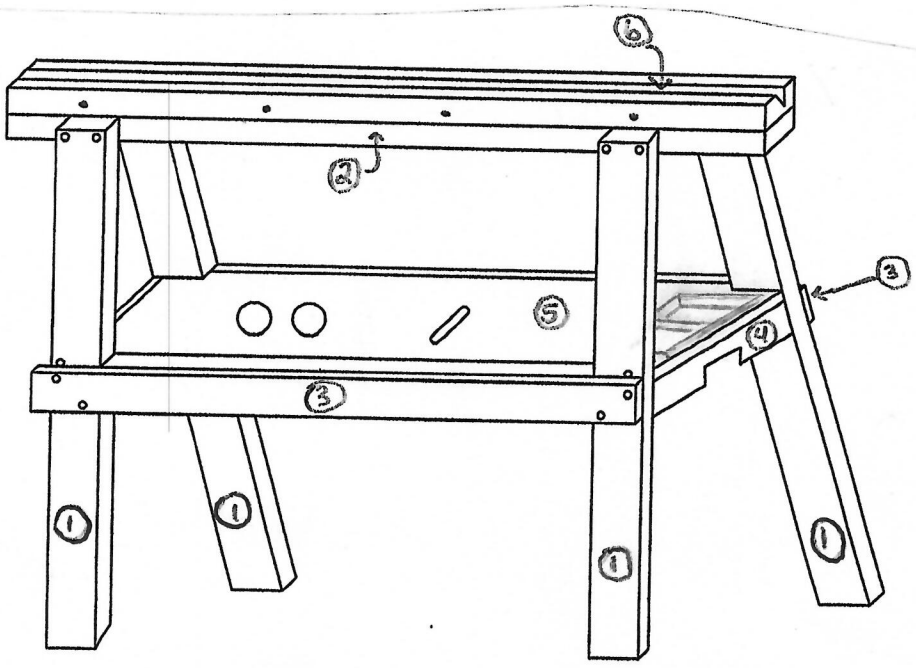
Sawhorse Project – Orientation/Safety project

HHS Intro to Construction Trades II. – Mr. Hoefler

**READ DIRECTIONS CAREFULLY AND FOLLOW THE STEPS!!!!!!!!

* You are to use ONLY the power tool specified for each step listed in the directions.



Tools Needed

Layout Tools
Cordless Drill
Circular Saw
Jig Saw
Table Saw
Miter Saw
Wood Chisel
Drill Bits
Orbital Sander
Paint Brushes
Hammer
Straight Edge
Driver Bits
T-20 & T-25

Daily Reminders

Measure twice-cut once
Think Safety!!!!
Don't be in a Hurry!
Put Names on all boards!
Follow these Directions
Share Work – Share Tools
When in Doubt – ASK!
Glue everything (except part #6)
TUCK IN LOOSE CLOTHING!
Be Careful with small pre-drill bits !
CLEAN YOUR VARNISH BRUSHES !!
Skip cutting part #4....use scrap

Supplies Needed

1- 2x4x12' (for legs-part 1)
2- 2x4x8' (for parts 2,3,6)
1 or 2 scrap pieces for part 4's
Glue and Paper Towel
T-25 2 ½" screws
T-20 1 ¾" screws
Exterior wood glue/paper towel
Blue Spray paint- LOGO
Exterior Varnish Sealer
Tray Stock

**For Grading: Take Sawhorse out in the hall with: 1) Directions Packet 2) Scrap 2x4 3) Speeds Square

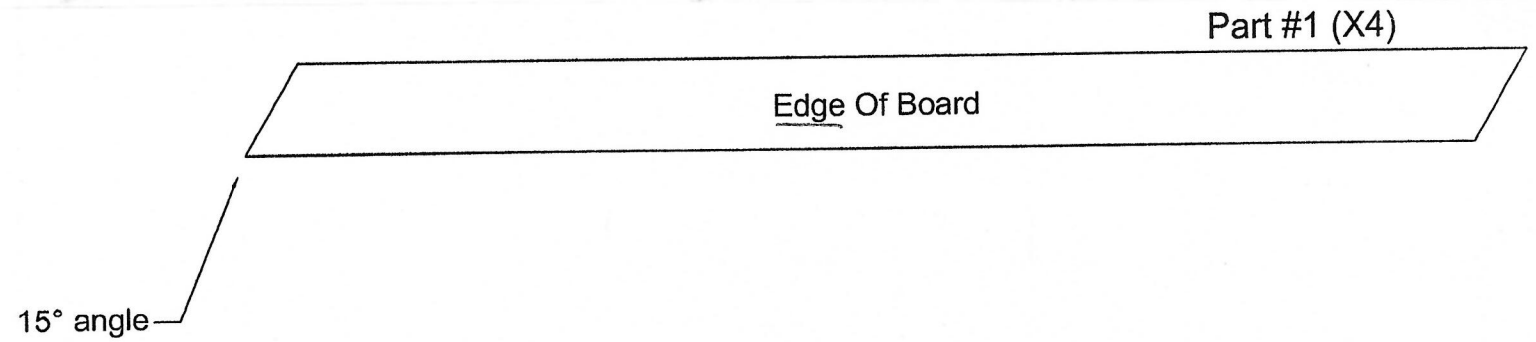
** GRADING ON: Square, Solid, Level, Flush, Screw Patterns, Layout/Measuring/Math, Following these Directions, and Completion.

Using the Miter Saw, cut the legs for the sawhorse, (Part #1).

1. Cut a 15 degree angle at the very end of a full 2x4x12' ***ON EDGE !!**

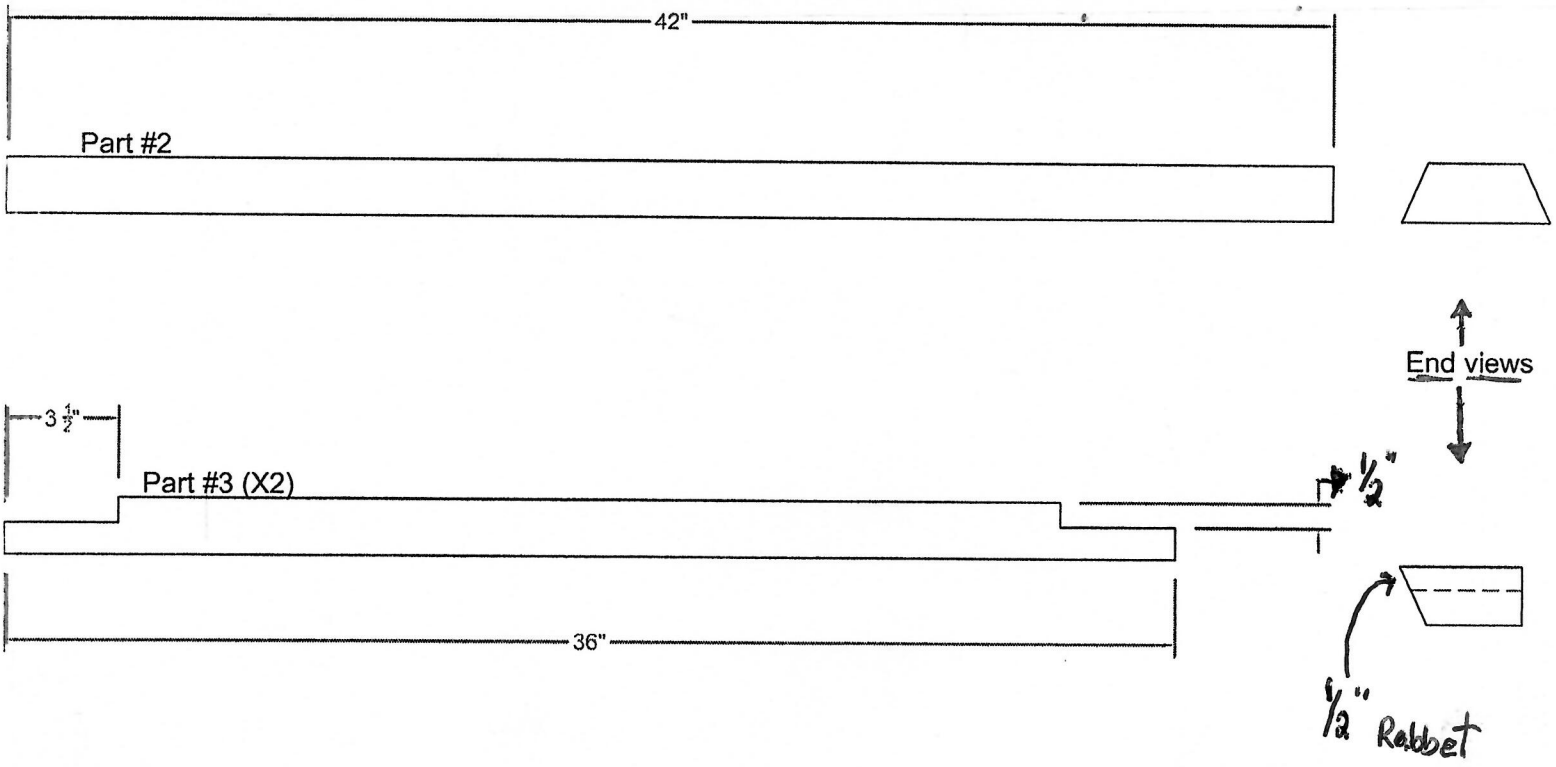
2. Measure 34 inches from end you just cut, mark a parallel 15 degree line (Short to Long, or Long to short)
   *NOTE: Align the blade so that the cut will be on the scrap side of the mark, and be sure the 2x4 is on edge on the saw.

3. Repeat this procedure until you have 4 legs.
   (Reminder: do not lay out all four legs on your 2x4 and cut all at once, cut one at a time)



Using the Circular Saw you will cut the saw horse structural top (part #2) and the side shelf supports (part #3).

1. Out of a 2x4x8', Cut **one** 42" 2x4 square on each end with the circular saw (part #2).
2. Taper **opposing** 15 degree angles on **both edges** of part #2 with the table saw
3. Cut two 36" square pieces out of your 2x4x8' with the circular saw (part #3).
4. Taper a 15 degree angle on **just one side** of both part #3 pieces with the table saw.
5. Cut a 3 ½" x ½" Rabbet cut on the **wide face** of each of parts #3 with the circular saw and a wood chisel.
   Mr. H. Demo: Make 10-12 non thru cuts ½" deep with saw and then pop out pieces with chisel.



Using the circular saw , jig saw, layout tools, and drill bits you will cut and prepare the shelf (part #5) for installation. *SMOOTH SIDE UP ON THE OSB !!

1. Locate the strips of O.S.B. that are 15 7/8" wide (in loft behind railing)

2. Cut the 15 7/8" O.S.B. strip to 36" long with the circular saw

3. Cut the corners out using the jig saw as per drawing below

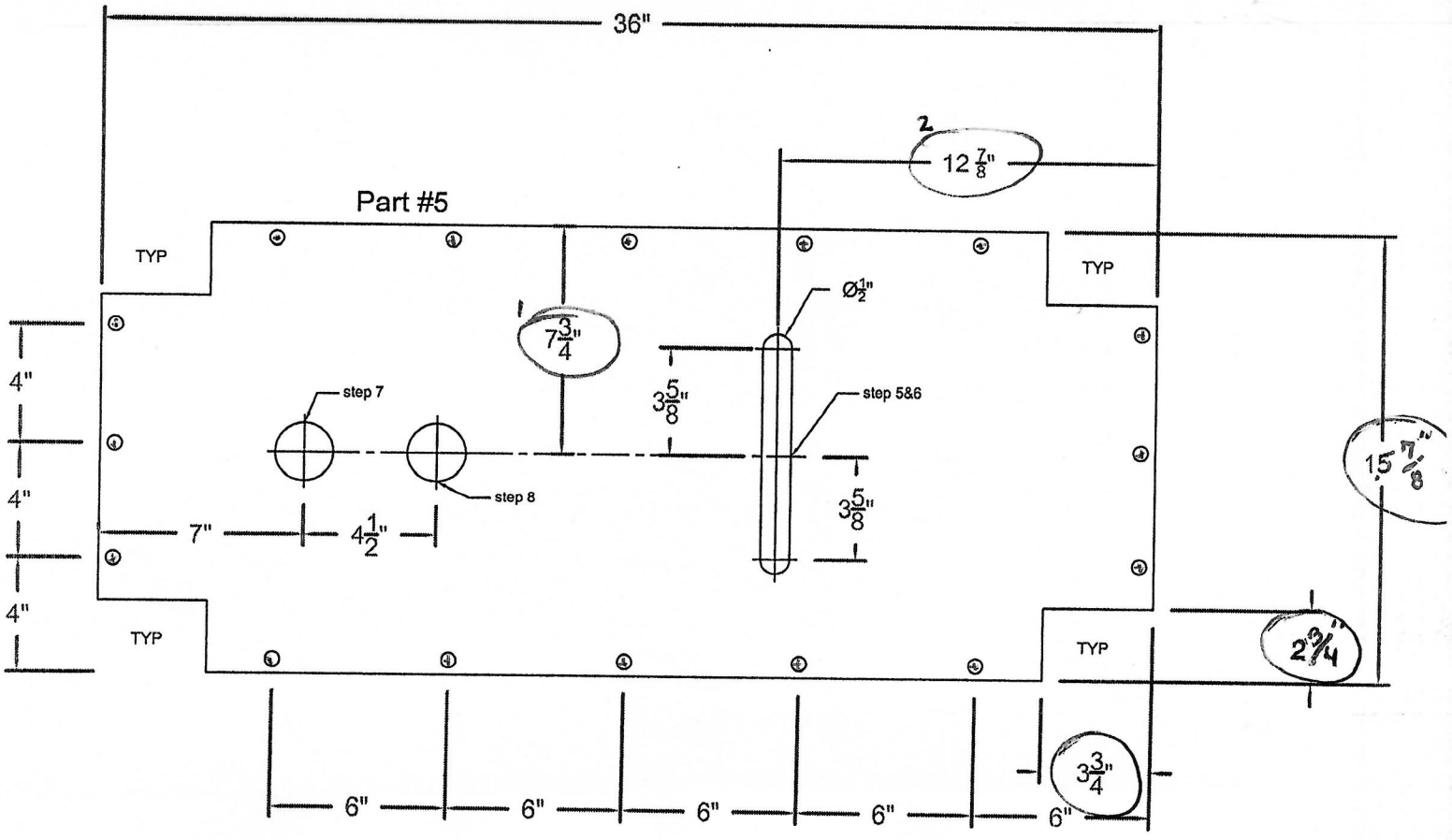
4. Layout your long reference lines as in the drawing below- 7 ¾" and the 12 7/8" lines

5. Drill two 1/2" holes with the paddle bit and drill. Center holes as per drawing

6. Cut out the strip of plywood between the 1/2" holes with a jig saw to make your ½"slot. Use Speed Square so lines are straight and the correct distance

7. Drill a 2"-2 ¼ " hole with the center of the hole as per drawing (using forstner or Hole Saw bits located on tool table)

8. Drill another 2" hole 4 ½" from the center of step 6. hole (see drawing)



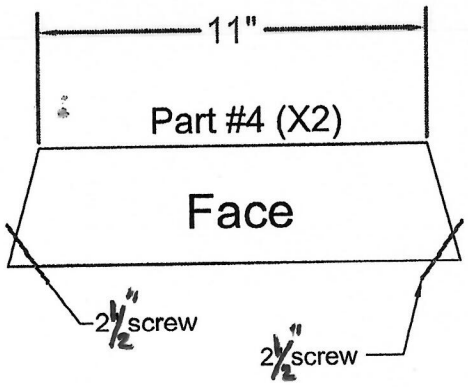
Using the Miter Saw you will cut two end shelf supports (part #4) out of scrap located in the scrap wood area.

1. Cut one end of a scrap piece of 2x4 at a 15 degree angle. * *scrap piece should be **face down** on the Miter saw table when cutting your angle*

2. Measure from the short point 11" and mark. This will be your next short point. (short to short)

3. Align the blade with your mark so your blade will be on the scrap side and cut an **opposing** 15 degree angle (see diagram below)

**** DO NOT CUT OUR YOUR STACKING NOTCH YET, WAIT TILL STEP 12 OF PAGE # 6**



Using the drill, you will assemble the saw horse (gluing everything EXCEPT part #6). NOTE: Use speed square to help you assemble! Do not worry about wobble till step 13.

1. Pre-Drill pilot holes the outside diameter of the screw shaft through the tops of the legs at a 15 degree angle, parallel to the end. Do not pilot drill the board behind the leg (part #2). Pre-Drill bits are on tool table

2. Attach legs 3" from the ends of the top, (part #2), using 2 ½" T-25 star screws. Don't forget to GLUE EVERYTHING except the tippy top part #6 !!

3. Measure 16" down the legs and square a line across leg using the Speed Sqr.

4. Drill pilot holes through the ends of the *Side* shelf supports (part #3). Attach the shelf supports (using 2 ½" Star Screws) with the top of the Side Supports on the squared line.

5. Insert the plywood O.S.B. shelf....rough side up. **DO NOT SREW-DOWN YET!**

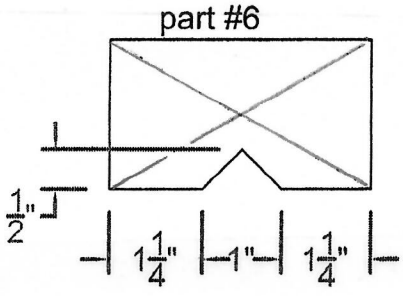
6. Screw on *End* shelf supports (part #4) with 2 ½" screws through the bottom on both ends @ 15 degree angles. (see diagram on page #4 diagram) Then tuck a 2 ½" star screw through the leg into the top of the 11" end support piece. These 2 ½" screws will go right in the top crotch of the side support piece at a 90 degree angle.

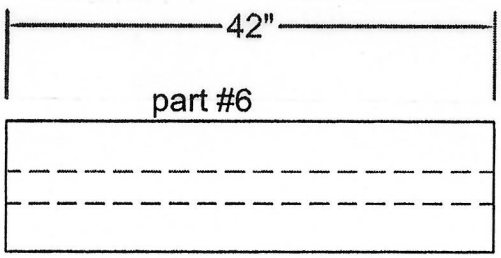
7. Screw on O.S.B. shelf with 1 ¾" screws as per diagram on page 3.

8. Using the Table saw, cut out 1" strips of AC Plywood to attach around the entire perimeter of your OSB shelf. Attach strips with 1 ¾" screws. Evenly space screws 5" apart on the sides, with the first screw 1 ½" from the end. Evenly space the three screws for the end strips.

9. **(Part # 6)** Cut a 2 x 4 at 42" square for the removable top of the saw horse.

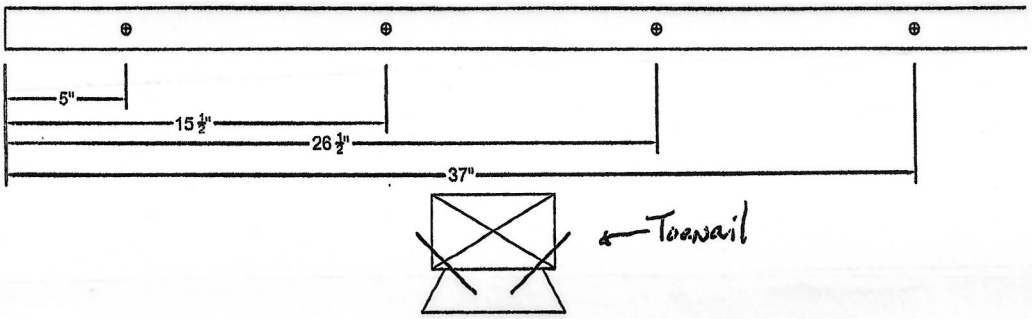
10. For step 10, Use the Powermatic table saw with a 45 degree angle on the saw blade. On one face of your part #6 2x4, you will be cutting a "v"-groove out of the middle. * Must use Feather boards.



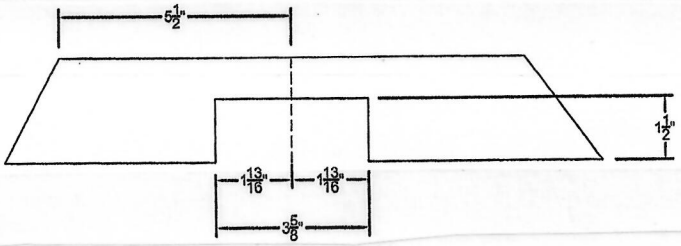


pg. #6

11. Attach Part #6 with the "V"groove side up. Keep it flush with the ends and sides. Insert 1 ¾" screws through the lower edge of your 2 x 4, **toe-nailed** as per diagram below.



12. Cut out the stacking notch in the end supports (part #4) so that the sawhorses are stackable. You will be cutting out a 3 5/8" wide X 1 ½" deep notch out of the middle (see diagram below) WITH THE JIG SAW. (4 separate cuts)



13. Take the Saw Horse out in the hall to check for wobble. If it wobbles, cut the two long legs with circular saw tilted at 15 degree angle. Lay horse on its side, take only a blade off at a time.

14. Sand all rough edges and surfaces with the palm sander. Knock all sharp corners & edges down smooth (especially the 1" shelf AC strips as this is where your leg will rub while carrying). **Also,** sand any and all pencil marks and names on boards.

NOTE: Press lightly on corners and edges so not to rip the sandpaper!!

15. Now you must put your logo on (one on each side) and put your names on the underside of part #2 with the Marker that is on Hoefler's computer. Remember on the logo....a little goes a long way. DO NOT OVER-DO THE SPRAY PAINT !!

16. Lastly, you will now seal and varnish your sawhorse. You will be required to put two coats on your sawhorse. Varnish must be evenly coated with no spots missed AND with NO DRIPS! * be sure and use drop cloth and ** YOU MUST CLEAN YOUR OWN BRUSHES !!

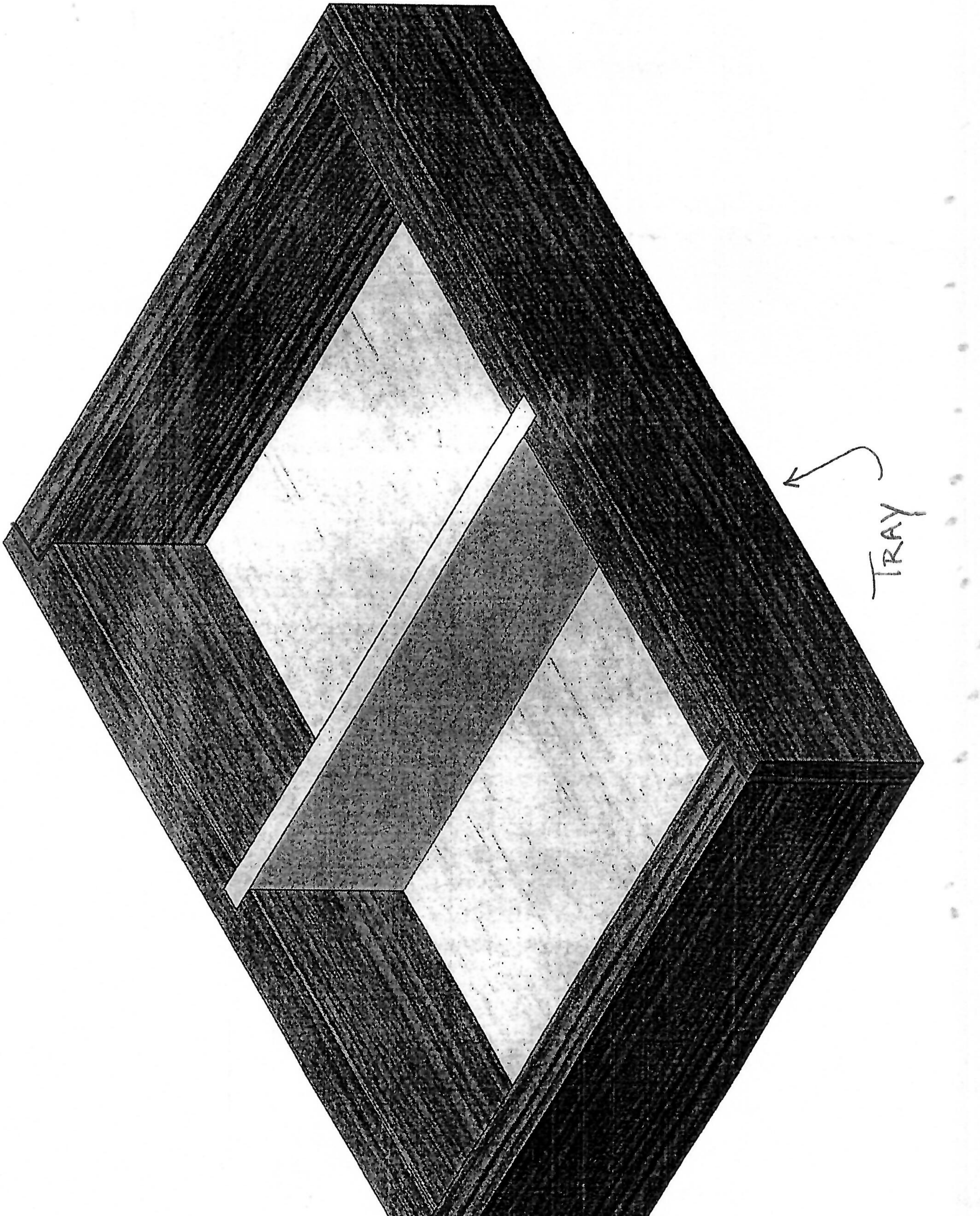
17. ***FOR SAWHORSE #2 ONLY***: Tray assembly (see page #7 & #8). Attach Finished Tray to end of OSB next to the slot under the legs. Sketch the outer edge of Tray from above, pre-drill 3/8" in from outer edge, then use 1 ¾" screws from underneath to attach tray.

*******YOU ARE READY TO TAKE YOUR SAWHORSE OUT IN THE HALL FOR GRADING BY MR. HOEFLER**
*********(see bottom of cover sheet for grading instructions)

STEPS FOR TRAY ASSEMBLY (For Second Sawhorse ONLY)

(*See template* for the Tray- hanging up on big Powermatic Table Saw)

1. Rip and X-cut the ¾" (One by) stock to 1 7/8 " wide by 32" length. (Stock will be leaning on wall to the left of the Bench Grinder)
2. Using the template for the layout of the Rabbets, Dados, and Cross cuts.
3. Router **inside bottom rabbet using router table #2 (wooden older table).**
   NOTE: ROUTER should be SET AT roughly ¼" DEPTH BY 3/8" wide
   ****ALPHA CHECK—CHECK SETTING BY RUNNING ¾" SCRAP STOCK 1ST!!!**
4. Find and layout the center **dados** on front and back **INSIDE**, ¼" WIDTH BY 3/8" DEPTH.
5. Cut center dado on miter saw by re-sawing-**use depth stop gauge for correct depth**!! (must use blocking behind your stock while on the Mitre Saw)
6. X-cut front and back (sides) to 9" length.
7. Layout rabbets for ends of the front and Back (sides) on **inside. ¾" width by 3/8" depth**
8. **Re-saw rabbets on miter saw using the depth stop and block of wood. **Alpha Ck !!**
9. **Final rabbet cut on router table #1 (taller black router)** ***Use Rail Sled !*** ****Alpha Ck. !!**
10. Layout end pieces to 6" lengths.
11. X-cut ends using **Miter Saw.**
12. Glue and assemble the sides to the ends of tray. *FASTEN WITH 1" PINS/Brads USING PASSLODE TACKER.*
13. With tray held at square w/ speadsquare, Measure bottom opening
14. Rip with table saw Lauan plywood to fit the bottom of your box inside the Rabbet.
15. X-cut bottom Lauan with Miter Saw to length to fit bottom of box.
16. Rip with table saw the divider Lauan to be flush with top of tray.
17. X-cut with Miter saw the center divider Lauan to length to fit snug in the dados
18. Assemble Bottom Lauan and tray divider. Glue and *PASSLODE @ slight angle with 1" PINS/Brads.*
19. Layout tray on saw horse by sketching the outside perimeter from the top, layout 4 pilot holes 3/8" in from the perimeter (to hit the middle of the ¾" board)
20. Drill 4 pilot holes from the top using 1/8" drill bit
21. Glue and assemble (from underneath), the tray onto OSB using 1¼" screws
    ** Attach Tray to the very end of the OSB (under legs) with the slot cut out
    NOW, refer back to project directions #17


TRAY

Fastening/Sawhorse Project Terms and Procedures-Hoefler 2019

Face vs Edge vs End

Long to short long to long Short to Short

Cutting using sawhorses: Can't.... Always....

OSB

Nominal vs. Actual dimensions of Lumber 1x6x10'= 2x4x8'= 2x12x12'=

Layout

Screw pattern

Countersink

Flush

Taper

Pre-drill (Pilot Holes)

Rabbet. vs. Dado. vs. Groove

Toe-nail

Star Bit screws T-20 vs T-25

Drill speed setting 1 vs 2:

X-cut vs. Rip cut

Difference between a Tool and a Supply?

"Draw it tight" (watch the gap!)

Glue it! BUT spread w/ finger and clean drips with paper towel!!

Stock is located in the Lean-To outside: 2x4x12' is for the legs 2x4x8' is for everything else!

Tool/Supply storage:

Circ. Saw=

Jig Saw=

Chisels=

Sanders=

Varnish sealer:

Logo Stencil:

Tray Mat.:

Drill Bits and Driver Bits=

Drills=

Paint brushes:

Layout tools=

Glue=

Blue spray paint:

Tape Measures

2" x 4" Mat.