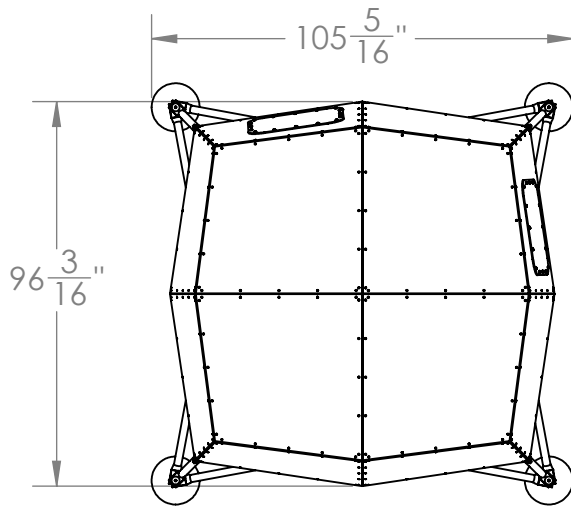
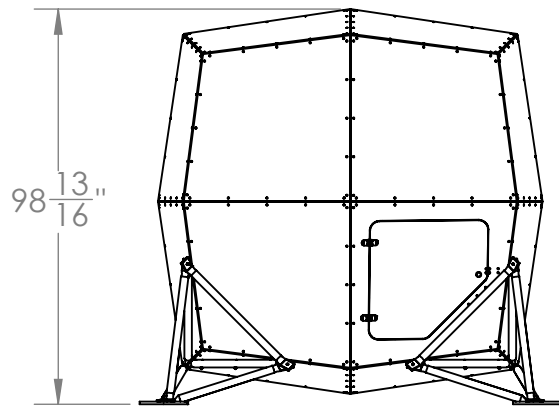


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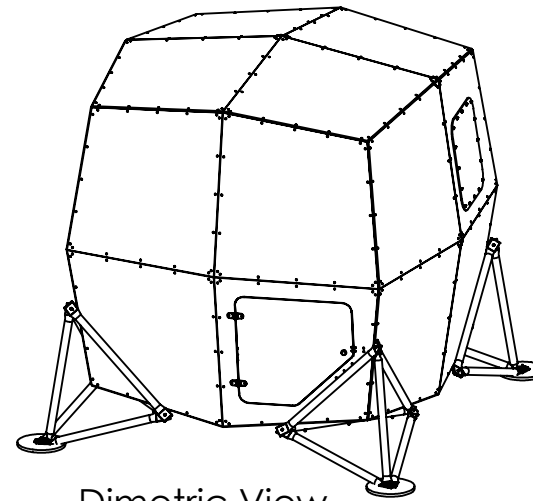


Plan View

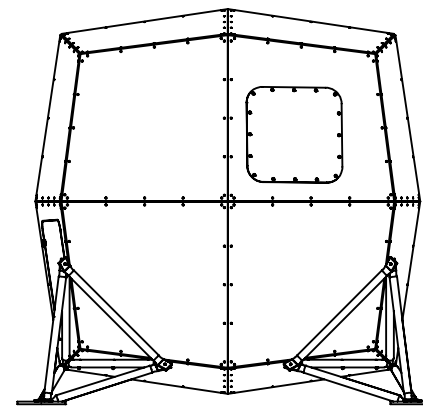


Front View

Ken Isaacs' Microhut



Dimetric View



Right Side View

To visit  
SolidWorks.me  
where links to  
free 3D CAD  
files can be  
found  
[Click Here](#)

To visit the  
July, 1972  
Popular Science  
Microhut article  
[Click Here](#)

To visit Ken Isaacs'  
Wikipedia article  
where links to his  
book can be found  
[Click Here](#)

To visit the July 2010  
TinyHouseTalk.com  
article, with photos  
[Click Here](#)

A

The Microhut first debuted in the July, 1972 edition of Popular Science magazine. Later, in 1974 Isaacs published "How to Build Your Own Living Structures" where it was renamed the 8' Microhouse. In July 2010, TinyHouseTalk.com published an article where a Microhouse was built in Glasgow, Lanarkshire, UK. The (Apollo Lunar Module looking) design used stressed skin plywood construction, and was intended to be: an inexpensive, easily transportable shelter, and have the ability to be erected on site in one day. Unfortunately the magazine, and book allowed only a limited number of pages to communicate the design. This drawing package is intended to give far more detailed dimensions than either the magazine's or book allowed, in an attempt to encourage more people to build this unique shelter. This drawing and associated CAD files are provided under a Creative Commons CC0 license, which means "do anything you want with it"; you do not need ask for permission, nor do you need to give attribution. If you build one of these, please contact me at SolidWorks.me and I will add your photos to the website. Ron Brown

B

A

ITEM	PART DESCRIPTION	CONFIGURATION	QTY
1	Horizontal Panel	With Opening	2
2	Horizontal Panel	Default	2
3	Primary Vertical Panel	Fully Open	2
4	Primary Vertical Panel	Bottom Part Open	2
5	Secondary Vertical Panel	Default	1
6	Secondary Vertical Panel	Partially Open	1
7	Secondary Vertical Panel	Bottom Part Open	1
8	Secondary Vertical Panel	Bottom Full Open	1
9	Skin Panel	Default	16
10	Skin Panel	Hatch	1
11	Skin Panel	Window	3
12	Skin Panel	Leg Mounting	4
13	Hatch	Default	1
14	Floor Panel	Default	4
15	Floor Support Long	Top	4
16	Floor Support Long	Bottom	4
17	Floor Support Short	Top	4
18	Floor Support Short	Bottom	4
19	Foot Pad	Default	4
20	Table Top	Default	1
21	Table Support	Default	2
22	Catch Block	Default	1
23	Acrylic_Window	Default	3

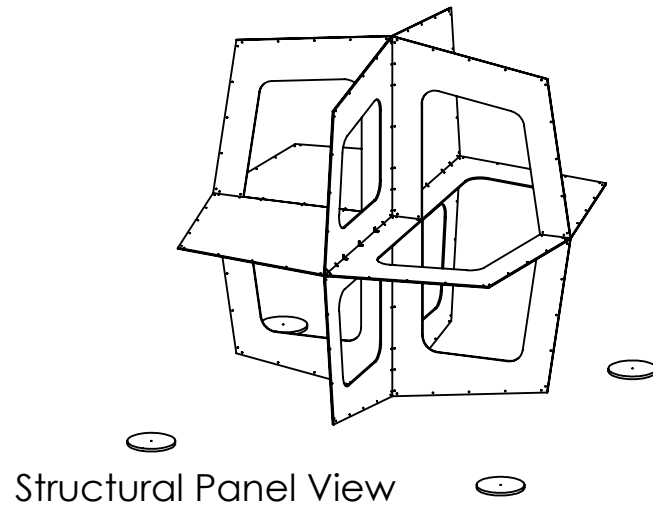
ITEM	PART DESCRIPTION	CONFIGURATION	QTY
24	Strut-A	Default	8
25	Strut-A	Mounting	4
26	Strut-B	Default	4
27	Strut-C RH	Default	4
28	Strut-C LH	Default	4
29	1 X 1 Angle Bracket	Default	150
30	1 X 1 Angle Bracket	Skin to Interior	240
31	1 X 1 Angle Bracket	Skin to Skin	120
32	1-4 - 20 X 4 PHMS	Std. Hardware	2
33	1-4 - 20 X 2 3-4 HHMS	Std. Hardware	12
34	1-4 - 20 Wing Nut	Std. Hardware	2
35	1-4 - 20 Hex Nut	Std. Hardware	28
36	1-4 - 20 X 1 1-2 HHMS	Std. Hardware	12
37	1-4 - 20 X 2 FHMS	Std. Hardware	4
38	Fender Washer 1-4 X 2	Std. Hardware	16
39	10-32 X 3-4 FHMS	Std. Hardware	759
40	#10 X 1 Wood Screw	Std. Hardware	6
41	#10 Flat Washer	Std. Hardware	96
42	10-32 Hex Nut	Std. Hardware	808
43	10-32 X 1 PHMS	Std. Hardware	48
44	8-32 Hex Nut	Std. Hardware	12
45	8-32 X 3-4 FHMS	Std. Hardware	13
46	Sealing Washer	Std. Hardware	48
47	Strap Hinge	Std. Hardware	2
48	Magnetic Catch	Std. Hardware	1
49	Slide Bolt Latch	Std. Hardware	1
50	Door pull knob	Std. Hardware	1
51	3M Tedlar Tape	2" Wide	1
52	Exterior Paint	House Paint	1
53	Polyurethane Coating	Seal Int. Wood	1
54	Silicone Sealer	Window Sealer	1

Original Design by: Ken Isaacs: [PopularScienceMag.1972](http://PopularScienceMag.1972)  
 Redrawn by: Ron Brown, CAD files available [SolidWorks.me](http://SolidWorks.me)

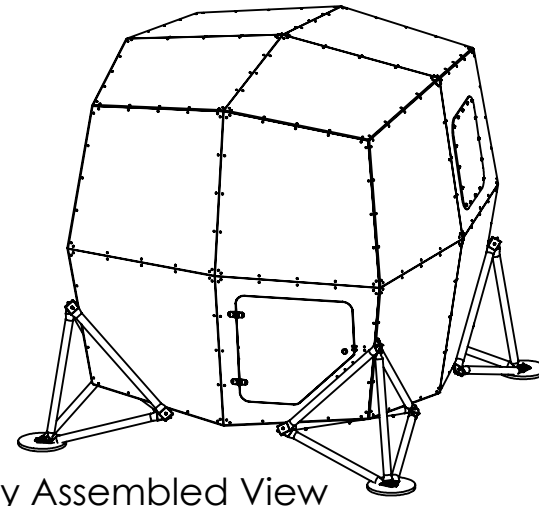
DWG Title: Micro Hut	Rev A
SHEET 2 OF 30	Rev A

**A**

B



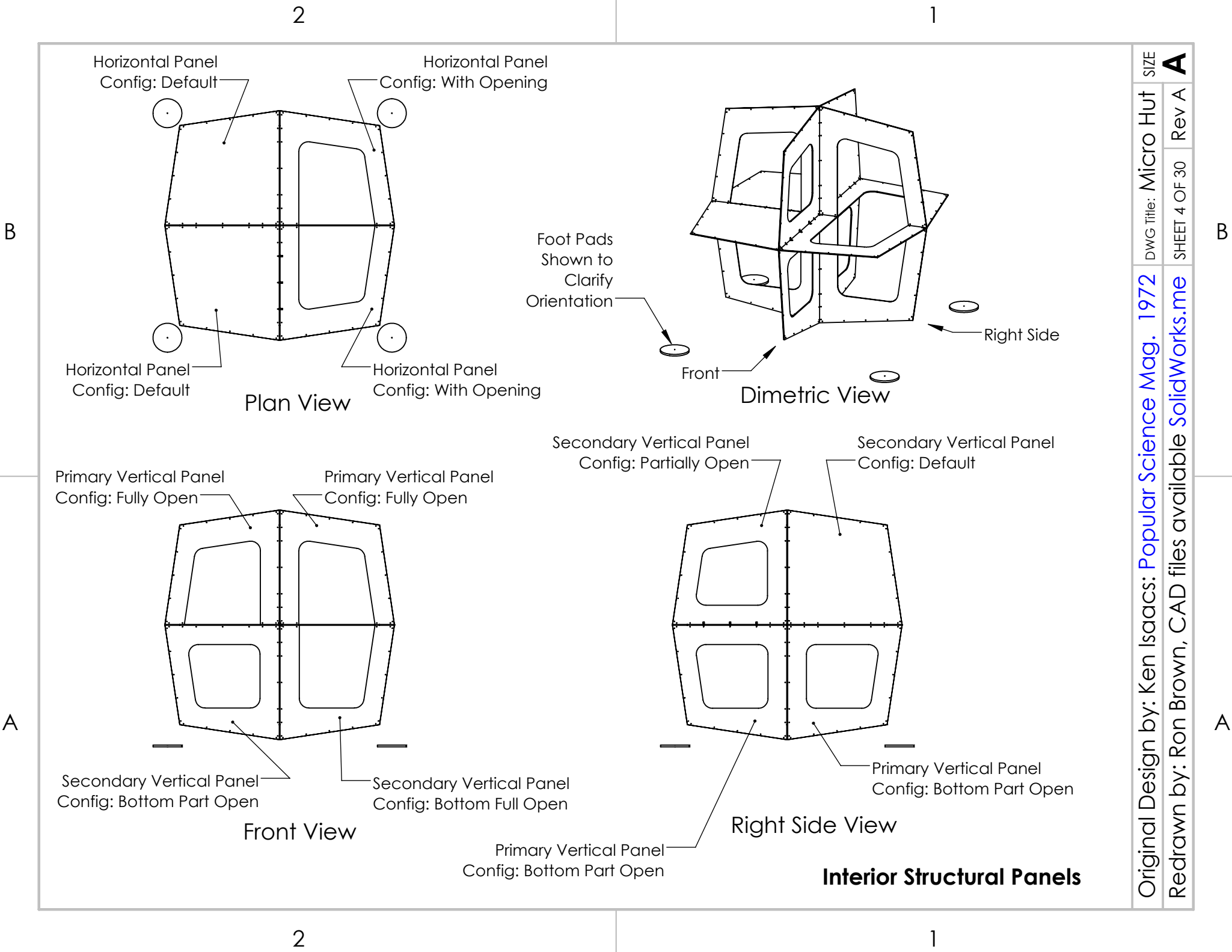
Fully Assembled View

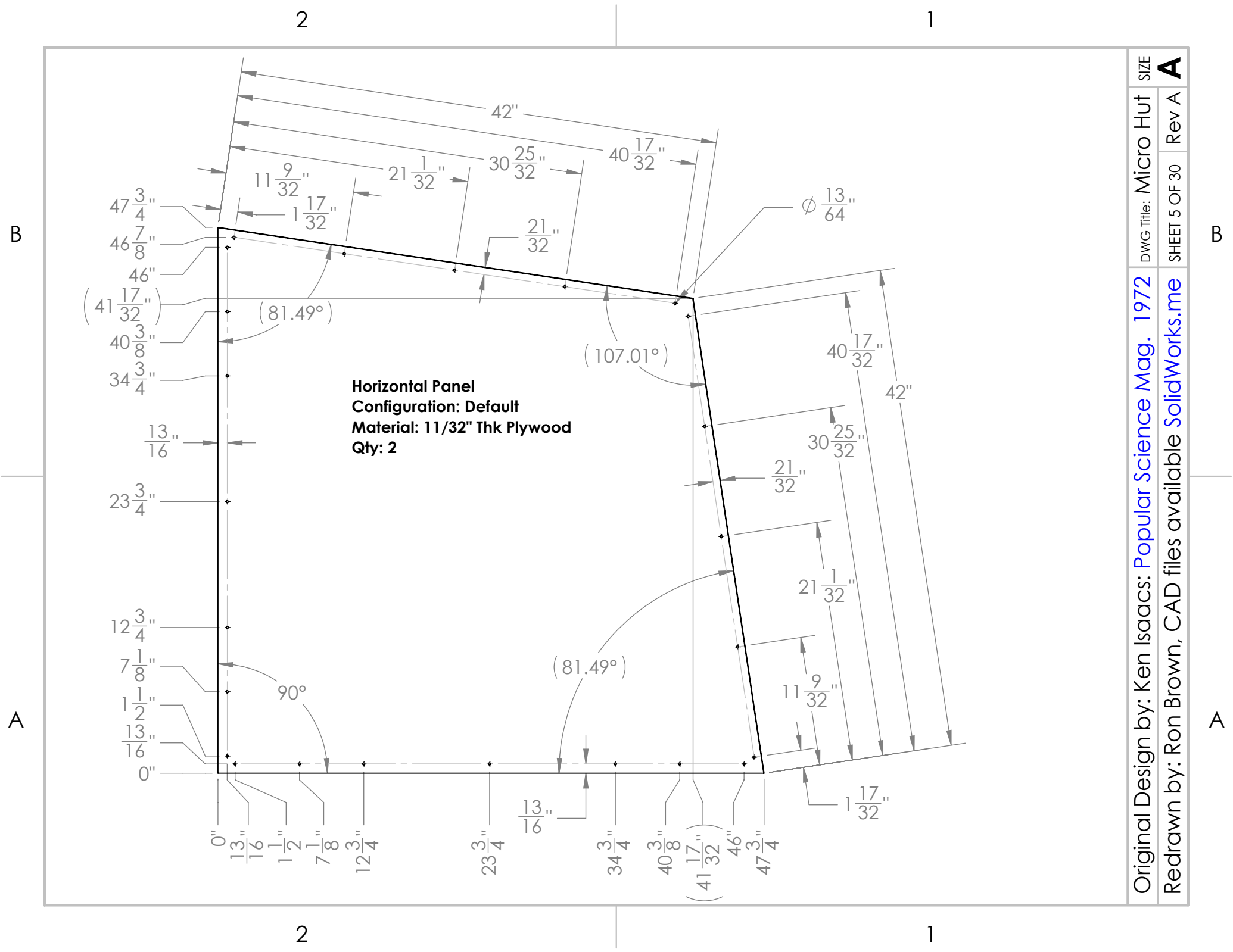


The Microhut consists of 12 interior structural panels, covered with 24 exterior skin panels, and supported by 4 tetrahedral legs that are reminiscent of the Apollo Lunar Excursion Module (LEM). The structural panels, skin panels floor panels and supports, as well as a few Misc. items are created from 11/32" (3/8" Nominal) A-C sheathing grade plywood. This requires 21 sheets of 11/32 plywood. The structural and skin panels are fabricated from 4' x 4' half sheets of plywood. This allows transporting the stack of panels in the rear of an SUV. If transporting 4' x 8' sheets is acceptable, making the horizontal panels and primary vertical panels from a full 8' sheet will increase strength and reduce cost and build time. Be sure to study the design to see which configurations of panels can be combined if you take this route. The legs are fabricated from 1-1/2" (approx. 1-7/8 OD) thin walled electrical conduit. This requires 8, 10' sections of conduit. Considerable effort has been made to keep the design as close as possible to Ken Isaacs' original design, but there were some dimensional errors published in the Popular Science article. Please use the dimensions shown in this drawing package only. As others build this shelter, and give me feedback, I will update the drawing package with any corrections or improvements that I believe warrant making the changes. So, if you are going to build one, please check SolidWorks.me for the latest drawing revision. The drawing revision can be found in the upper right corner of the title block. I invite your feedback for corrections or clarification. The original design in this drawing package will need to stay "as is"; it is to remain a tribute to Ken Isaacs original work. As such, I will not be making changes to the actual design, only correcting any mistakes or adding clarification to instructions. Of course, you are free, and encouraged to make any changes you wish. Everyone is encouraged to read the July, 1972 Popular Science article, and the section of Isaac's book "How to Build Your Own Living Structures" (pages 94-107), as well as the more recent (2010) article on TinyHouseTalk.com, Links are provided on sheet 1 of this drawing package. These articles and the book contain additional information that I have not provided here, copyright prevents me from copying photographs, or the entire text here. Building a Microhut will require a few "less common" tools: a beam compass, a regular drawing compass, a digital protractor (wixey.com) and a precision marking rule (incra.com). You will also need to develop the ability to use a tape measure to mark 1/32" increments. This can be done by marking between the 1/16" increments on the tape. The marking part is easy, but remembering which 1/32" increment is between which two 1/16" increments is more difficult, and invites errors. Double check all measurements. Using 1/32" increments was chosen, because the mounting hole locations of the panels are all rounded to the nearest 1/32" increment, and rounding to a 1/16" increment may cause binding in some locations. Isaacs recommends stacking up and clamping "Like Panels" together, and drilling the holes with a drill press for greater accuracy.

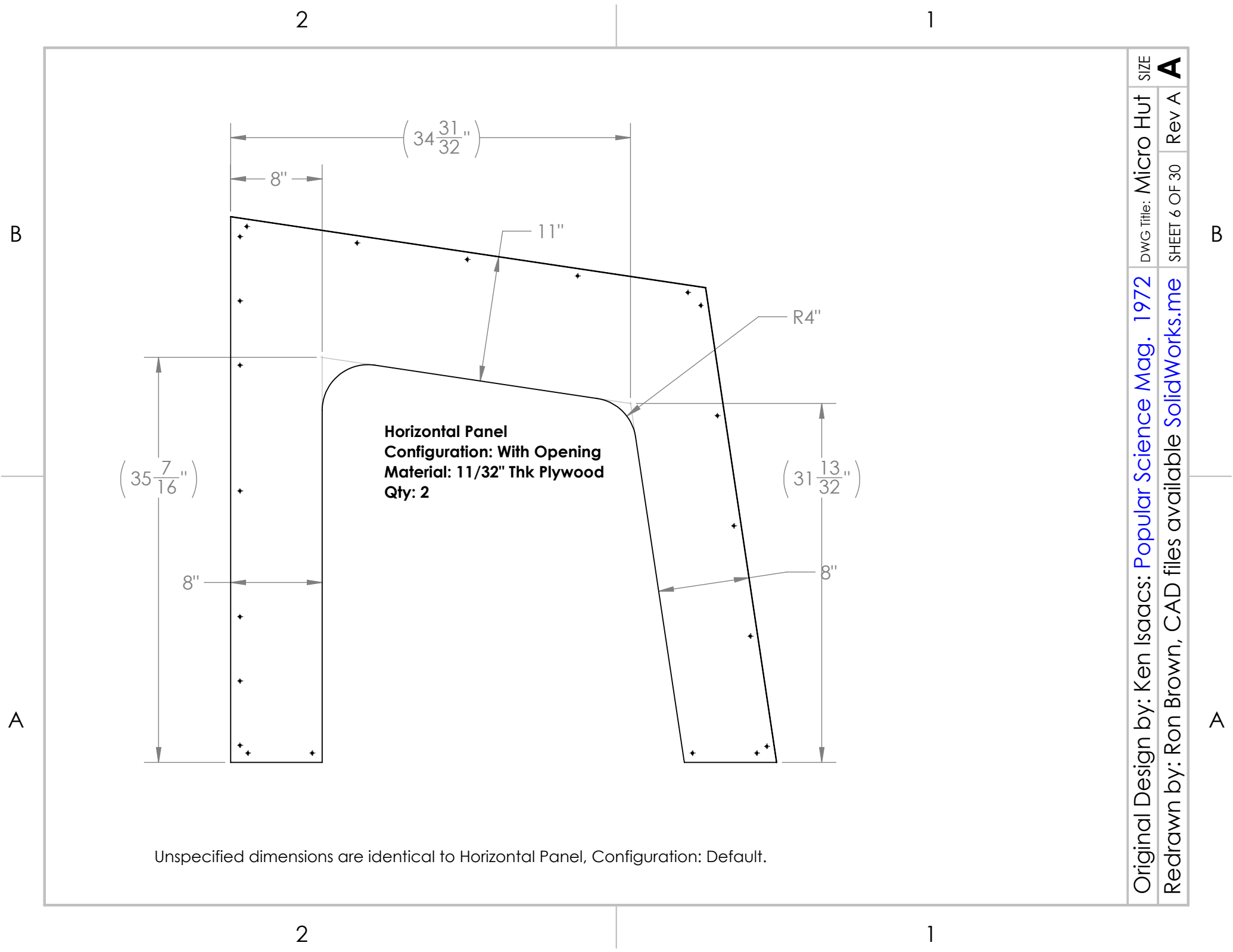
B

A

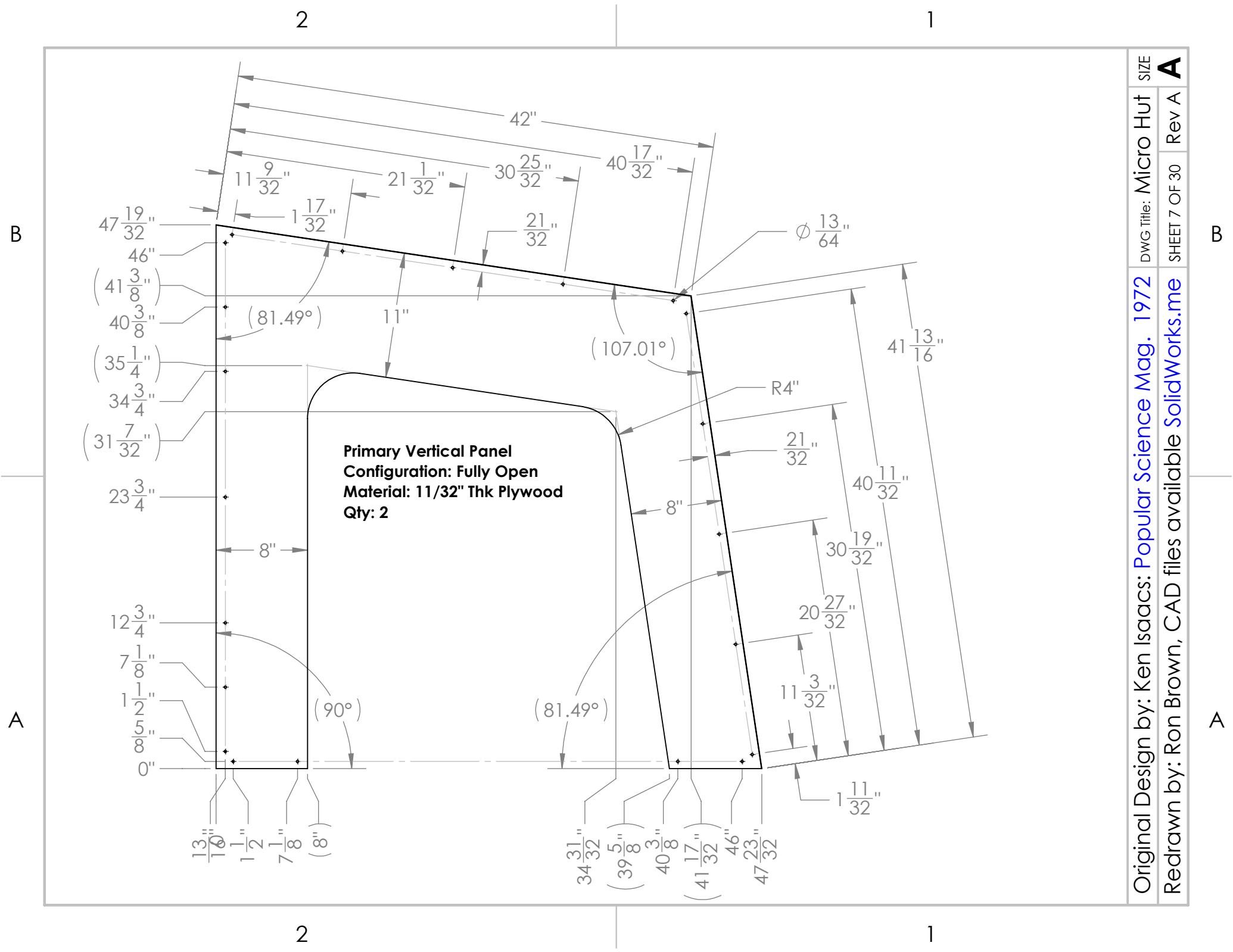


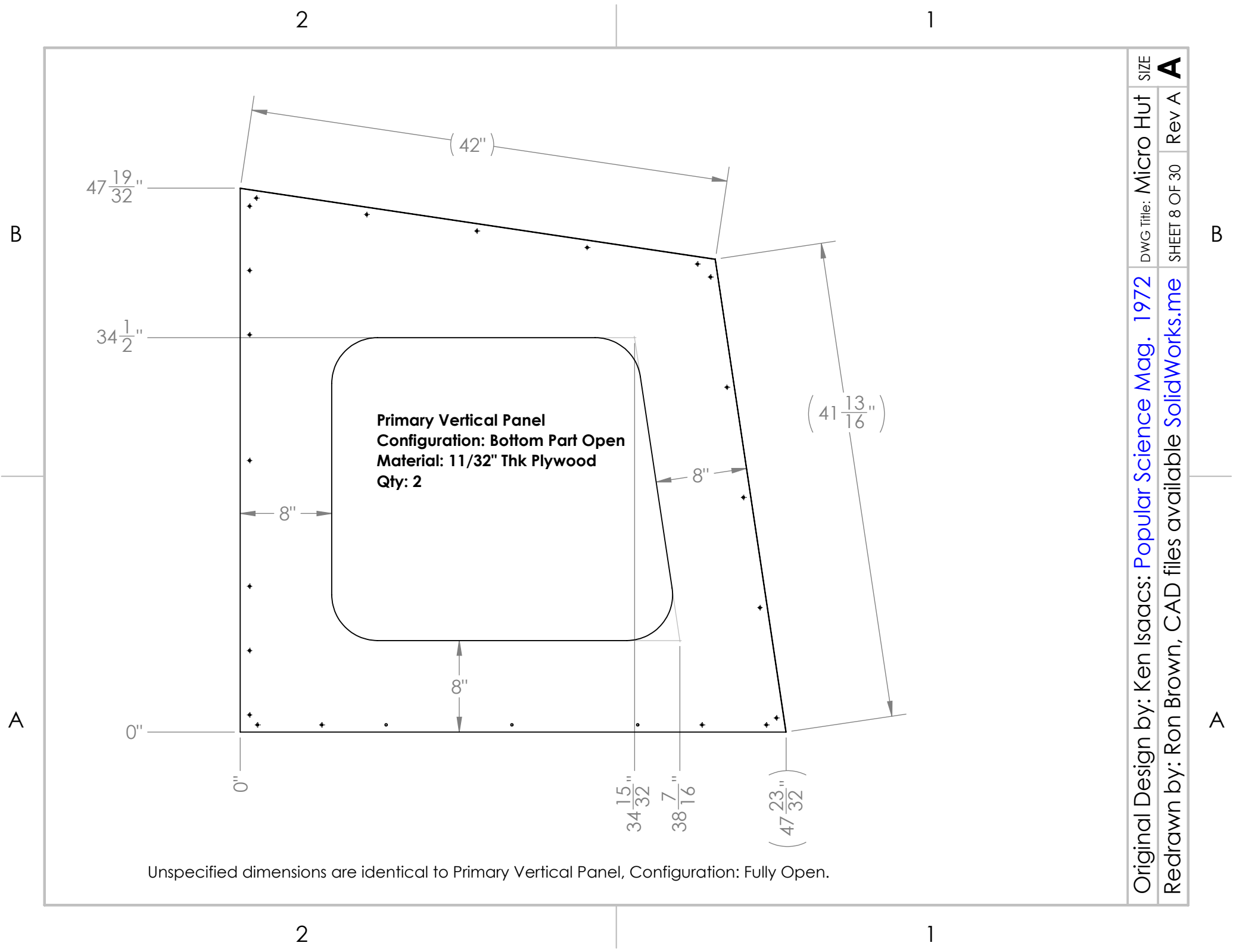


Original Design by: Ken Isaacs: <a href="#">Popular Science Mag. 1972</a>		DWG Title: Micro Hut	SIZE
Redrawn by: Ron Brown, CAD files available <a href="#">SolidWorks.me</a>		SHEET 5 OF 30	Rev A



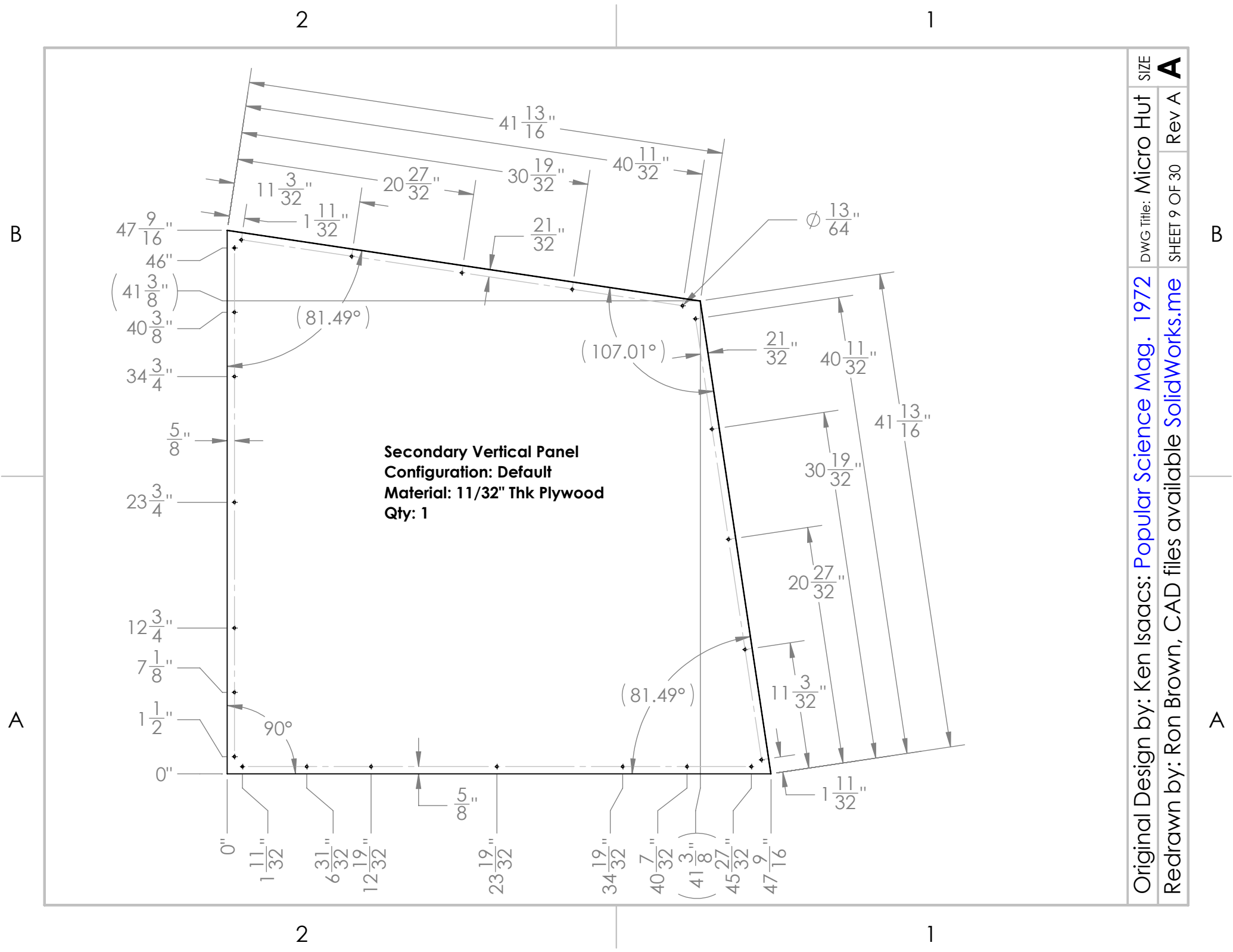
Original Design by: Ken Isaacs: <a href="#">Popular Science Mag. 1972</a> Redrawn by: Ron Brown, CAD files available <a href="#">SolidWorks.me</a>	DWG Title: Micro Hut	SIZE <b>A</b>
	SHEET 6 OF 30	Rev A

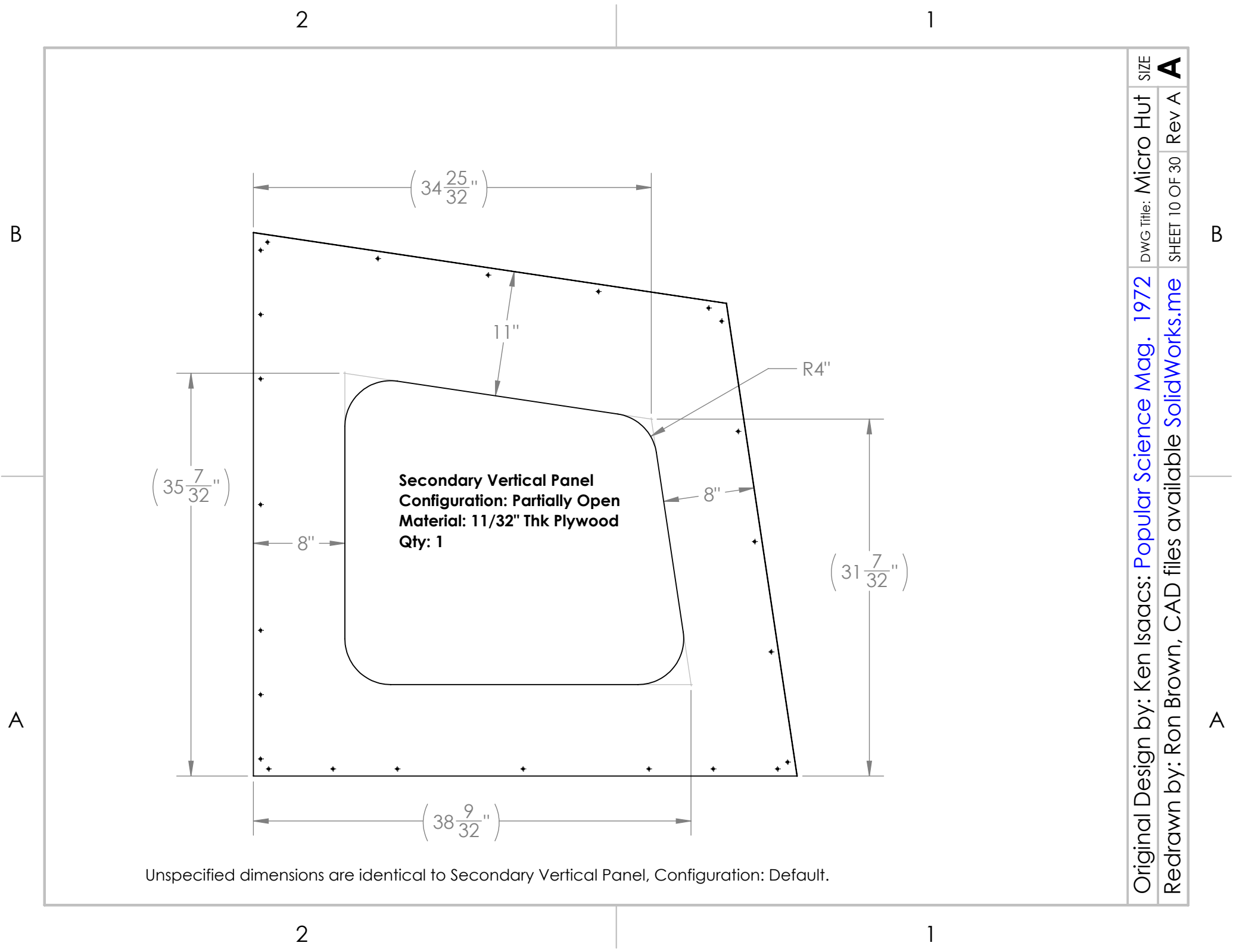




Original Design by: Ken Isaacs: <a href="#">Popular Science Mag. 1972</a> Redrawn by: Ron Brown, CAD files available <a href="#">SolidWorks.me</a>	DWG Title: Micro Hut	SIZE
	SHEET 8 OF 30	Rev A

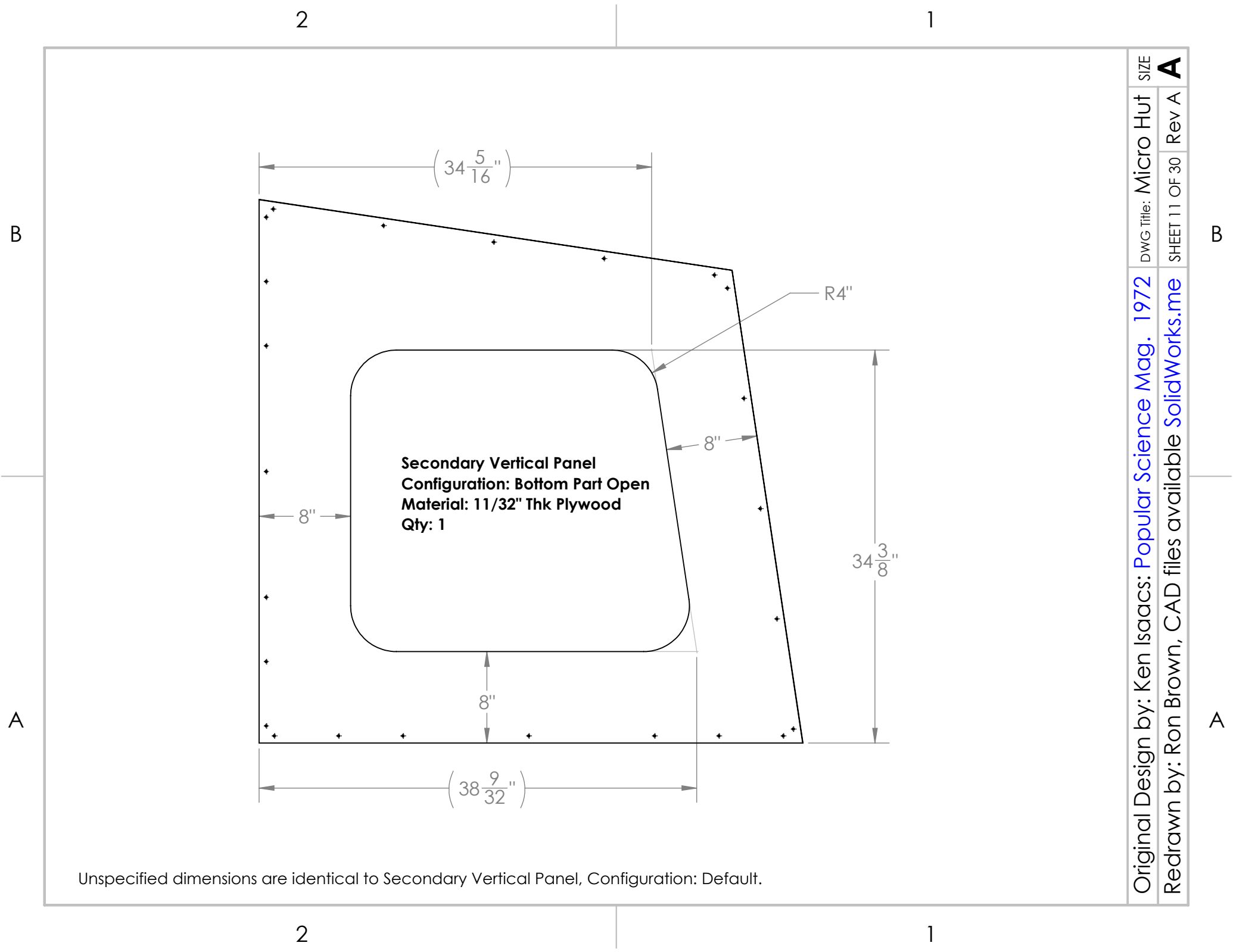




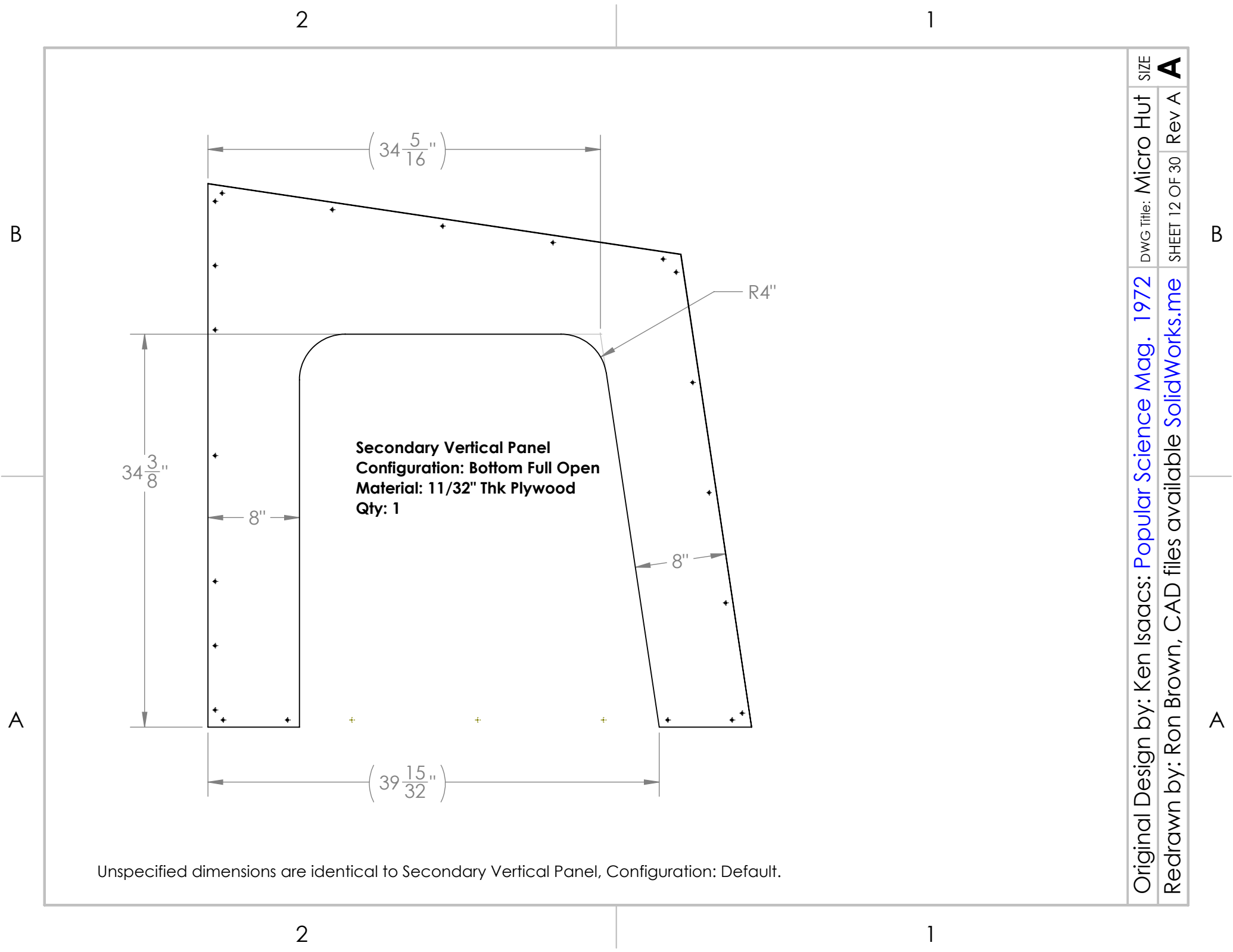


Unspecified dimensions are identical to Secondary Vertical Panel, Configuration: Default.

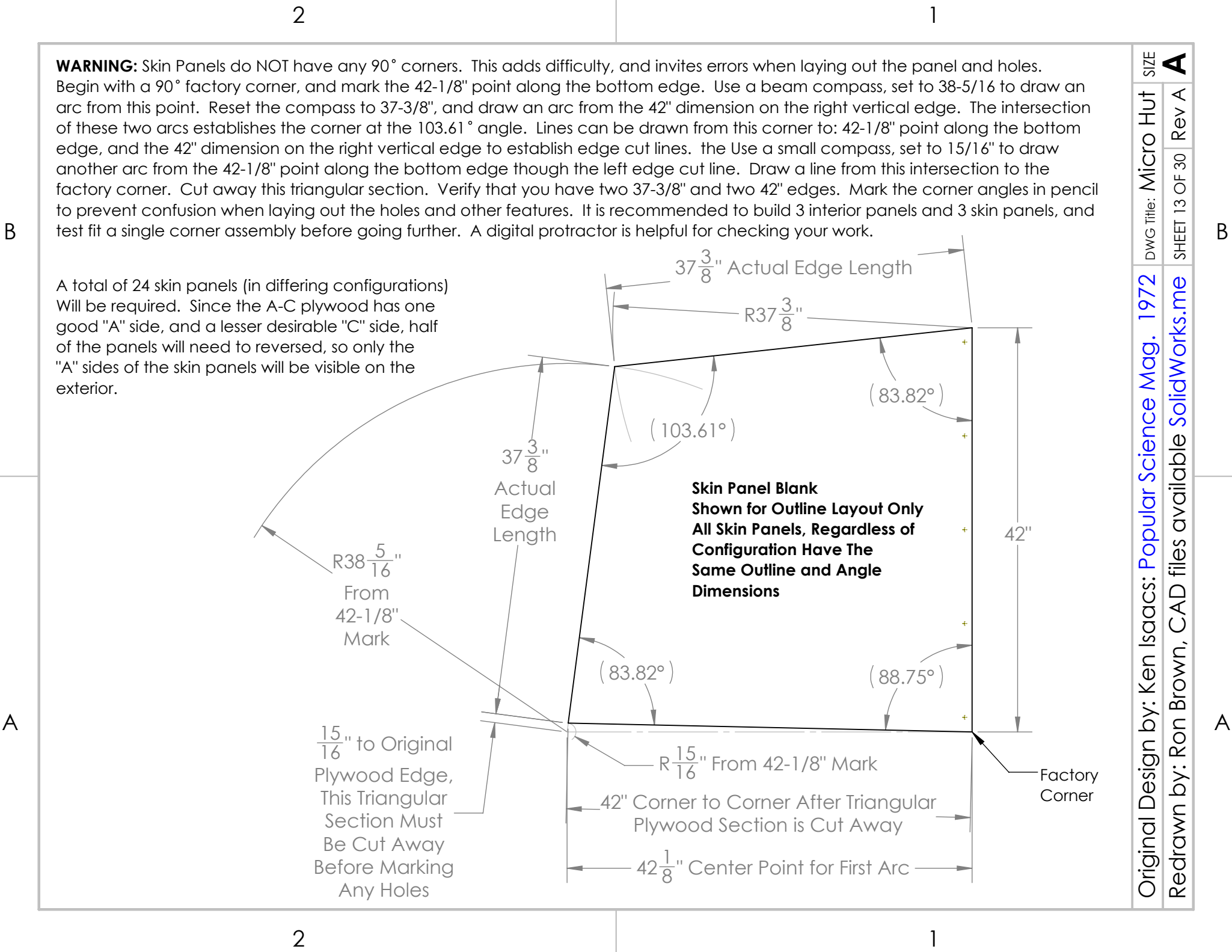
Original Design by: Ken Isaacs: <a href="#">Popular Science Mag. 1972</a> Redrawn by: Ron Brown, CAD files available <a href="#">SolidWorks.me</a>	DWG Title: Micro Hut	SIZE <b>A</b>
	SHEET 10 OF 30	Rev A



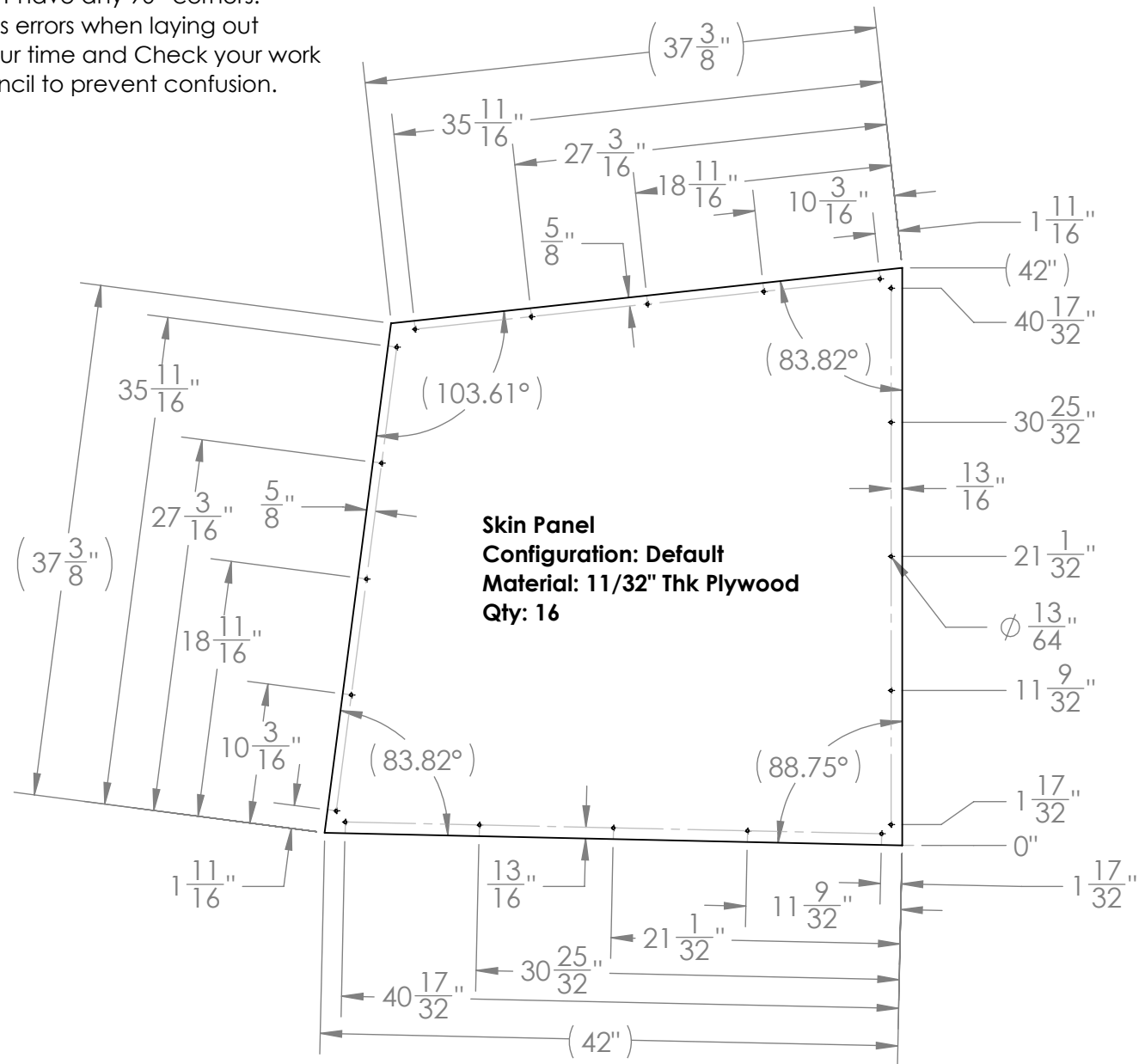
Original Design by: Ken Isaacs: <a href="#">Popular Science Mag. 1972</a>		DWG Title: Micro Hut	SIZE
Redrawn by: Ron Brown, CAD files available <a href="#">SolidWorks.me</a>		SHEET 11 OF 30	Rev A



Original Design by: Ken Isaacs: <a href="#">Popular Science Mag. 1972</a> Redrawn by: Ron Brown, CAD files available <a href="#">SolidWorks.me</a>	DWG Title: Micro Hut	SIZE <b>A</b>
	SHEET 12 OF 30	Rev A

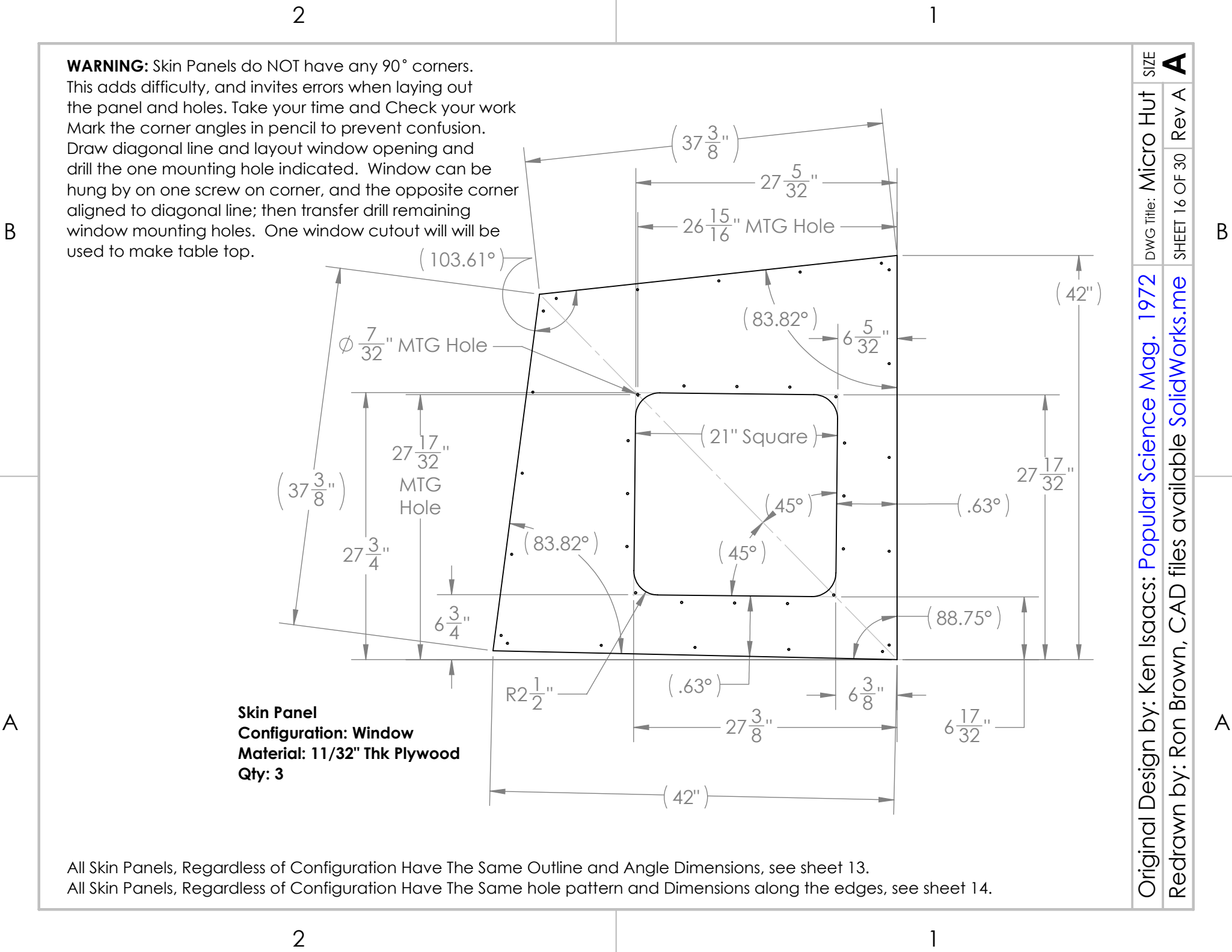


**WARNING:** Skin Panels do NOT have any 90° corners.  
This adds difficulty, and invites errors when laying out the panel and holes. Take your time and Check your work  
Mark the corner angles in pencil to prevent confusion.



All Skin Panels, Regardless of Configuration Have The Same Outline and Angle Dimensions, see sheet 13.



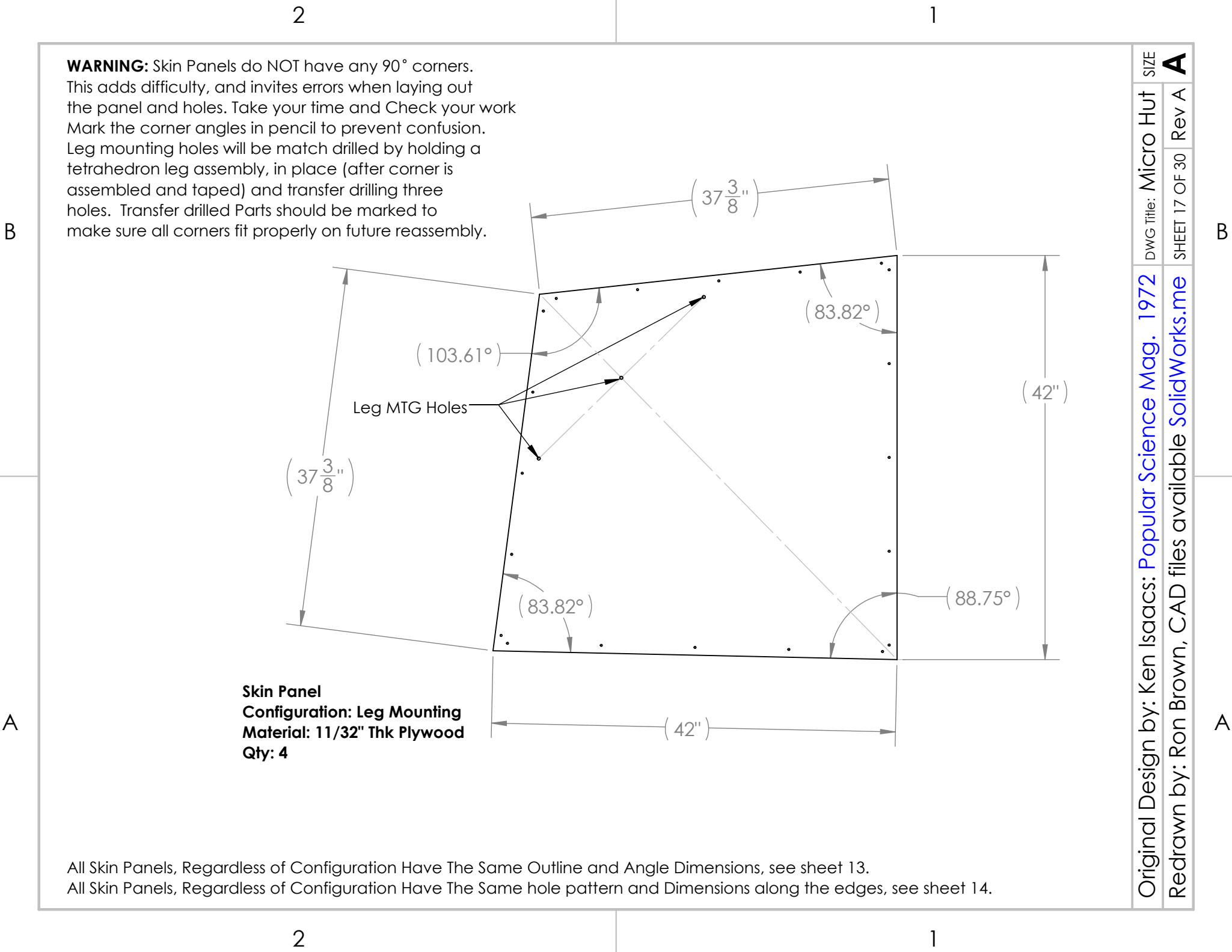


**WARNING:** Skin Panels do NOT have any 90° corners. This adds difficulty, and invites errors when laying out the panel and holes. Take your time and Check your work. Mark the corner angles in pencil to prevent confusion. Draw diagonal line and layout window opening and drill the one mounting hole indicated. Window can be hung by on one screw on corner, and the opposite corner aligned to diagonal line; then transfer drill remaining window mounting holes. One window cutout will will be used to make table top.

**Skin Panel**  
**Configuration: Window**  
**Material: 11/32" Thk Plywood**  
**Qty: 3**

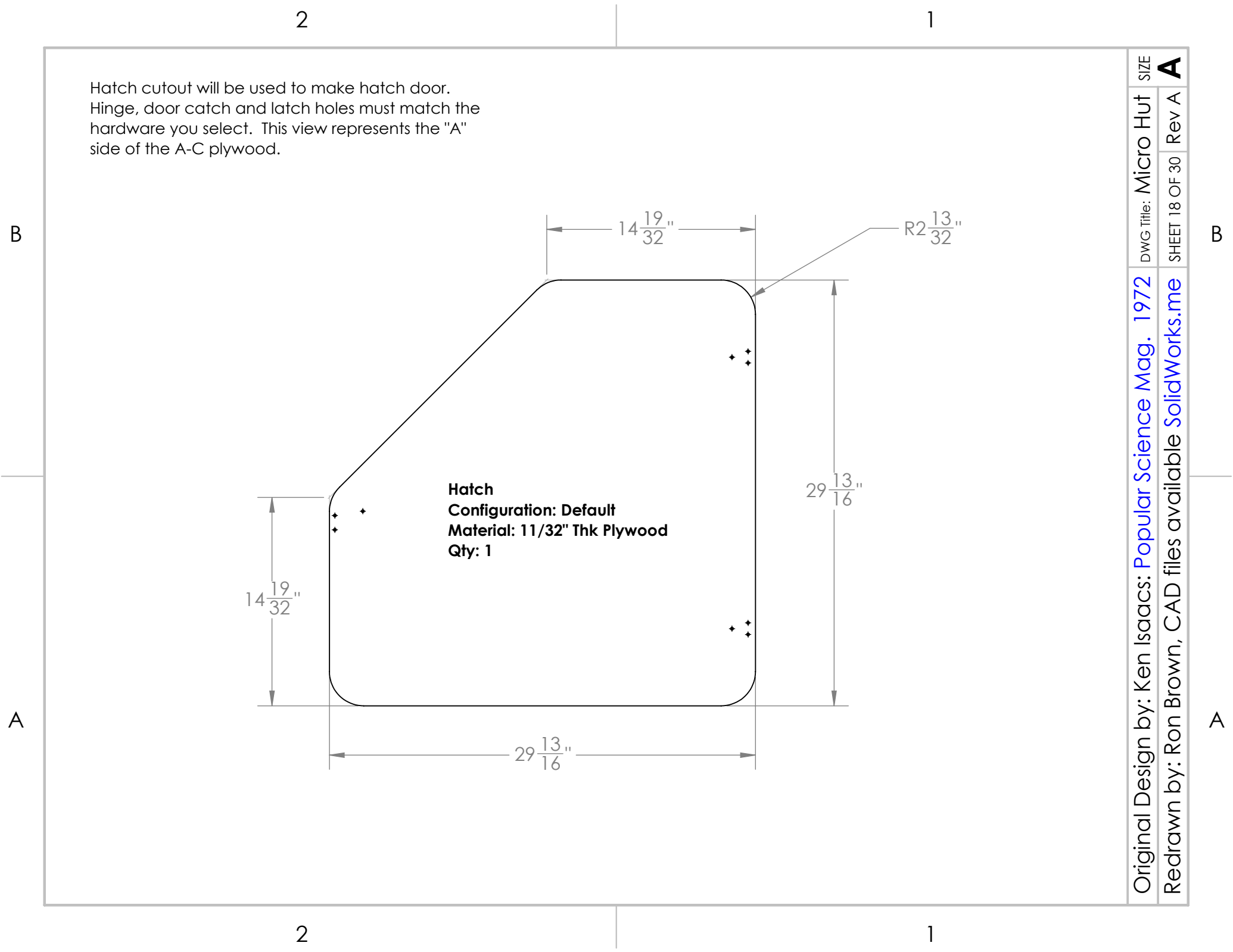
All Skin Panels, Regardless of Configuration Have The Same Outline and Angle Dimensions, see sheet 13.  
All Skin Panels, Regardless of Configuration Have The Same hole pattern and Dimensions along the edges, see sheet 14.

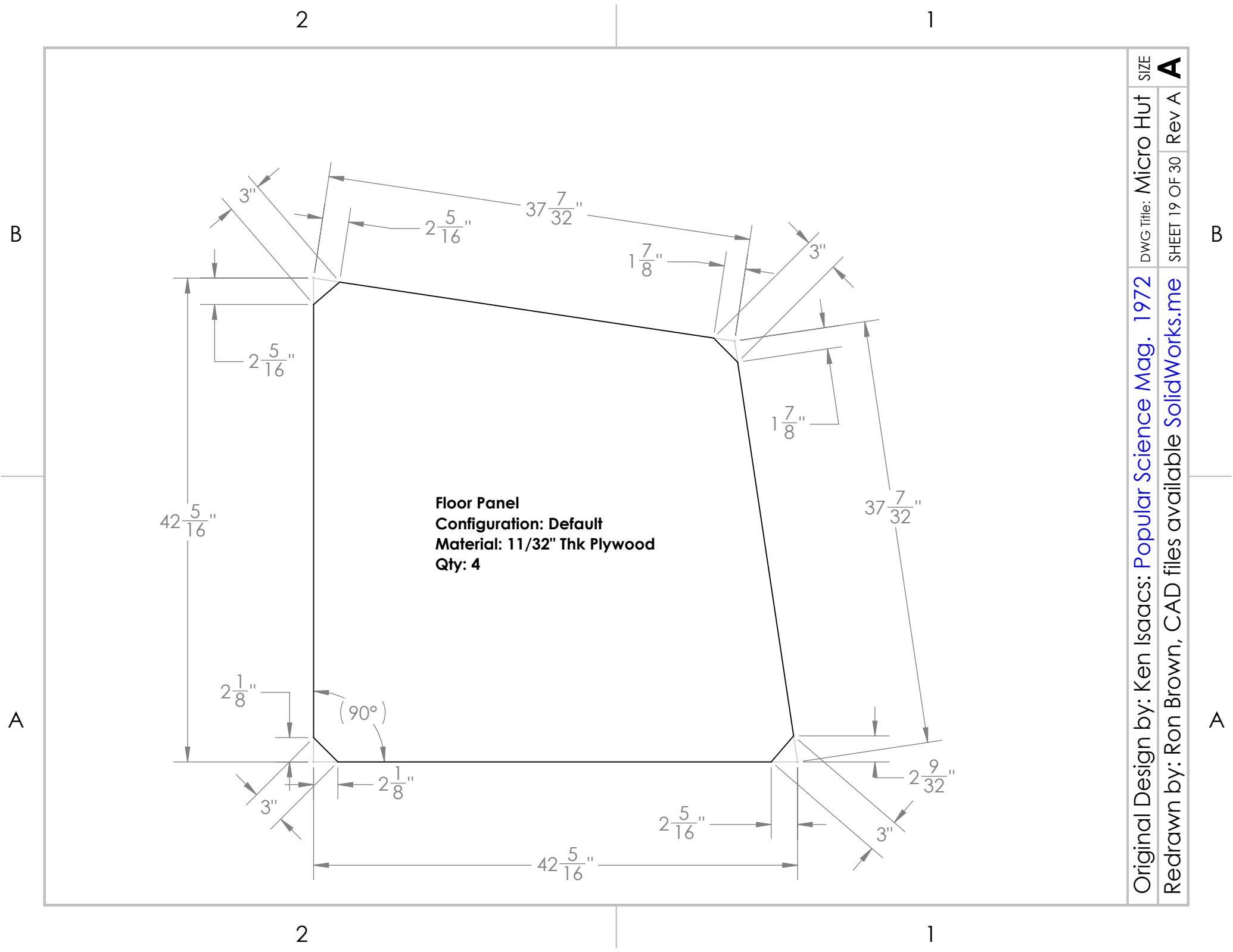


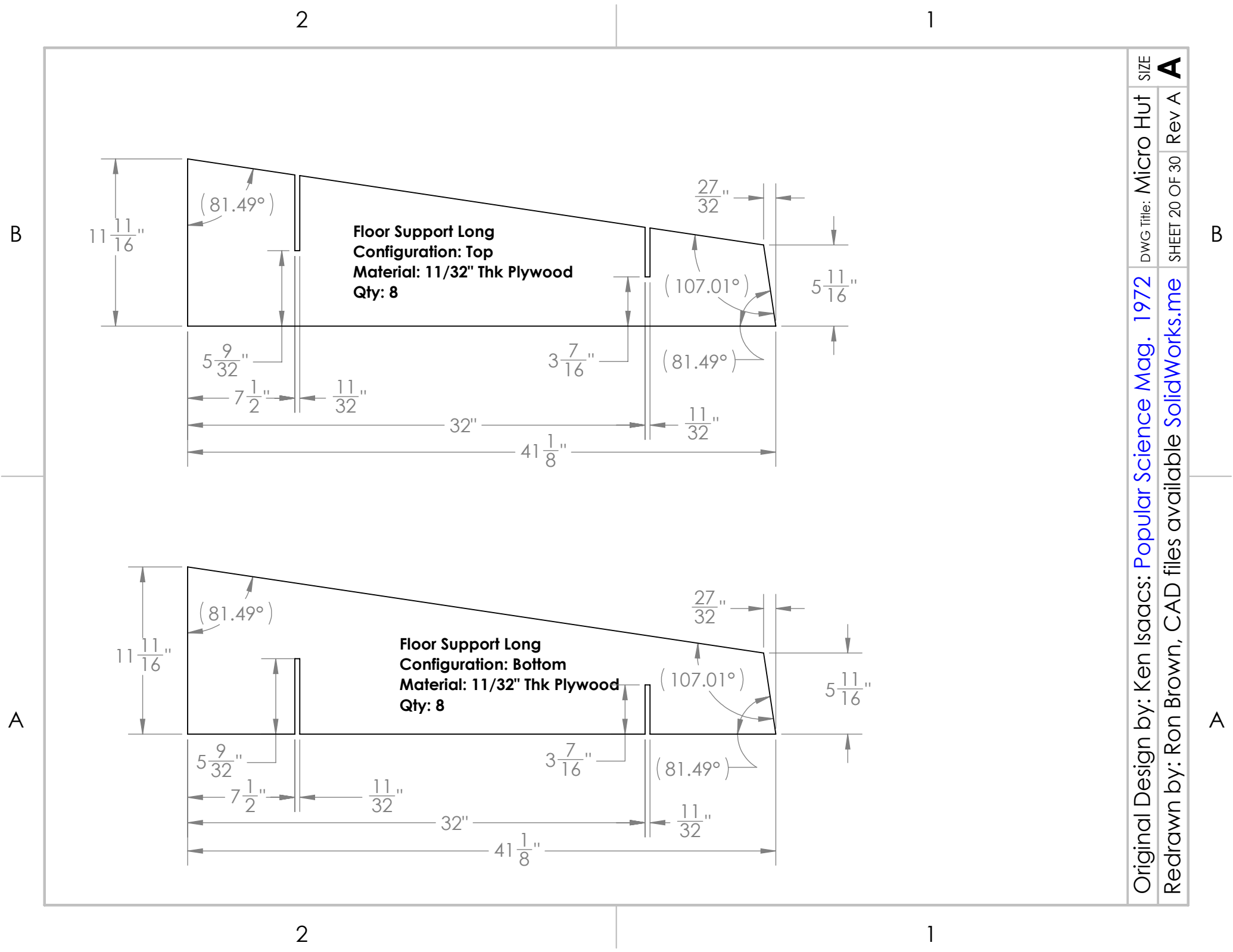


All Skin Panels, Regardless of Configuration Have The Same Outline and Angle Dimensions, see sheet 13.  
All Skin Panels, Regardless of Configuration Have The Same hole pattern and Dimensions along the edges, see sheet 14.

Original Design by: Ken Isaacs: <a href="#">Popular Science Mag. 1972</a> Redrawn by: Ron Brown, CAD files available <a href="#">SolidWorks.me</a>	DWG Title: Micro Hut	SIZE <b>A</b>
	SHEET 17 OF 30	Rev A







Original Design by: Ken Isaacs: <a href="#">Popular Science Mag. 1972</a> Redrawn by: Ron Brown, CAD files available <a href="#">SolidWorks.me</a>	DWG Title: Micro Hut	SIZE <b>A</b>
	SHEET 20 OF 30	Rev A

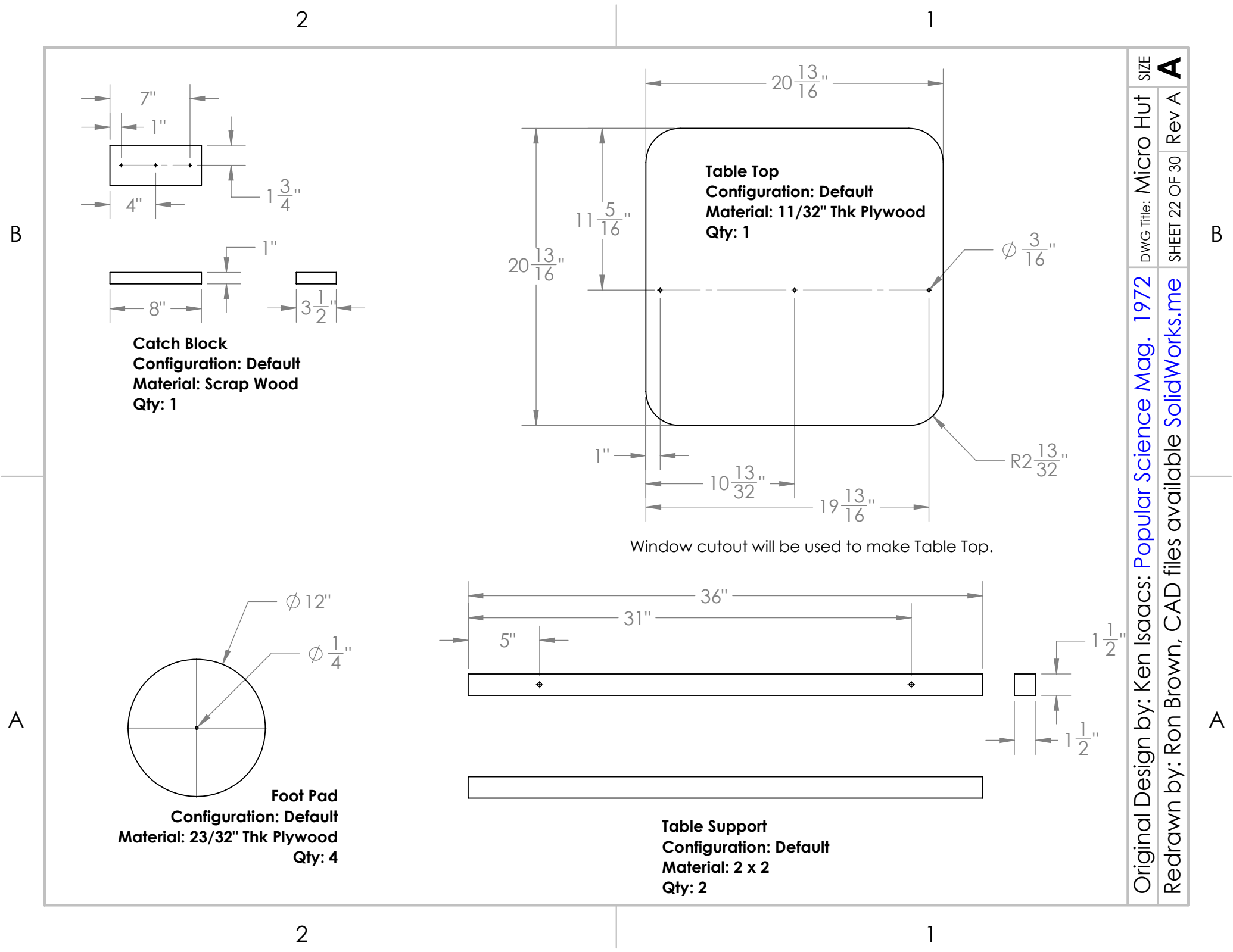
1

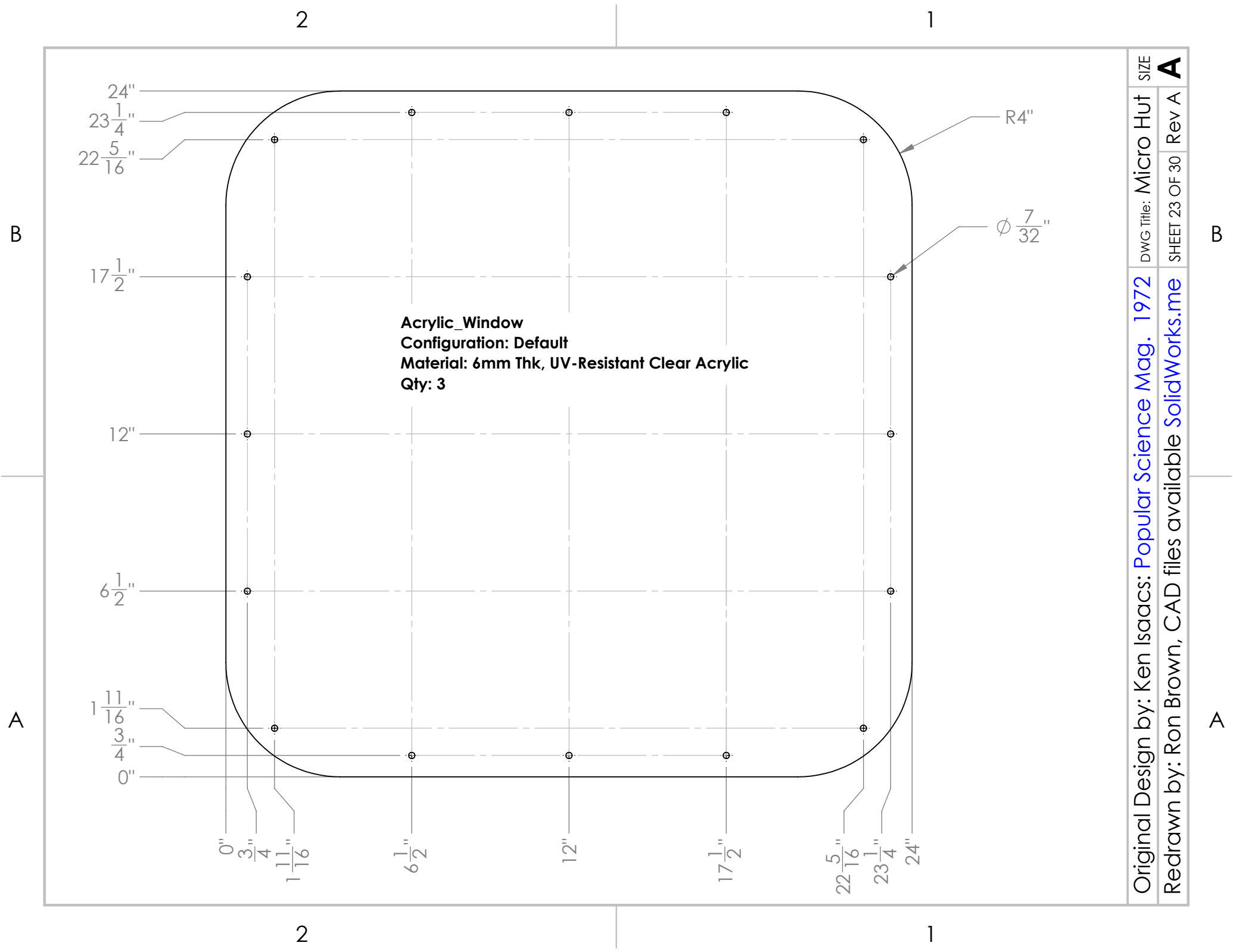
B



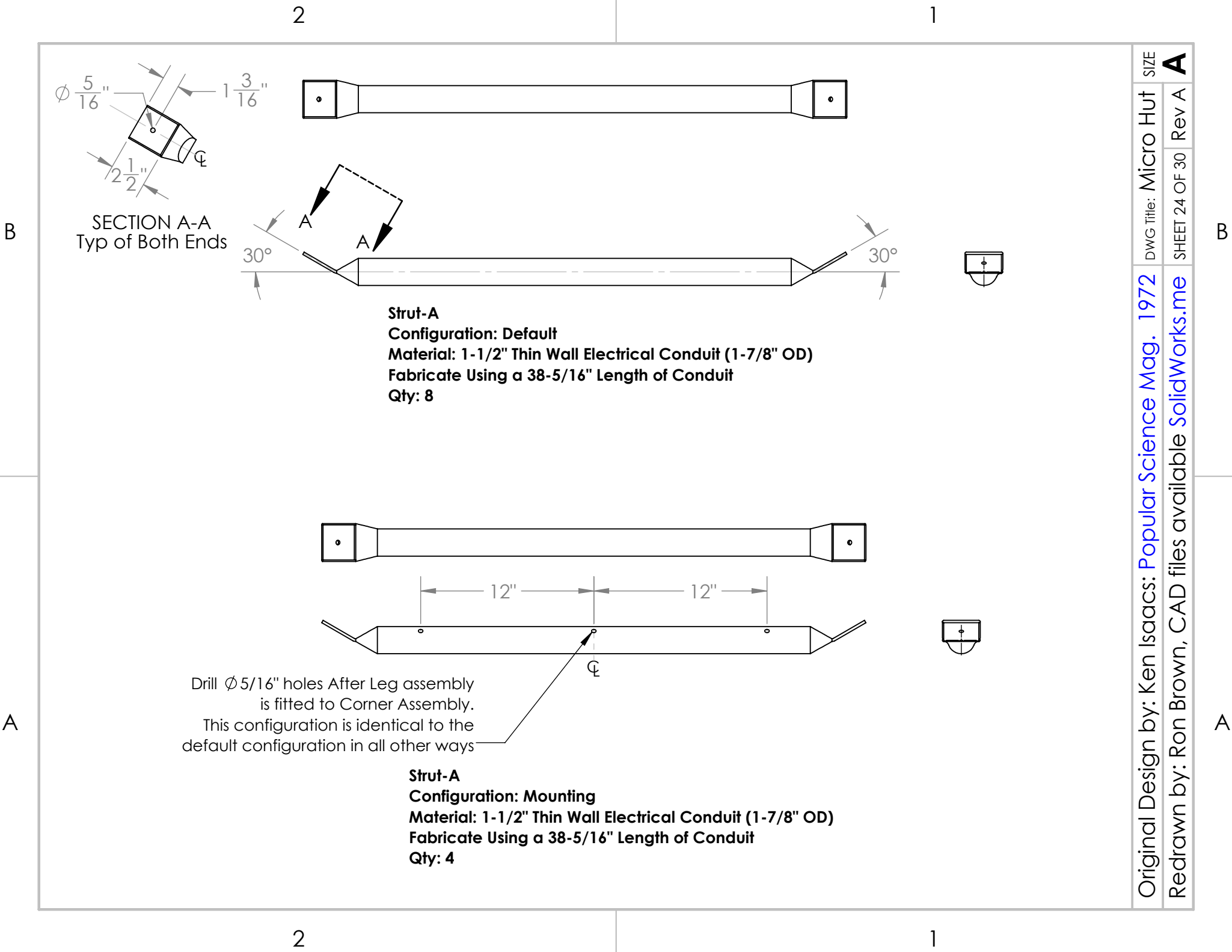
A







Original Design by: Ken Isaacs: <a href="#">Popular Science Mag. 1972</a>		DWG Title: Micro Hut	SIZE
Redrawn by: Ron Brown, CAD files available <a href="#">SolidWorks.me</a>		SHEET 23 OF 30	Rev A



Original Design by: Ken Isaacs: <a href="#">Popular Science Mag. 1972</a> Redrawn by: Ron Brown, CAD files available <a href="#">SolidWorks.me</a>	DWG Title: Micro Hut	SIZE <b>A</b>
	SHEET 24 OF 30	Rev A



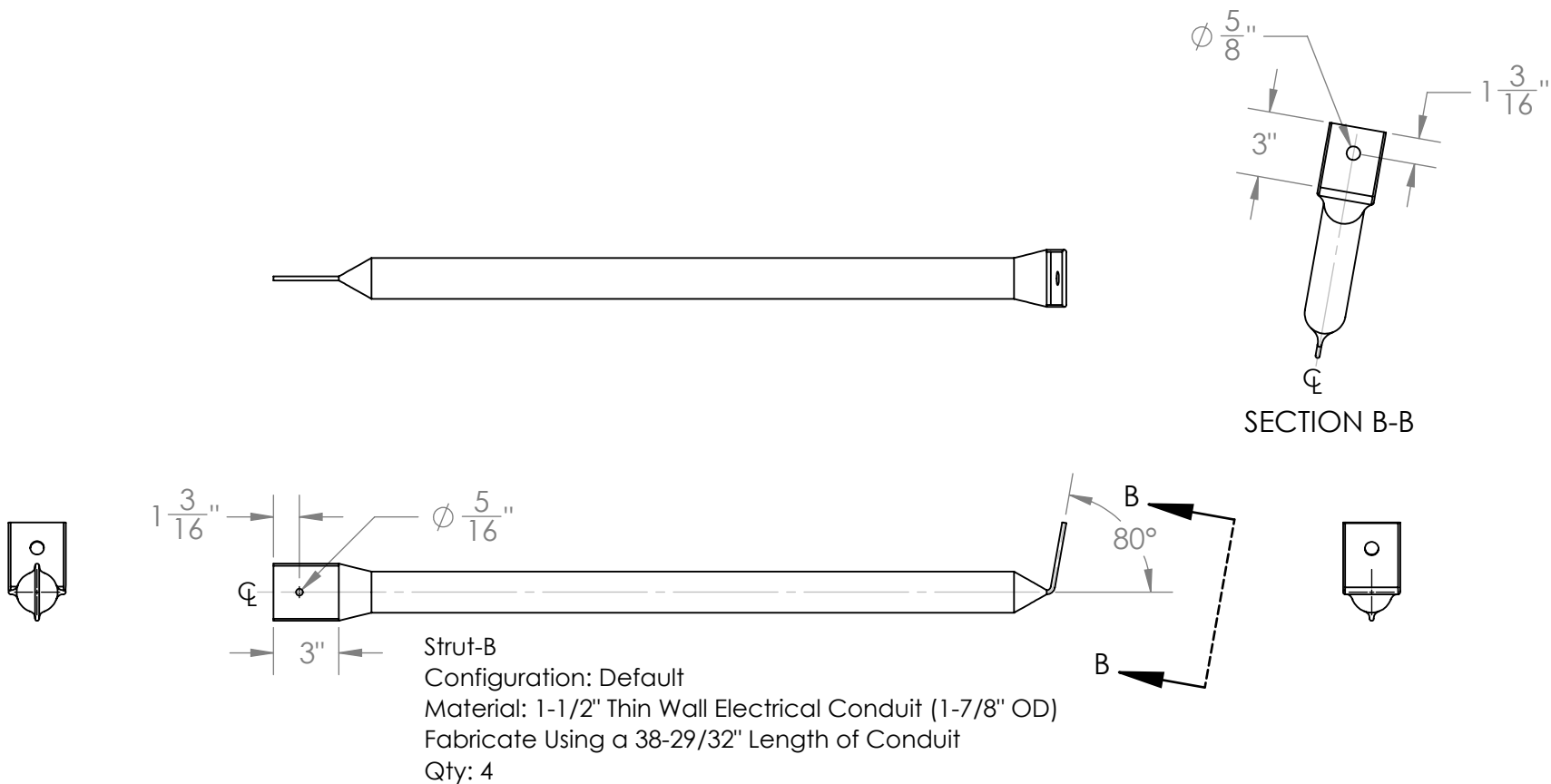
The struts are fabricated by cutting sections of conduit to the lengths shown, marking the flange length, rotating the conduit to the correct orientation and flattening the flanges in a heavy duty bench vise. The bends can be made while the conduit is still in the vise. A digital protractor will be an essential tool for these tasks. The holes must be drilled through the flanges after flattening and bending. All drawings in this package are third angle projections; if you are not familiar with reading mechanical drawings, please get help from someone familiar with print reading to help you understand the more complex rotation angles and bends. Start by building one complete leg assembly and fitting it to one corner assembly, and drilling the mounting holes through the skin panel before proceeding to the rest of the legs. Once a leg is match assembled to a corner mark all of the parts to be sure the same corner will fit together properly in the future.

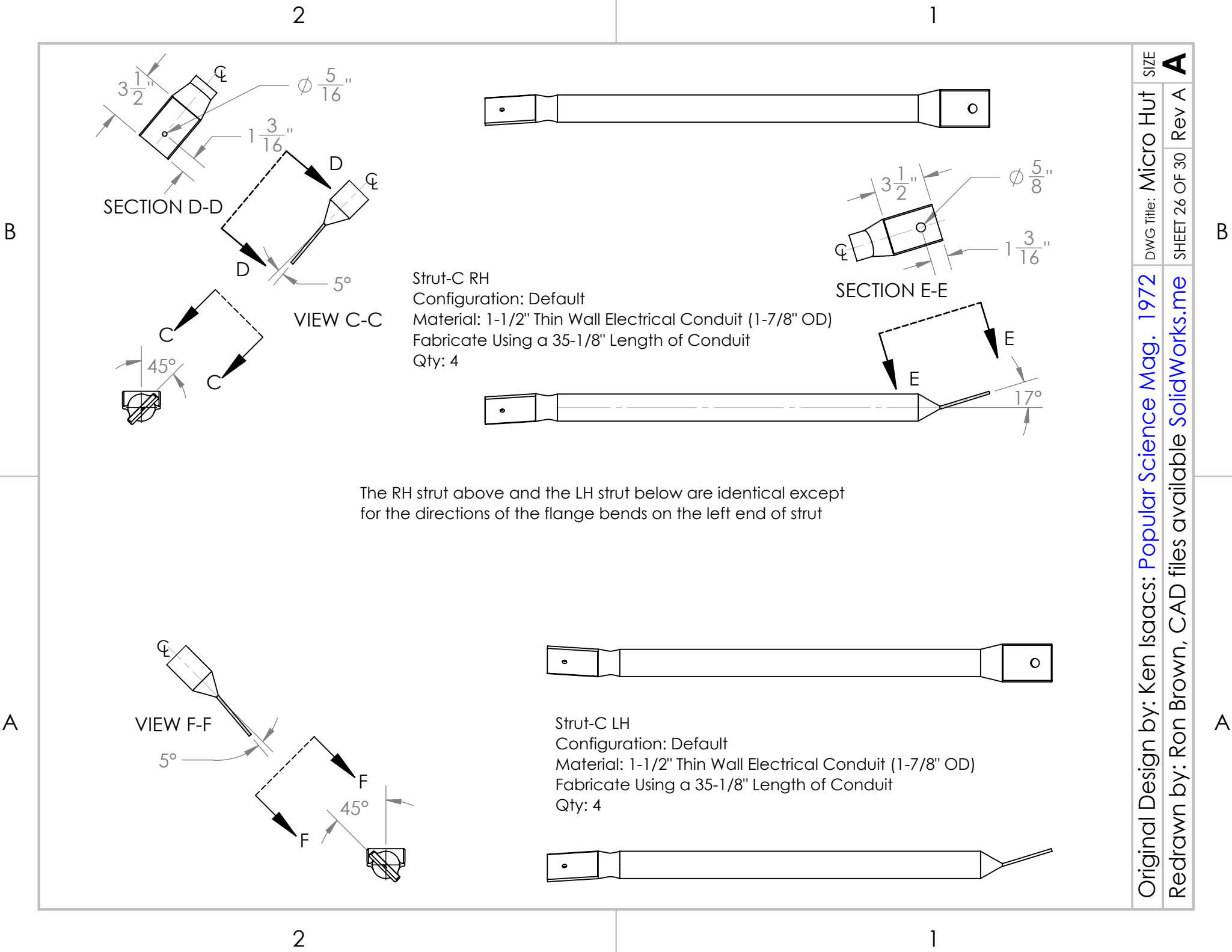
B

B

A

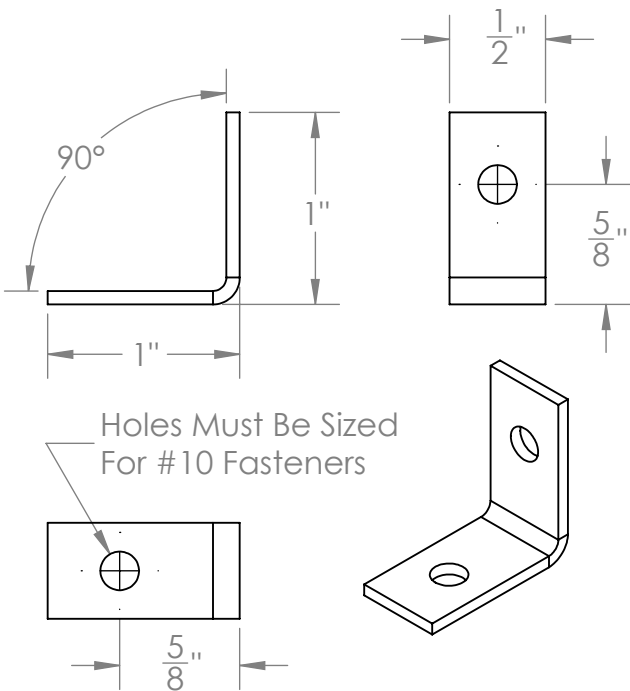
A



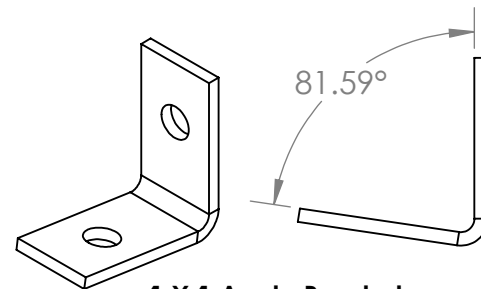


Considerable effort has been made to keep this design as close as possible to Ken Isaacs' original design. Therefore I have used the three variations, of a 1" steel corner angle bracket that he specified below. The default brackets are not modified, but the two other configurations must be bent to the angular dimensions shown below. I believe this to be an expensive option that requires very precise marking and drilling of the skin and interior panels, as well as purchasing over 500 brackets. I would suggest using lengths of 2X2 (one per seam), cut (using a table saw) to match the same angular dimensions, as the angle brackets below, and using #10 x 1" flat head wood screws. Of course, this requires marking matched 2 x 2's to their original assembled (matched) location, and transporting a little more weight; you can decide for yourself which is best . The angle brackets you choose MUST have holes for #10 fasteners located 5/8" from the base as shown below, or panels will not align correctly. Some of the default angle brackets can be omitted if you desire to reinforce only two of the four interior corners.

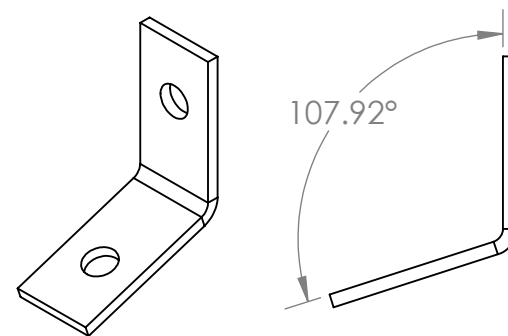
B



**1 X 1 Angle Bracket**  
**Configuration: Default**  
**Material: Steel Angle Bracket**  
**Qty: 150**



**1 X 1 Angle Bracket**  
**Configuration: Skin to Interior**  
**Material: Steel Angle Bracket**  
**Bend to Angular Dimension Shown**  
**Qty: 240**



**1 X 1 Angle Bracket**  
**Configuration: Skin to Skin**  
**Material: Steel Angle Bracket**  
**Bend to Angular Dimension Shown**  
**Qty: 120**

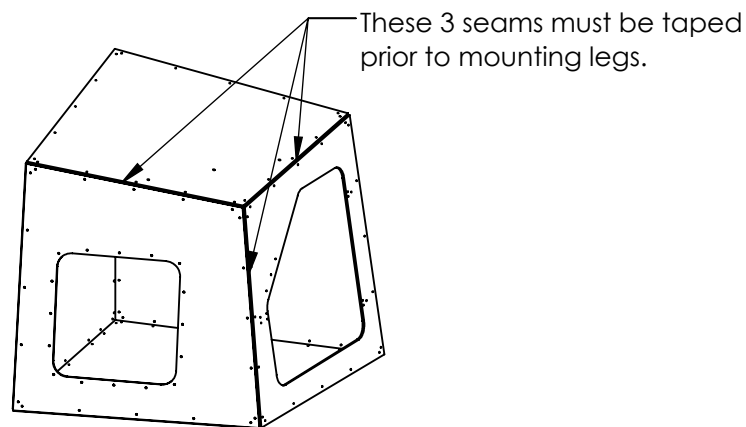
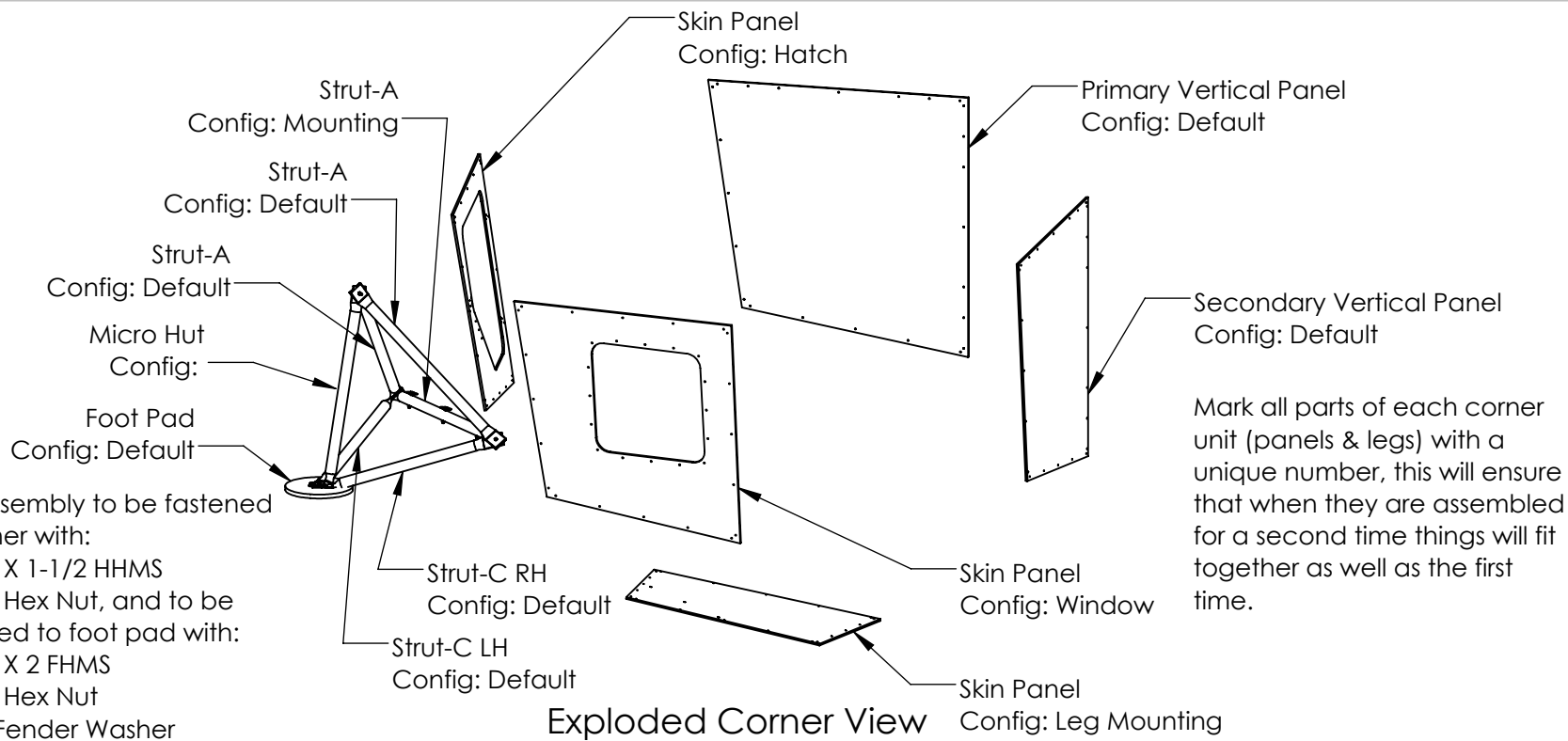
A

B

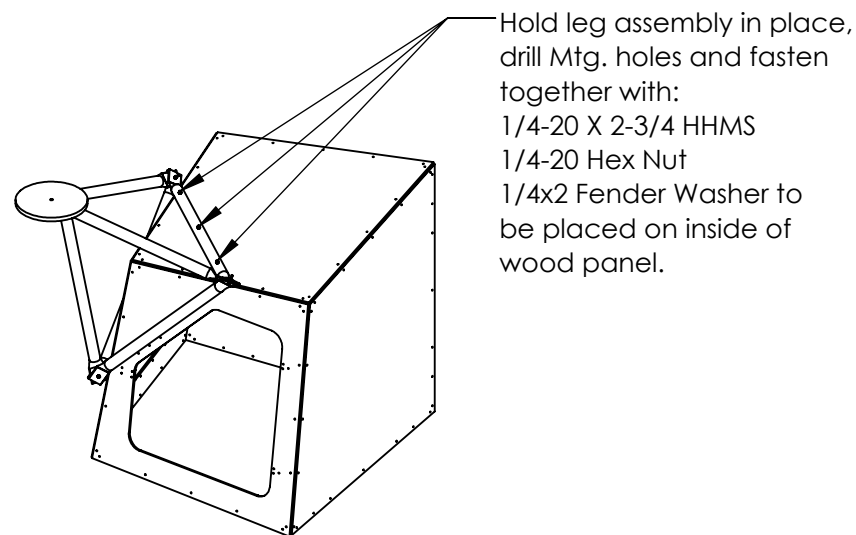
A

B

B



Fabricate and assemble one corner unit using the panels shown in exploded view above, prior to cutting additional panels or legs. Proceed only after proper fit has been verified. Heads of panel mounting fasteners should be drawn flush with plywood surface.



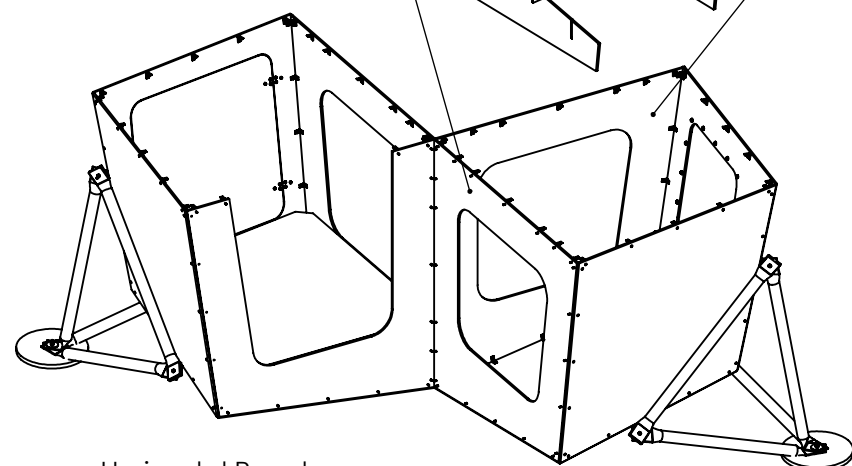
A

B

2

Fasten a pair of opposing corner units together. Floor, hatch and windows can be assembled as corner units are built.

Primary Vertical Panel  
Config: Bottom Part Open

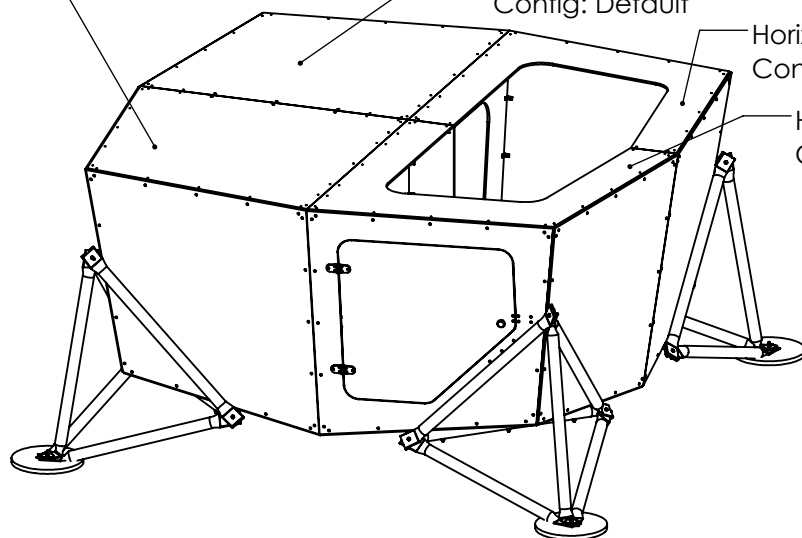


Horizontal Panel  
Config: Default

Horizontal Panel  
Config: Default

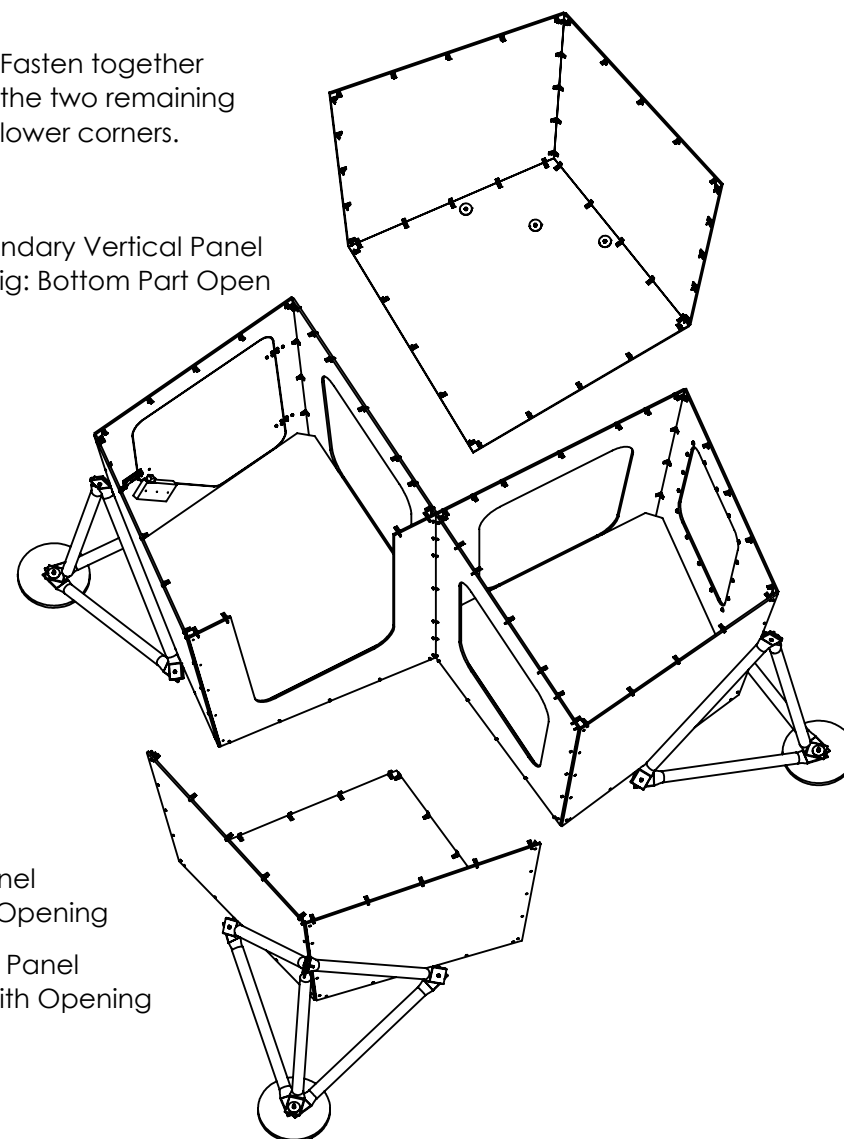
Horizontal Panel  
Config: With Opening

Horizontal Panel  
Config: With Opening



Fasten together  
the two remaining  
lower corners.

Secondary Vertical Panel  
Config: Bottom Part Open



Fasten horizontal panels in place.  
Be sure to place angle brackets for upper interior structure  
and skin panels. The needed angle brackets are Not  
shown in this view.

2

1

B

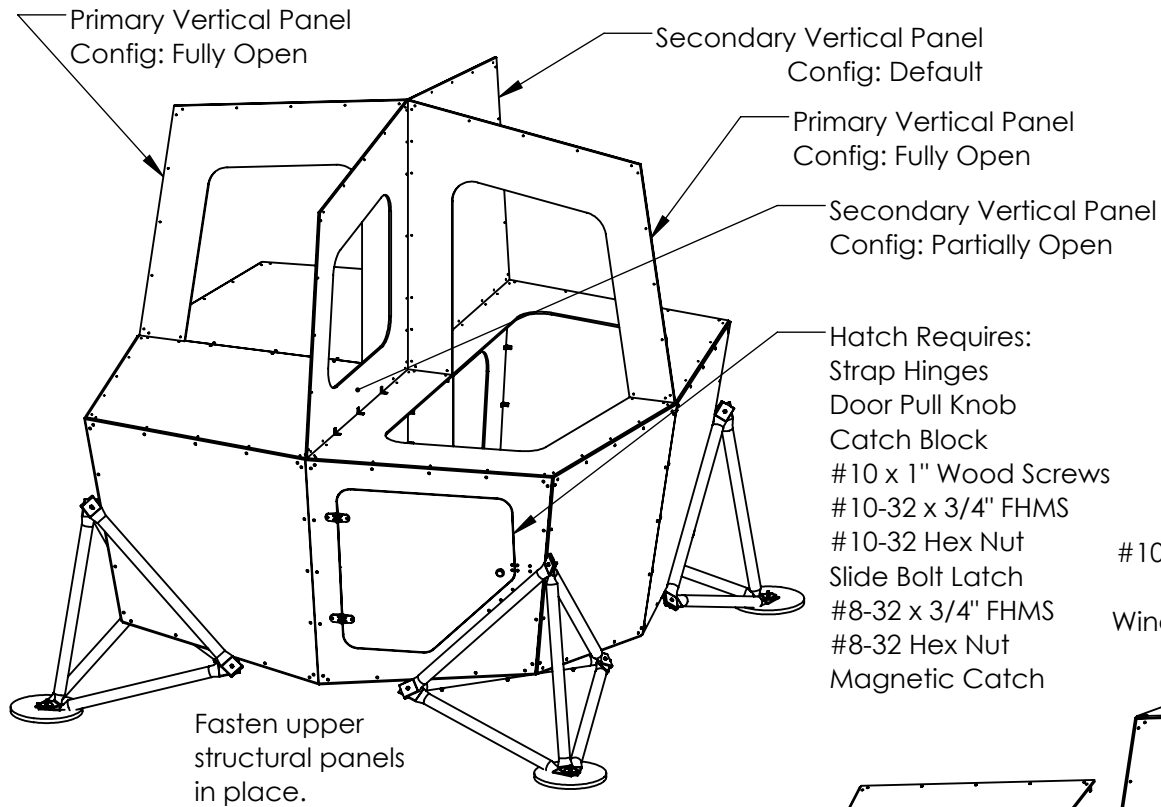
A

A

B

2

1



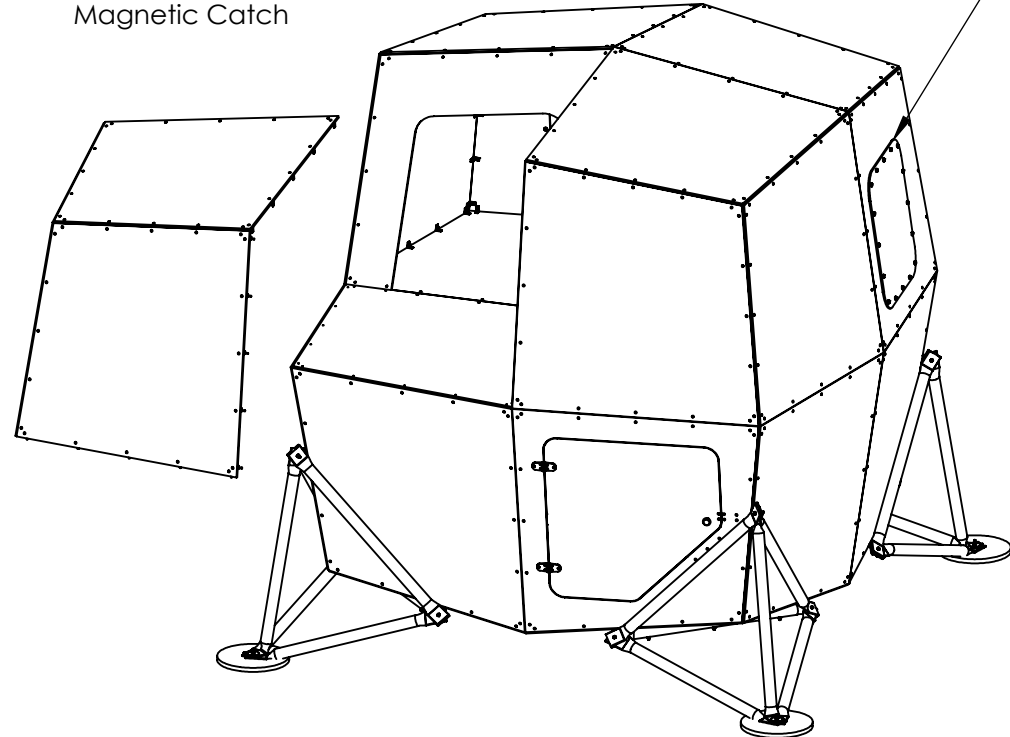
Hopefully this has inspired you to build a version of this shelter yourself. Ken Isaacs proposed this shelter design as an alternative to a 30 year mortgage. He wrote about a small village of these in his book, which is quite thought inspiring. It is especially thought inspiring if you calculate how much interest you will have to pay the bank over the next 30 years. So, go and build one, spend a summer vacation it. Maybe even donate it to the homeless when you're finished with it.  
Ron Brown



(optional) Removable Table  
Assembly Requires: Table Top  
Table Support  
#1/4-20 x 4" PHMS  
#1/4-20 Wing Nut  
#10 x 1" Wood Screws

Fasten upper skin panels in place. Hatch and window panels can be configured to your liking. Tape around seams using the 2" wide 3M Tedlar Tape, bottom seams first.

Windows require #10-32 x 1" PHMS  
#10 Flat Washer & Sealing Washer (on Exterior)  
#10-32 Hex Nut & Flat Washer (on Interior)  
Windows are external, and sealed with silicone



A

B