

## Introduction

We have 15 years experience using this solar oven design and have found it to be our favorite. The original designer, Barbara Kerr, has cooked in hers many more years than that.

It can be installed into the South wall of a house (making sure the eaves do not shade it in the summer) or it can be placed on an old office swivel chair with the back taken off and turned to face the sun throughout the day for optimum cooking.

Although winter cooking temperatures can be raised through the use of exterior reflectors, we have never felt the need for them on this design. We generally get up to 275° fahrenheit in this cooker. Furthermore, different cooking techniques can also raise cooking temperatures.

Ampersand houses three of these solar wall ovens to keep everyone fed. We actually still have the same solar oven we made 15 years ago and with regular re-finishing and painting, it has been very reliable as a primary cooking appliance in our sunny climate.

# Overview of Construction

These plans are intended for use by those who have working knowledge of hand and power tools.

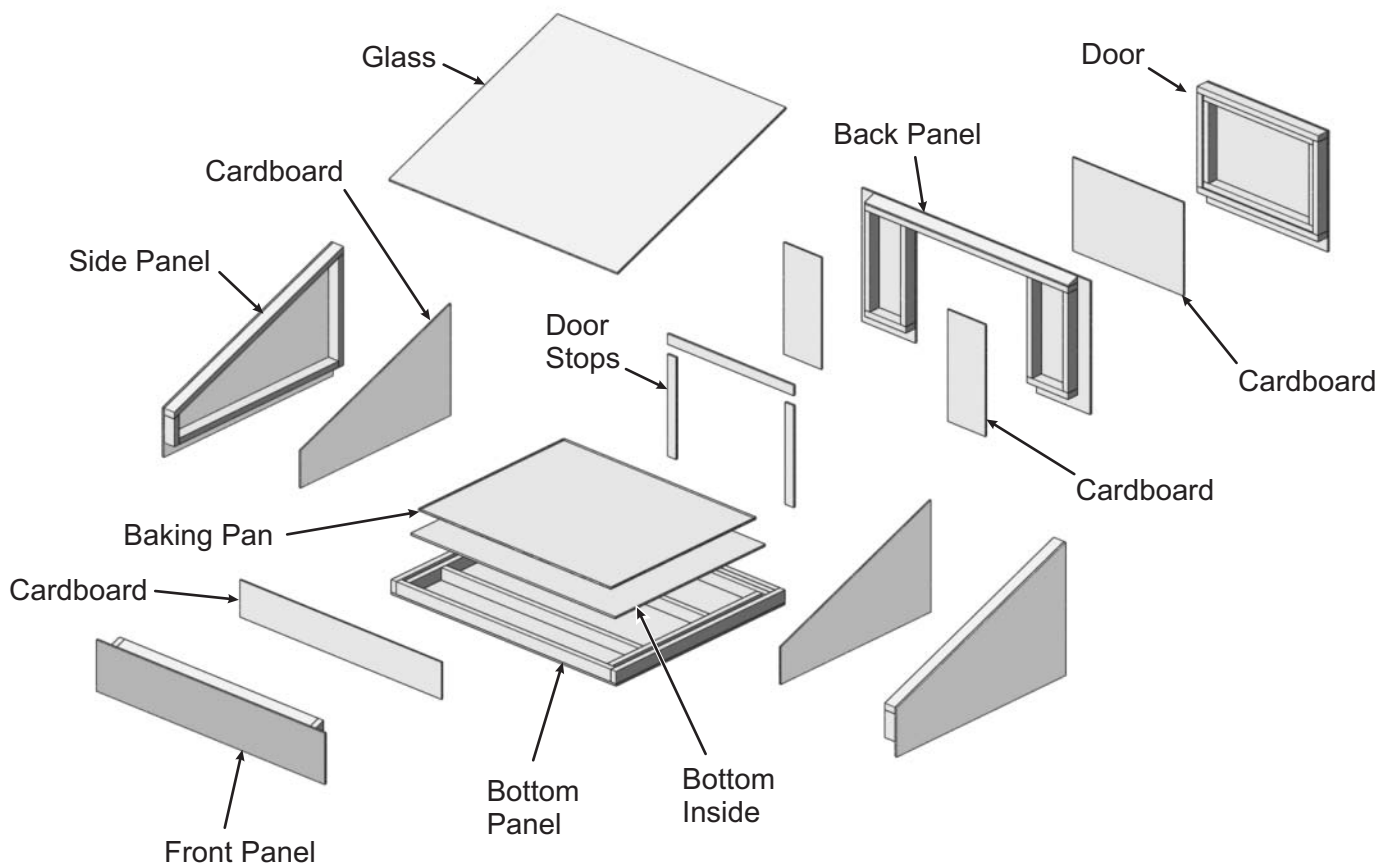
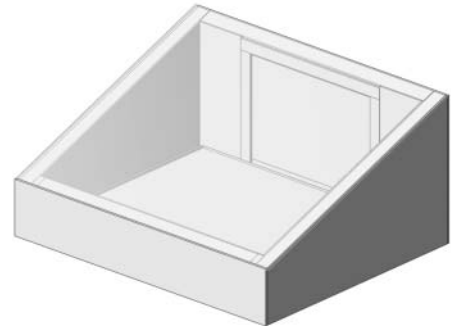
## Required tools include:

Saws (table saw is helpful for cutting sheets but can also be done with a circular saw, a miter saw or hand saw is used for cross cutting strips). Cordless drill and driver, countersink bit, caulking gun, utility knife, square, straight edge, staple gun, clamps, brushes, and scissors.

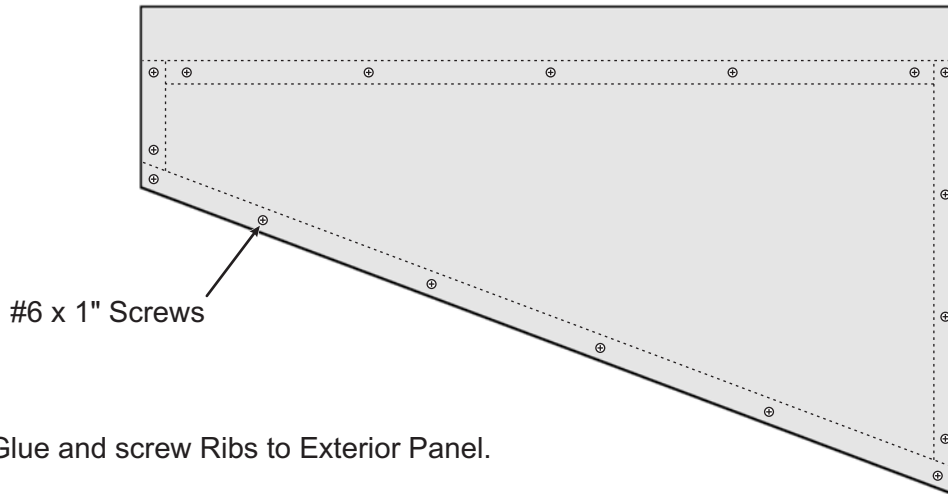
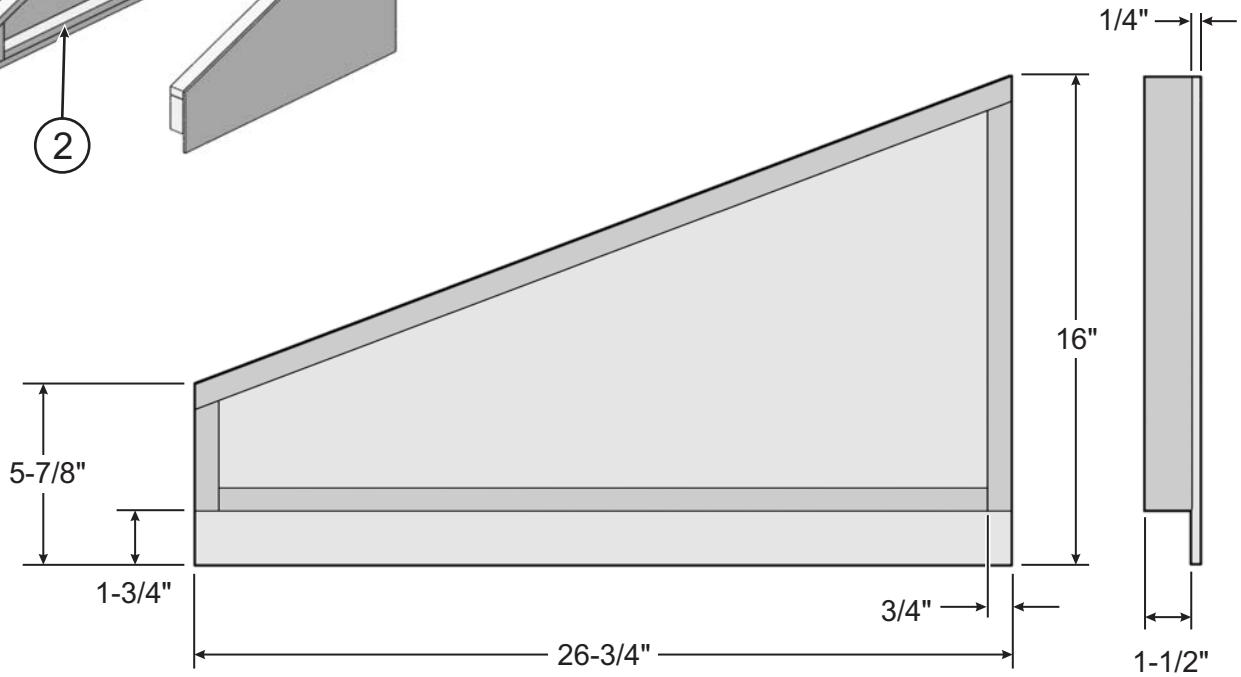
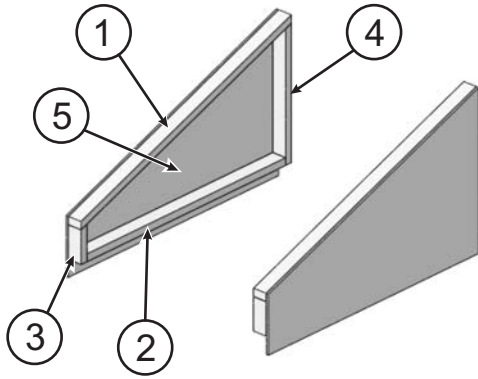
## Materials include:

Cardboard, aluminum foil, wheat paste, silicone caulk, polyfil or other suitable insulation, hinges, handle, slide bolt, exterior grade paint, #6 x 1" wood screws, exterior grade glue such as Titebond 3 or equivalent.

See Cut sheet for wood, glass and sheet metal needs and sizes. There is a complete list (see last page) and abbreviated lists on each page which relate to the task of that page.



# 1. Side Panels

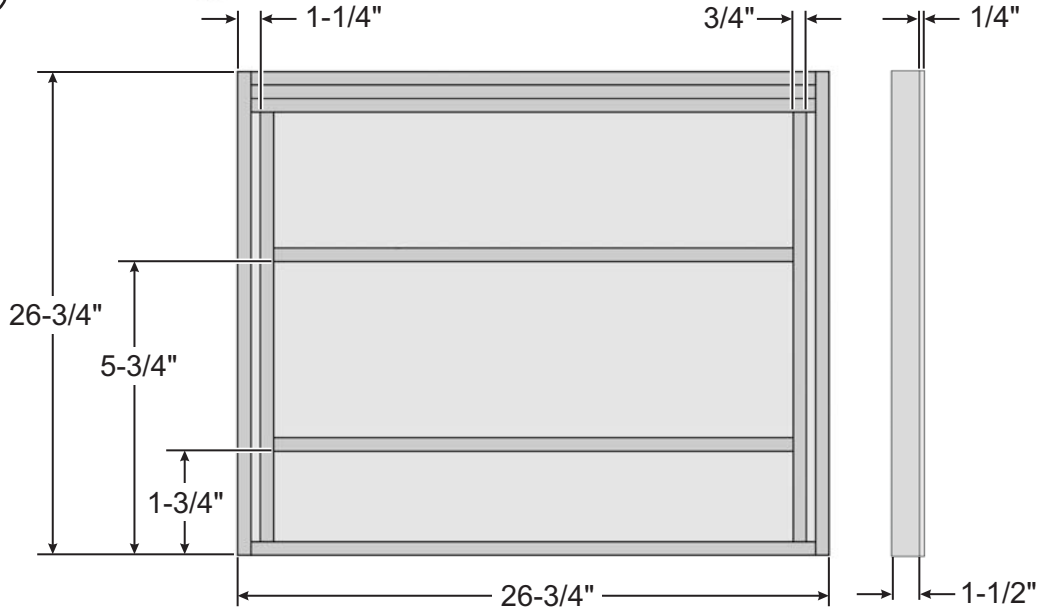
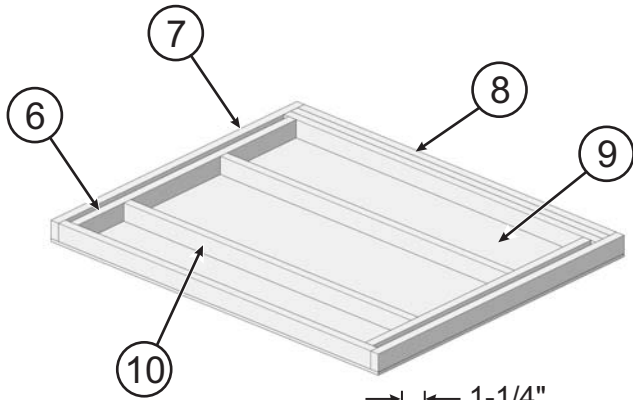


Glue and screw Ribs to Exterior Panel.

Item	Description	Quantity	Material	Thickness	Width	Length	Notes
1	Rib, Upper	2	1 x 2	3/4	1 1/2	28 7/8	Length allows for angle cut
2	Rib, Lower	2	1 x 2	3/4	1 1/2	25 1/4	
3	Rib, Side (short)	2	1 x 2	3/4	1 1/2	3 5/8	Length allows for angle cut
4	Rib, Side (long)	2	1 x 2	3/4	1 1/2	13 3/8	Length allows for angle cut
5	Exterior Panel	2	Plywood	1/4	16	26 3/4	Wdth allows for angle cut

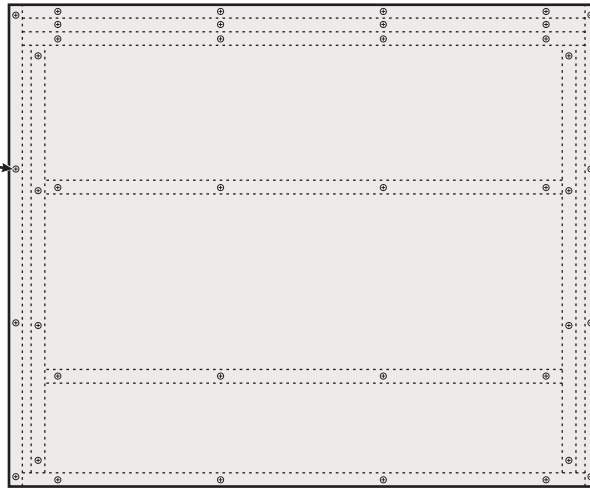


## 2. Bottom Panel



#6 x 1" Screws

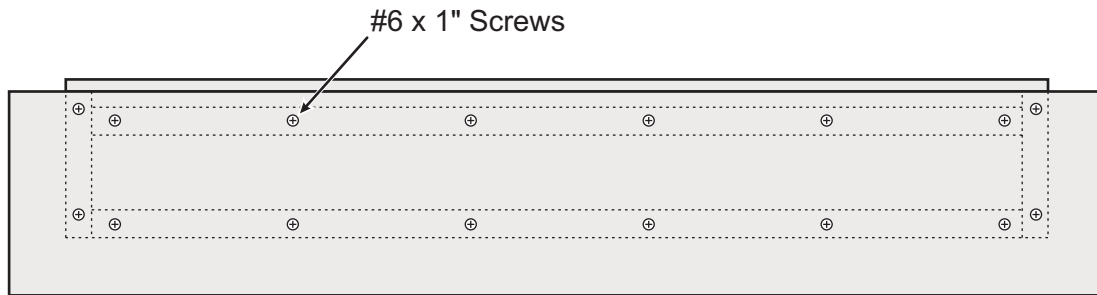
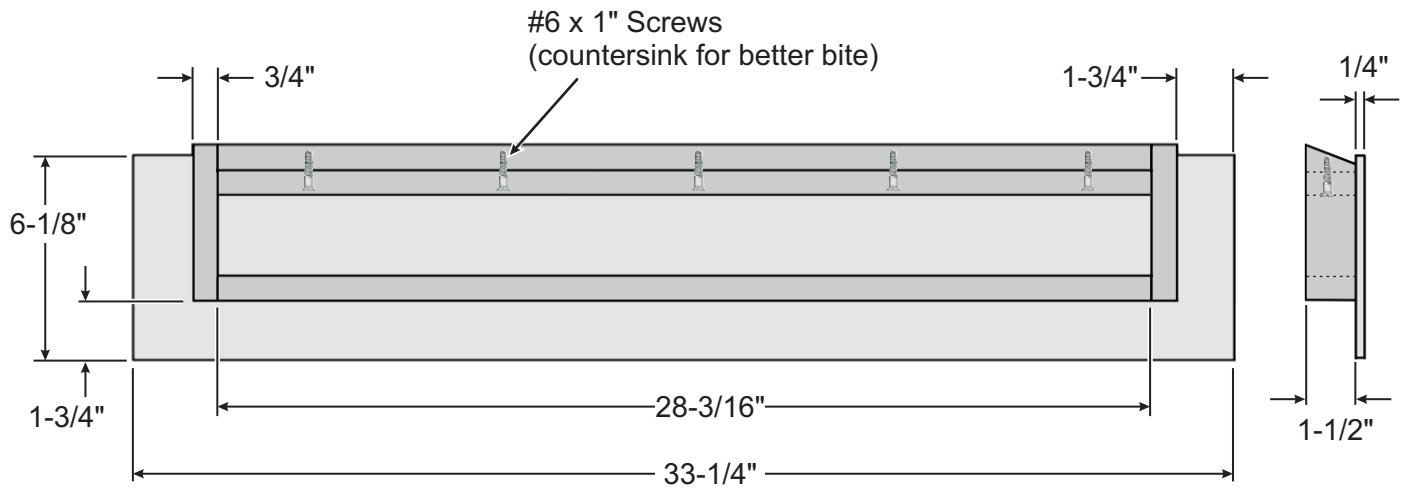
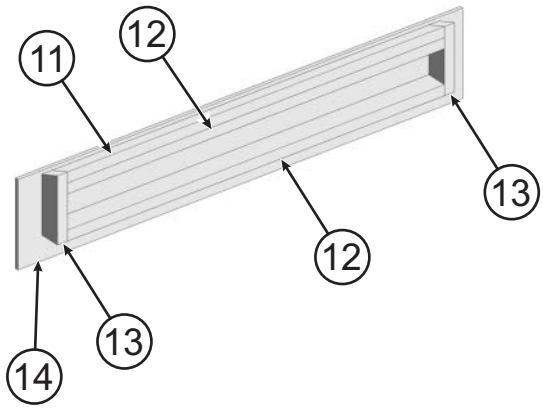
Glue and screw Ribs to Exterior Panel.



Item	Description	Quantity	Material	Thickness	Width	Length	Notes
6	Rib, Outer	2	1 x 2	3/4	1 1/2	23 3/4	
7	Rib, Left/Right	2	1 x 2	3/4	1 1/2	26 3/4	
8	Ribs, Upper/Lower	4	1 x 2	3/4	1 1/2	31 1/4	
9	Exterior Panel	1	Plywood	1/4	32 3/4	26 3/4	
10	Rib, Interior	2	1 x 2	3/4	1 1/2	28 3/4	



# 3. Front Panel

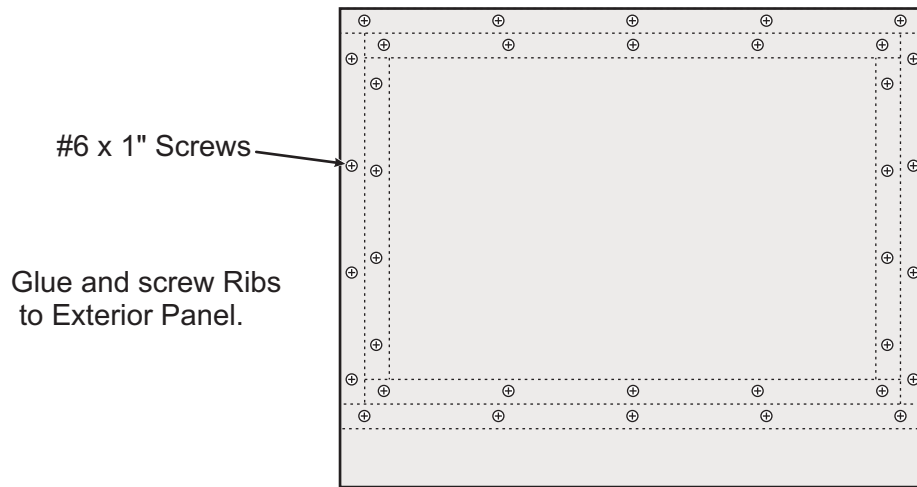
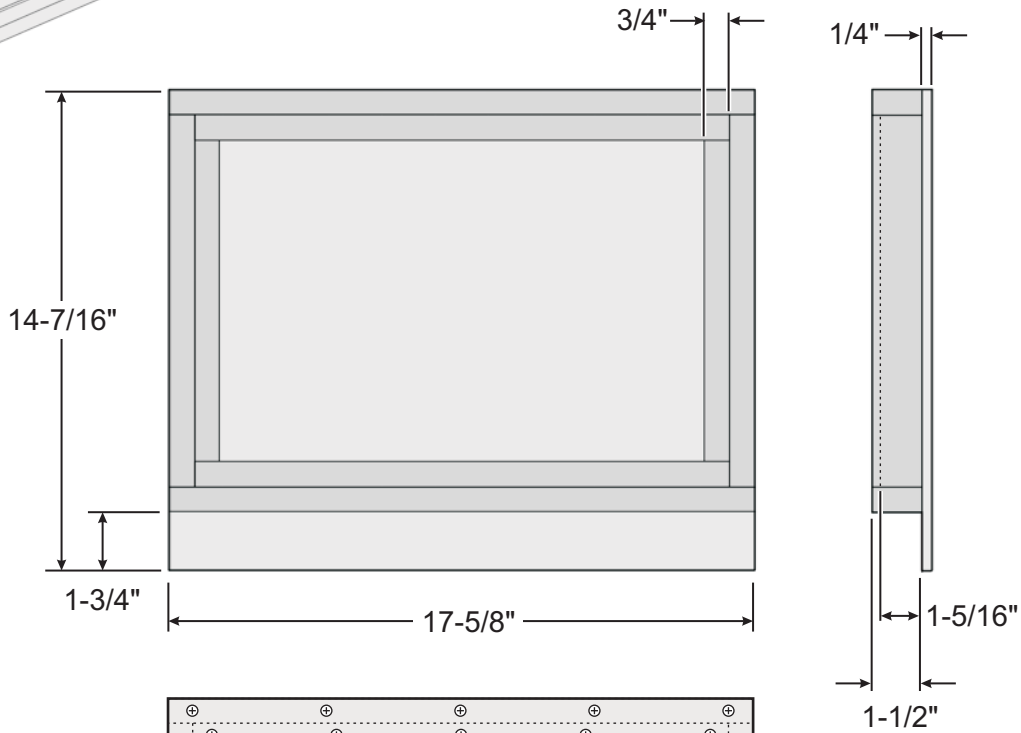
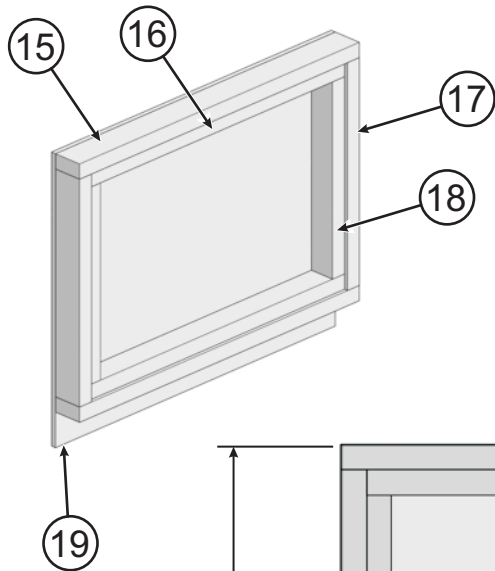


Glue and screw Ribs to Exterior Panel.

Item	Description	Quantity	Material	Thickness	Width	Length	Notes
11	Rib, Upper	1	1 x 2	3/4	1 1/2	28 3/16	Bevel and attach to adjacent Rib
12	Ribs, Interior	2	1 x 2	3/4	1 1/2	28 3/16	
13	Ribs, Outer	2	1 x 2	3/4	1 1/2	4 11/16	Length allows for angle cut
14	Exterior Panel	1	Plywood	1/4	6 1/8	33 1/4	



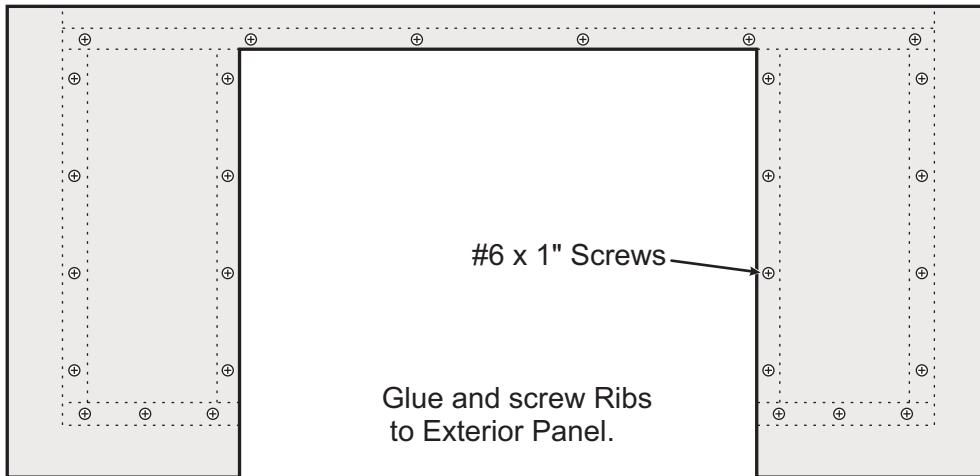
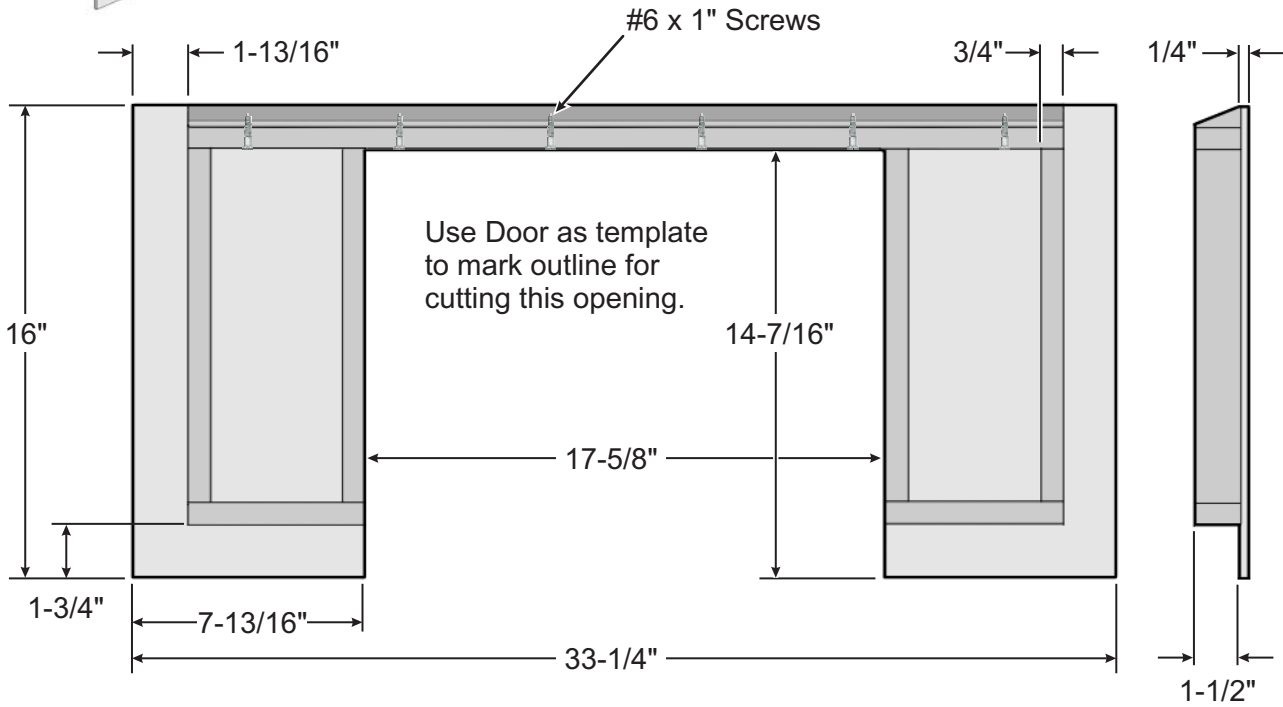
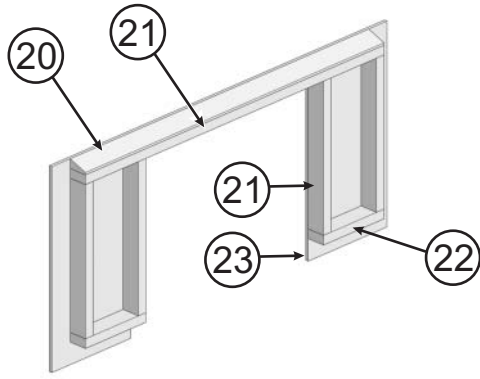
# 4. Door Assembly



Item	Description	Quantity	Material	Thickness	Width	Length	Notes
15	Rib, Top/Bottom	2	1 x 2	3/4	1 1/2	17 5/8	
16	Ribs, Interior	2	1 x 2	3/4	1 5/16	16 1/8	Reduced width for clearance
17	Ribs, Left/Right	2	1 x 2	3/4	1 1/2	11 3/16	
18	Ribs, Interior L/R	2	1 x 2	3/4	1 5/16	9 11/16	Reduced width for clearance
19	Exterior Panel	1	Plywood	1/4	14 7/16	17 5/8	



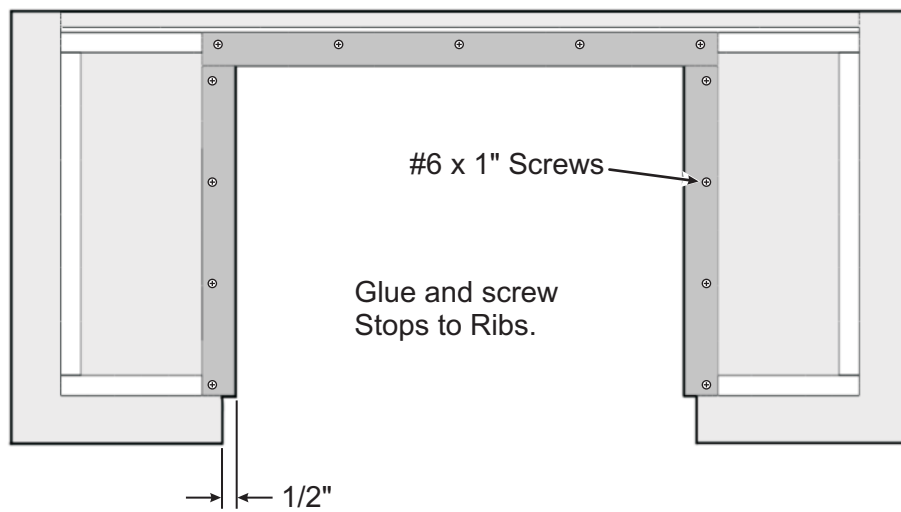
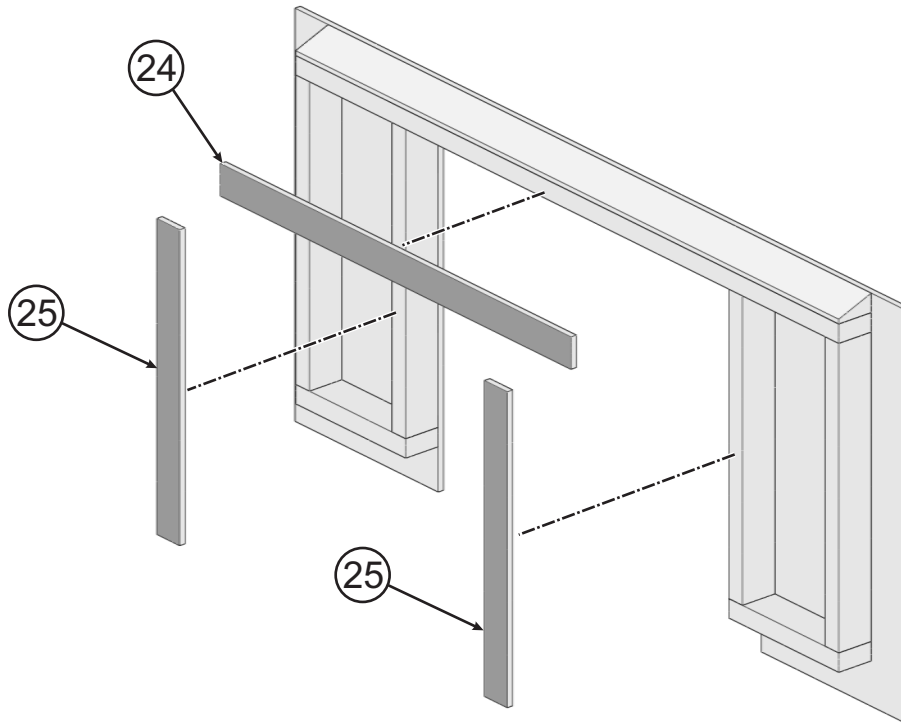
# 5. Rear Panel



Item	Description	Quantity	Material	Thickness	Width	Length	Notes
20	Rib, Upper	1	1 x 2	3/4	1 1/2	29 5/8	Bevel and attach to adjacent Rib
21	Rib, Interior	1	1 x 2	3/4	1 1/2	29 5/8	
22	Ribs, Interior L/R	2	1 x 2	3/4	1 1/2	6	
23	Exterior Panel	1	Plywood	1/4	16	33 1/4	



# 6. Door Stops



Item	Description	Quantity	Material	Thickness	Width	Length	Notes
24	Stop, Door	1	Plywood	1/4	1 1/8	19 1/8	
25	Stop, Door	2	Plywood	1/4	1 1/8	12 1/8	

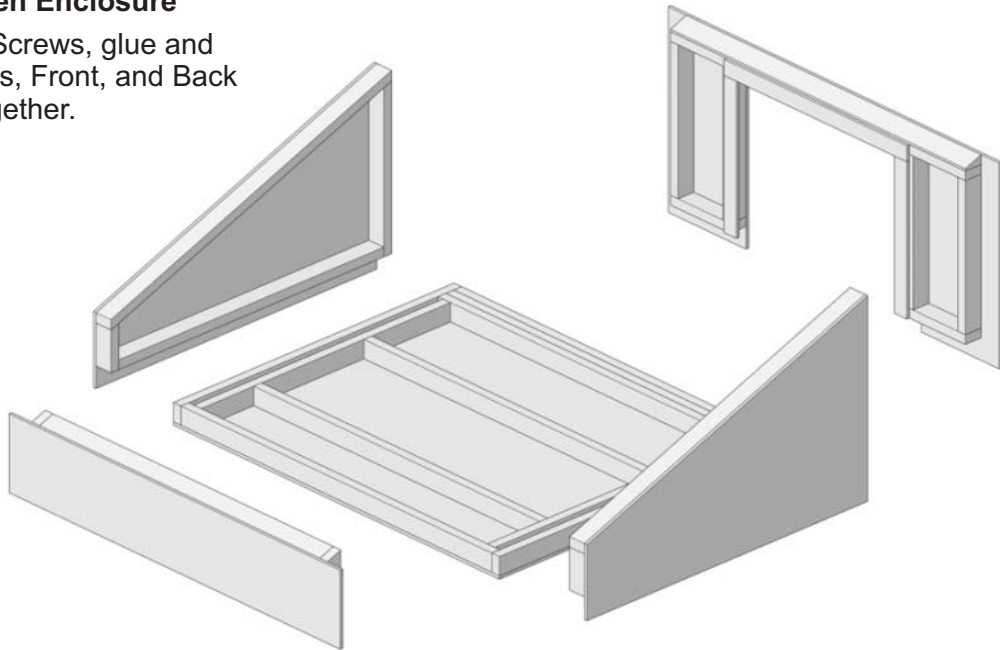




# 7. Oven Assembly

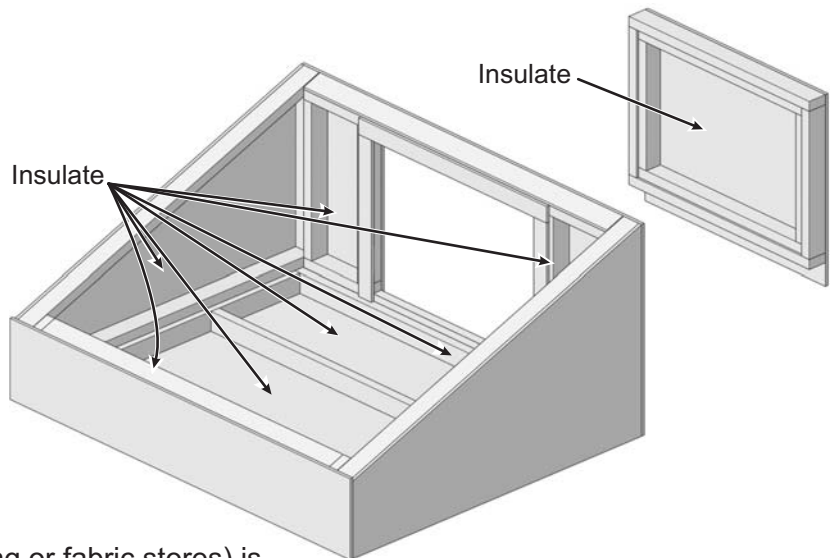
## Assemble Oven Enclosure

Using #6 x 1" Screws, glue and screw the Sides, Front, and Back assemblies together.



## Insulate Oven

Using insulation of choice, fill all interior open spaces of the Oven Enclosure. This includes the Bottom, Sides, Front, Back, and Door assemblies.

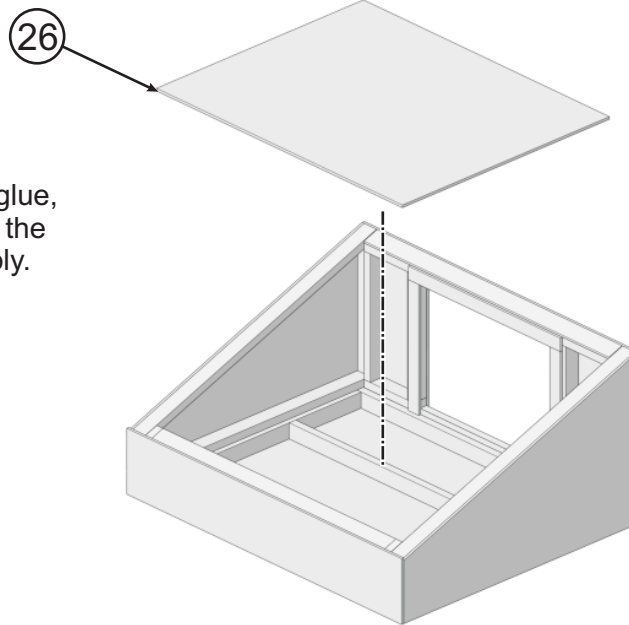


## Choosing Insulation

- Poly batting (available at quilting or fabric stores) is recommended.
- Avoid most foam boards or anything that will off-gas or has a breakdown temperature below 300 degrees.
- Straw or crumpled newspaper works effectively however the dangers of using organic materials is that moisture could eventually get into the insulation space and cause it to slump and break down.



# Oven Assembly (cont.)



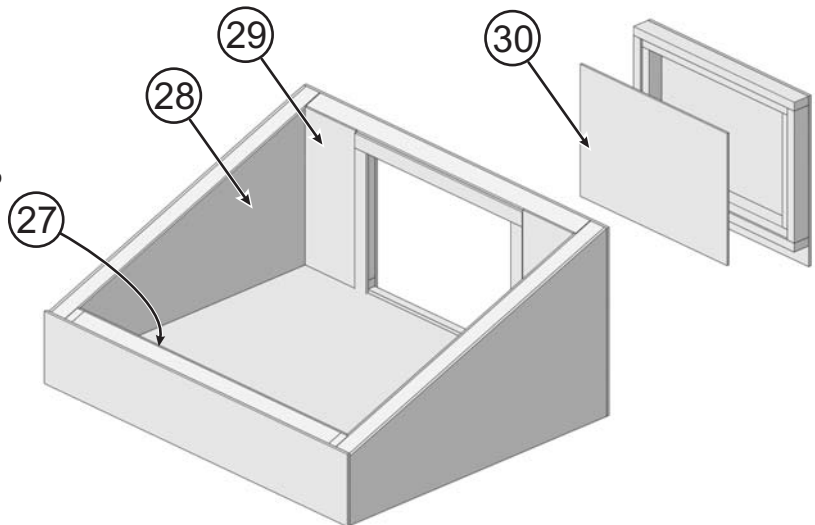
## Install Bottom Panel

Using #6 x 1" Screws and glue, attach the Bottom Panel to the Ribs of the Bottom assembly.

Item	Description	Quantity	Material	Thickness	Width	Length
26	Panel, Bottom	1	Plywood	1/4	29 3/4	23 3/4

## Install the Liners & Seal Interior

1. Cut cardboard liners to size.
2. Use Wheat Paste to glue foil onto exposed sides of cardboard.
3. Staple Liners to inside of oven.
4. Seal all interior corners with 100% silicone caulking.



Item	Description	Quantity	Material	Thickness	Width	Length	Notes
27	Cardboard Liner, Reflective, Front	1	cardboard/foil	1/8	4 7/16	29 3/8	
28	Cardboard Liner, Reflective, Side	2	cardboard/foil	1/8	13 3/8	23 3/4	Cut angle to match Side Assy.
29	Cardboard Liner, Reflective, Back	2	cardboard/foil	1/8	5 1/2	13 3/8	
30	Cardboard Liner, Reflective, Door	1	cardboard/foil	1/8	11 1/8	16 1/8	

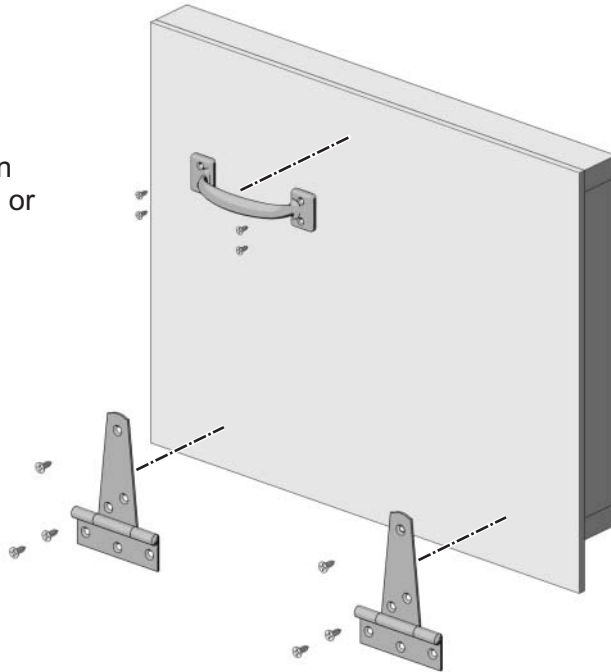


# 8. Door Hardware & Install

## Attach hardware to Door

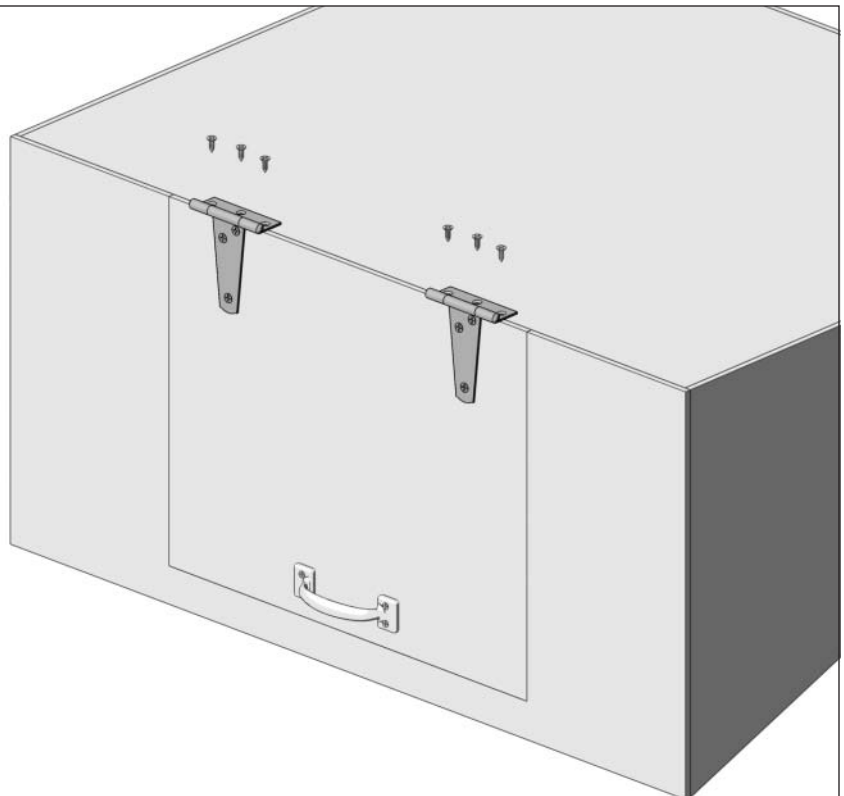
1. Attach door handle.
2. Attach hinges.

This hardware is common and can be found at most hardware stores or recycling centers.



## Install Door

Turn oven upside down. Align the door to its opening and screw hinges in place from the bottom side of the oven.



# 9. Paint, Install Baking Pan & Glass

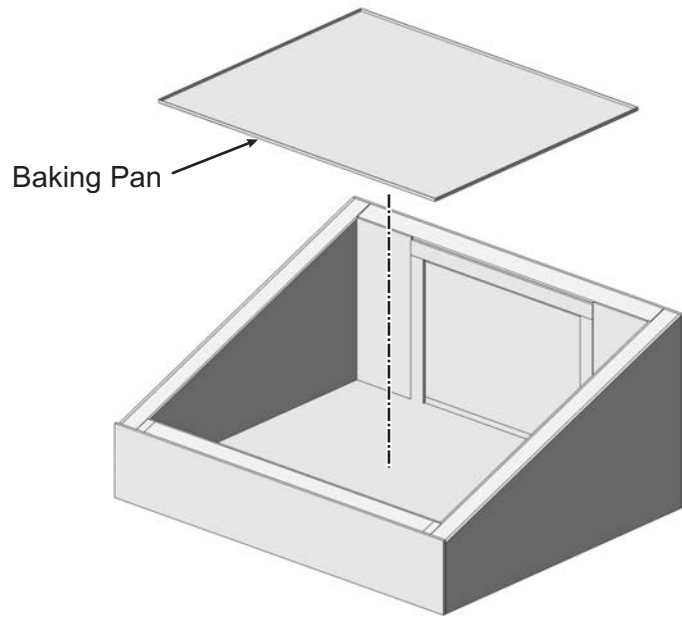
## Paint

Remove the Door and hardware and paint exterior with a high grade exterior paint to protect the oven from the elements.

Reinstall Door and hardware.

## Install Baking Pan

Use 22, 24, or 26 gauge thick Galvanized steel. Cut and, if desired, bend a lip around the perimeter to catch any food spills within the pan.



Item	Description	Quantity	Material	Thickness	Width	Length	Notes
31	Baking Pan	1	Galvanized Steel	24 gauge	23	28	add to size if lip is desired around its perimeter

## Install Glass

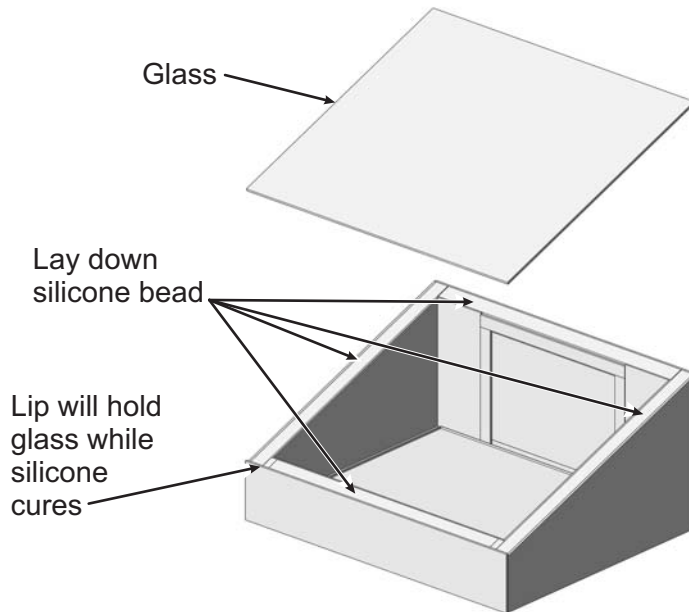
Using 100% silicone caulking, lay a heavy bead around top edge of oven enclosure. Place glass sheet onto oven and press downward to seat the glass into the silicon.

Let glass rest on lip of Front Panel.

## Before Cooking!!

Position oven towards sun with door open and allow paint, silicone, and glue to off gas.

**Start cooking with free unlimited solar energy!**



Item	Description	Quantity	Material	Thickness	Width	Length	Notes
32	Glass Sheet	1	Tempered Glass	1/4	28 1/2	33 1/4	



# Cut List for wood, metal and glass

Item	Description	Quantity	Material	Thickness	Width	Length	Notes
1	Rib, Upper	2	1 x 2	3/4	1 1/2	28 7/8	Length allows for angle cut
2	Rib, Lower	2	1 x 2	3/4	1 1/2	25 1/4	
3	Rib, Side (short)	2	1 x 2	3/4	1 1/2	3 5/8	Length allows for angle cut
4	Rib, Side (long)	2	1 x 2	3/4	1 1/2	13 3/8	Length allows for angle cut
5	Exterior Panel	2	Plywood	1/4	16	26 3/4	Width allows for angle cut
6	Rib, Outer	2	1 x 2	3/4	1 1/2	23 3/4	
7	Rib, Left/Right	2	1 x 2	3/4	1 1/2	26 3/4	
8	Ribs, Upper/Lower	4	1 x 2	3/4	1 1/2	31 1/4	
9	Exterior Panel	1	Plywood	1/4	32 3/4	26 3/4	
10	Rib, Interior	2	1 x 2	3/4	1 1/2	28 3/4	
11	Rib, Upper	1	1 x 2	3/4	1 1/2	28 3/16	Bevel and attach to adjacent Rib
12	Ribs, Interior	2	1 x 2	3/4	1 1/2	28 3/16	
13	Ribs, Outer	2	1 x 2	3/4	1 1/2	4 11/16	Length allows for angle cut
14	Exterior Panel	1	Plywood	1/4	6 1/8	33 1/4	
15	Rib, Top/Bottom	2	1 x 2	3/4	1 1/2	17 5/8	
16	Ribs, Interior	2	1 x 2	3/4	1 5/16	16 1/8	Reduced width for clearance
17	Ribs, Left/Right	2	1 x 2	3/4	1 1/2	11 3/16	
18	Ribs, Interior L/R	2	1 x 2	3/4	1 5/16	9 11/16	Reduced width for clearance
19	Exterior Panel	1	Plywood	1/4	14 7/16	17 5/8	
20	Rib, Upper	1	1 x 2	3/4	1 1/2	29 5/8	Bevel and attach to adjacent Rib
21	Rib, Interior	1	1 x 2	3/4	1 1/2	29 5/8	
22	Ribs, Interior L/R	2	1 x 2	3/4	1 1/2	6	
23	Exterior Panel	1	Plywood	1/4	16	33 1/4	
24	Stop, Door	1	Plywood	1/4	1 1/8	19 1/8	
25	Stop, Door	2	Plywood	1/4	1 1/8	12 1/8	
26	Panel, Bottom	1	Plywood	1/4	29 3/4	23 3/4	
27	Cardboard Liner, Reflective, Front	1	cardboard/foil	1/8	4 7/16	29 3/8	
28	Cardboard Liner, Reflective, Side	2	cardboard/foil	1/8	13 3/8	23 3/4	Cut angle to match Side Assy.
29	Cardboard Liner, Reflective, Back	2	cardboard/foil	1/8	5 1/2	13 3/8	
30	Cardboard Liner, Reflective, Door	1	cardboard/foil	1/8	11 1/8	16 1/8	
31	Baking Pan	1	Galvanized Steel	24 gauges	23	28	add to size if lip is desired around its perimeter
32	Glass Sheet	1	Tempered Glass	1/4	28 1/2	33 1/4	

