INTRODUCTION

I needed a workbench for odd jobs around the house. Since I'm not a wood worker and not rich I needed my workbench to be basic. I didn't want to sacrifice quality or durability and didn't like the workbench plans I saw on the Internet so I decided to design my own to suit my needs. After drawing it up by hand I grabbed Google Sketchup and redid the plans numerous times until I felt I got it the way I wanted and with minimal waste of wood. I learned Sketchup as I drew the plans so it could be improved but I think it illustrates the workbench and the plan nicely.

My workbench is built and I think it cost me about $120, it's really strong and stable, and it looks good enough. Here's the final product:

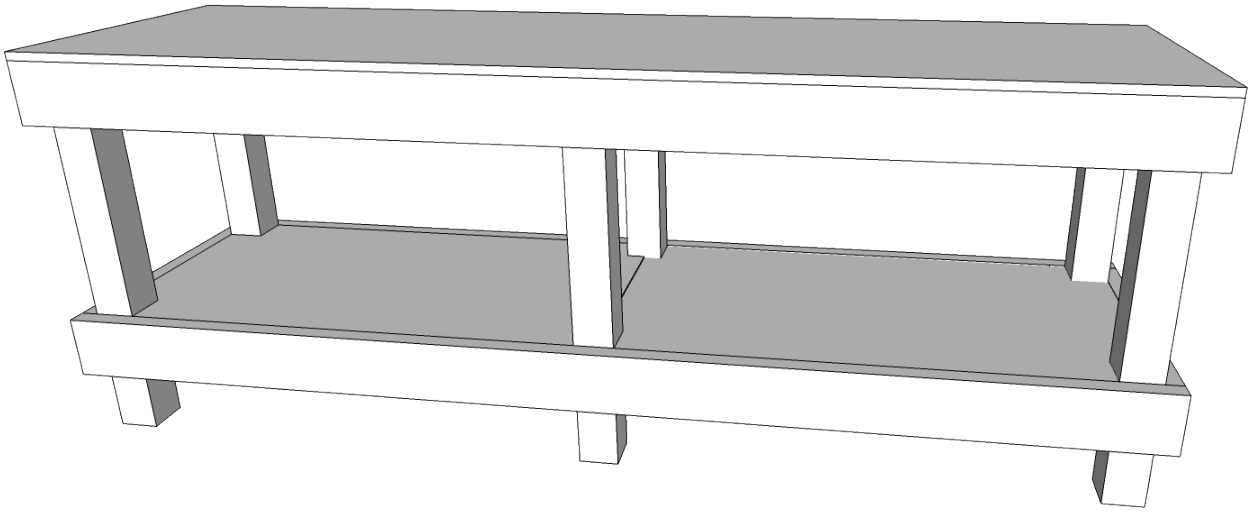

Figure 1, Finished Workbench

Please read through the plans before starting and let me know if you have any problems via my website (www.craigminah.com). I used carriage bolts since they're stronger than lag screws but lag screws should work just fine and would be easier than carriage bolts.

I call my workbench the "M1A1" because it's built like a tank.

TOOLS LIST
Circular saw w/ plywood blade
Hand saw
Drill w/ drill bits
Carpenters' square
Level
Tape measure
Socket wrench
Screwdriver, cross tip
Hammer

	PARTS LIST
6	2" x 6" x 96" kiln-dried lumber
1	2" x 4 x 96" kiln-dried lumber
3	4" x 4" x 72" pressure-treated lumber
1	48" x 96" x 3/4" plywood
2	24" x 48" x 1/2" plywood
40	5 1/5" x 1/2" carriage bolts
40	1/4" nuts
40	1/4" flat washers

Note: I'll use "2x4", "2x6", and "4x4" to refer to the lumber in the parts list above; nominal dimensions are less than colloquial dimensions so a 2x4 measures 1 1/2" x 3 1/2", a 2x6 measures 3 1/2" x 5 1/2" and a 4x4 measures 3.5" x 3 1/2"

Before starting any project, it's important to keep safety in mind. Please wear personal protective equipment (e.g. earplugs, eye protection, gloves, etc.) as needed and be careful using power tools.

UPPER WORK STRUCTURE

1. The first stage of the workbench we'll build is the tabletop. We'll need four of the eight-foot long 2x6's in the following dimensions:
   - Two 2x6s left uncut at 96"
   - Two 2x6s cut into eight 24" long sections

2. Using the 2 1/2-inch wood screws, assemble the two uncut 2x6s and four of the 24" 2x6s from step one using the diagram below; use the carpenter square to ensure the assembly remains square; I used two wood screws in each end and predrilled all screw holes

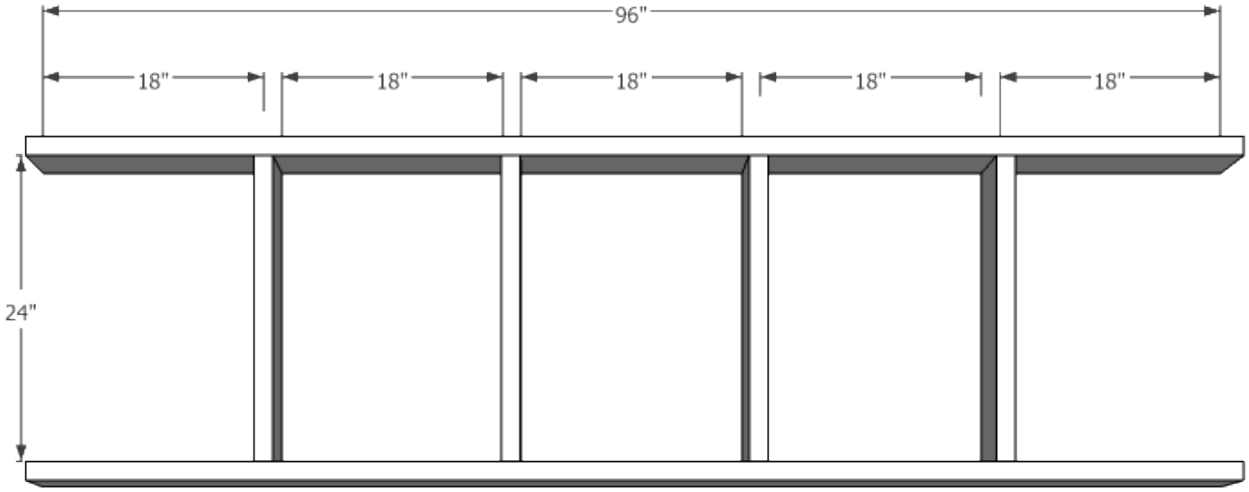

Figure 2, Workbench Top Frame

CORNER LEGS

3. Once the tabletop is built, the next step is to cut and attach the legs and the end caps; determine how tall you need your workbench to be, I used 35.75" for mine since I needed to be underneath existing peg board in my garage; be sure to account for the height of your tabletop (e.g. my legs are 35" plus 3/4" plywood top for total height of 35 3/4")

4. Measure and cut six legs of the same length out of your 4x4s

5. Using the carriage bolts, washers, and nuts, attach the end caps and legs to the top frame as depicted in the diagram below:

   Notes:
   a. *I drilled 1/4" holes for my 1/4" carriage bolts*
   b. *Use two carriage bolts per side (e.g. four carriage bolts for each leg through through 2x6)*
   c. *If you don't have a drill bit long enough to go through the 2x6 and 4x4 (nominal depth = 5") I highly recommend you get a drill bit long enough; if you don't have one (which I didn't) you can hold the leg in place, drill through the 2x6 to mark the leg, then drill through the leg;*

failure to do this may result in a huge headache as you try to transcribe the holes around the leg via carpenter square, level, tape measure, etc.

d. *When you drill through the sides into the 4x4 ensure your bolts in the x- axis are at a different elevation from the bolts in the y- axis so your bolts don't intersect inside the 4x4 (refer to diagram below)*

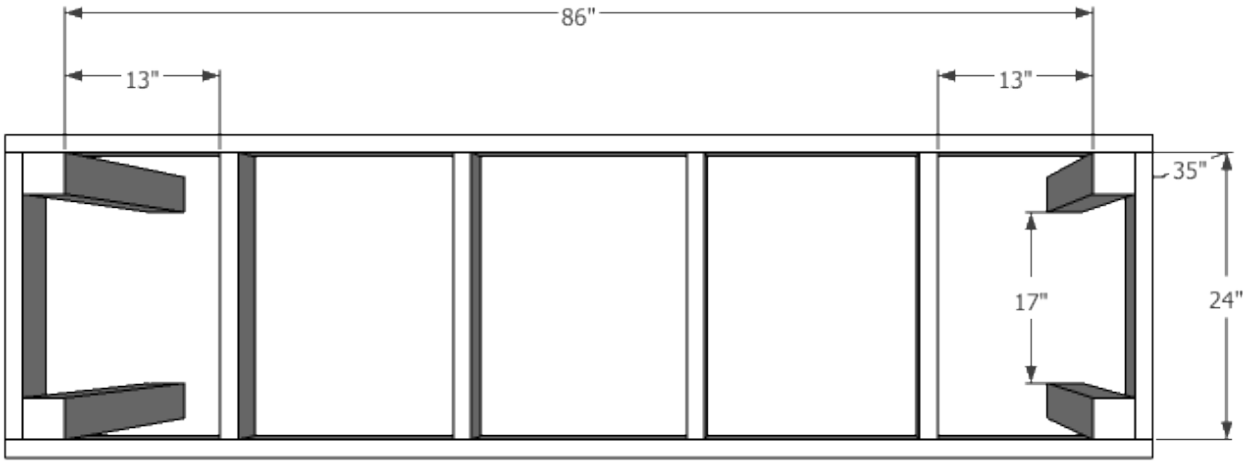

Figure 3, Leg and Tabletop End Caps

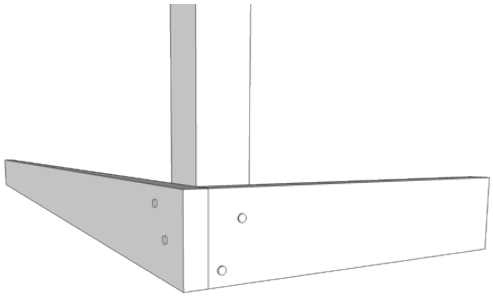

Figure 4, Leg Carriage Bolt Spacing Example

LEG SKIRT AND MIDDLE LEGS

6. Once the legs and end caps are installed you should flip the workbench over right-side up and install the leg skirt and middle legs

7. The leg skirt consists of two uncut 2x6s along with the last two 2x6s cut to 24" in length; install them using carriage bolts, washers, and nuts as before (e.g. two carriage bolts per face); the middle legs are installed in the same manner as before but make sure you install the carriage bolts on the top skirt (e.g. uncut 2x6); refer to the diagram below for specifics; I found that the 2x6 is perfect to use as a spacer to get the height of the skirt from the ground correct (or at least uniform) but you'll need one extra piece of 2x6 to do this; clamps help as well

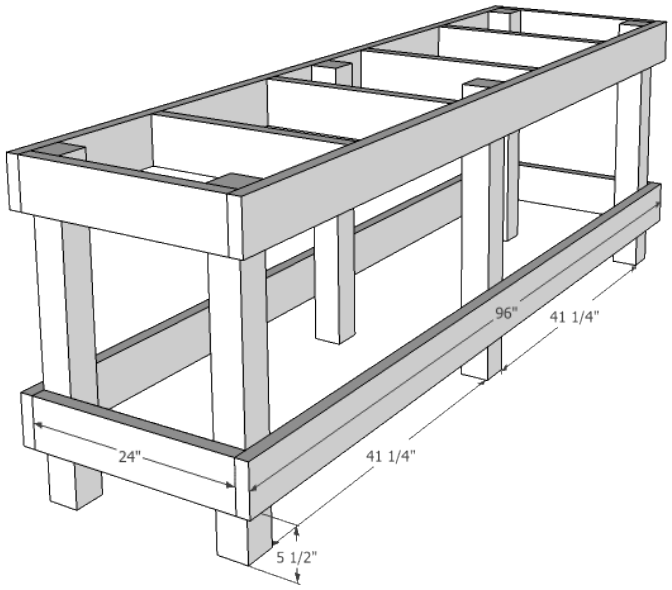

Figure 5, Bottom Leg Skirt

LOWER SHELF SUPPORT

8. To install the shelf support you'll need to cut the 2x4 into four 24" sections; the shelf sits on it flush with the top of the 2x6 used as the leg skirt which means the top of the 2x4 needs to be recessed from the top of the 2x6 by the thickness of the shelf; for example, if you use 1/2" plywood for the shelf you'll need to recess your 2x4s by 1/2" ensuring the top of the plywood sits flush with the top of the 2x6 skirt. Note that the nominal height of a 2x4 is actually 3 1/2" (and a 2x6 is really a 1 1/2" x 5 1/2"); I used a scrap piece of plywood as the measuring stick to make sure my 2x4 is at the proper depth

9. Install the 2x4s using two wood screws in each end

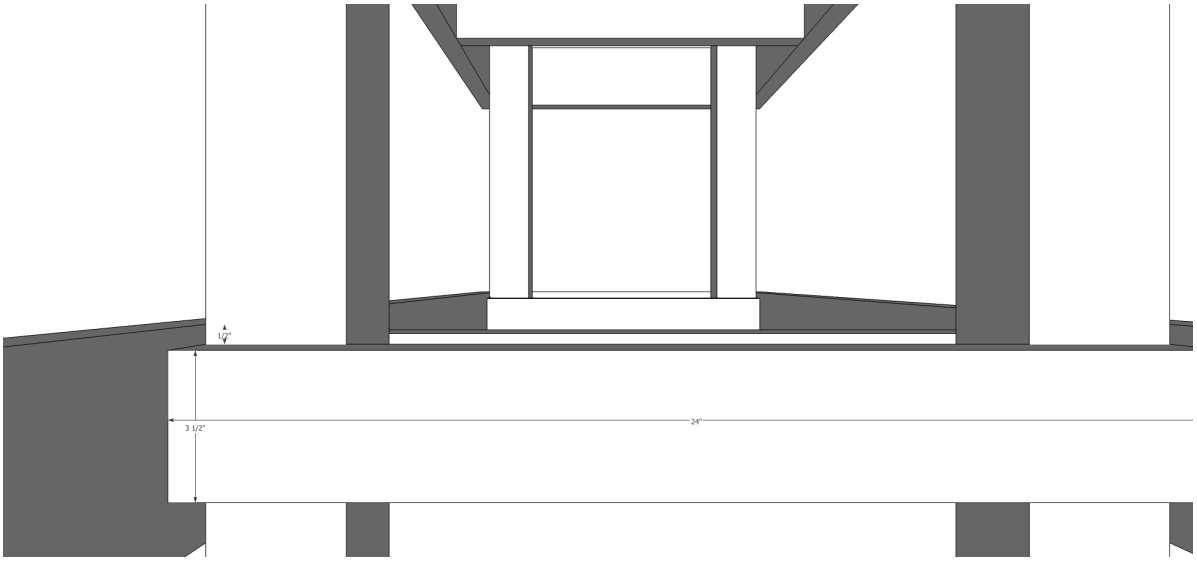

Figure 6, Lower Shelf Detail

LOWER SHELVES AND UPPER WORK SURFACE

10. After the bottom shelf supports are in place you'll need to cut the two shelves using the template below as the starting point but be sure to measure your actual dimensions to accommodate any differences and remember to measure from the inside of the 2x6 skirt since the shelves sit flush with the 2x6s and not on them

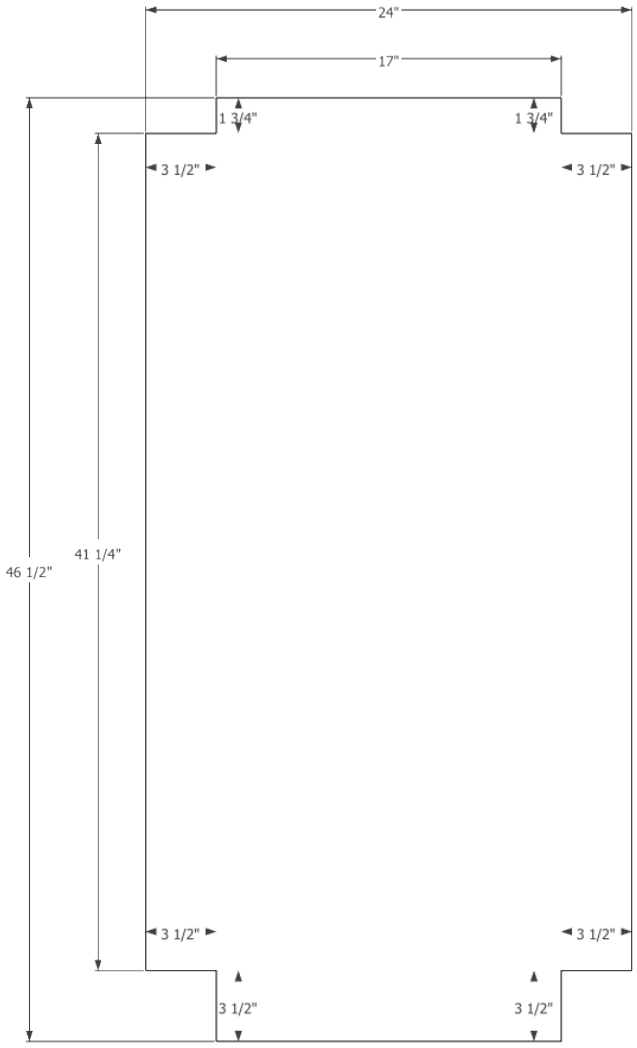

Figure 7, Lower Shelf

11. Place the two shelves on top of the 2x4 supports (I didn't see a need to screw them down)
12. Cut the 48"x96" plywood for the top to 27"x96" (I had Home Depot do it for me for free) and set it on top
13. Screw the worktop to the frame in the corners, at all 2x6 supports and down the center length-wise
14. Enjoy

CONCLUSION

I hope you find this project as satisfying and useful as I did. For me it marked the first time I made anything this large, used a circular saw, designed anything in Google Sketchup, and it left me with some new skills and a workbench I will use for a long time.