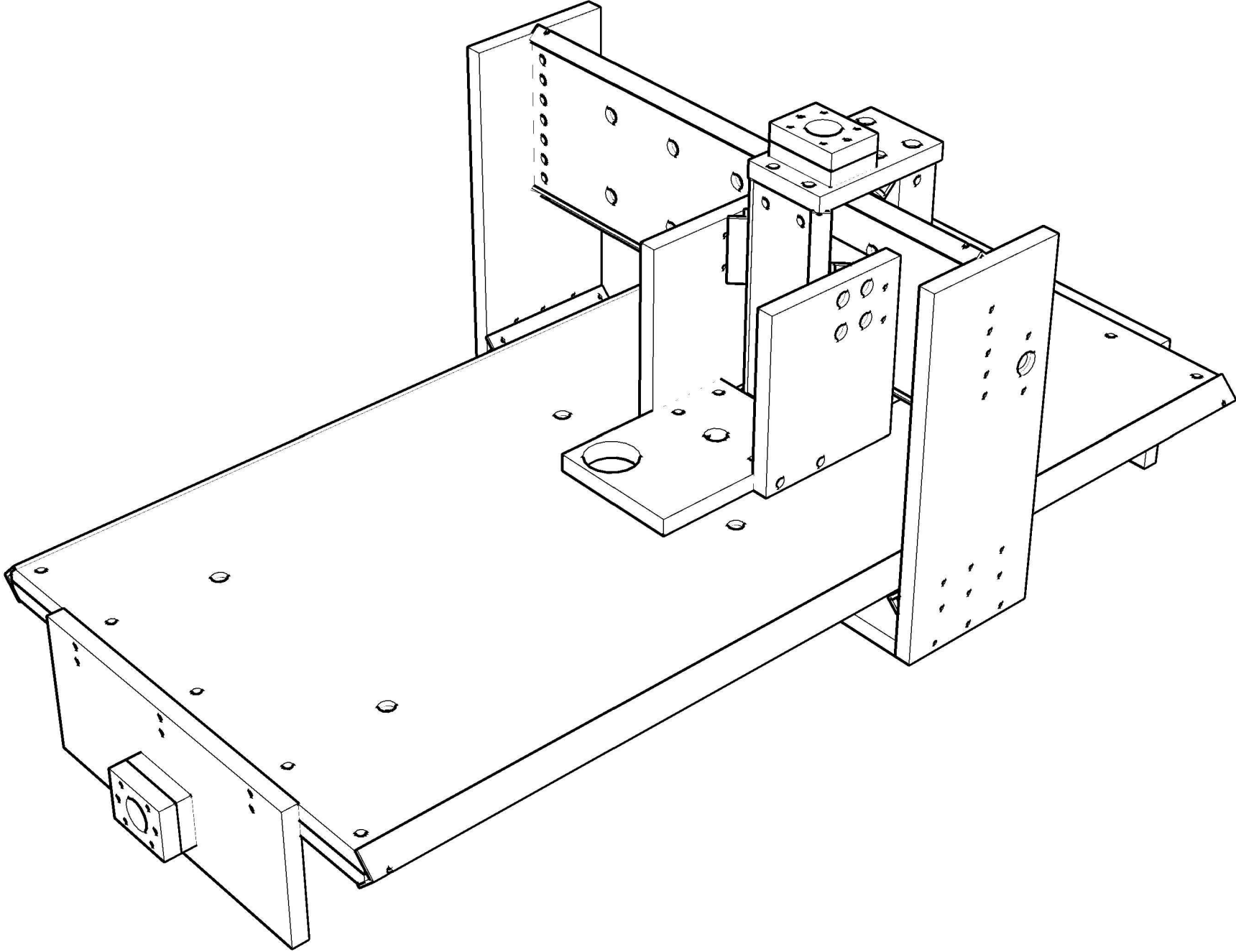
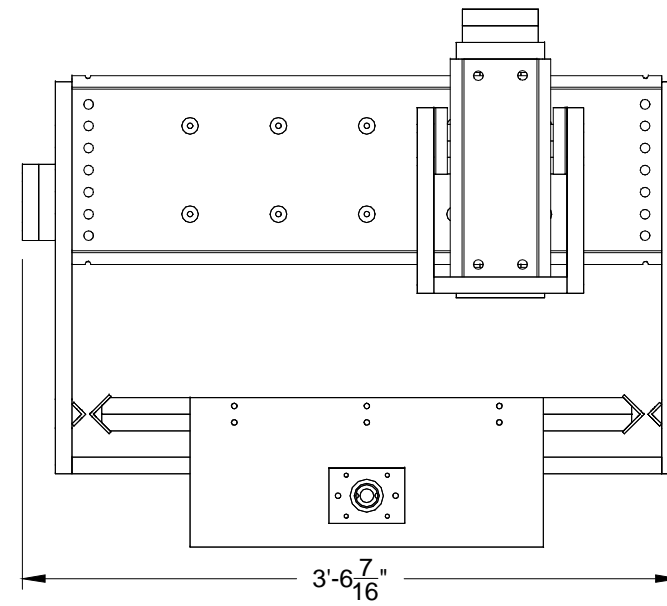
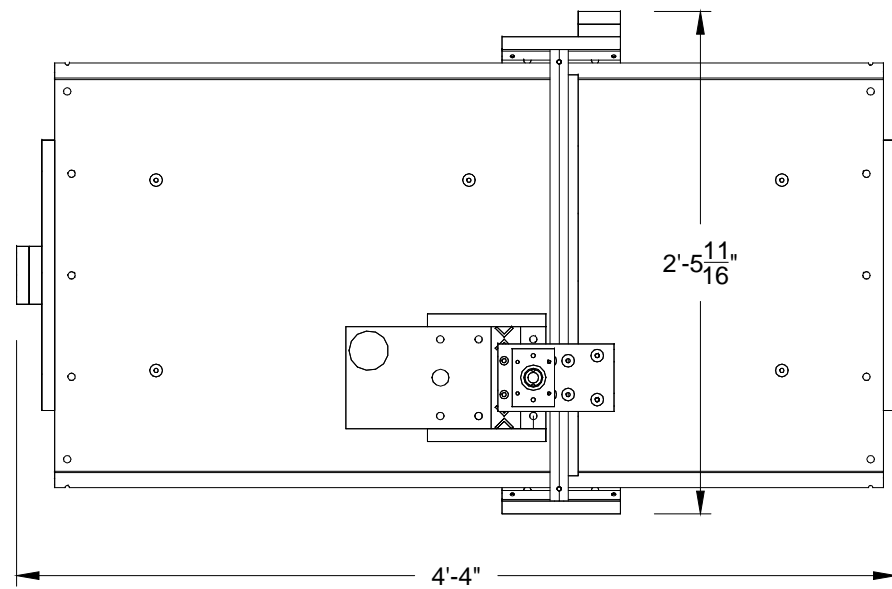


3 Axis CNC Machine - MDF Plans and Cut List





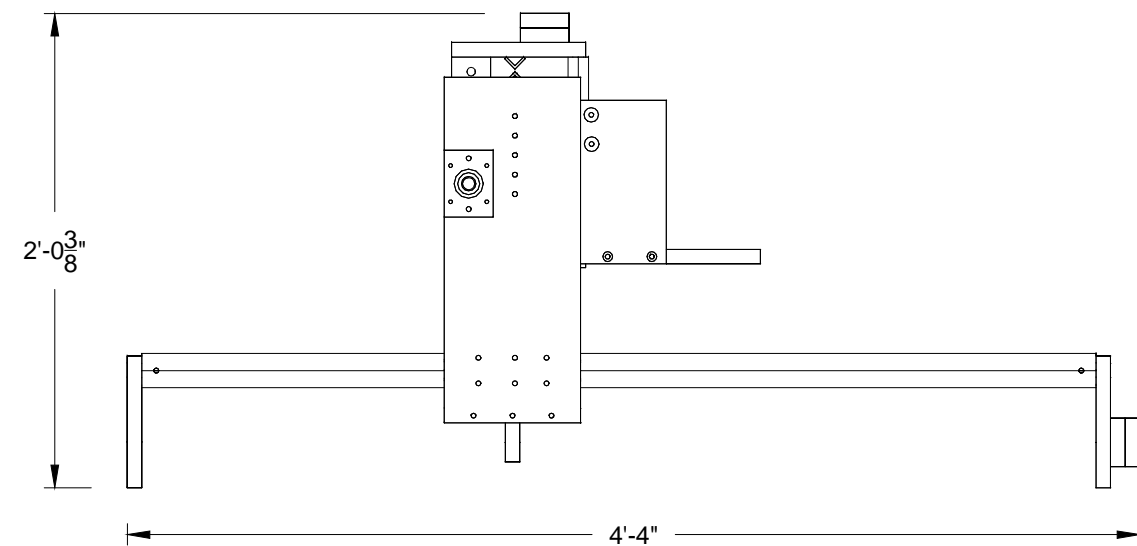
Overall Dimensions and General Notes:

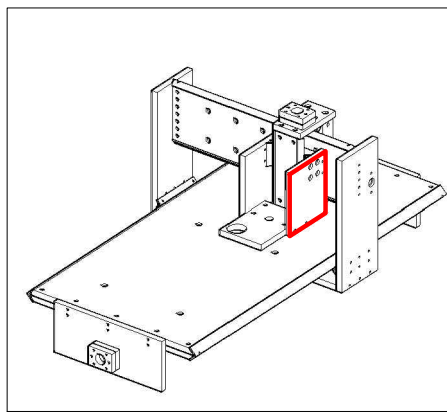
These measurements include only the MDF components and not other external components such as motors, bearings, lead screws, etc.

For placement of various items such as motors, lead screws, bearings and other unique hardware items, go to the buildyourcnc.com website.

Notes: All screw diameters and types will be $\frac{1}{4}$ " - 20 unless specified otherwise. Hole diameters and dimensions are seldomly repeated for simplicity. If there is an inquiry to a hole size, or a position, refer to another part of the drawing. Any omissions and errors should be relayed to Patrick Hood-Daniel (713-952-7511) or phooddaniel@buildyourcnc.com.

If there is any concern with you having sole responsibility for any actions resulting from this plans, please return the kit and I will refund your purchase in whole within 30 days of purchase.





Z Axis Bearing Supports

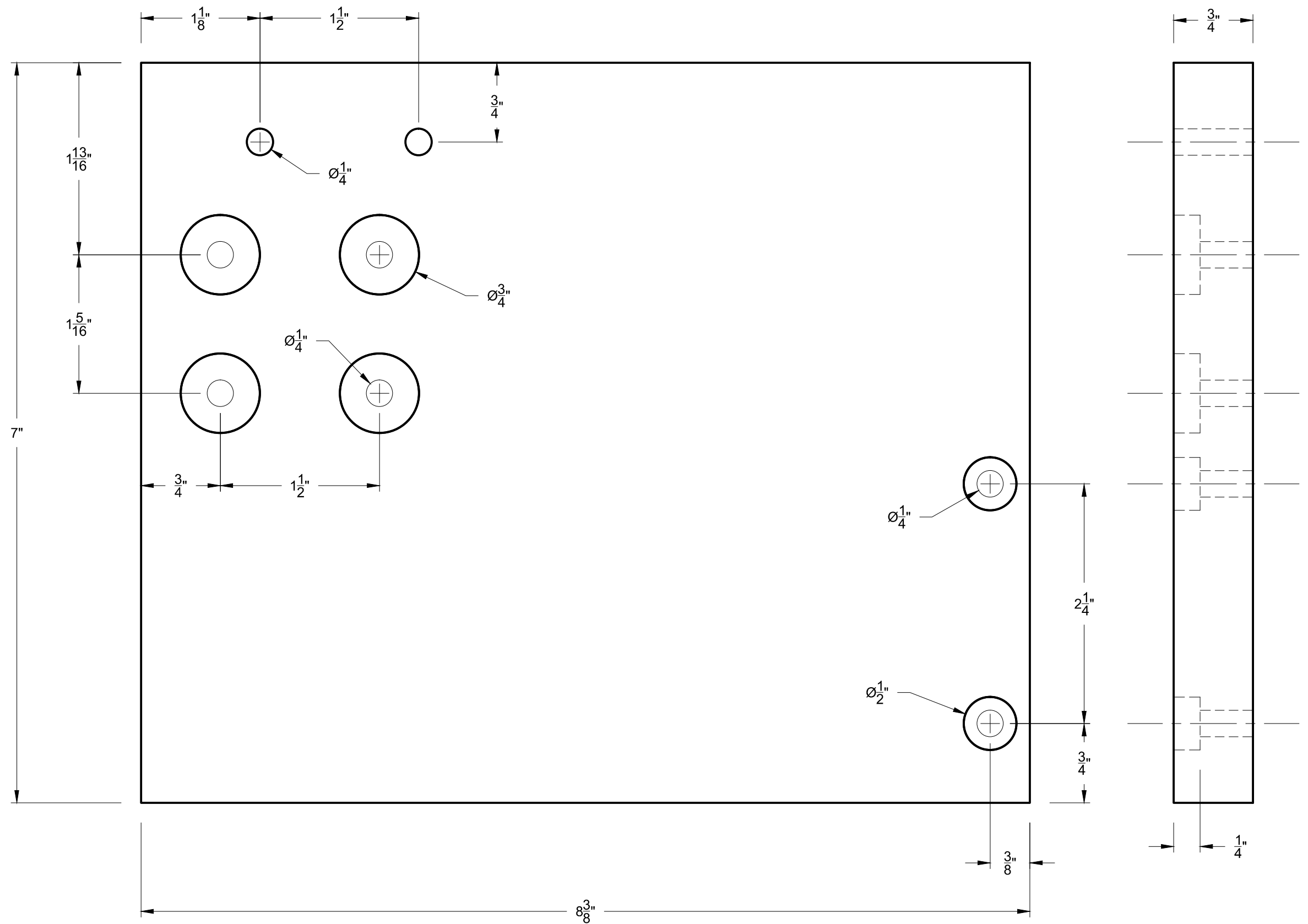
There are two of these pieces on the machine. They serve as supports for the linear bearings and for the router mount.

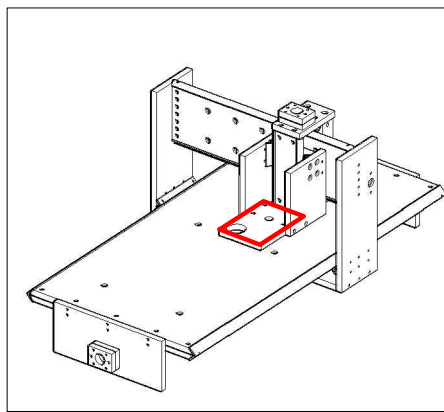
Each piece is an exact mirror of the other.

Hardware Needed:

4 2" screws to connect to the z-back support and the router mount base.

4 $\frac{3}{4}$ " screws to secure the linear bearing angle.





Router Base

This piece will be used dually as the router base and as a dust collector top.

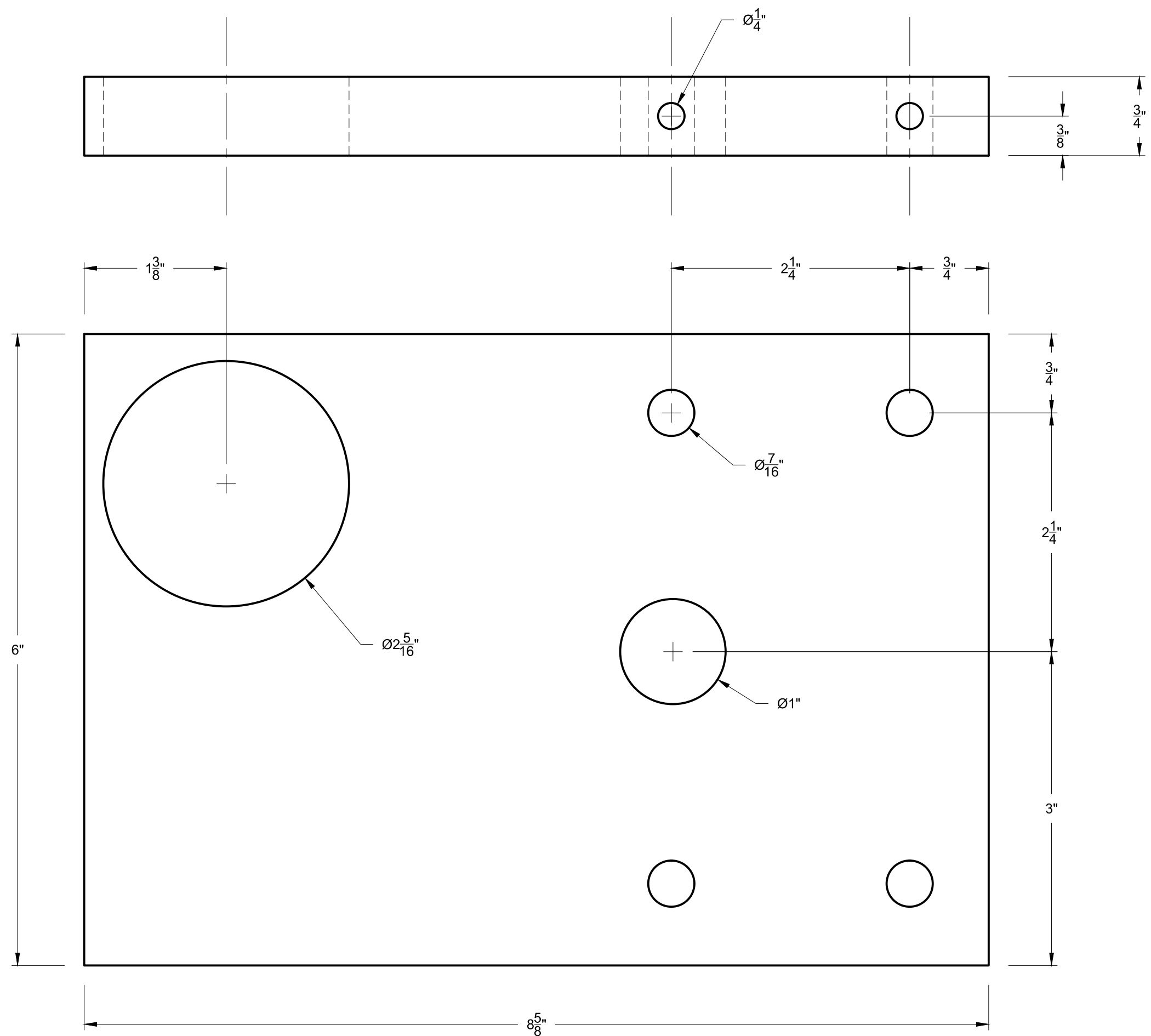
There is only one of these pieces on the machine.

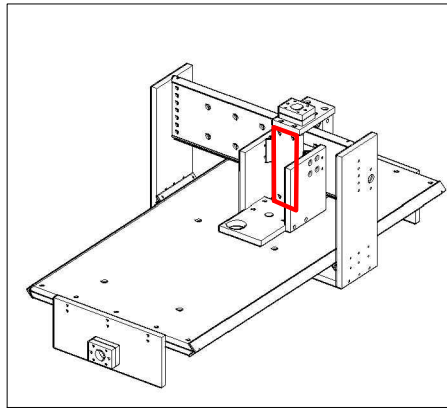
The diameter for the large hole for the vacuum hose should be modified to fit your vacuum hose.

The medium hole is used for the router collet to protrude.

Router mounting holes will need to be marked and bored so that your router can be utilized. The underside of this base should have these holes countersunk so as not to reveal the screw heads as this may interfere with the material to be cut.

The four remaining holes is to receive a cross dowels to connect to the screws from the Z Axis Bearing Supports.

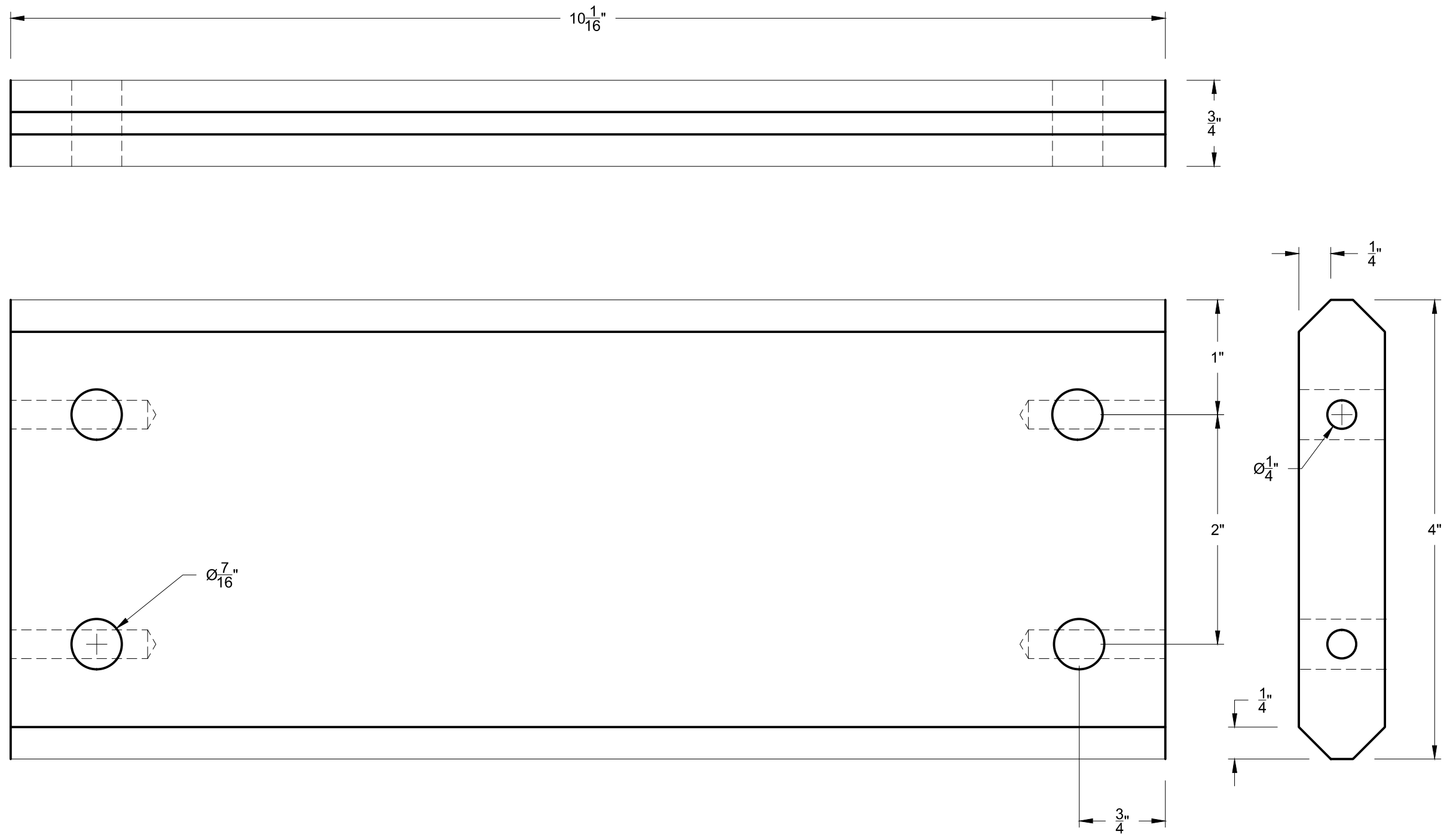


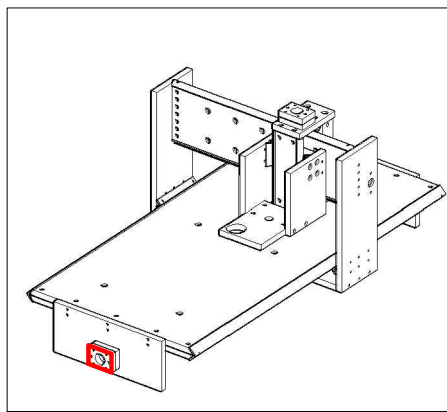


Z Axis Rail Support

This piece will be used as the support for the aluminum angles as rails. The sides are chamfered at 45 degree angles with a small portion of the MDF remaining for the router bearing guide.

The 4 holes at $\frac{7}{16}$ " are used to receive cross dowels to connect to the y-axis bearing supports.





Motor Mount

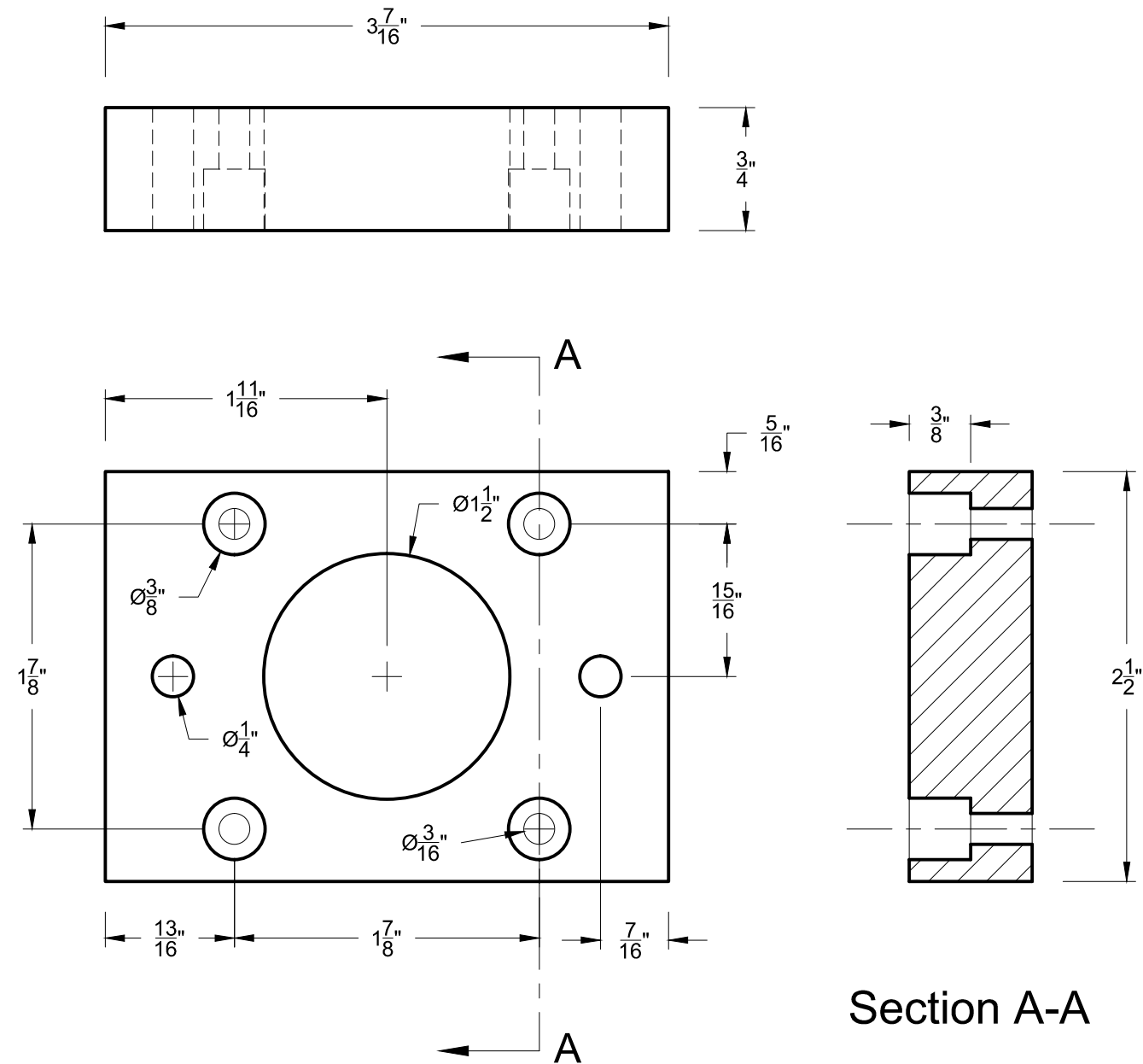
These pieces will enable you to mount the motors to drive the linear motion.

Countersunk holes will need to receive the #10 nuts. Use the method that is exhibited on the buildyourcnc.com website to drive the nuts into these holes.

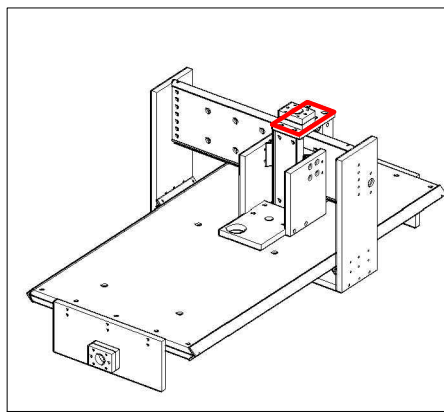
The two outside holes are to receive 3" screws in order to connect through the the main $\frac{3}{4}$ " piece being attached, and two motor mounts.

The large center hole is simply to allow space for the couplings and if the bearing is not flush against the main piece.

There are six of these pieces on the machine.



Section A-A

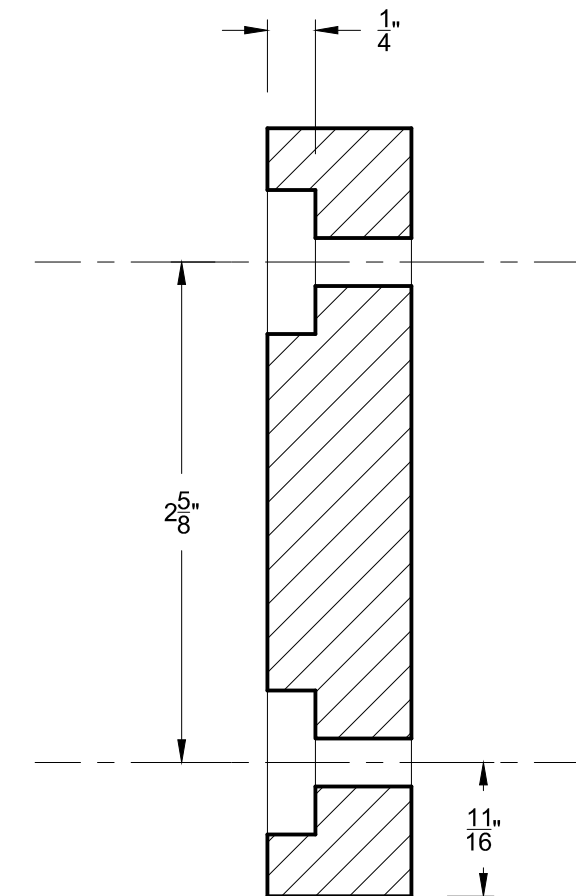
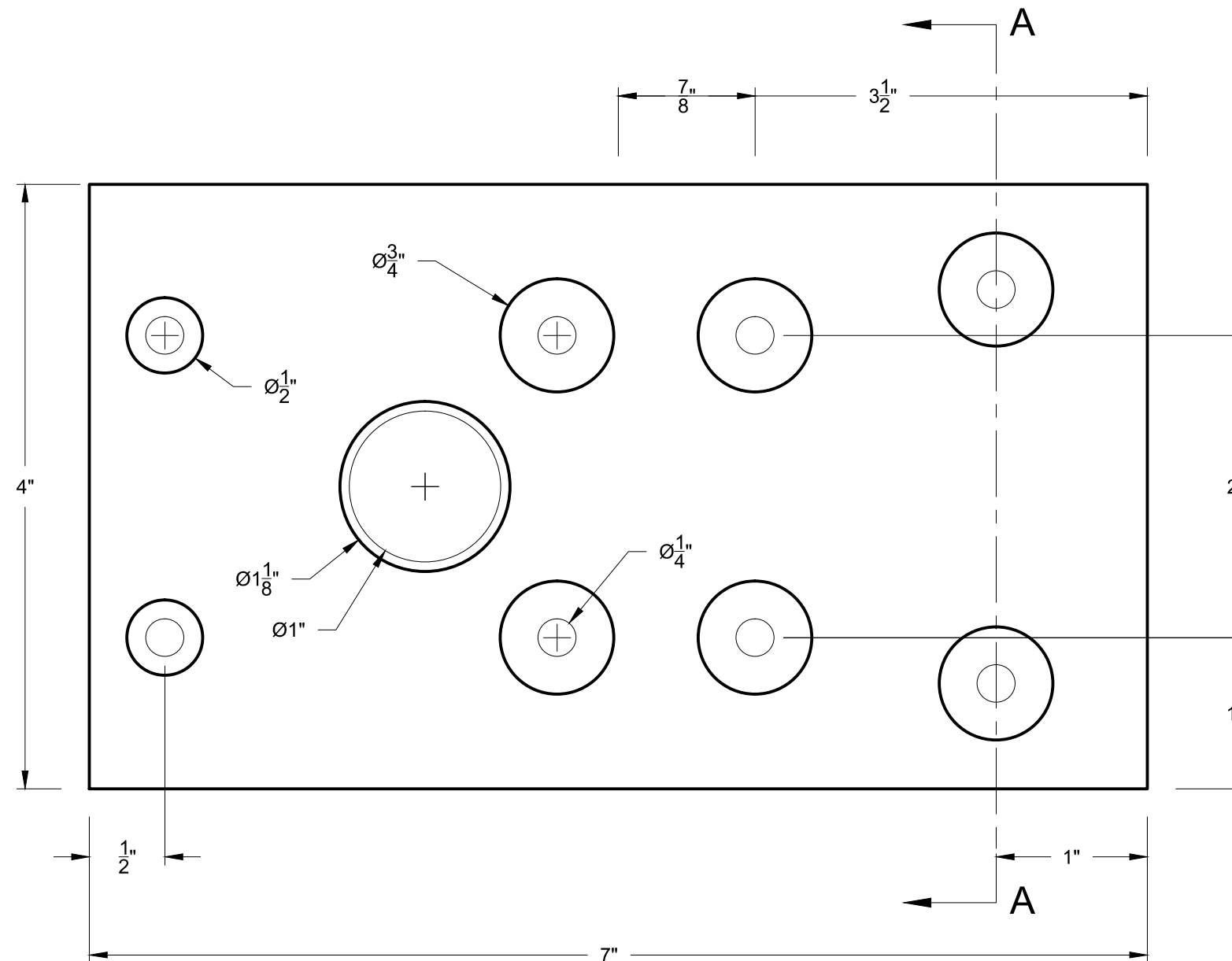
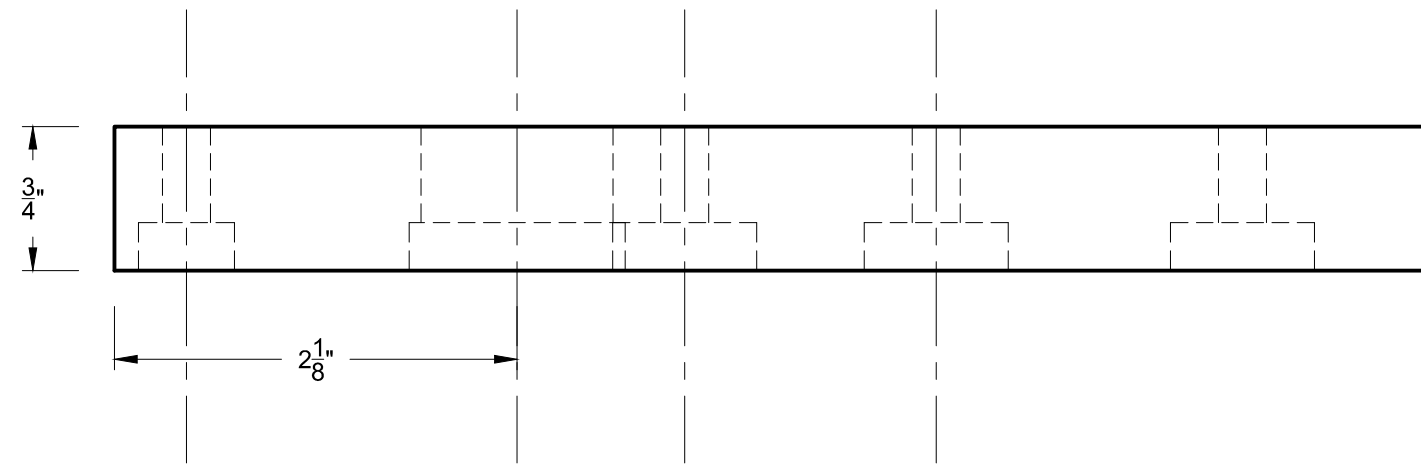


Y Axis Linear Bearing Supports

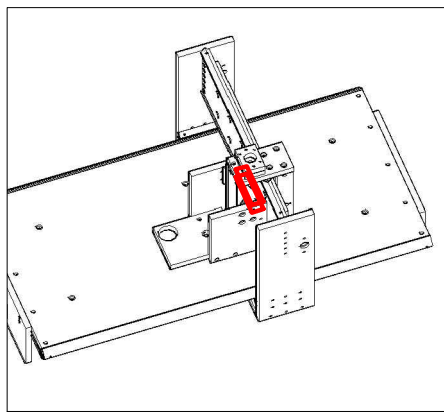
There are two of these pieces in the machine and they serve as linear bearing supports and to connect to the Z rail support and the Z back supports.

You will need four $\frac{3}{4}$ " screws to attach the bearing angle (the four holes in the middle). Four 2" screws are needed for the four outside holes to connect to the y-axis back support and the z-axis rail support pieces.

The two holes outside of the larger bearing hole is used to fasten the motor mount using 3" screws.



Section A-A

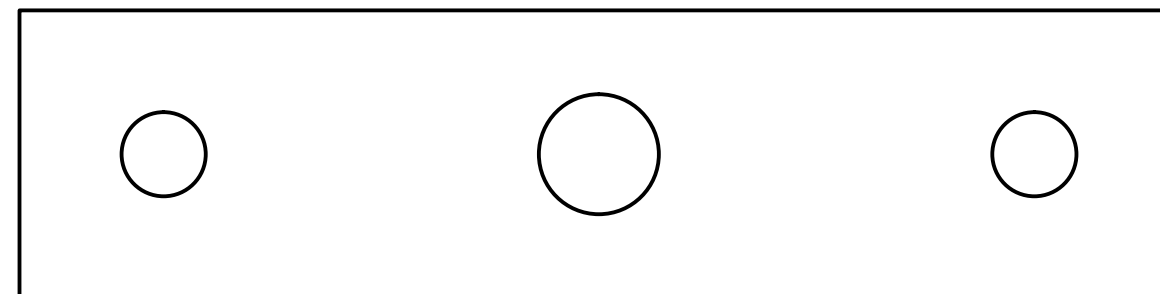
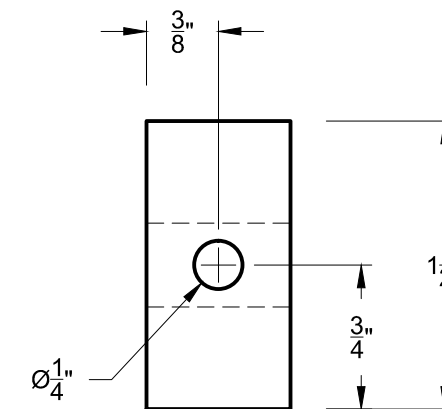
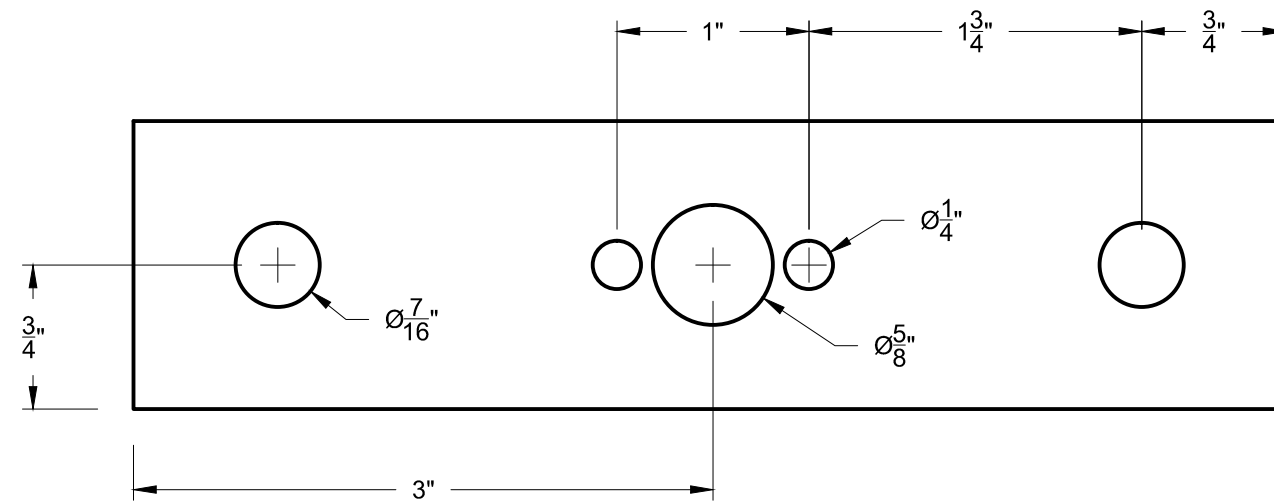
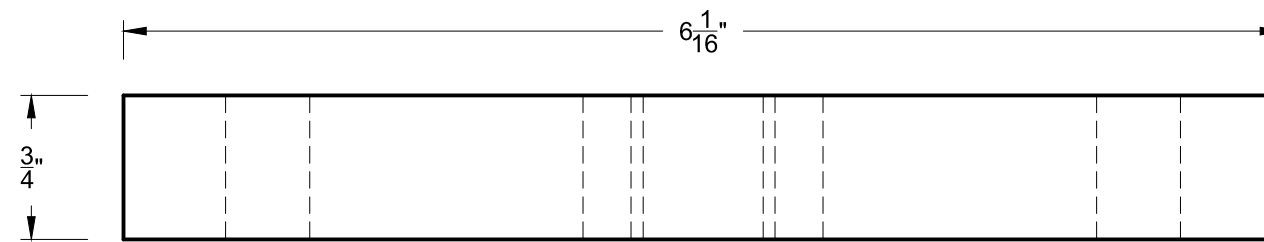


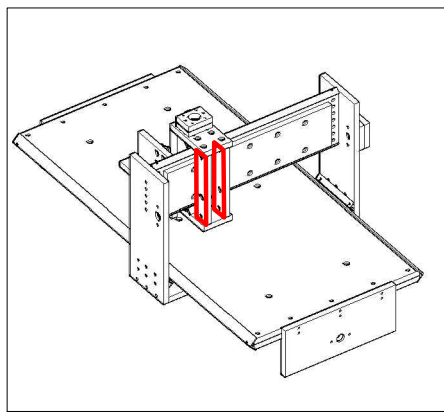
Z Axis Back Supports

The piece shown at the top is the z-axis back support piece that will also serve to hold the z-nut. The piece at the bottom serves simply as extra support for the router sides. Both will have a center bore on each end to mount to the router sides (shown upper right).

You will need four cross dowels, two for each piece.

For the piece shown at the top, two 1-1/2" screws and nuts are required to fasten the transmission nut.



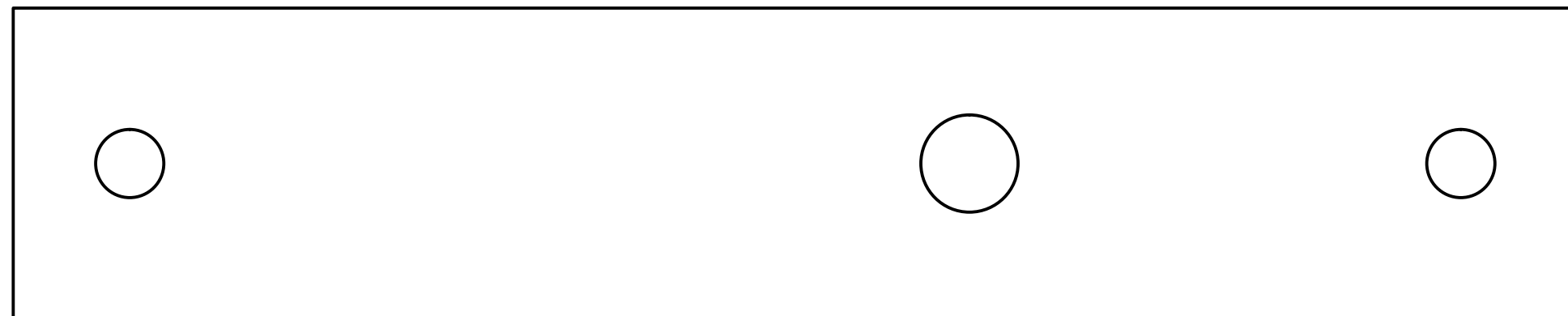
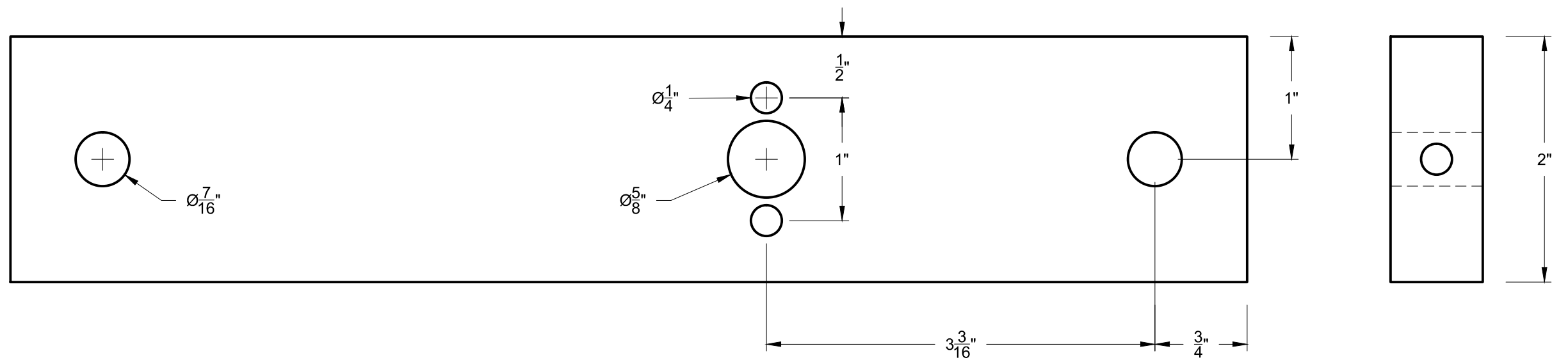
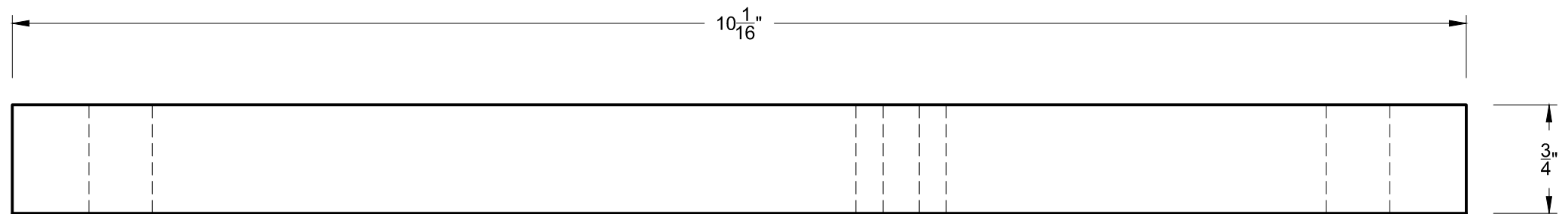


Y Axis Back Supports

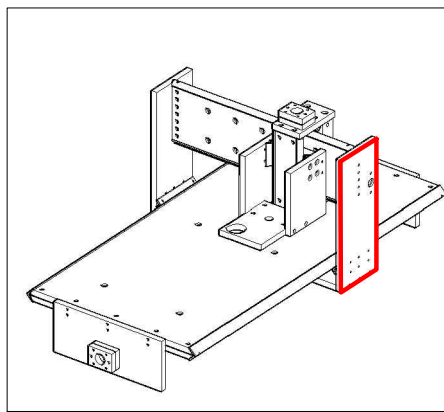
These two pieces are similar to the z-axis back support found on the previous page. These pieces will serve as the back support for the y-axis and one (top) will hold the y-nut.

You will need four cross dowels, two for each.

For the piece show at the top, two 1-1/2" screws and nuts are required to fasten the transmission nut.



Scale: 1:2



Gantry Side

The Gantry sides serve to hold up the y and z axes and ride on the x-axis rails.

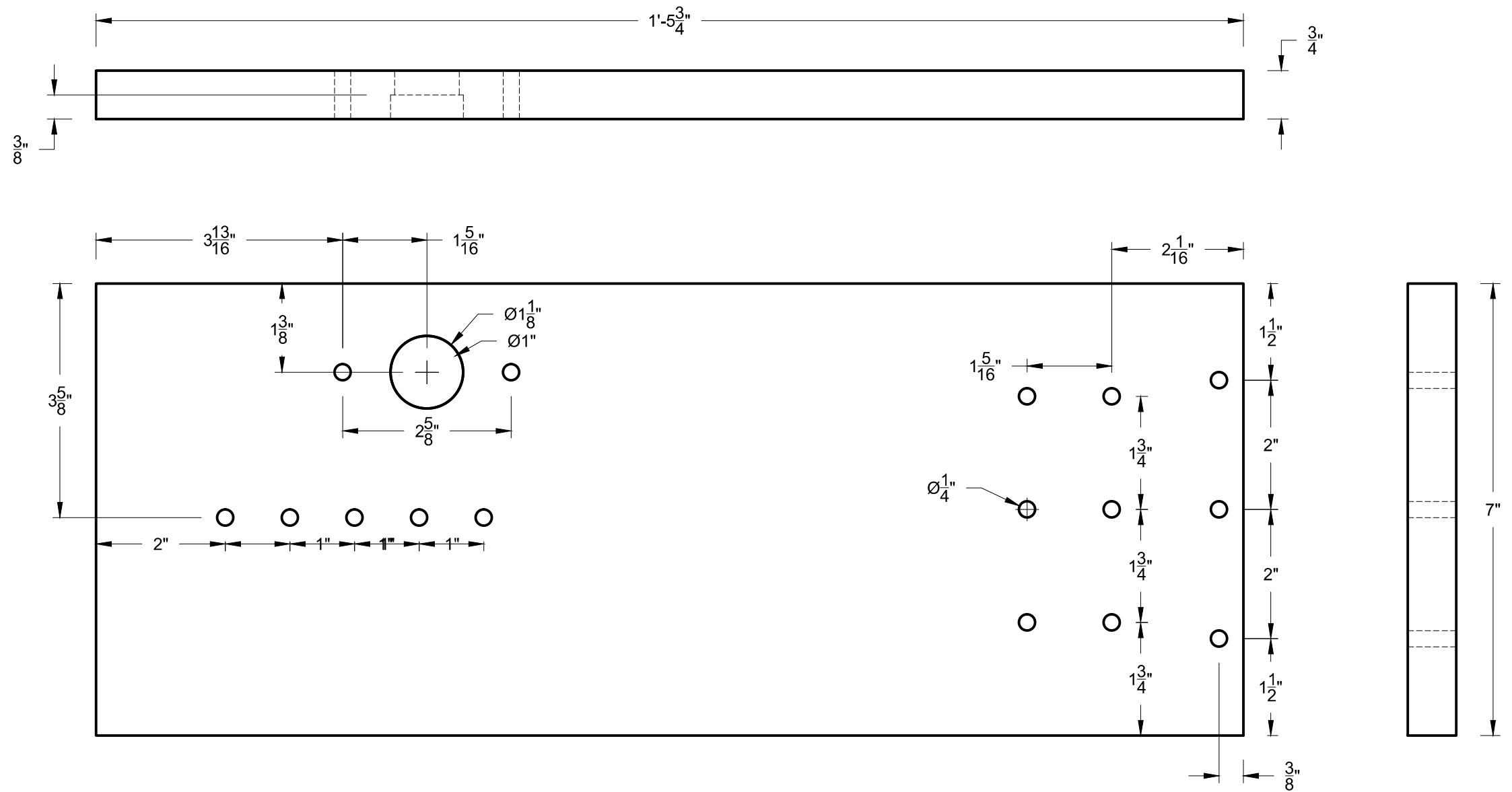
The five holes lined up on the left will connect to the y-axis rail support piece using 2" screws.

The six holes in a grid configuration are used to attach the bearing angle using $\frac{3}{4}$ " screws.

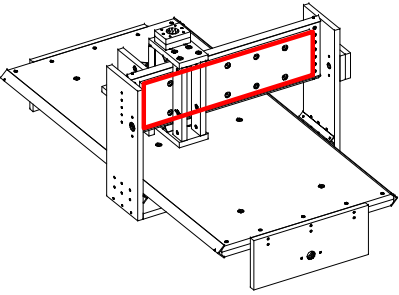
The three holes to the far right will connect to the gantry bottom piece and will require three 2" screws.

The large hole is for the bearing and needs to be countersunk to the bearing thickness. The two adjacent holes will hold the motor mount and will require the use of 3" screws.

There are two of the gantry sides in the machine each mirroring the other.



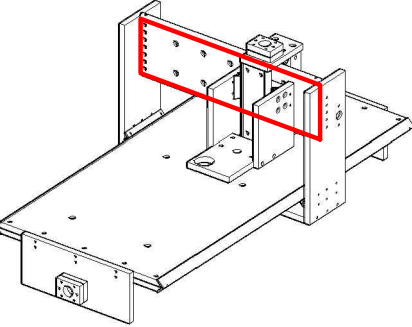
Scale: 5/16" = 1"



Y Axis Rail Support Front Reinforcement

This is the back part of the y-axis rail support piece.

These will fasten with the 1" screws mentioned on the previous page.

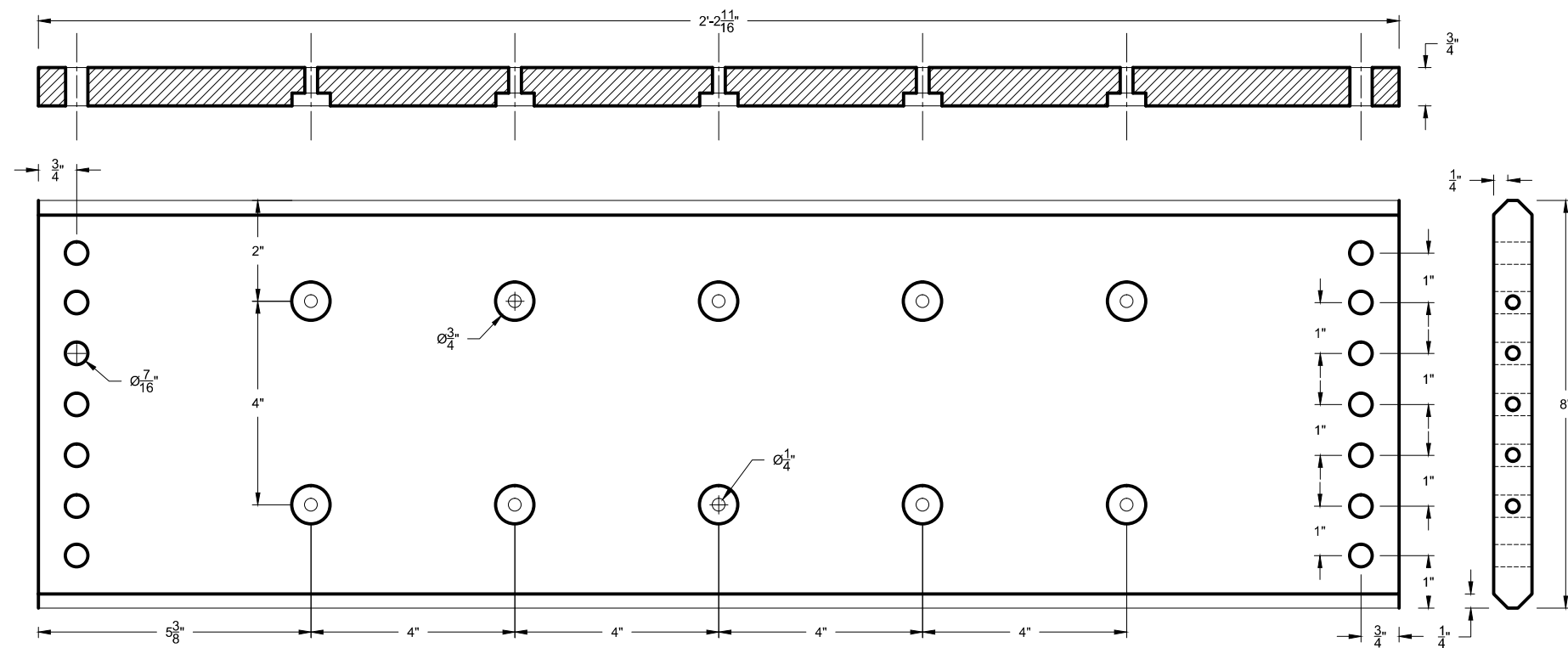
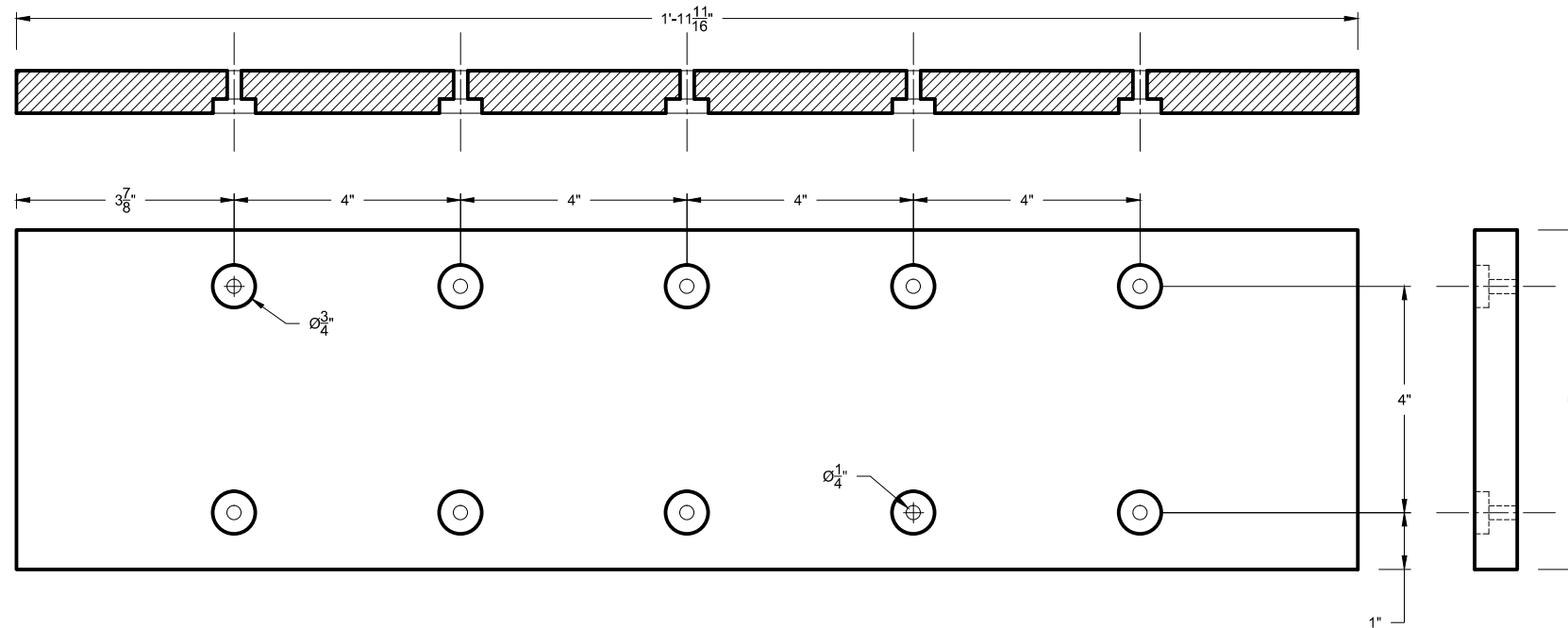


Y Axis Rail Support Front

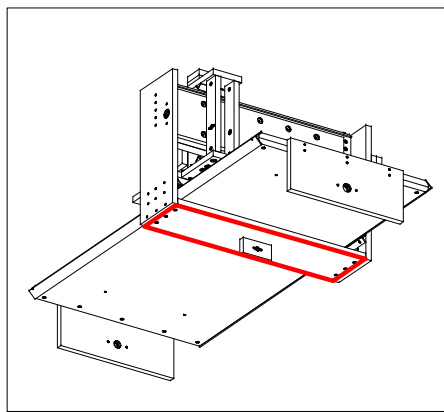
The is the main gantry support and the piece that supports the rails for the y-axis travel.

You will need 7 cross dowels on each side, two of which will be used to fasten the rail to the piece. The other will be used to attach the gantry sides.

The 10 holes in the center will be used to fasten the reinforcement with $\frac{3}{8}$ " countersinking (half way through the $\frac{3}{4}$ " board) to allow 1" screws to be used. There should be very little protrusion of the screw head or the nut so the z-axis assembly will not have obstruction.



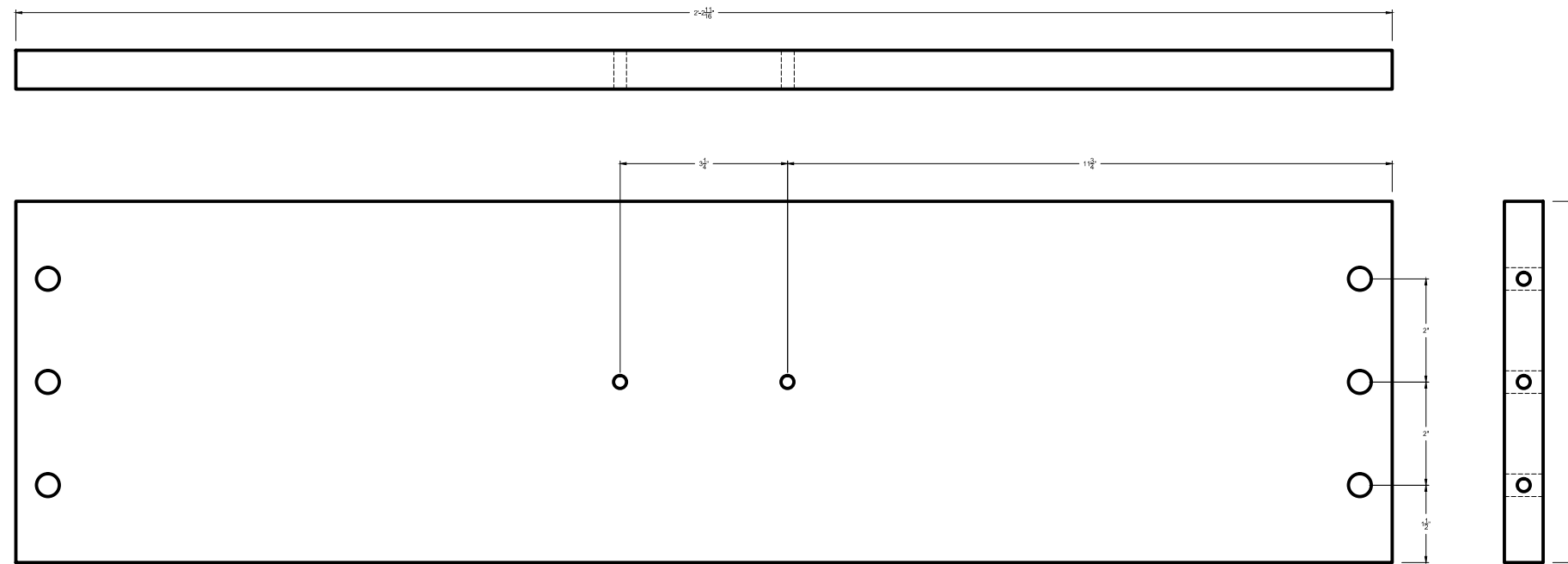
Scale: 5/16" = 1"



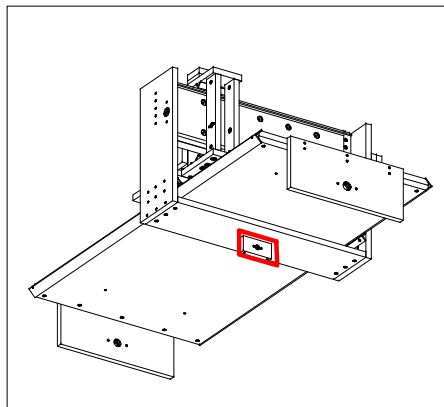
Gantry Bottom Support

This is the piece that will serve as the support to maintain alignment and strength for the gantry around the table rails.

Six cross dowels will be used to connect to the gantry sides and two 3" screws are needed to fasten the x-nut piece.



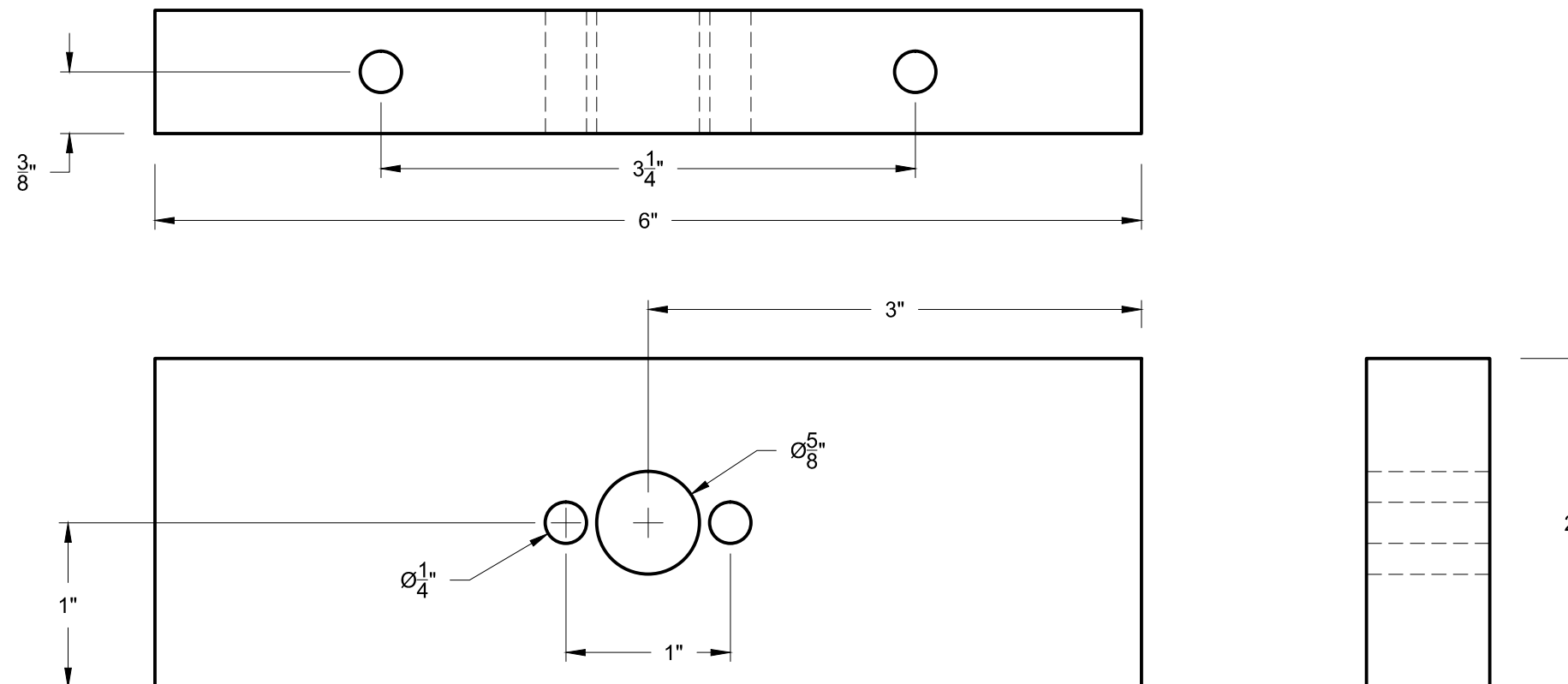
Scale: 1:1



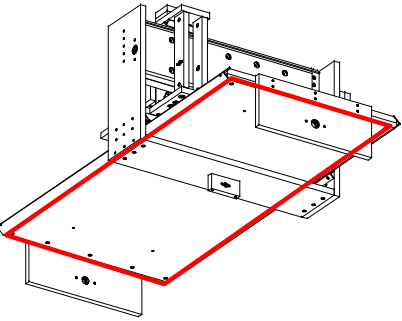
Gantry Bottom X-nut Support

This piece will fasten to the gantry bottom from the previous page.

Two 1 - 1/2" screws are needed to secure the transmission nut to the piece, and two 3" screws to fasten to the gantry bottom.



Scale: 1:4



Bottom Half of Table

This is the bottom half of the complete table assembly.

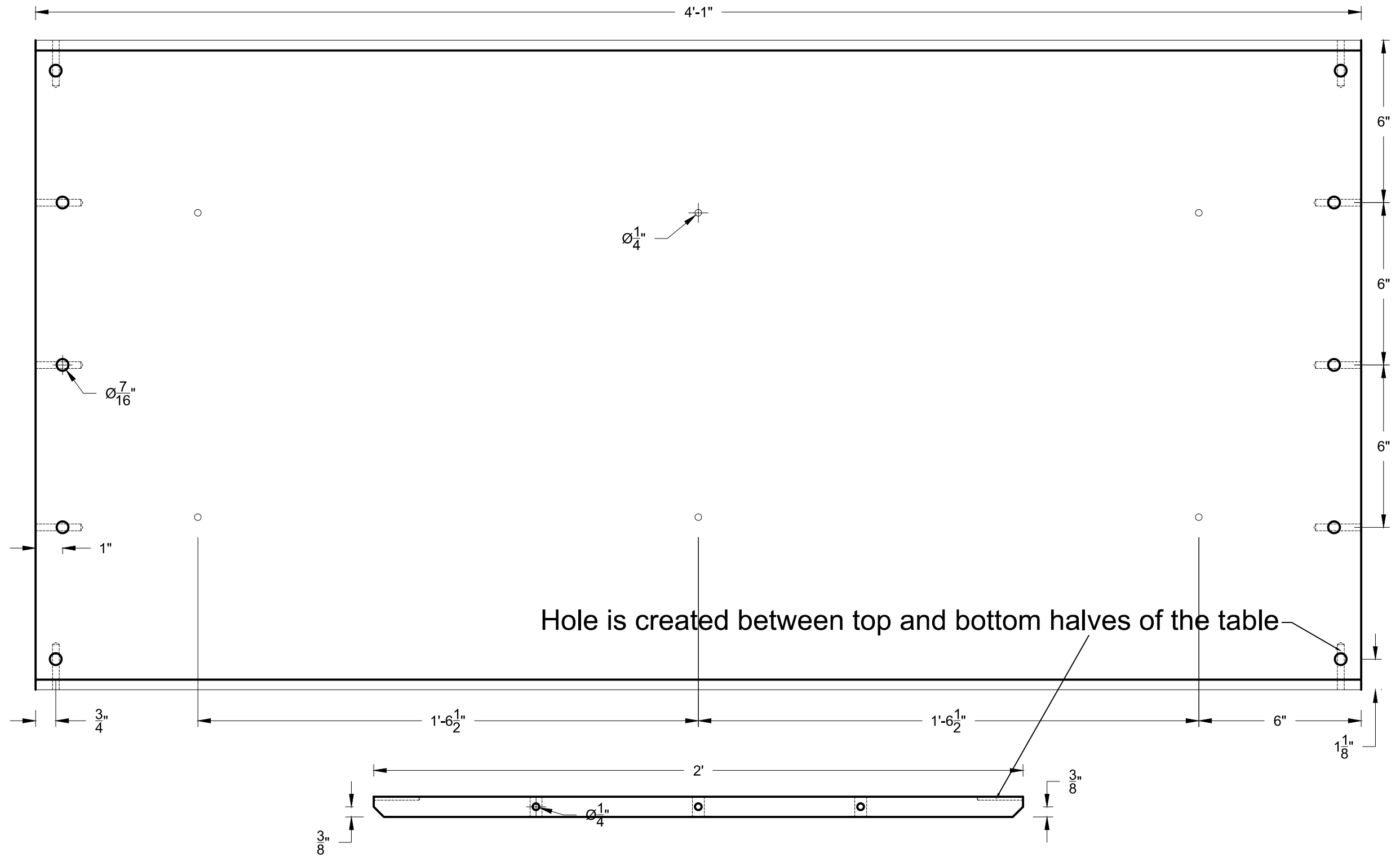
The piece is chamfered to receive two 1-1/4" angles for linear motion of the gantry.

The six holes in the middle are to be used to fasten the two halves of the table together.

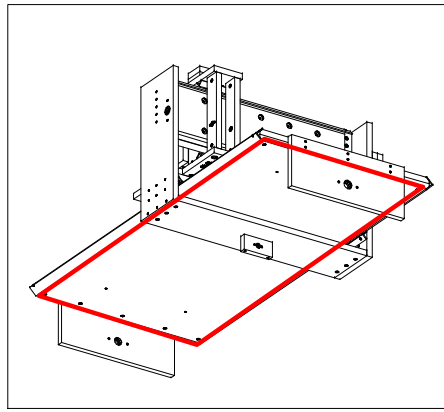
The five holes on either end will receive cross dowels. Three for connecting to the table ends and two for holding the angles in place.

The two holes for the angle attachment should be drilled only after the two halves are prepared and fastened together.

4'1" for the table length may seem non-typical; however, this is the nominal dimension of stock found at the local home improvement store.



Scale: 1:4



Top Half of Table

The top half of the table will serve as the cutting surface. The holes in the middle are countersunk so there is not protrusion of screw heads to interfere with the material to be cut.

Six 1-1/2" screws are needed for the middle holes to fasten the other table half.

