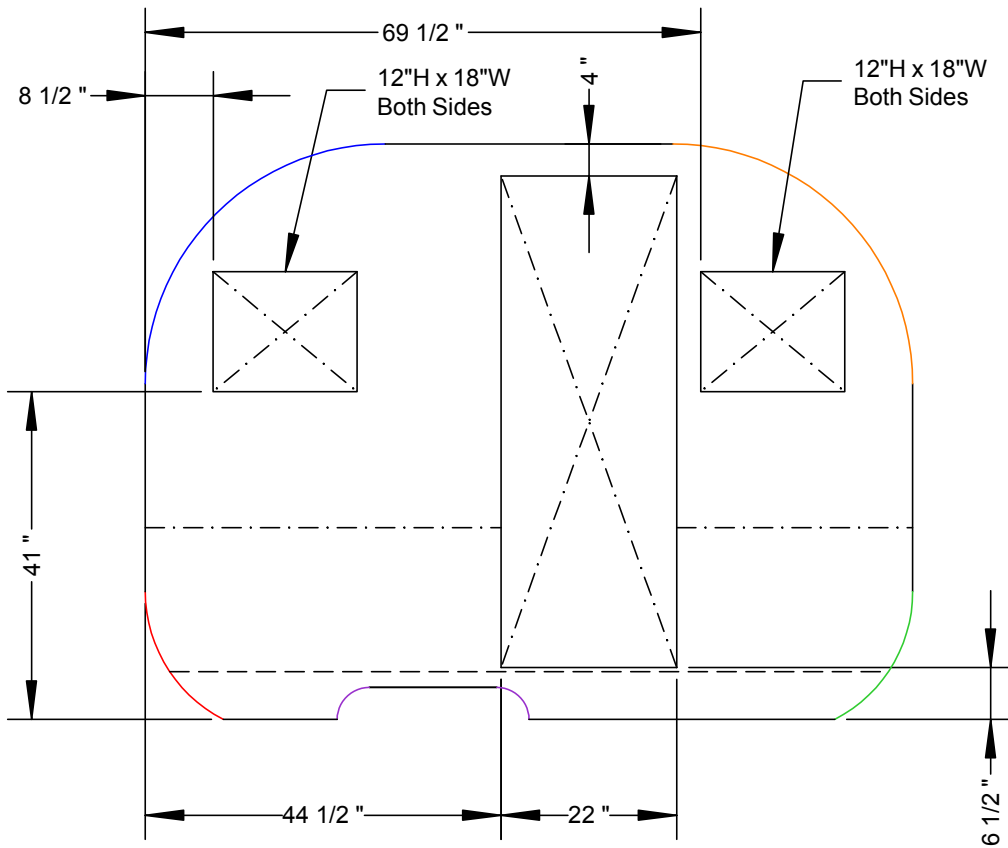
WANDERER 8 - Interior - Layout C - 1:12



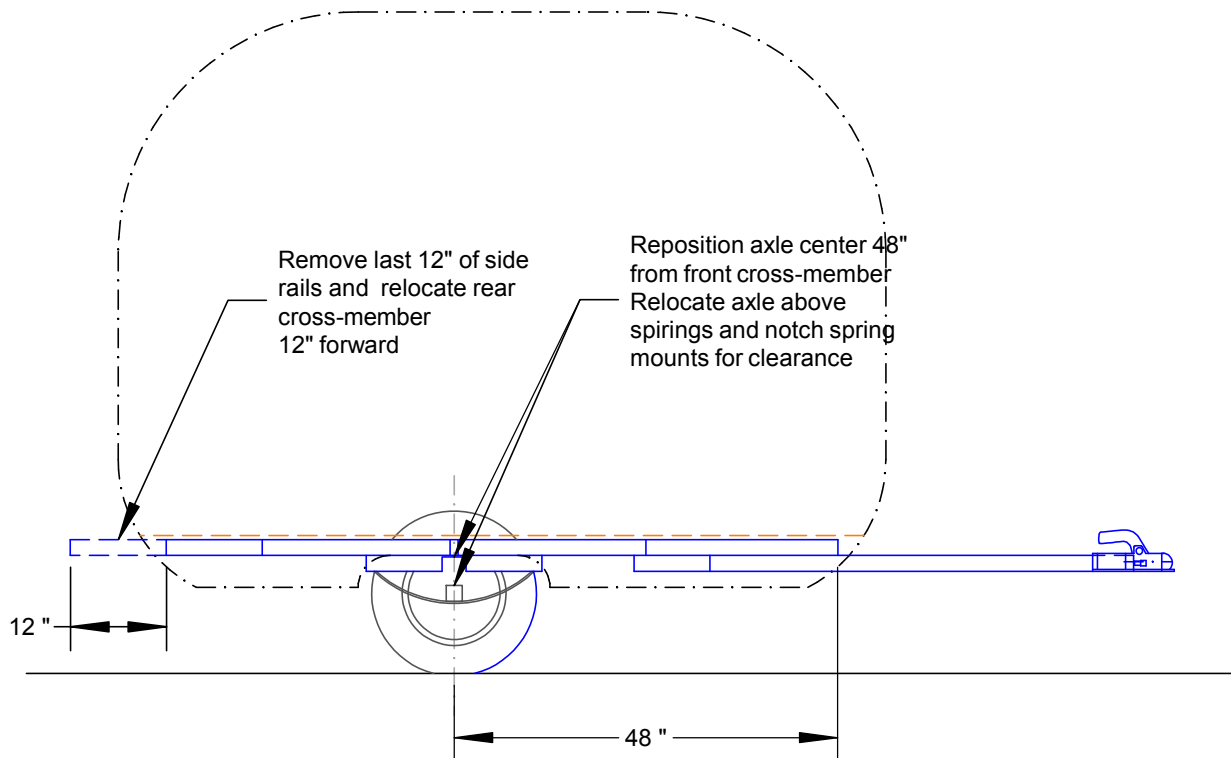
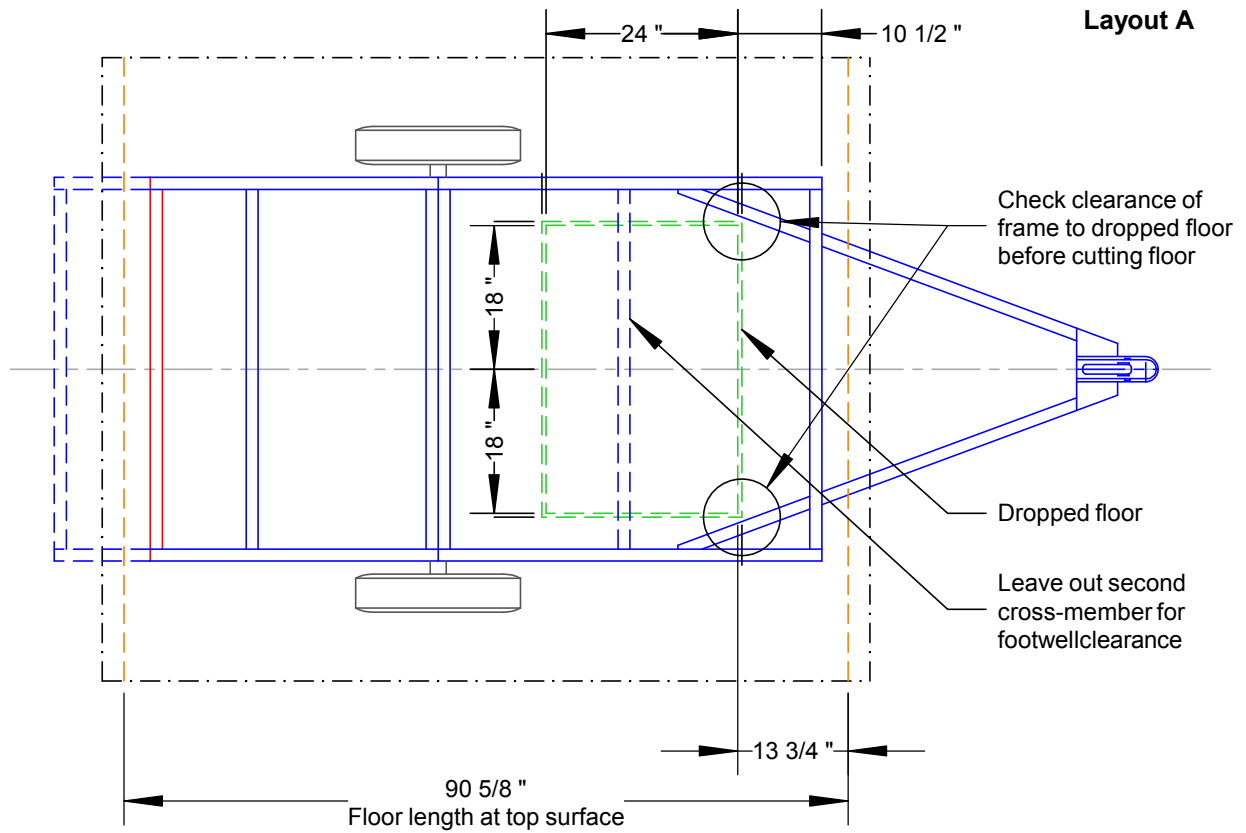
Layout C



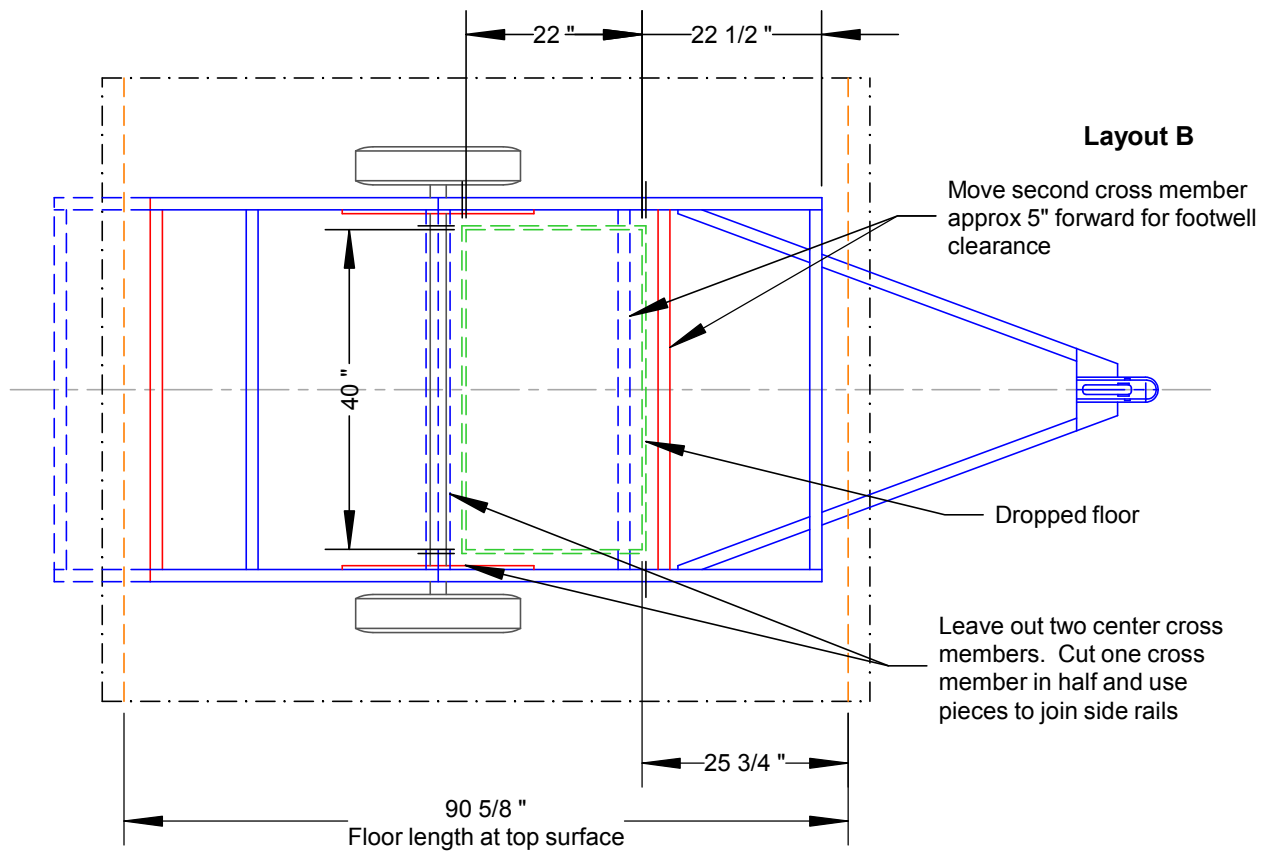
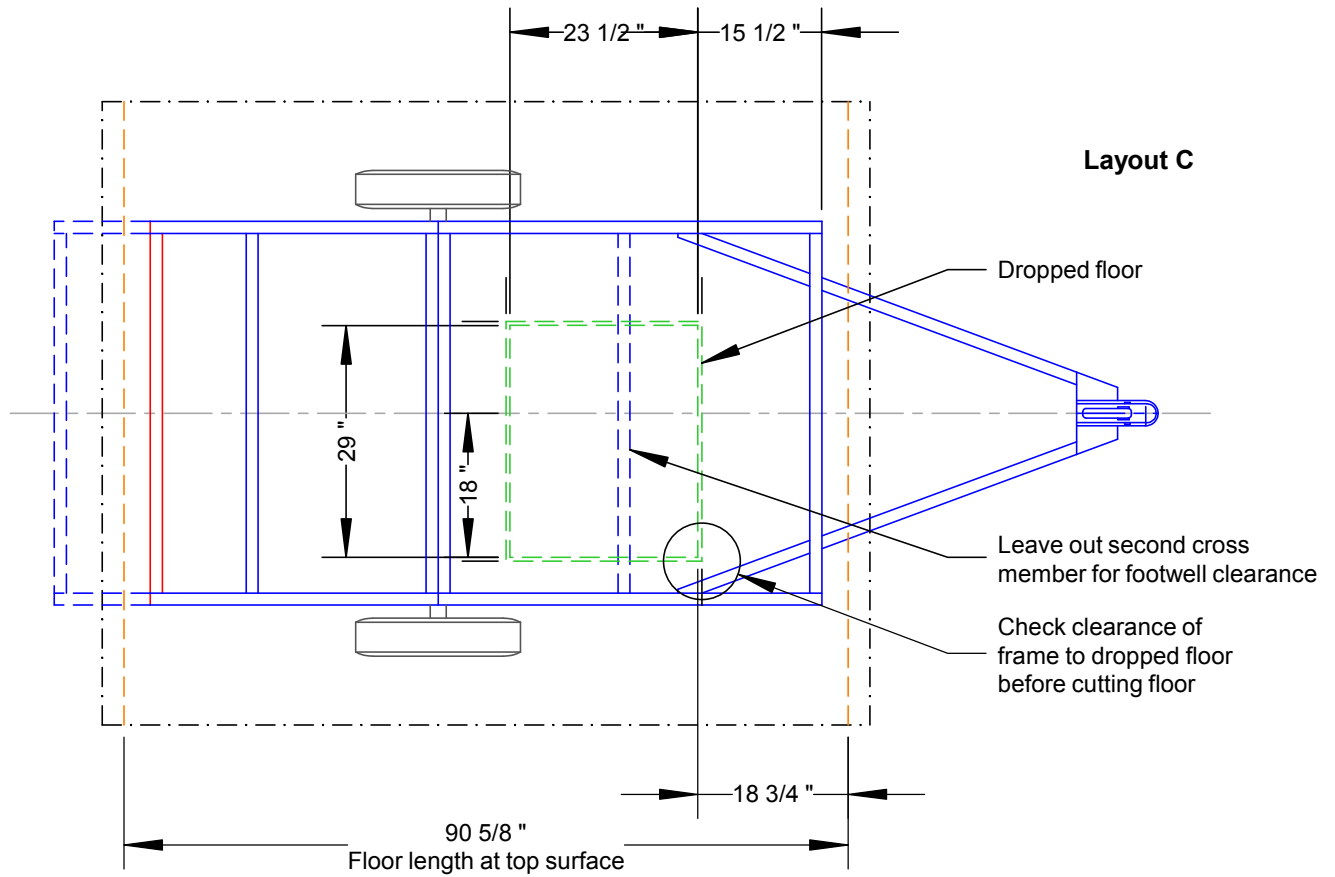
Layout B



Note: All dimensions to dropped floor are to inside faces



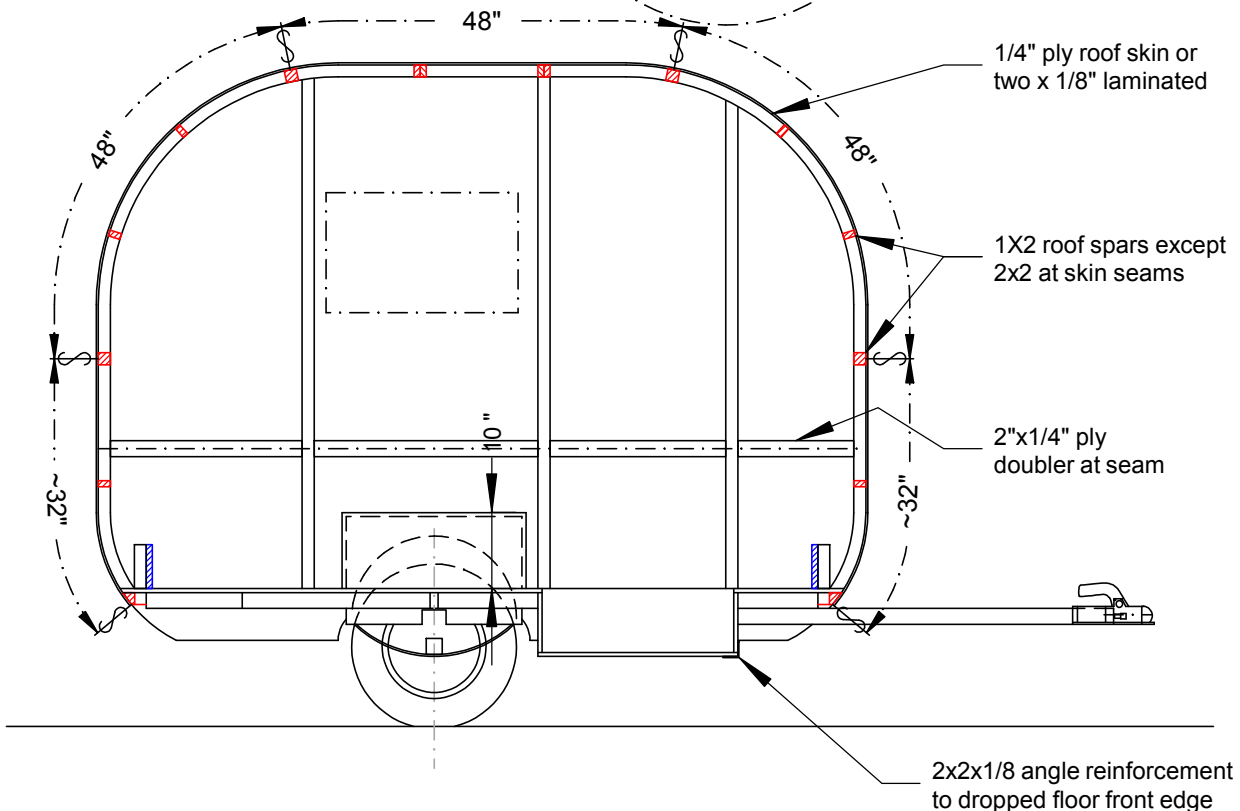
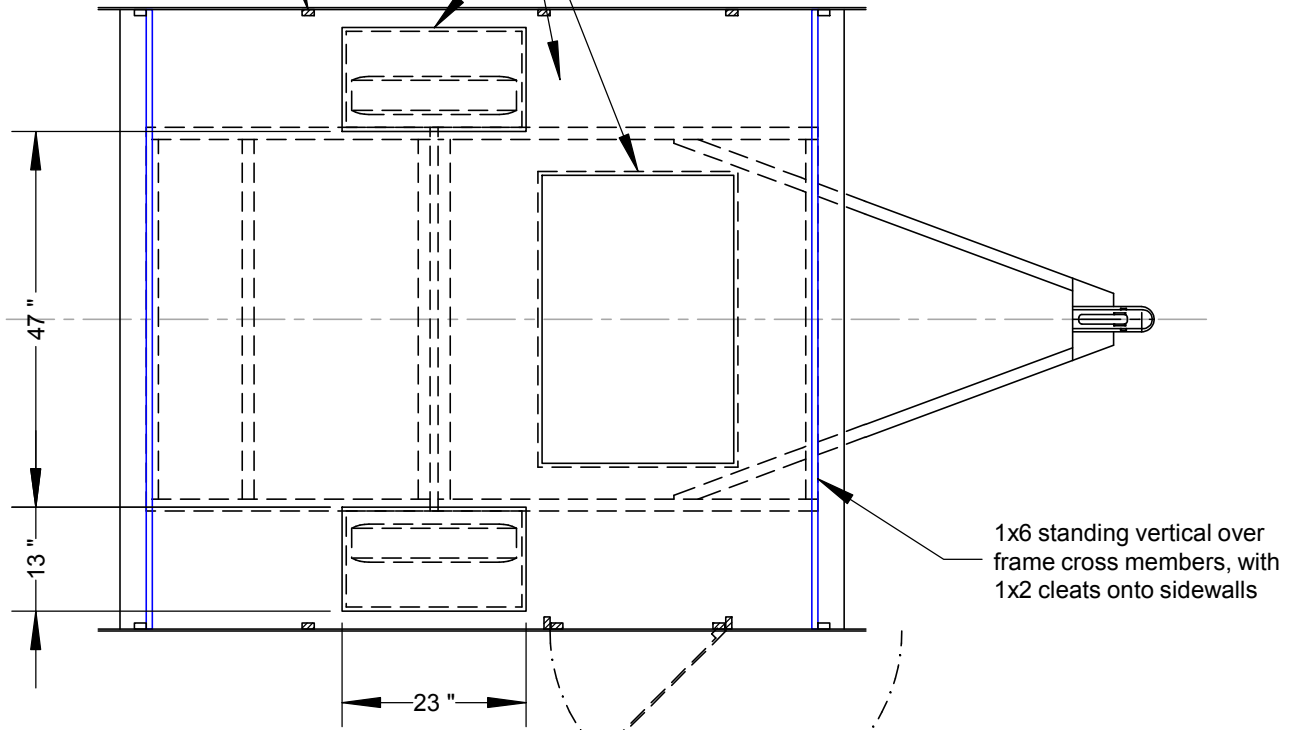
Note: All dimensions to dropped floor are to inside faces



1/4" ply sidewall with three 1x2 frames (turned sideways at door frame)

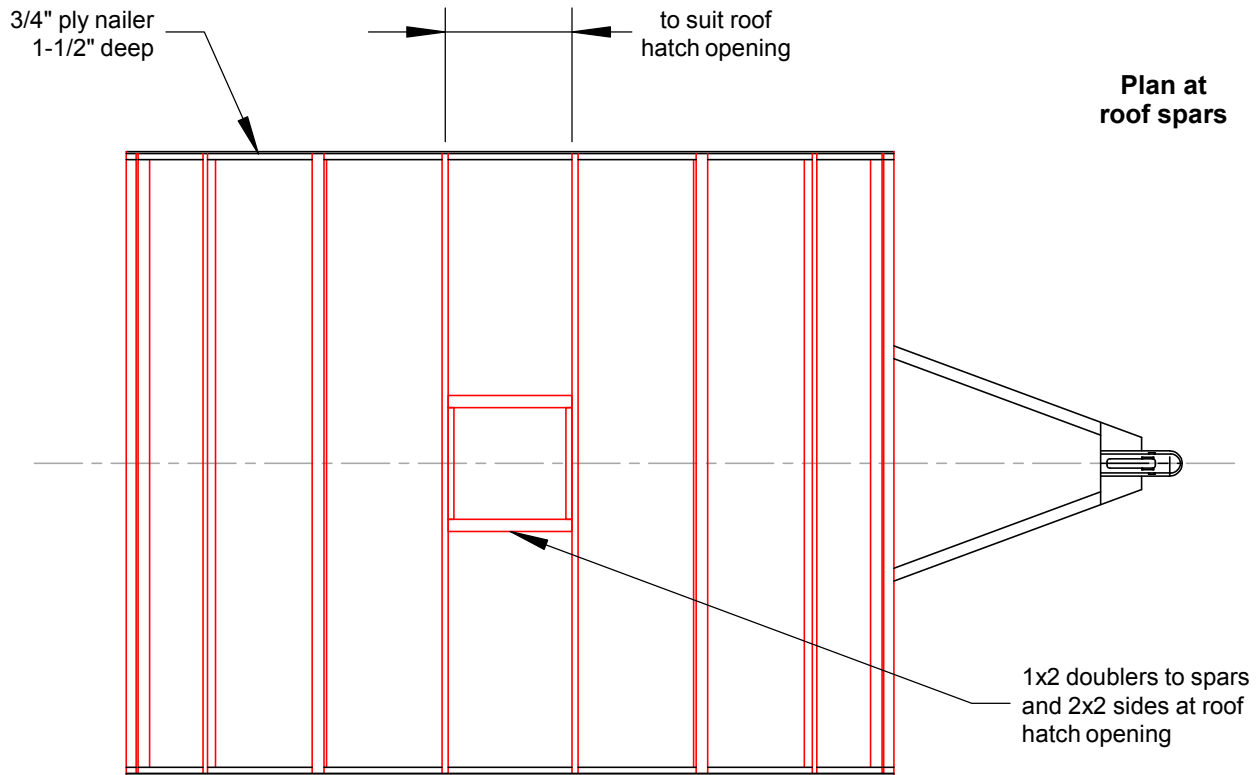
1/2" ply floor, dropped floor sides/bottom and wheel boxes

Plan at floor level

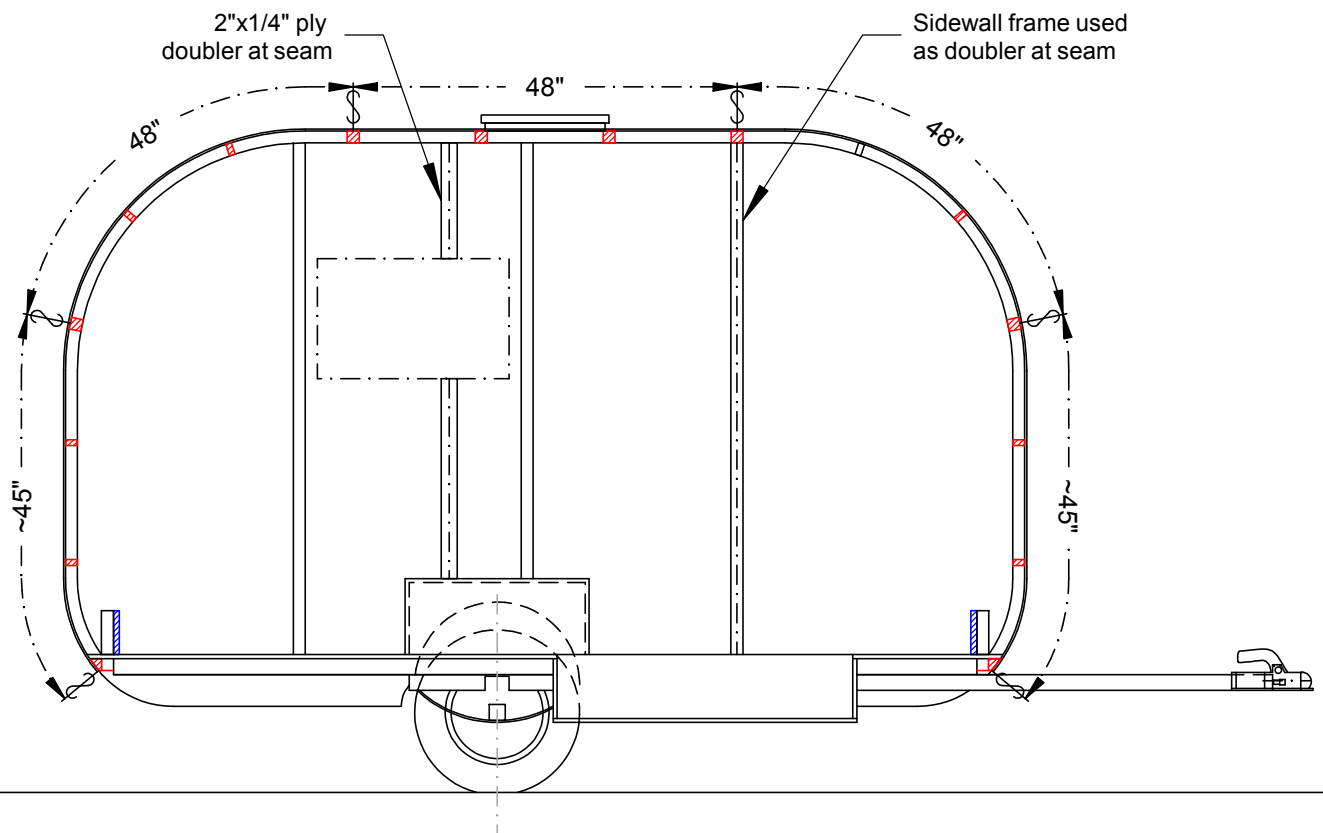


Wanderer 10 construction as Wanderer 8, except for position of roof seams (see next sheet)

WANDERER 8 - Construction - 1:12

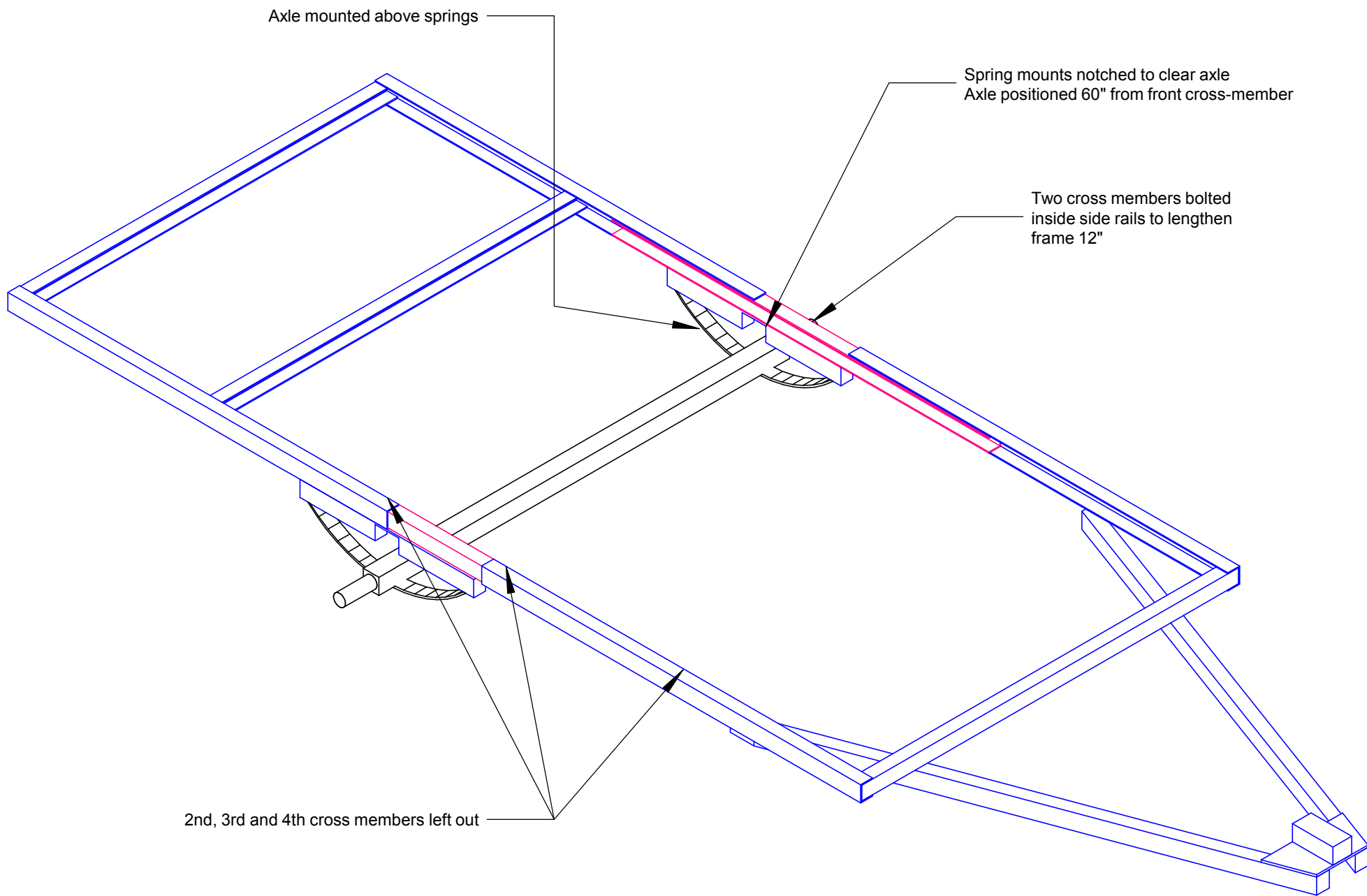


WANDERER 8 - Construction - 1:12



Wanderer 10 construction as Wanderer 8, except for position of roof seams

WANDERER 10 - Construction - 1:12



Axle mounted above springs

Spring mounts notched to clear axle
Axle positioned 60" from front cross-member

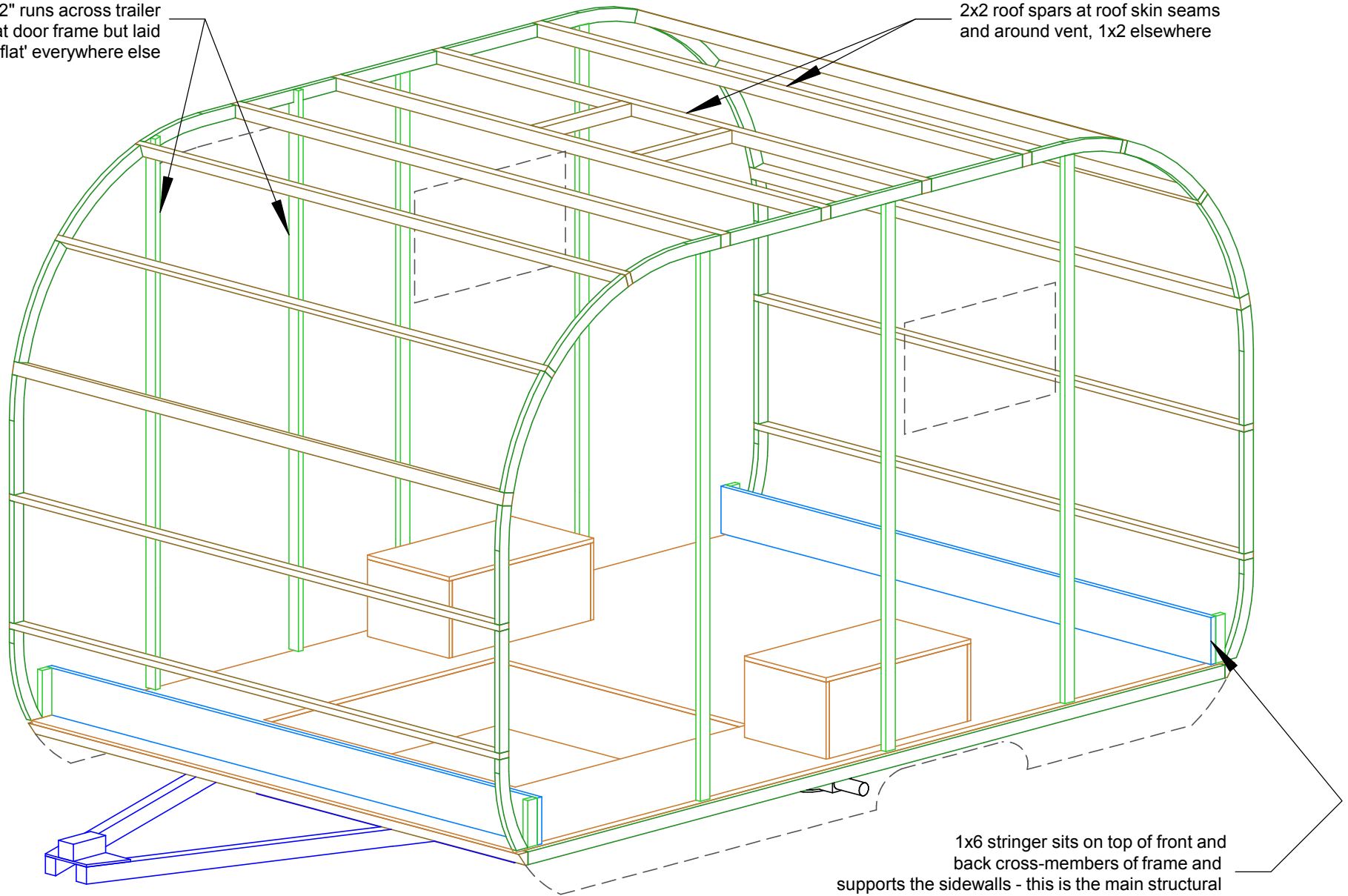
Two cross members bolted
inside side rails to lengthen
frame 12"

2nd, 3rd and 4th cross members left out

WANDERER 10
Chassis Modifications
(Wanderer 8 similar)

1x2 framing turned sideways
(ie, 2" runs across trailer
width) at door frame but laid
'flat' everywhere else

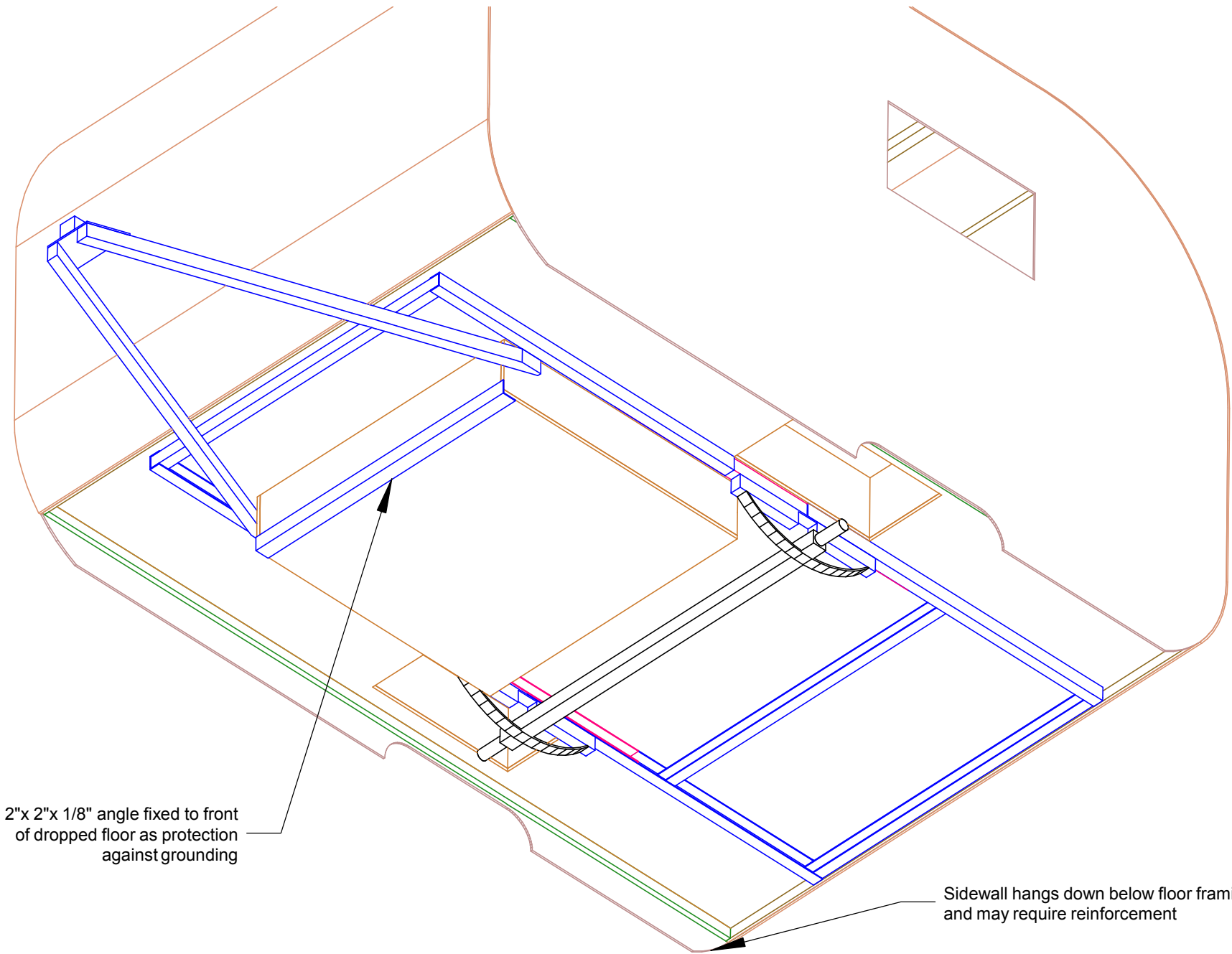
2x2 roof spars at roof skin seams
and around vent, 1x2 elsewhere



1x6 stringer sits on top of front and
back cross-members of frame and
supports the sidewalls - this is the main structural
component of the body and must not be cut or left out

**WANDERER 10 - Construction 1/2
(Wanderer 8 similar)**

Sidewall and roof skins are not shown in this illustration
to allow the framing to be seen, but this is not the
construction method - the framing is NOT (and should
not) be strong enough to allow it to be erected on its own.



2"x 2"x 1/8" angle fixed to front of dropped floor as protection against grounding

Sidewall hangs down below floor framing and may require reinforcement

**WANDERER 10 - Construction 2/2
(Wanderer 8 similar)**

Wanderer 8 Weight and Balance Estimate

Layout Option A

SUMMARY	Weight pound	LCG inch	Lever pound-inch
Chassis	276		15408
Floor	122		6154
Body Skin	238		11546
Interior	134		7127
Subtotal	<u>770</u>	52.2	<u>40234</u>
Margin 5%	39		2012
Total Chassis & Body	<u>809</u>		<u>42246</u>
Estimate Fit-Out	300	60	18000
Estimate Stores/Provisions	200	48	9600
Grand total	<u>1309</u>	<u>53.4</u>	<u>69846</u>
Longl position of wheels		42.0	
Longl position of hitch		130.5	
%age of weight on hitch		12.8%	
Weight on hitch	168		8973
Weight on axle	1141		60873

DETAIL	Unit	Quantity	Unit weight pound/unit	Weight pound	Position inch	Lever pound-inch
Chassis						
Harbor Freight Trailer	ea	1	260	260.0	52	13520
Jack	ea	1	16	<u>16.0</u>	118	<u>1888</u>
Subtotal	Subtotal, Chassis			276.0		15408
Floor						
Floor, 1/2	ft2	49.3	1.67	82.3	48	3951
Drop floor sides/ends, 1/2	ft2	6.9	1.67	11.5	67.5	777
Drop floor protection angle, 2x2x1/8	ft	3.1	1.65	5.1	80	407
Wheel box sides/ends, 1/2	ft2	7.8	1.67	13.0	42	546
Front/back frames, ex 2x2	ft	13.0	0.435	5.7	48	271
Side frames, 1x2	ft	14.5	0.29	<u>4.2</u>	48	<u>202</u>
Subtotal, Floor				121.8		6154
Sidewalls						
Sidewall ply, 1/4, incl door	ft2	88.2	0.84	73.6	48	3535
Left side framing, 1x2	ft	16.0	0.29	4.6	54	251
Right side framing, 1x2, incl door	ft	29.8	0.29	8.7	59	510
Sidewall edge nailer, 1x2 equiv	ft	31.7	0.29	9.2	48	441
Front/Roof/Back						
Skin, 1x4	ft2	113.4	0.84	94.7	48	4545
Roof spars, 1x2	ft	39.0	0.29	11.3	48	543
Roof seam/hatch spars, 2x2	ft	41.4	0.58	24.0	48	1153
Stringers						
Stringers, 1x6	ft	13.0	0.87	11.3	48	543
End blocks, 1x2	ft	1.8	0.29	<u>0.5</u>	48	<u>26</u>
Subtotal, Body Skin				238.0		11546
Dinette						
Seat tops, 3/8+framing	ft2	17.3	1.6	27.6	28.5	787
Middle top, 3/8+framing	ft2	4.9	1.6	7.9	13.5	106
Seat faces, 1/4+framing	ft2	5.0	1.1	5.5	41	226
Middle face, 1/4+framing	ft2	6.5	1.1	7.2	25	179
Seat ends, 1/4+framing	ft2	3.8	1.1	4.2	55.5	234
Table, 3/4 solid	ft2	5.8	2.5	14.6	40.5	591
Galley/Closet/Potty						
Galley front, 1/4+framing	ft2	11.3	1.1	12.4	80	992
Galley top, 3/8+framing	ft2	6.0	1.6	9.7	87	841
Galley shelf, 1/4+framing	ft2	6.0	1.1	6.6	87	578
Closet side, 1/4+framing	ft2	6.7	1.1	7.3	87	638
Closet back, 1/4+framing	ft2	8.0	1.1	8.8	80	704
Potty top, 1/2+framing	ft2	3.3	3.0	10.0	67.5	675
Overhead locker						
Locker base, 1/4+framing	ft2	6.1	1.1	6.7	43	288
Locker front/doors, 1/4+framing	ft2	3.4	1.1	3.7	48	179
Locker bulkheads, 1/4+framing	ft2	2.1	1.1	<u>2.3</u>	48	<u>110</u>
Subtotal, Interior				134.5		7127