

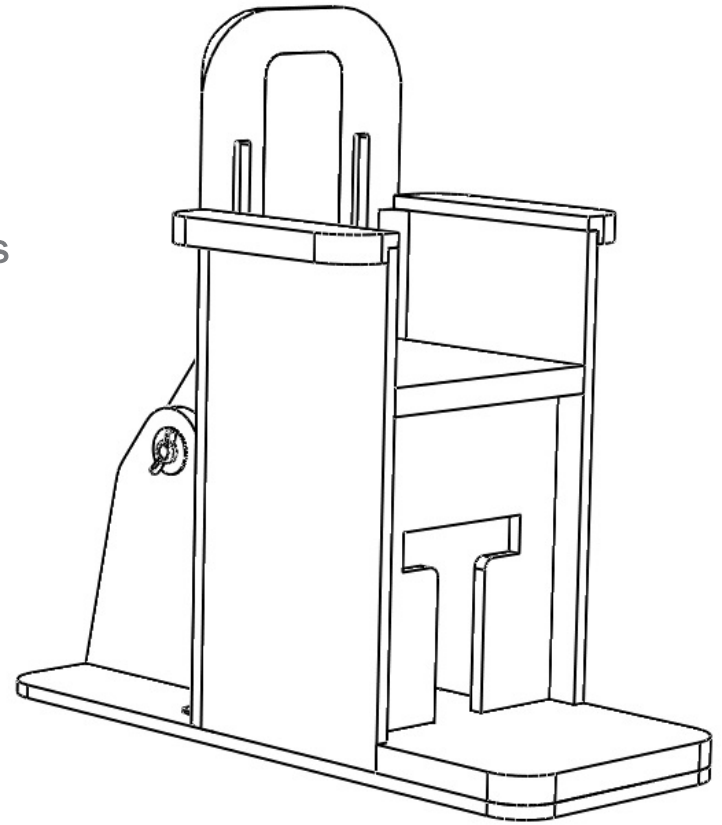


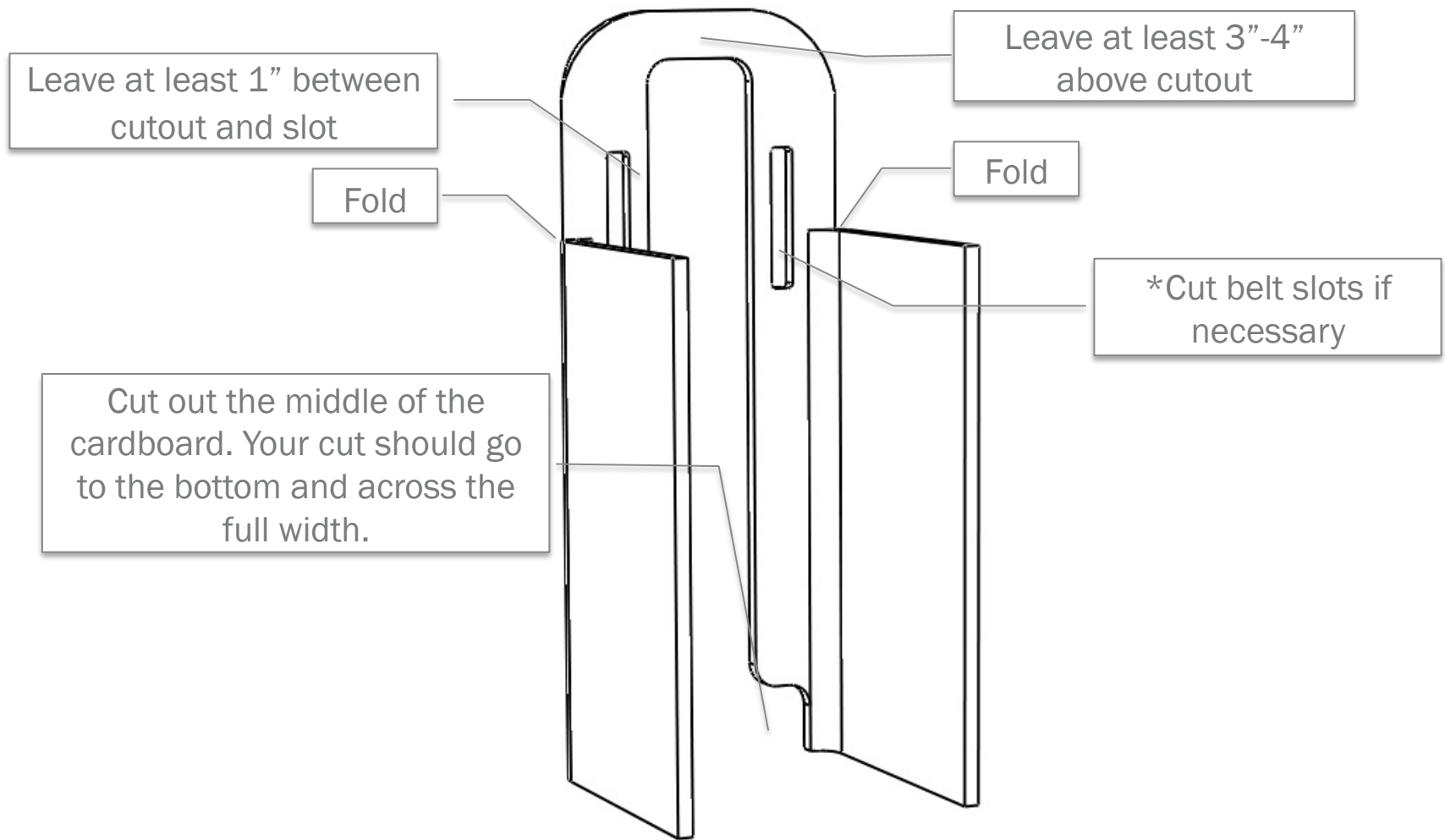
Adaptive Design
association, inc.

BUILDING A RECLINING ADAPTIVE CHAIR

STEP-BY-STEP

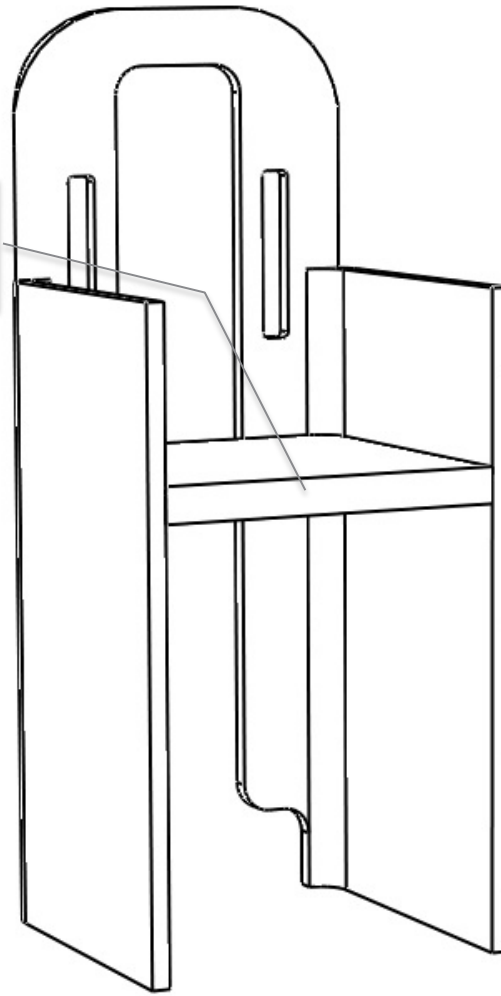
This document serves as a guide for creating a reclining adaptive chair. Design proportions and relations are explained but the dimensions should be tailored to the individual which the chair is being built for. The chair can be scaled but be sure to add further reinforcement as necessary for larger chairs!



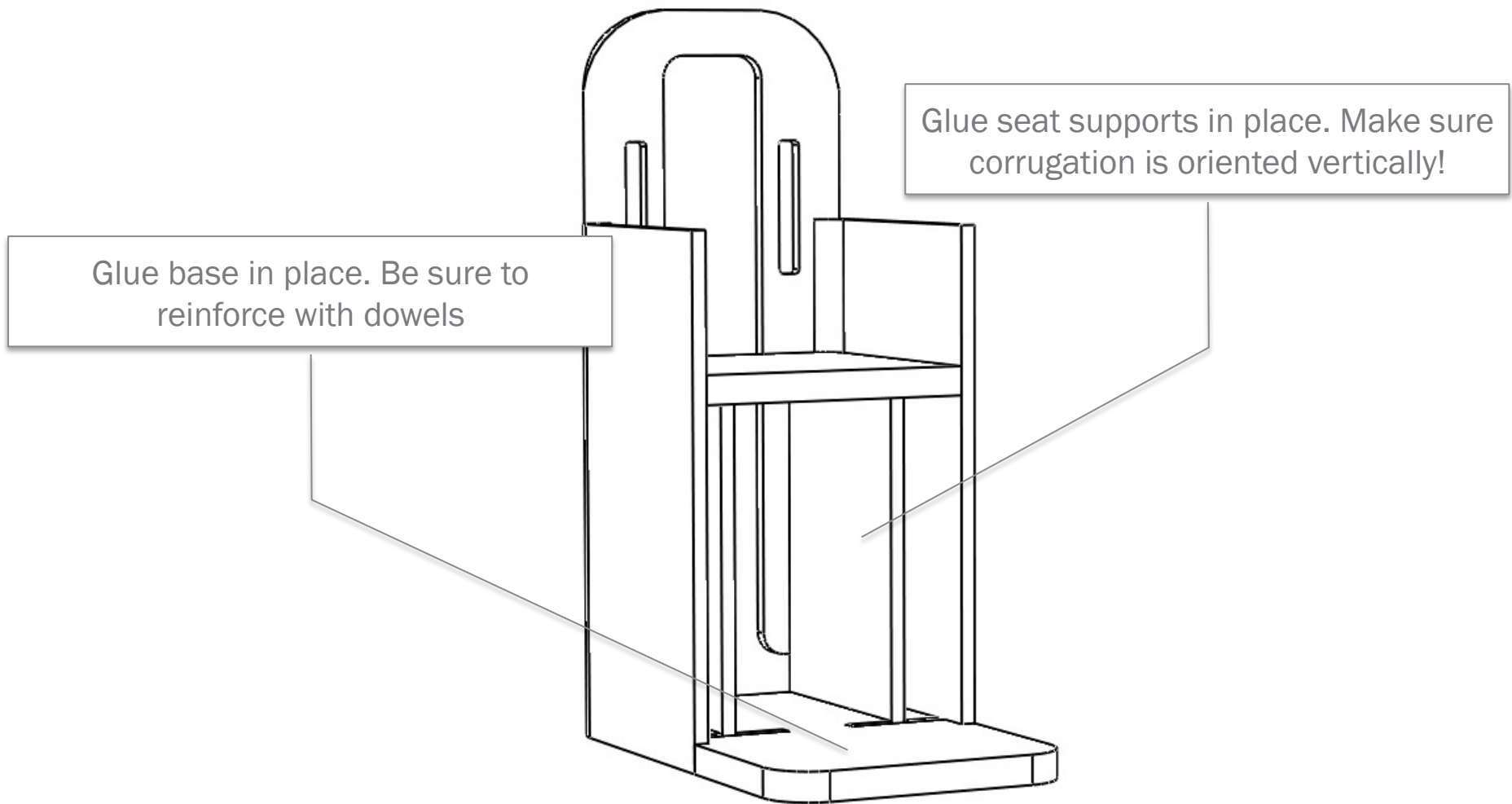


Cut the back and sides as one piece- folding along the edges of the back to create your two sides. Use your measurements to identify the dimensions of the overall piece. Make sure to add at least 2" to the overall width to account for the folds and to provide room for growth.

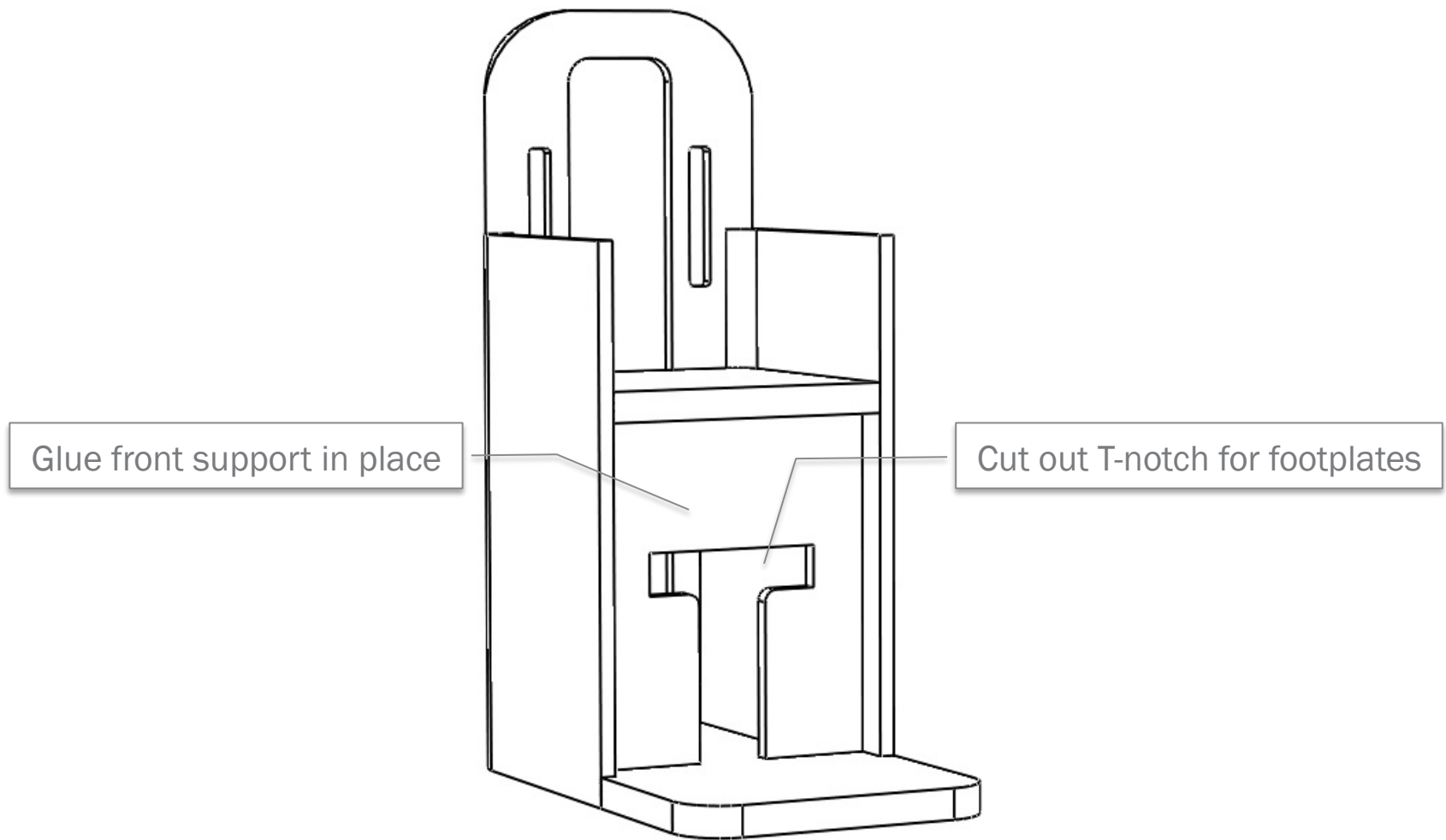
Glue seat in place with hot glue on all sides. Use dowels to reinforce.



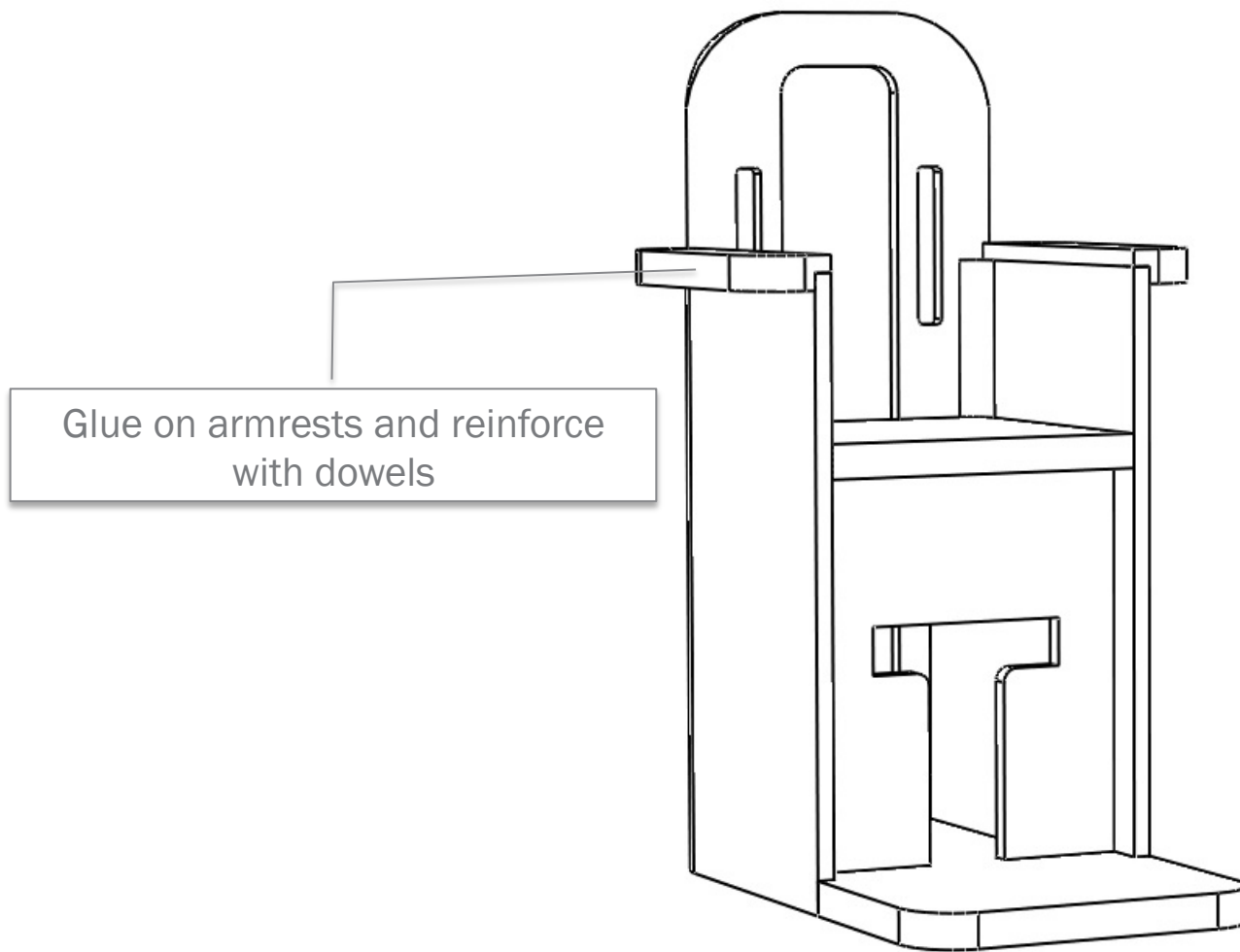
Cut out the seat to fit flush with the front edge of the sides. The seat should be two layers of tri-wall (layered cross-grain).



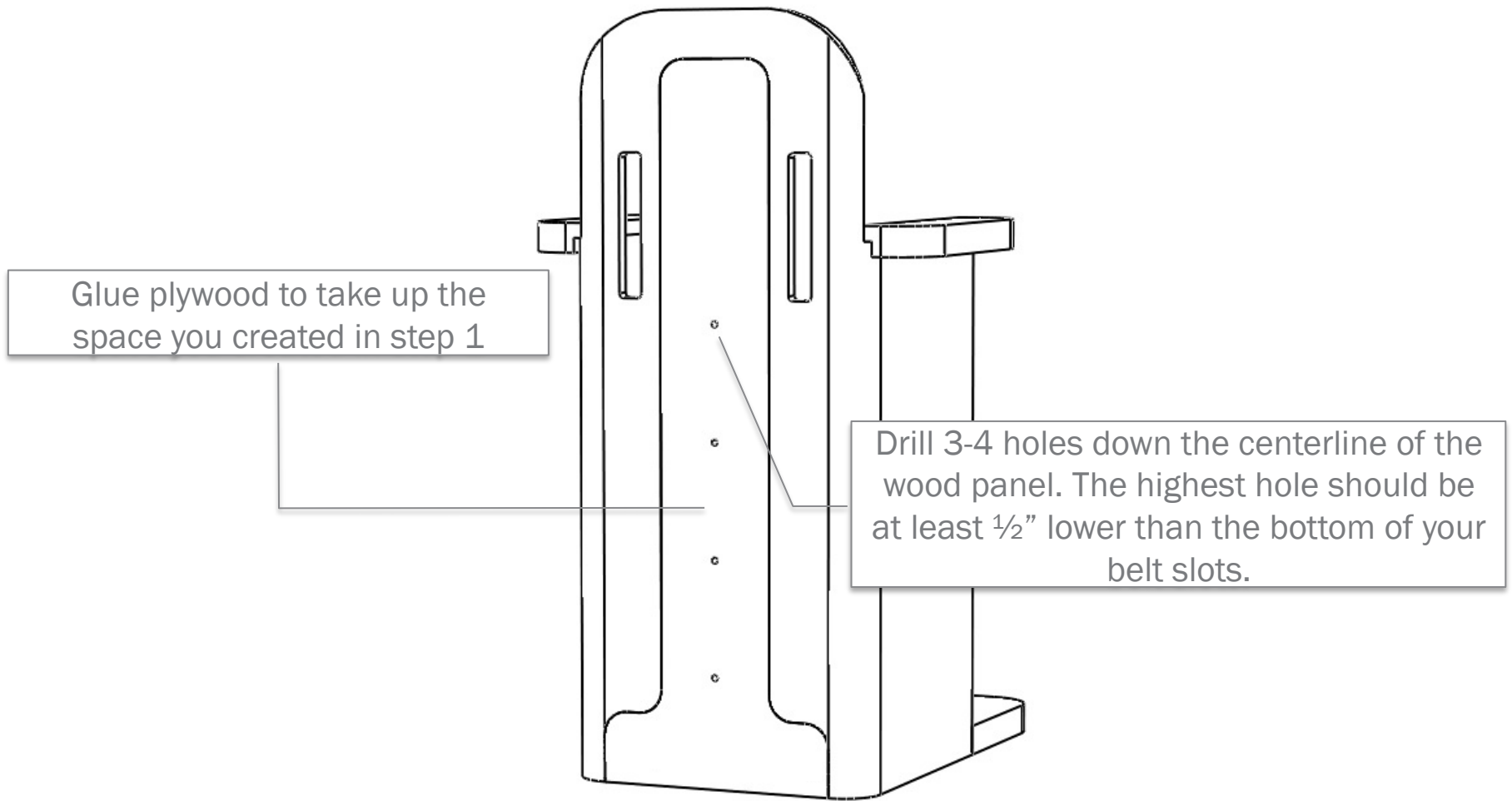
Add a base to support any footplates that may be added later. The base should be 2 layers of tri-wall. Cut through the top layer to embed the chair into the base. Add additional supports between the bottom of the seat and the top of the base as necessary. Your supports should stop 2.625" from the front of the chair.



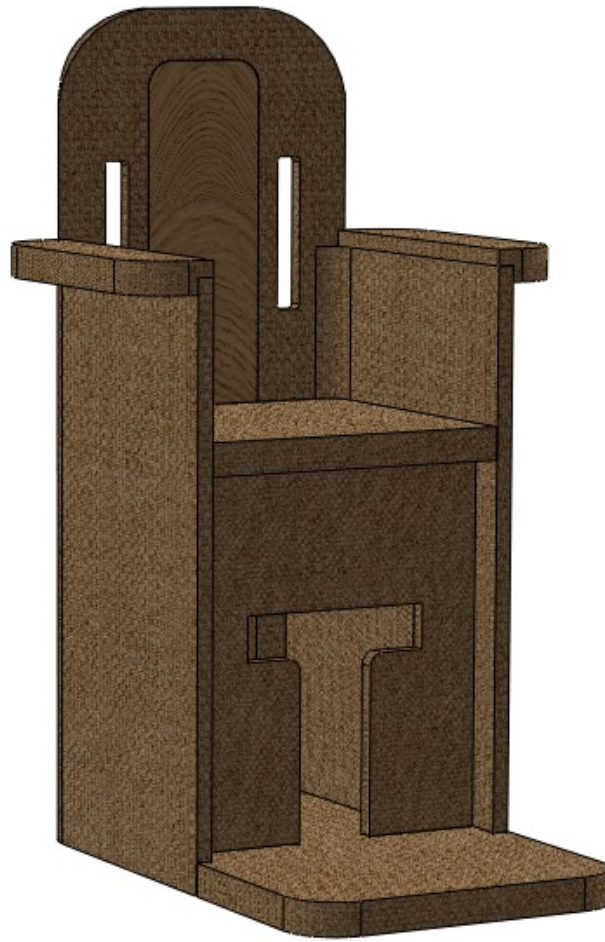
Add a front support 2" back from the front edge of the seat. It should sit flush (perpendicularly) against the supports you added in step 3. If you'll be adding footplates, be sure to cut out a t-notch to accommodate them.



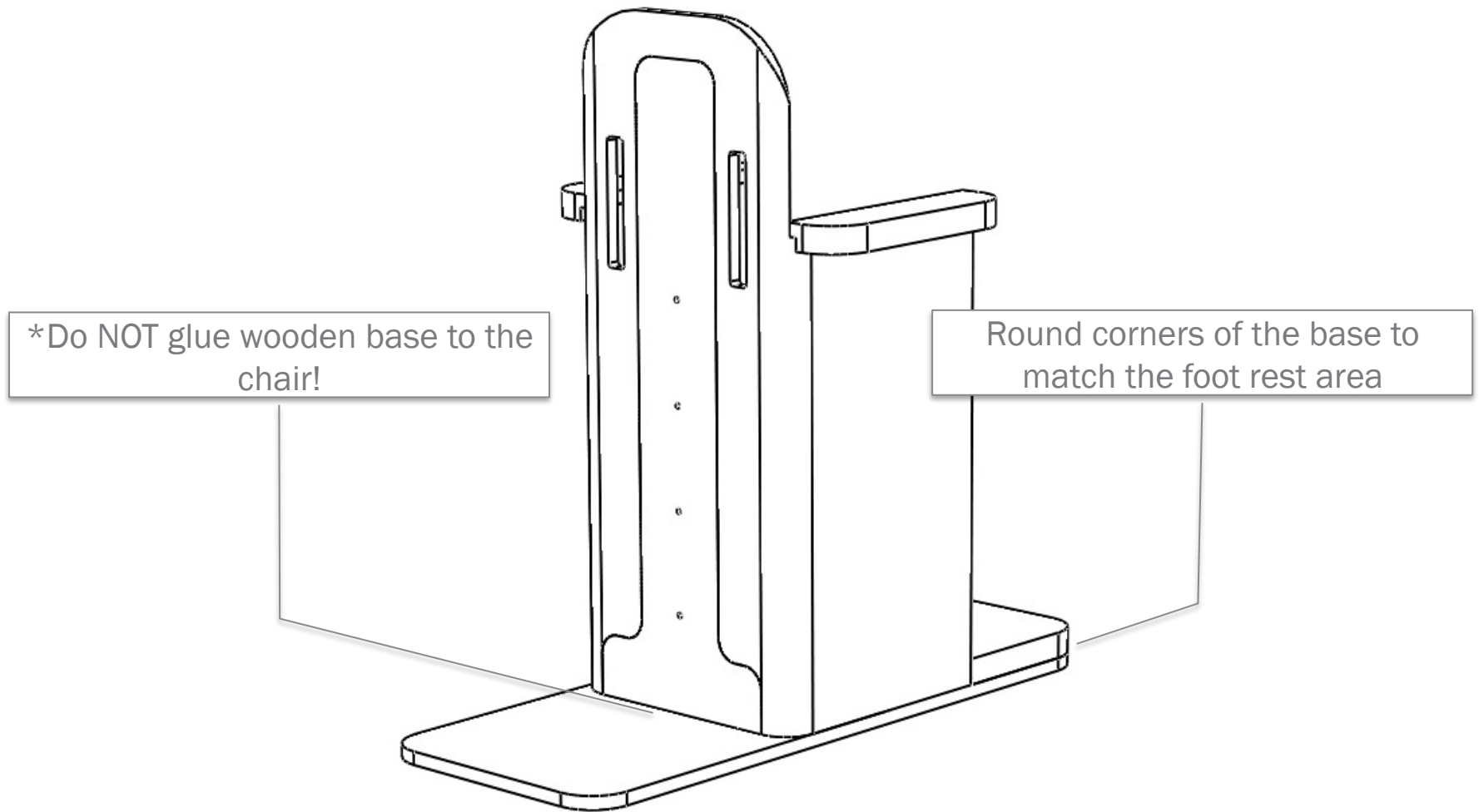
Glue on armrests to each side. Make sure each armrest is two layers of tri-wall. One layer should rest on top of the side panels and the other should touch the face of the side panels.



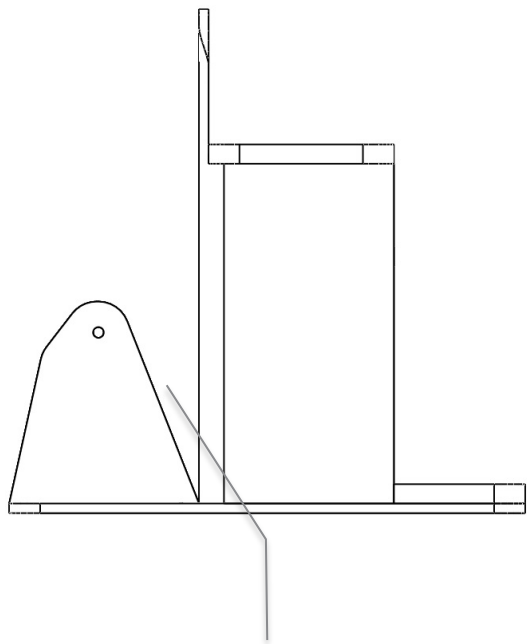
Add a piece of plywood to the area that you cut out earlier. It should fit snugly before being glued into place. Make sure it matches the thickness of the cardboard as closely as possible. $\frac{3}{4}$ " plywood should be closest to the thickness of the tri-wall.



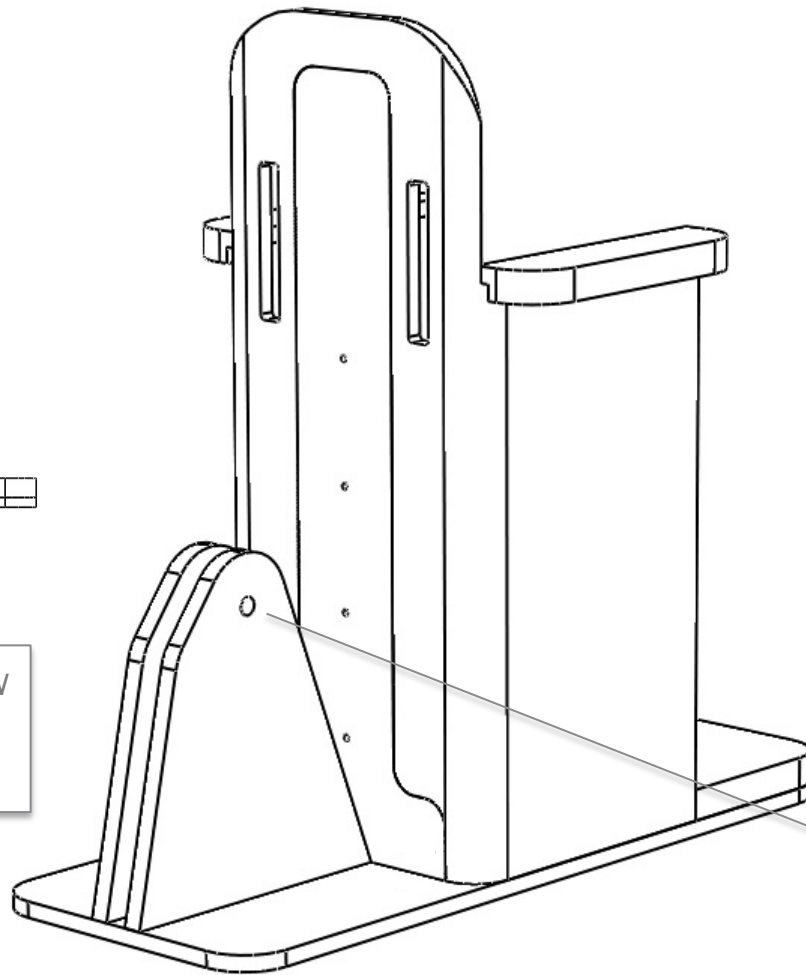
Congrats! You've completed the chair portion of this build. Continue on to create the reclining base!



Use a piece of 3/4" plywood to create a base for the chair. It should be flush with the sides and front of the chair but extend from the back. The length of the extension should be at least the length of your foot rest area.

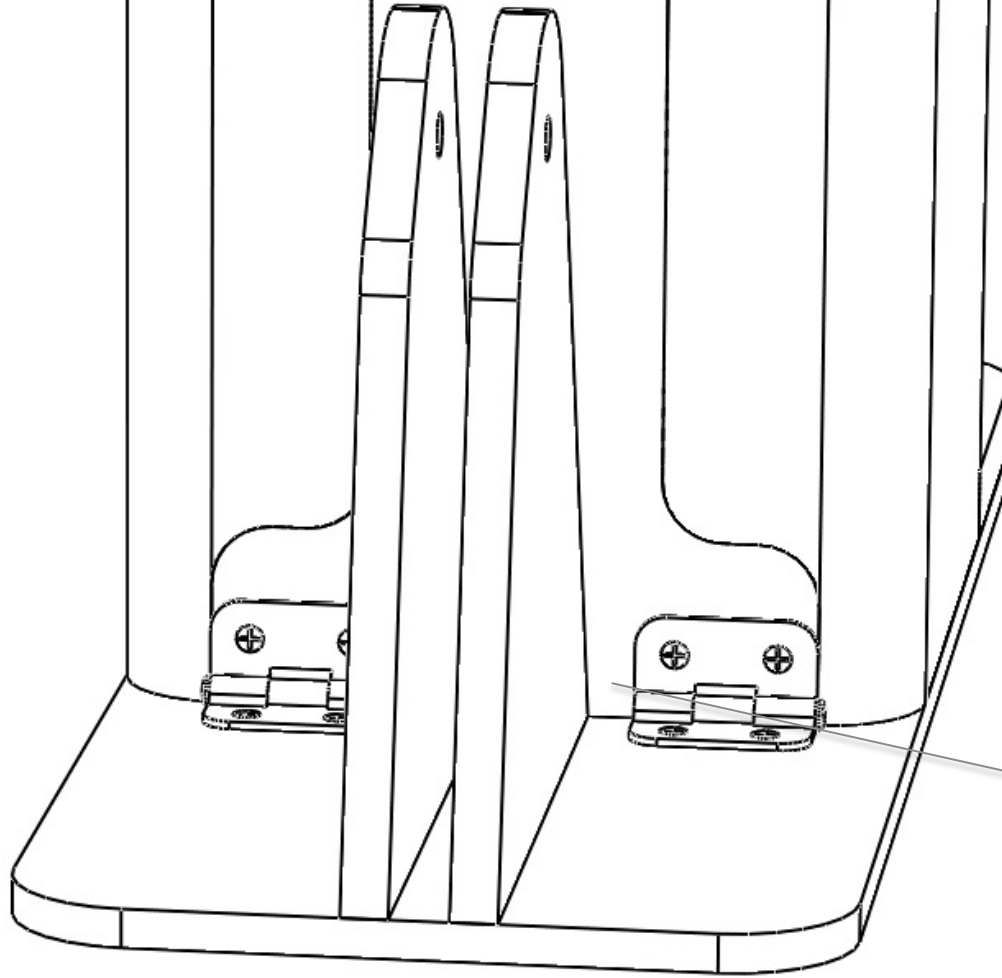


*Front angle should allow the chair to recline to its furthest position



Drill $\frac{1}{4}$ " holes through both pieces. There should be at least 1" between the hole and any edge.

Make two vertical supports for the reclining mechanism out of $\frac{3}{4}$ " plywood. They should extend from the back of the chair at its base to the rearmost edge of the wooden base. They should be roughly half as high as the chair back. Attach them centered on the base. They should be spaced 1" apart.

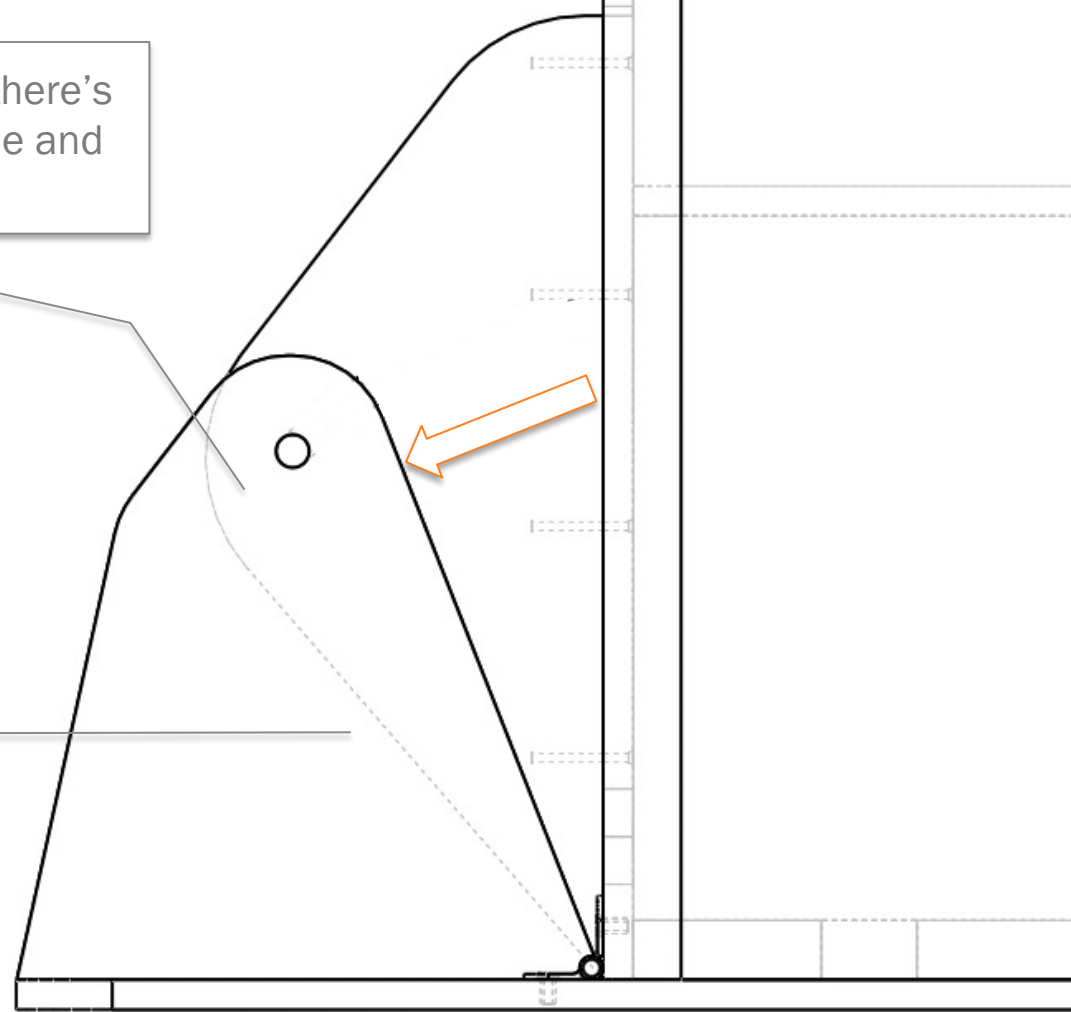


Make sure you're hinges
aren't touching the
vertical wood supports

Attach your base to the chair using two hinges. The hinges should be spaced as far apart as possible without getting your screw holes too close to the edge of the wood panel on the chair. Be sure to use sufficiently long screws for secure attachment.

Leave enough material so there's around 2" between the hole and edge of the "fin"

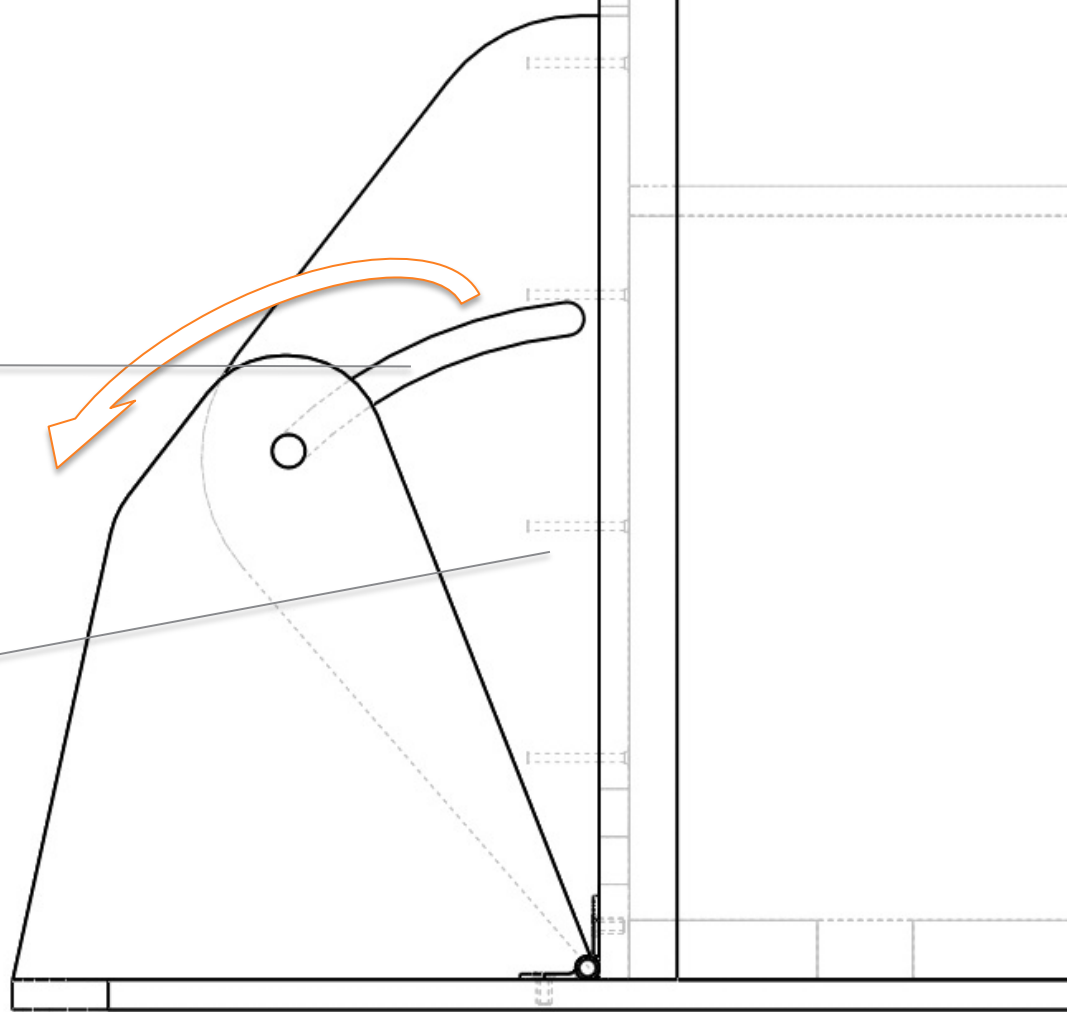
*Bottom angle should allow the back of the chair to touch the side supports attached to the base



Create a back "fin" for the chair out of $\frac{3}{4}$ " plywood. This will act as the other half of the reclining mechanism. Make sure the fin extends far enough from the chair so the holes in the side supports overlap it.

*Make sure to cut the notch wide enough so the circle is completely clear at any position

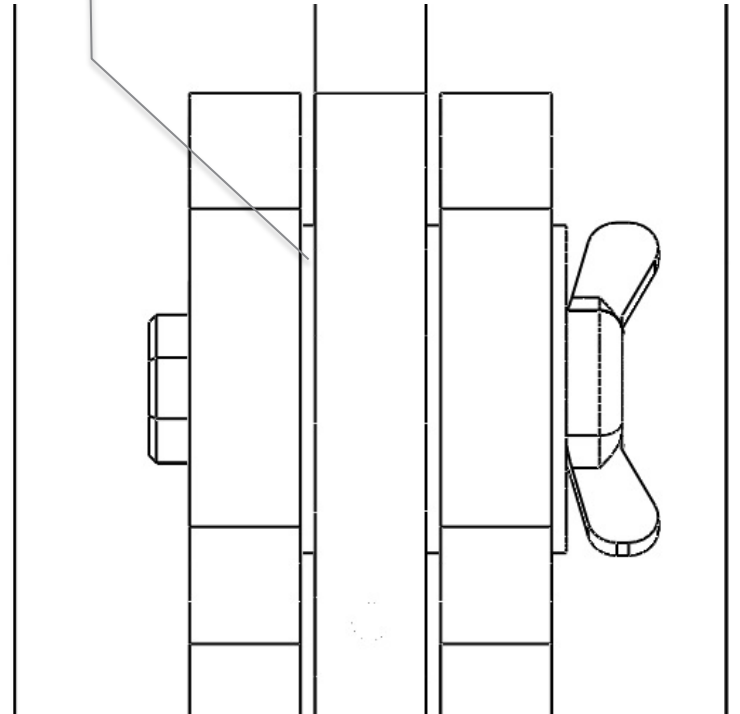
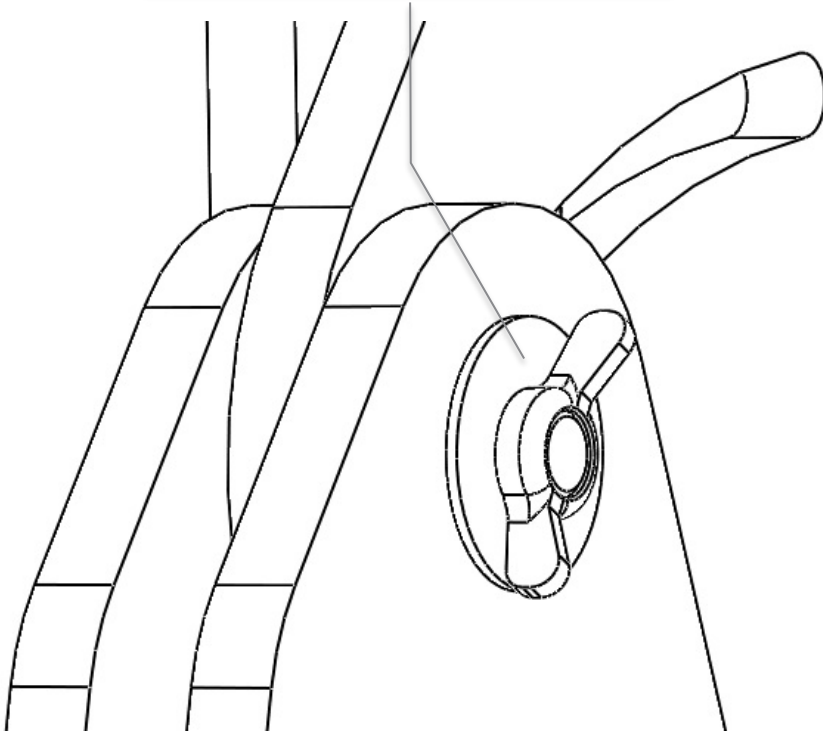
Once the notch is cut, attach the fin to the chair with wood screws through the holes you made in step 6



Place a pencil at the top and bottom of the hole of the side support. In each position, recline the chair back with the “fin” temporarily attached (a few small dots of hot glue works well). Use the pencil to draw the arc of travel onto the fin. Use the lines as a reference to cut an arced notch.

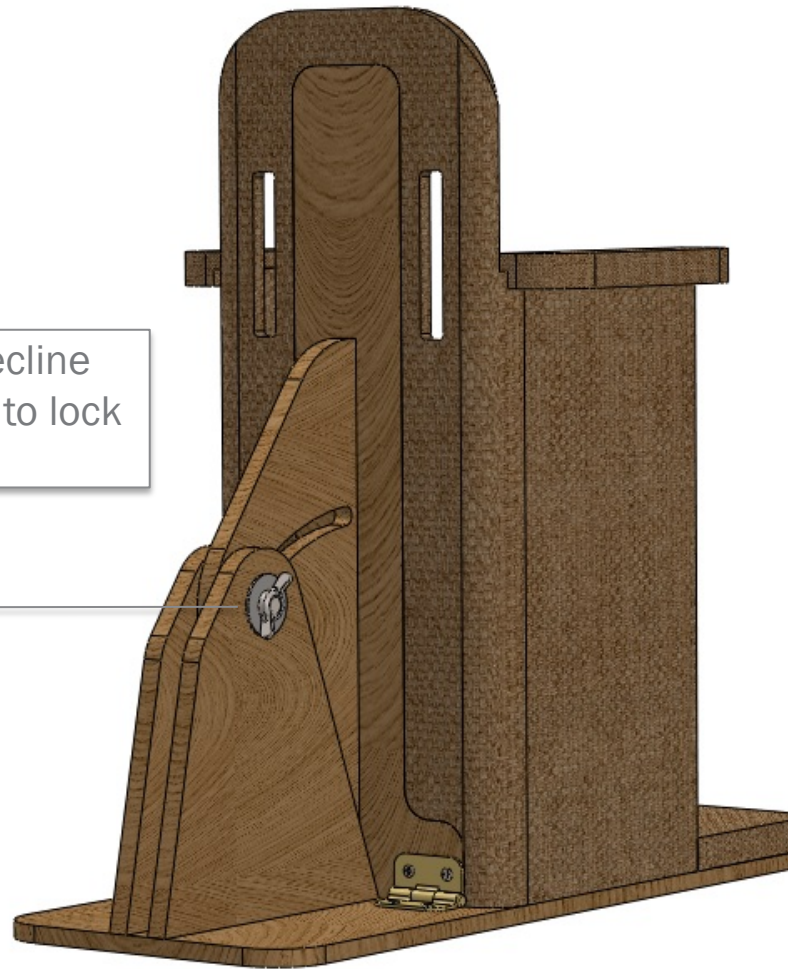
Use a steel washer
between the wing nut and
side support

*Use rubber washers
between the fin and side
supports!



Use a $\frac{1}{4}$ -20 bolt (hex head) with a matching wing nut to create the lock. Place steel and rubber washers between the pieces as shown above. If you want to prevent the bolt from rotating when turning the wing nut, you can add a screw into the wood that sits flush against one face of the bolt head.

*Loosen wing nut to recline chair and tighten snugly to lock into position



Congrats! You've completed your reclining adaptive chair! Be sure to add belts and yoga mat (for padding) as necessary. Your finished piece can be painted and coated with polyurethane but be sure to keep the hinges and inside faces of the side supports free of any paint/poly to ensure proper function!