

Benjamin Barbaro

Ultimate Bar Battlestation

A compact, safe, and beautiful way of storing a large collection of bottles

DSGN395: Furniture Design

Winter 2025

Instructor: Hemant Jha

Fabrication Instructor: Eric Capper

Special thanks to: All the shop pros (Heidi, Joe, Scott, Bob), shop trainers along the way, Ann, Hemant, & McMaster. Could not have done it without all of you,

My current storage solution barely holds my bottles and is in danger of a domino effect when removing bottles

The mesh surface of the shelf is not good for balancing bottles or working on top of.

I often find myself taking the bottles I will use in a night and making drinks on the kitchen counter instead

Inſpired by my parent's ſpice rack when they ridid our kitchen, every bottle is easily acessable and very efficiently using the cabinet ſpace. Each bottle is secure and readable.

My shelves will be carrying considerably more weight than ſpice jars so to avoid excessive cantilever force I will put the bottom on wheels

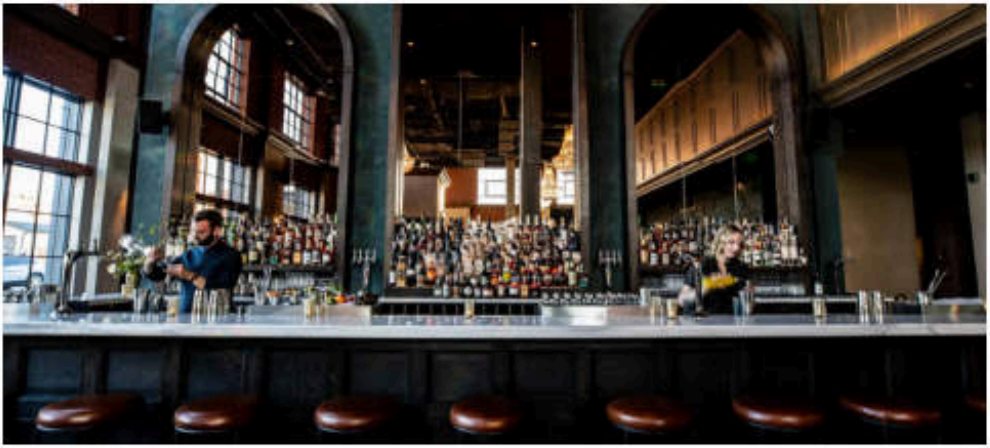
This design is for anyone who needs convenient, acessible ſtorage for a reasonably sized collection of bottles. The design should be tileable to allow for expansion



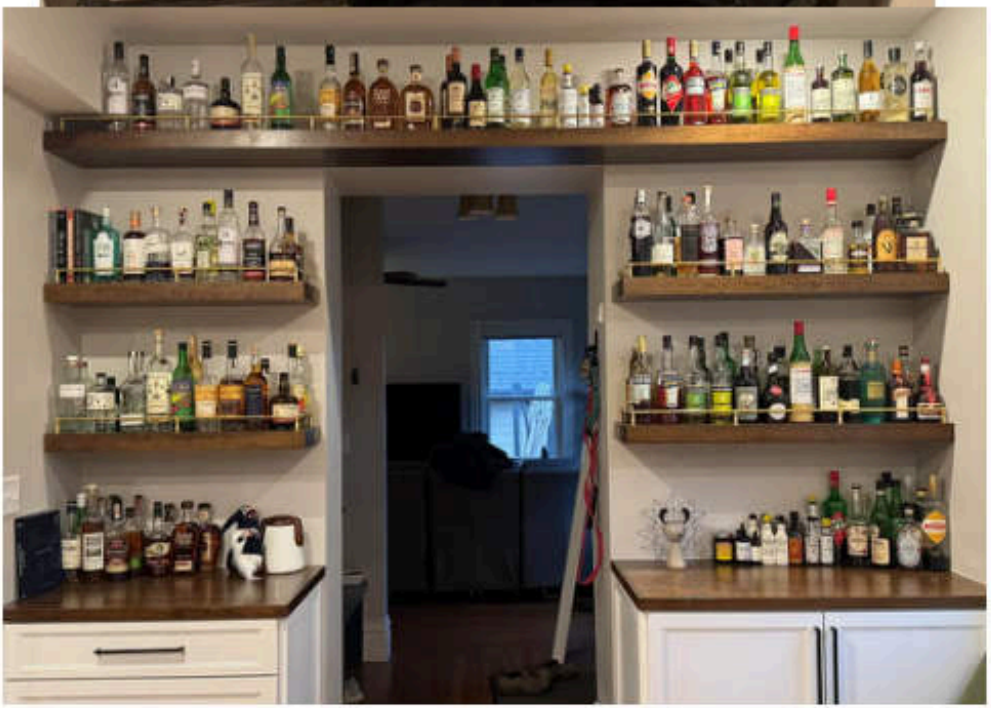
Mood Board

most designs either organization or acessibility





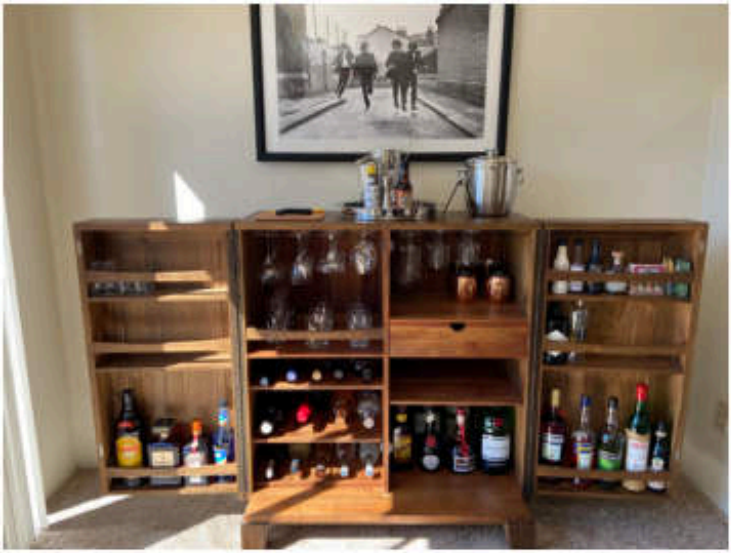










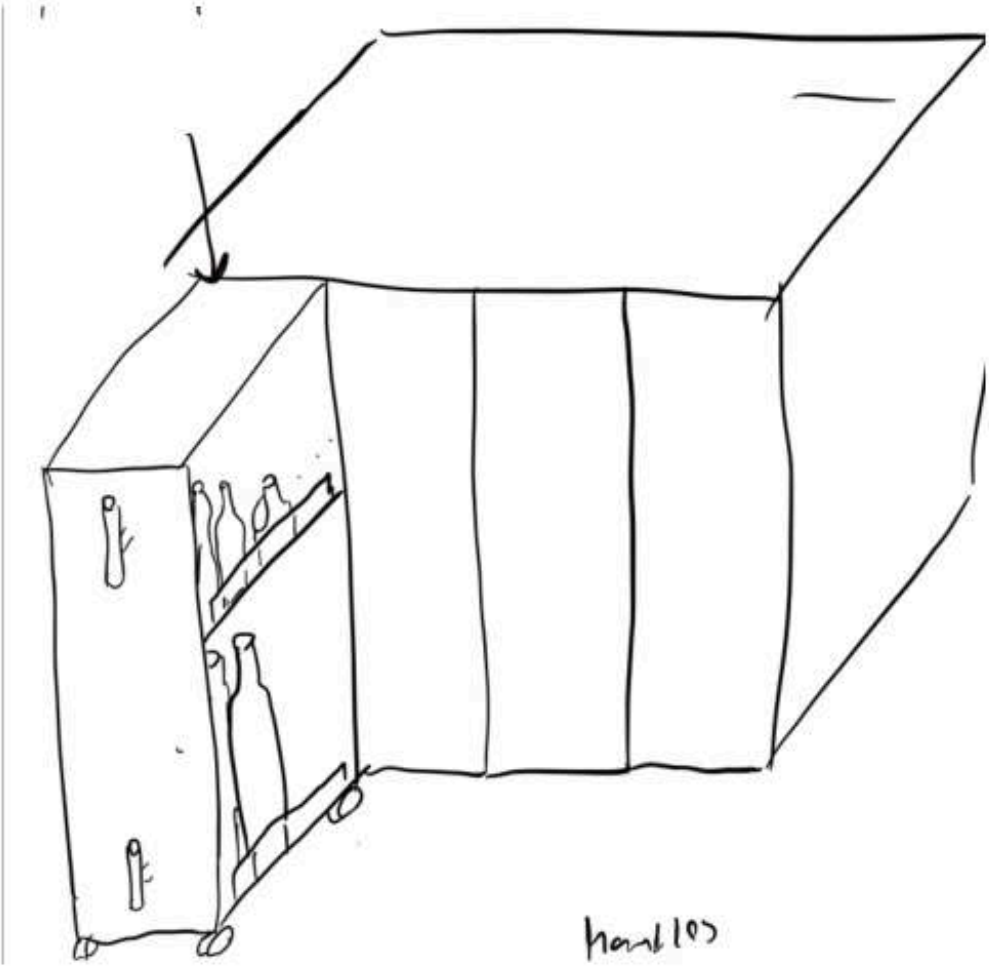






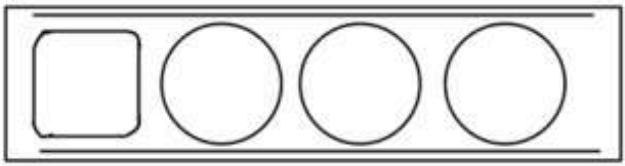

Rum

Initial Sketching

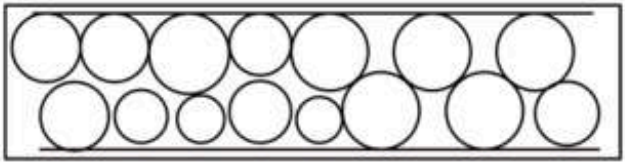


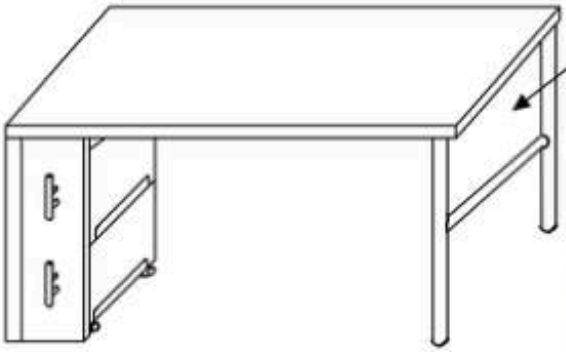
handles

top-down

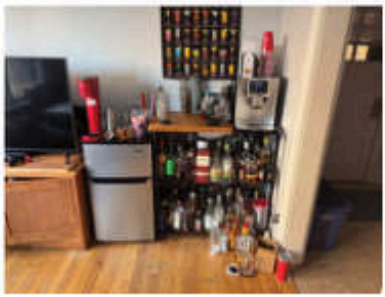


other





Current bar fits cooler racks?



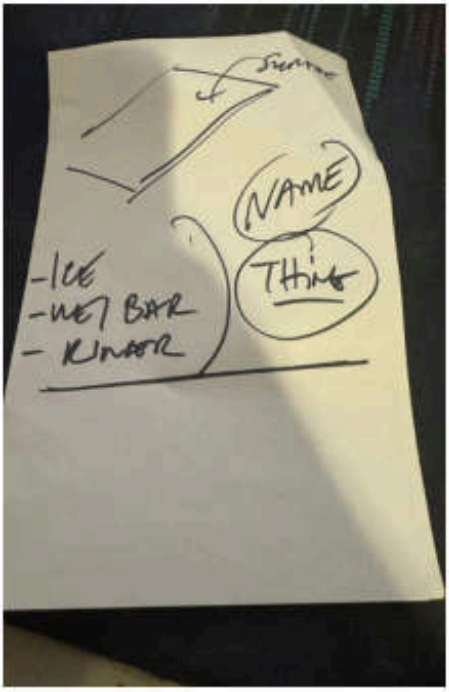
Design Feedback

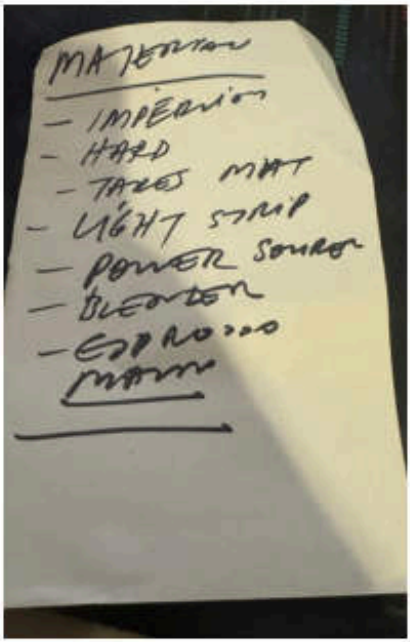
design may hide pretty bottles, don't I want them displayed?

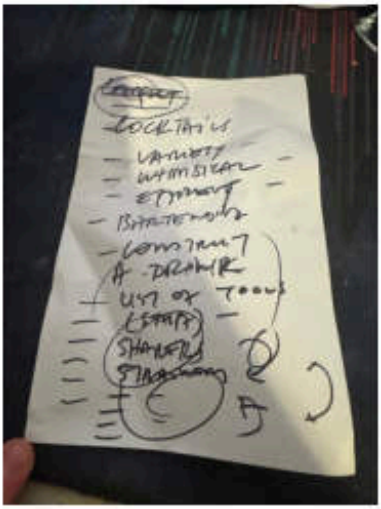
would drawers be better?

tiered organizing system - multiple drawers on top of each other?

bar cart - move around to make use of space

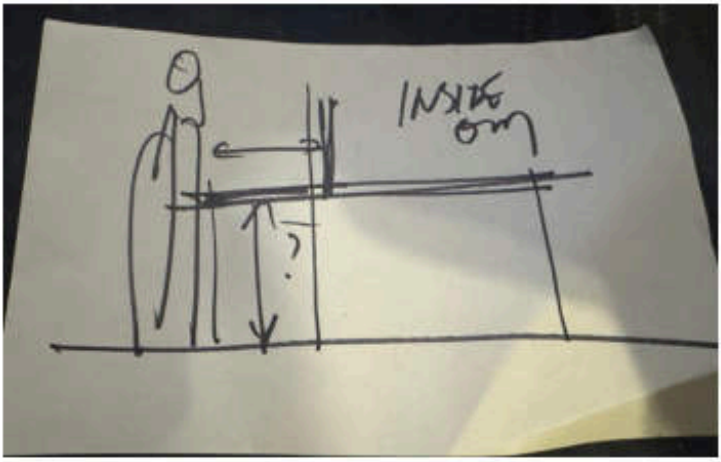

NAME
THING
-ICE
-WET BAR
-MINOR


- IMPERIAL
- HARD
- TAKES MAT
- LIGHT STRIP
- POWER SOURCE
- BLEACHER
- EXTRA


- LOCKERS
- VARIETY
- UNIFORM
- EQUIPMENT
- BATHROOMS
- CONSTANT
- DRAWER
- LIST OF TOOLS




DIMENSIONS


INSIDE
?

Further Research

vertical drawer examples

https://www.youtube.com/watch?v=1dfG7gqZXkk

https://www.youtube.com/watch?v=fZPxvFvwuIw

https://www.industrialshelving.com/rousseau-vertical-drawer-cabinets/\ https://www.youtube.com/watch?v=5k_2ZM-IahQ

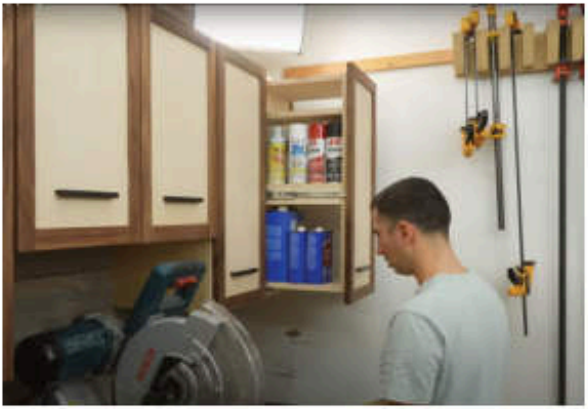
Other Ideas

Integrated powerstrip/LEDs - added usability for drink mixers/blenders and espresso machine

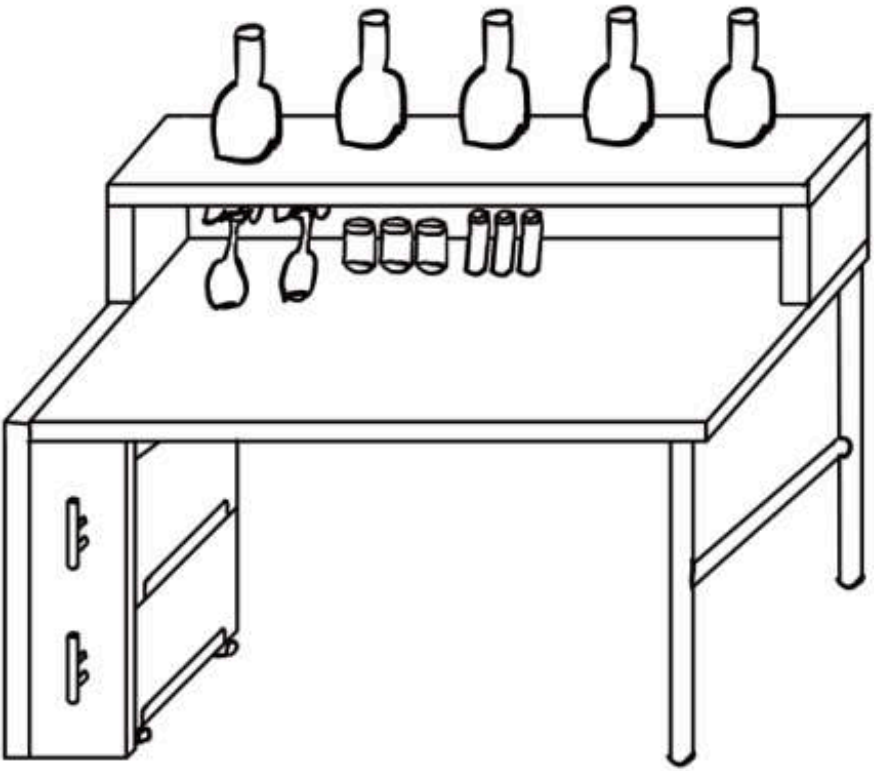



KYNOSYS





Design Adjustments



Incorporated Storage/Glassware Display, considering removable cart & transparent window on side

Design Intent

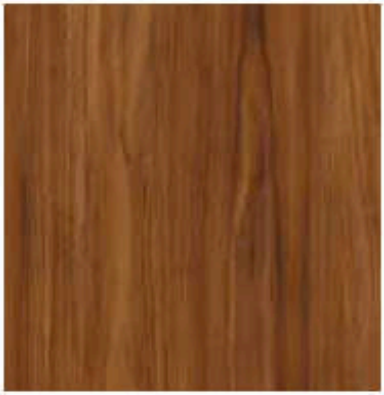
The purpose of the product is to be an all inclusive bar setup, with storage for bottles and glassware and space to create cocktails.

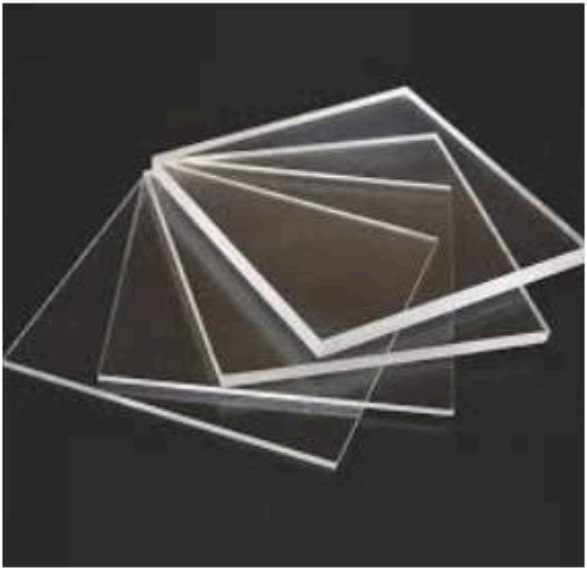
This specific design will likely be one-off but the cart design could be translateable to professional bars and home bars with an extensive collection.

Hard wood seems to be the best choice for the bar surface, as when properly oiled it will wick off moisture and spilled alcohol for easy cleanup.

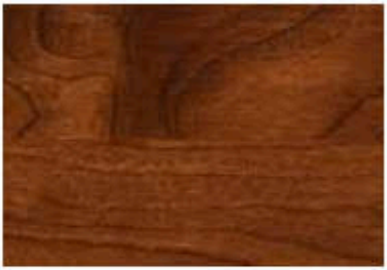
Black accents with hard wood - stemware holders, iron piping, bottle rails, maybe copper handles/ stemware?

Materials Palatte









Joinery Details







Stuff to Fit on Bar

Tools:

Boston shakers

Japanese jigger

OXO jigger

Big mixing glass

Small mixing glass

Mixing spoons

Hawthorne strainer

Julep strainer

Fine Mesh Strainer

Muddler

Y peeler

Channel knife

Utility knife















Glassware:

Rocks glasses

Collins glasses

Coupes

Nick and noras

Martini glasses

Pineapple glasses

Tiki rocks glasses

Cordial glasses

Hurricane glasses

Zombie glasses

Julep cups















Appliances:

Espresso machine

Blender

Milkshake blender

Mini fridge

sodastream









Other:

Big bitters (ango)

Little bitters

Dropper bottles

Spray bottles

Straws

Cocktail picks

Umbrellas











Limiting Heights:

Bottles: tallest 14", most under 13"

Glassware: 8.5" needed for stemware rack, all rocks under 4", 6.5" max non stemware (collins/zombie)

Sodastream 16"

Espresso machine 14.5" + 3.5" to fill hopper

Max working height: 56"

Limiting Depth

29"D before protruding into doorway in current apartment space

Limiting width

57" without moving TV, 26" extra if moved

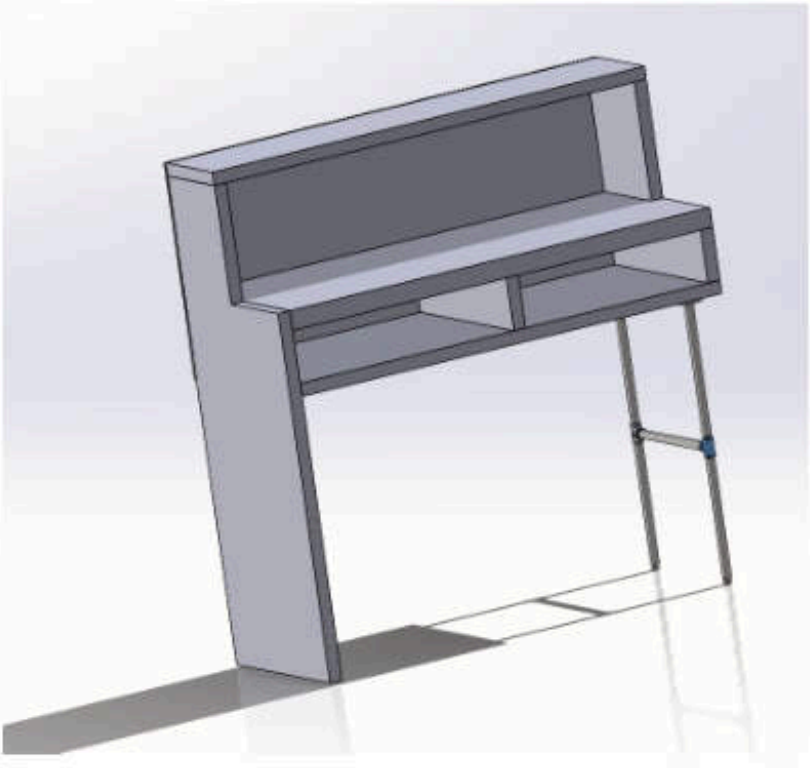
2:1 Mockup



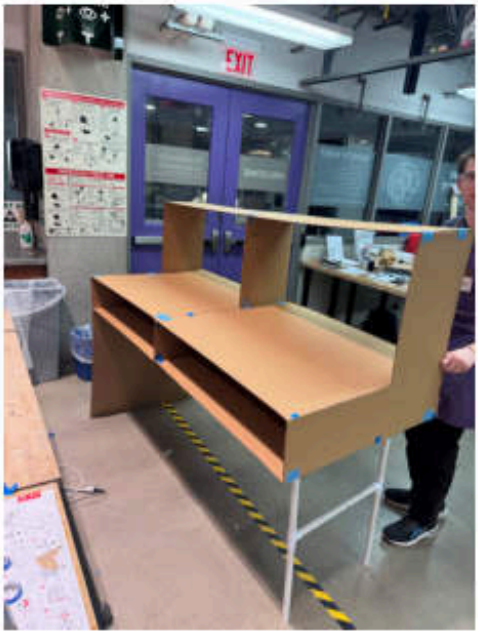




CAD Model

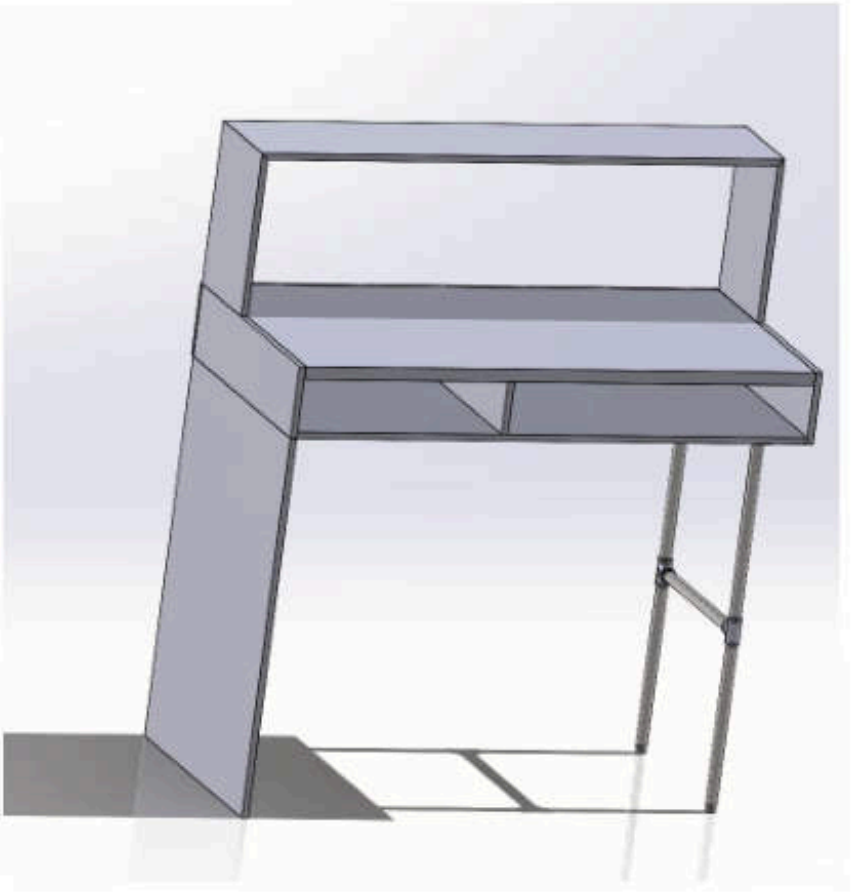


1:1 Mockup





Updated CAD



Functional Mockup





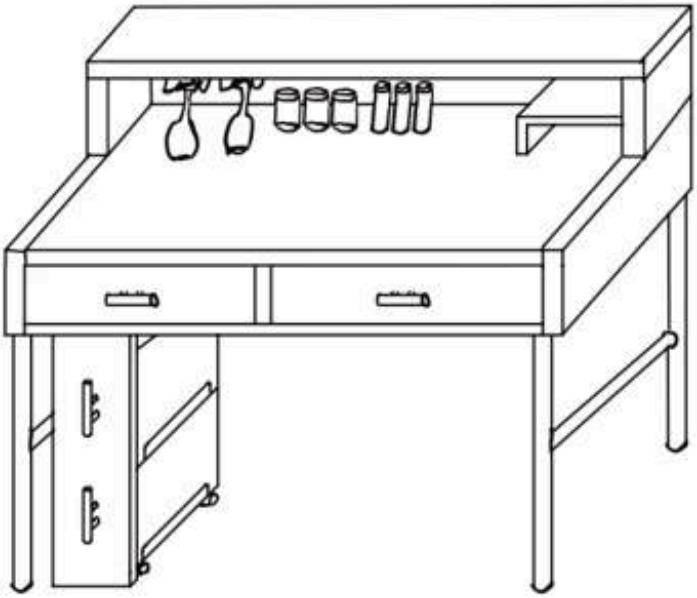


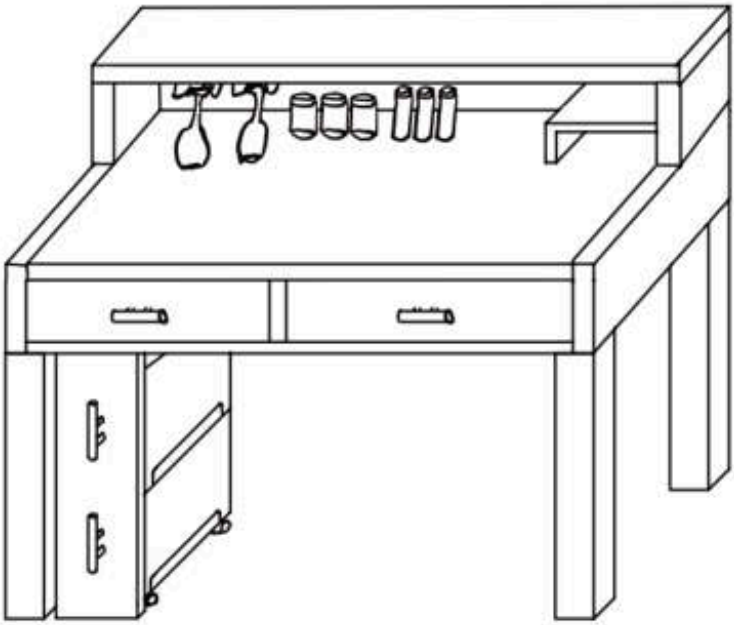


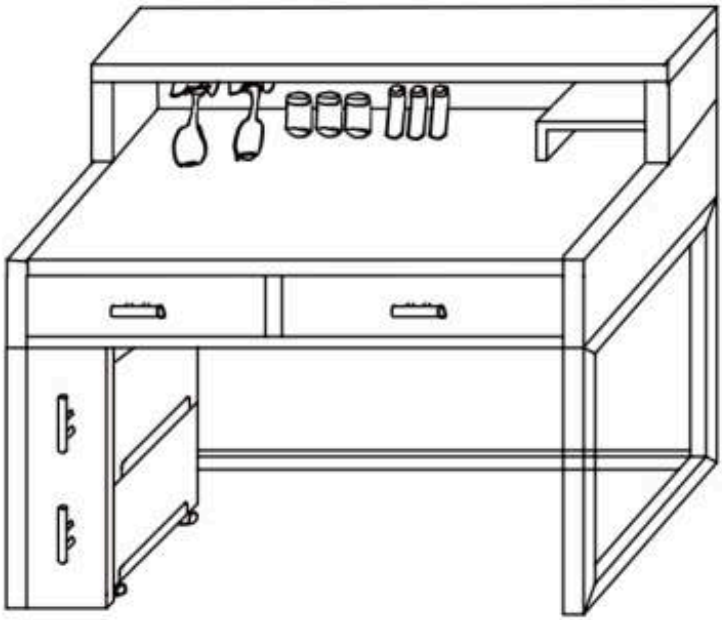




Alternative Leg Designs

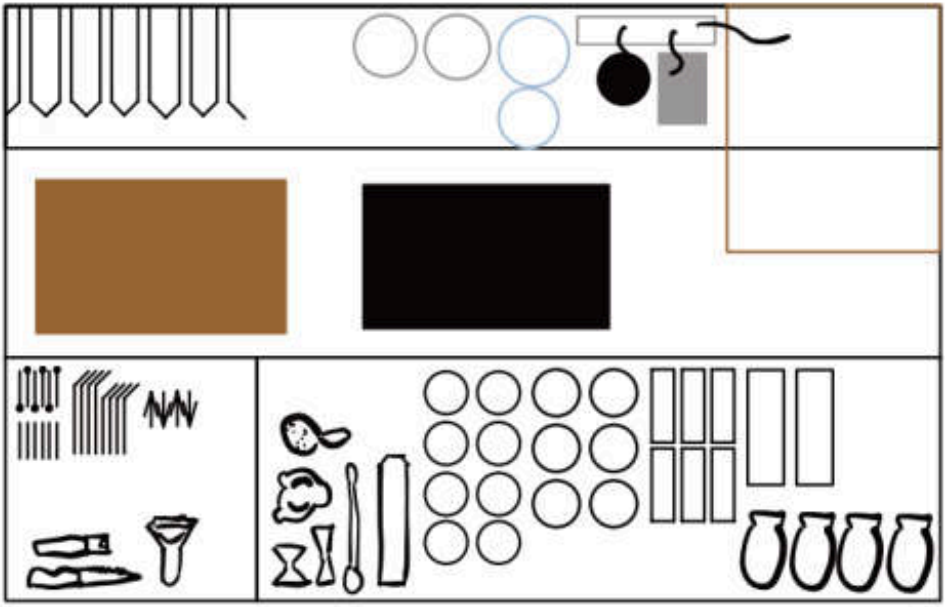




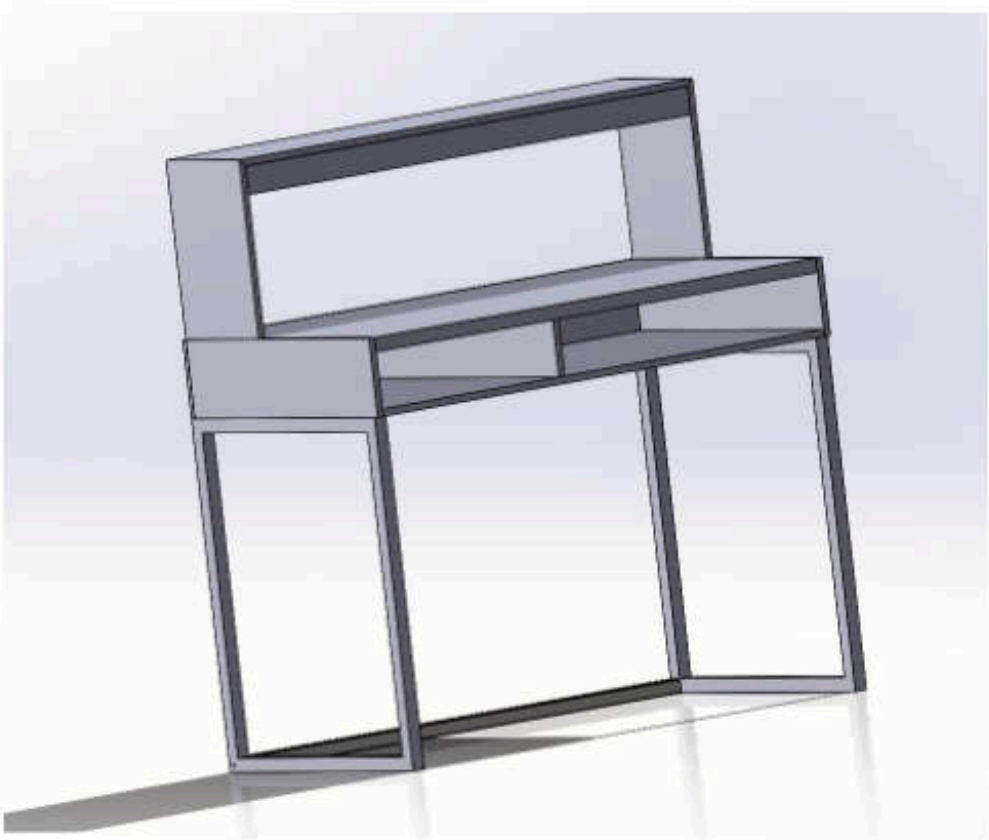


Layout Crafting





New CAD with updated leg design



Material Decisions

Benchtop slabs are too expensive, using McMaster workbench top

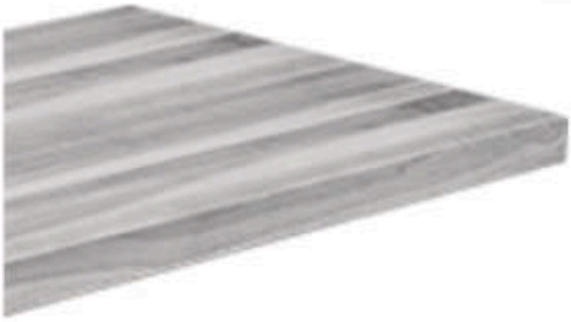
Steel tube frame, mineral oil finish

Maple hardwood for drawer/cart fronts

Caster set + heavy duty drawer slide for cart operation

Push-to-open drawer slides, flush covers

Wood Workbench Tops



Casters for Cart - Switched to all fixed



EVERBILT

2" RIGID CASTER
NON-MARKING RUBBER



Drawer Slides

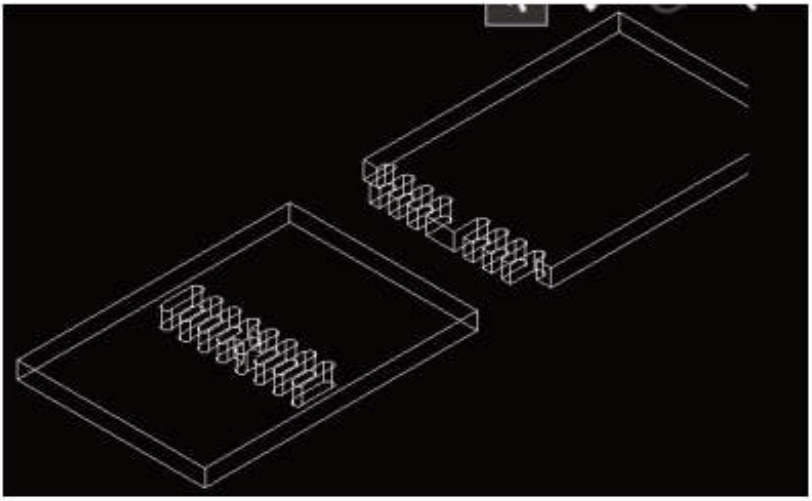
Fixed for storage cart, push-to-open for drawers



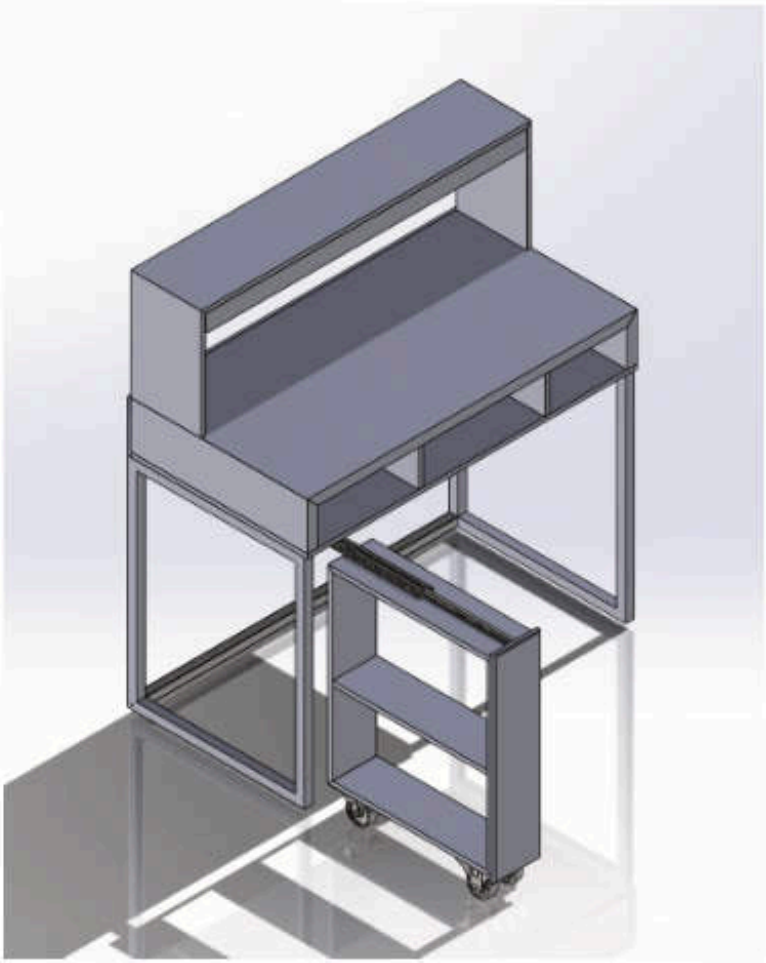


Cart Joinery

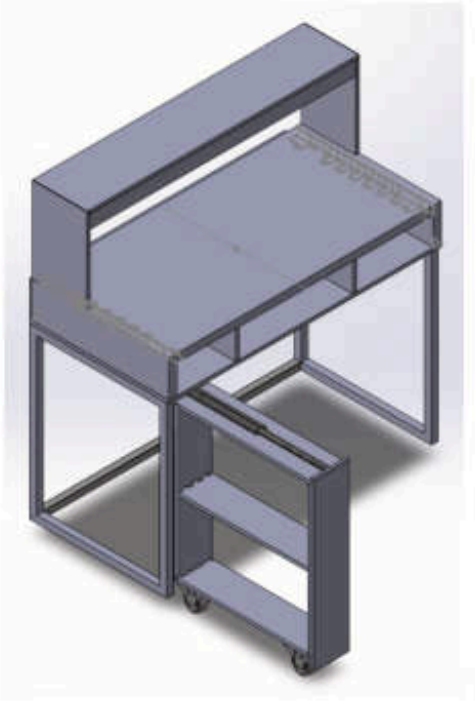


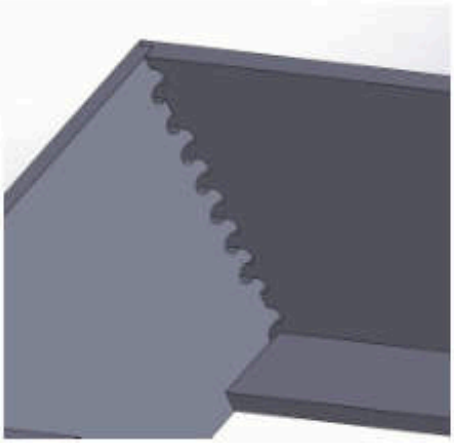


Update CAD + Cart Design

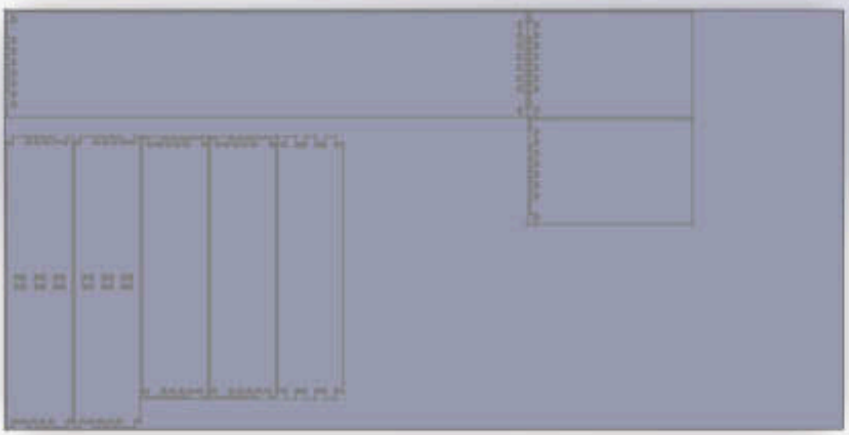


Updated CAD with CNC Joinery





Router Cut Sheet



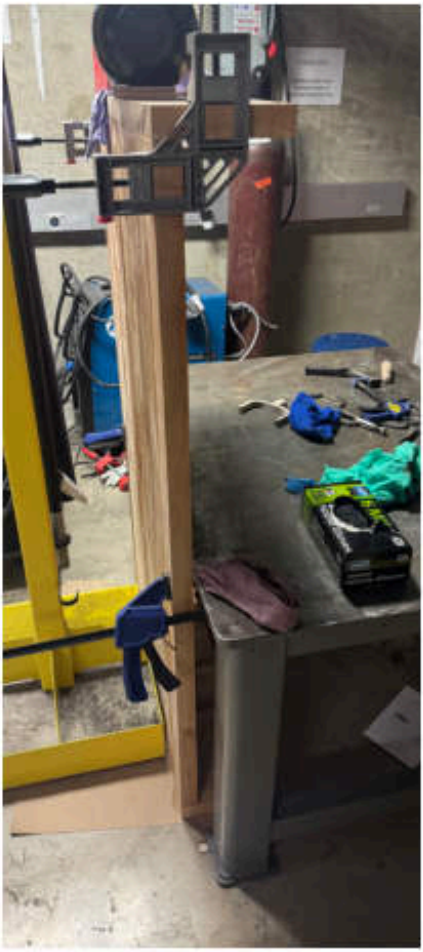
Test Router Fits/tolerance



Using Domino Joiner for Bench pieces



Glue-up





Drawer Organizer Cutouts

Boston Shaker Set



Drawer Organizer Cutouts

Boston Shaker Set



Drawer Organizer Cutouts

OXO Jigger



Drawer Organizer Cutouts

OXO Jigger



Drawer Organizer Cutouts

Japanese Jigger



Drawer Organizer Cutouts

Japanese Jigger



Drawer Organizer Cutouts

Muddler



Drawer Organizer Cutouts

Muddler



Drawer Organizer Cutouts

Trident Ice Pick



Drawer Organizer Cutouts

Trident Ice Pick



Drawer Organizer Cutouts

Anvil Ice Pick



Drawer Organizer Cutouts

Anvil Ice Pick



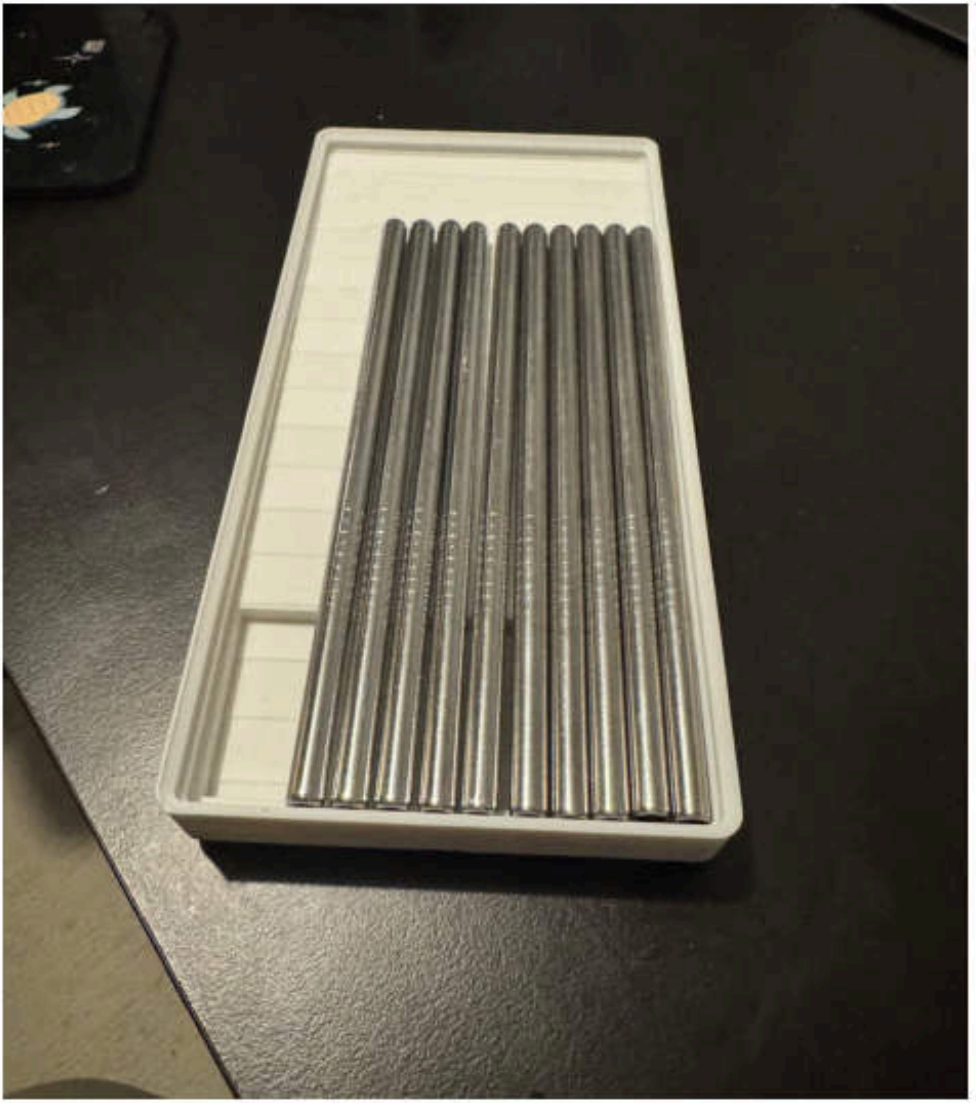
Drawer Organizer Cutouts

Bent Metal Straws



Drawer Organizer Cutouts

Short Straws



Drawer Organizer Cutouts

Short Straws



Drawer Organizer Cutouts

Rocks Glasses



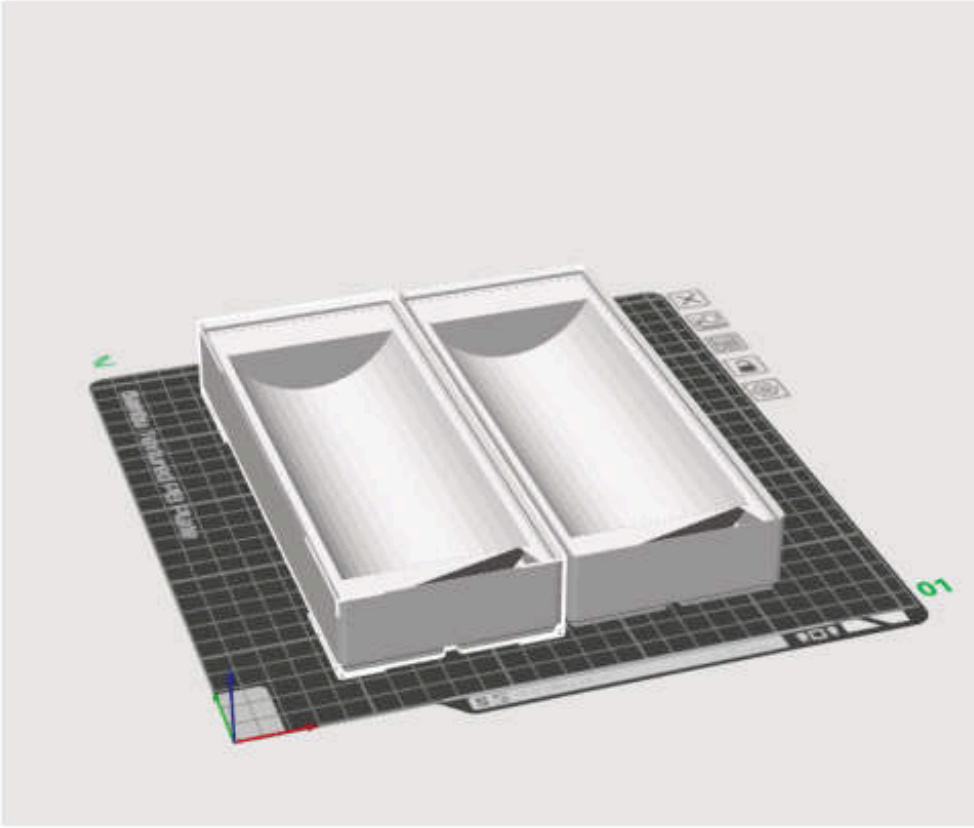
Drawer Organizer Cutouts

Rocks Glasses



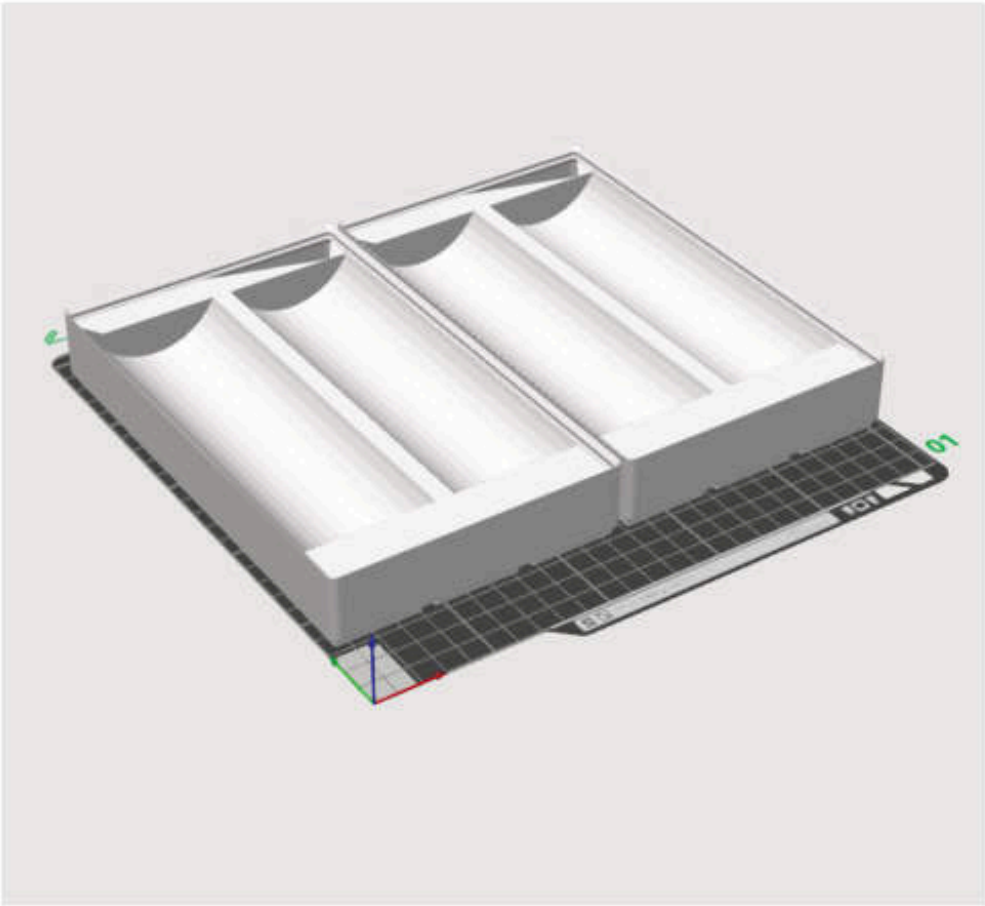
Drawer Organizer Cutouts

Zombie Glasses

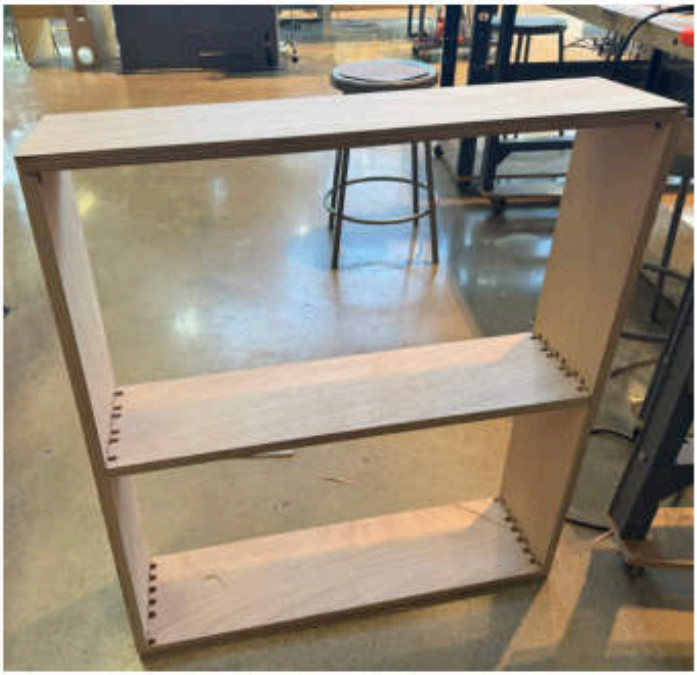


Drawer Organizer Cutouts

Collins Glasses



CNC Cart Joints





Domino Joiner to Connect Drawer Dividers





Attaching wood anchors to cart



Attaching wheels to cart



Slot Cut for Cross Brace

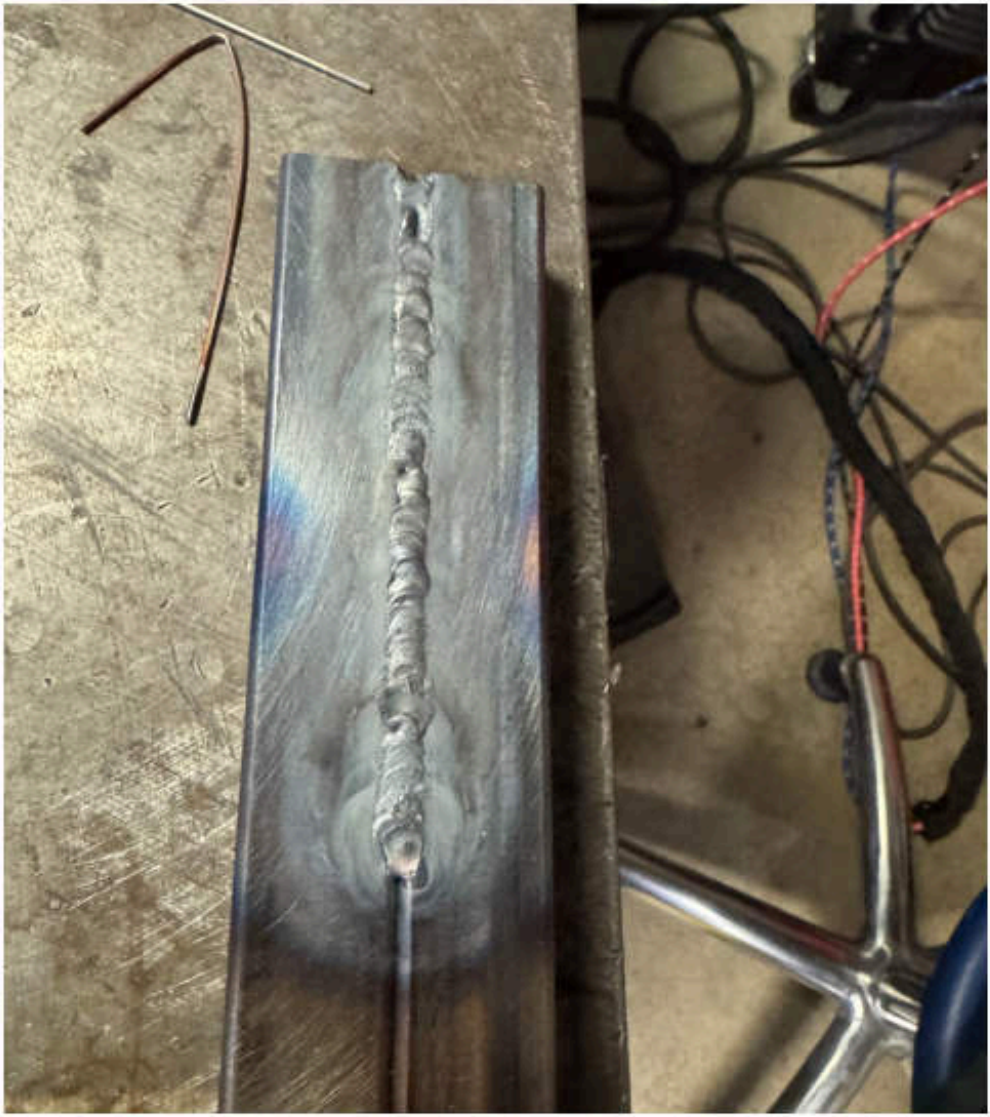


Cutting + attaching cross brace

Dowels cut to restrain bottles



Welding Practice



Full Welded rectangular Frame, made 2



Cleaning up welds with angle grinder



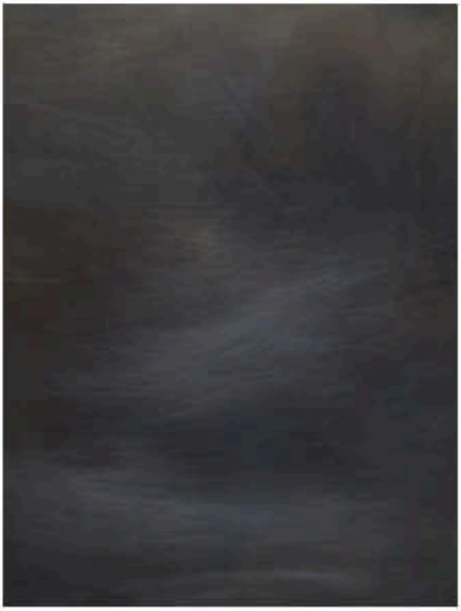
Orbital Sander to get smooth finish



Smoothing whole frame



Black Patina or Spray paint to finish

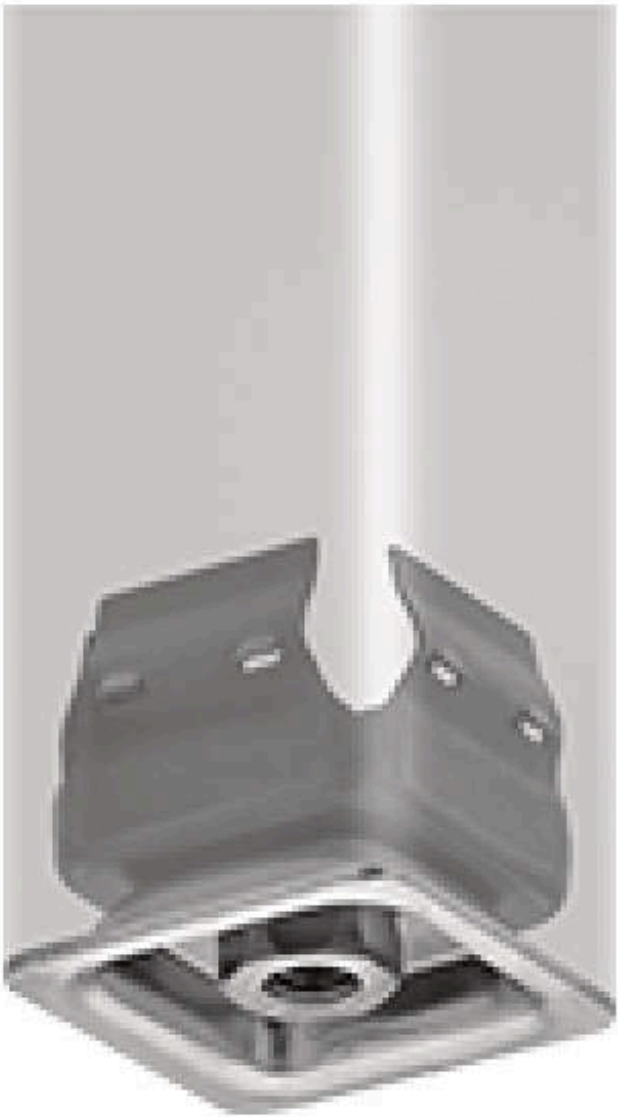




Leveling Feet to adjust height



Leveling feet inserts to attach feet to square tube & attach removeable tube



Edge Banding to hide plywood edges



Heat Gun to apply banding + Cutting tool to trim





CNC Cutting Penthouse + cover



Assembled Penthouse - adding domino joints



Wood Finish Options for Cart



Mineral Oil for Bar top



Measuring + CNC cutting drawers

Dados in side to align, slots cut for drawer slides to be hidden beneath and for floor to intersect with walls.

Held together with wood glue and air nails

Used japanese saws to finish right angles on slots for drawer slides

Alignment was adjusted with build in knobs on drawer slides

Drawers were sanded until they slid smoothly

Drawer Sizing

SALICE

Progressa+ - Full extension runner for 19 mm (3/4") drawer material thickness
Push to open

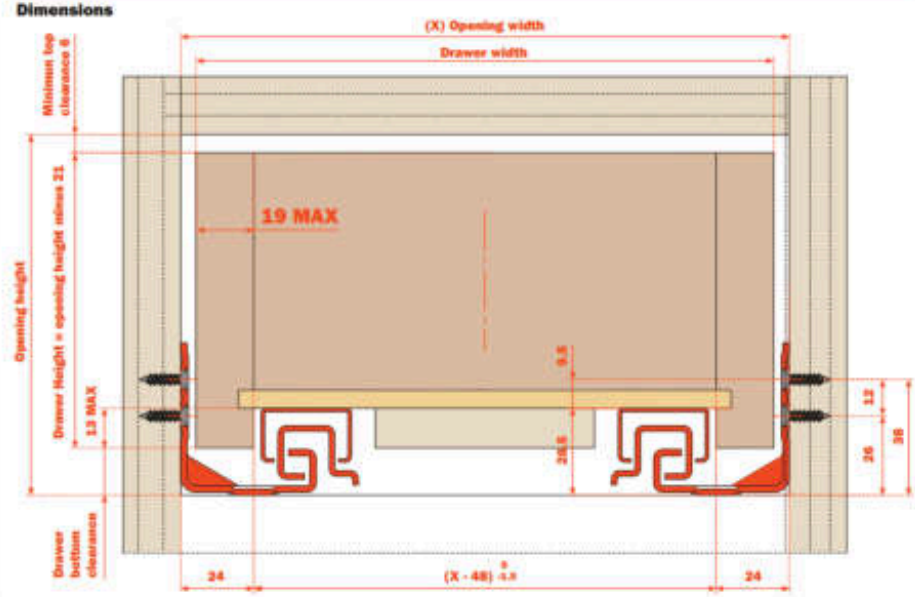


PUSH: THE OPENING SYSTEM FOR HANDLE-LESS DRAWERS IS FULLY INTEGRATED IN THE RUNNER.
A SLIGHT PRESSURE OF THE DRAWER FRONT IS ENOUGH FOR THE DRAWER TO OPEN.

Product features

- 170 Lbs Static load capacity
- Full extension with a synchronized mechanism
- Integrated Push opening system
- Elongated holes for depth and height adjustment
- Adjustable clips allow for easy drawer insertion and removal
- Special clip for narrow drawers
- The drawer is latched when closed
- Frameless or blocked out face frame applications
- Tool free height adjustments + 2.5 mm
- Tool free depth adjustments +/- 3 mm
- Tool free side adjustments +/- 1.5 mm
- Meets and exceeds Ansi BHMA A156.9-2020 Grade 1 standard; WI approved
- Optional:
  - tool free tilt adjustment +3 mm
  - Push Synchronizer
- 19 mm (3/4") drawer material thickness
- Compatible with Limesbox drawers
- Finish: bright zinc-plated
- 100% Made in Italy

Dimensions



Drawer Math

52.5 - 1.5 = 51in drawer

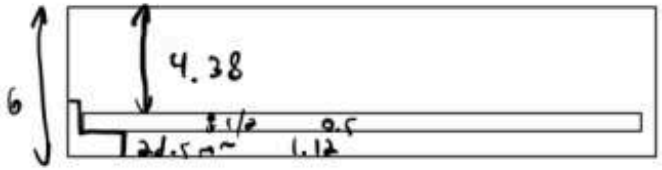


drawer 3/16 2·3/16 + 3·3/4 11 11
single +
wall 3/4
thick

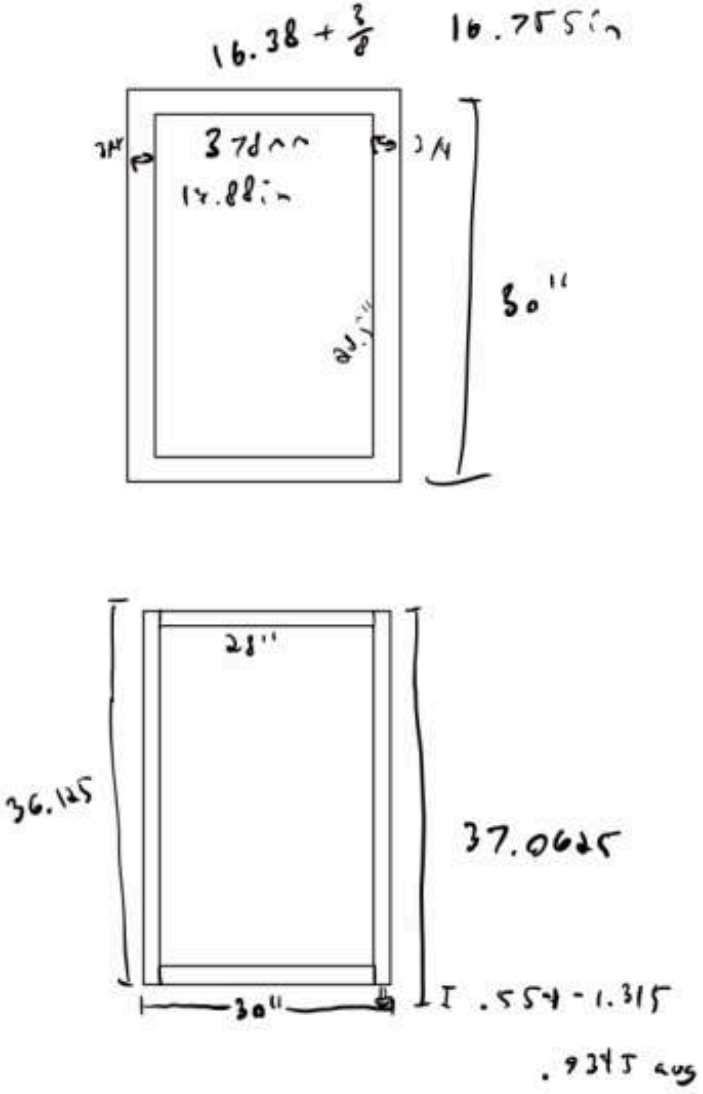
$6 \times \frac{3}{16} + 8 \times \frac{3}{4} = \frac{18}{16} + 6 = \frac{9}{8} + 6 = 7.125$ in

52.5 - 7.125 = 45.375 in = 1152.53mm

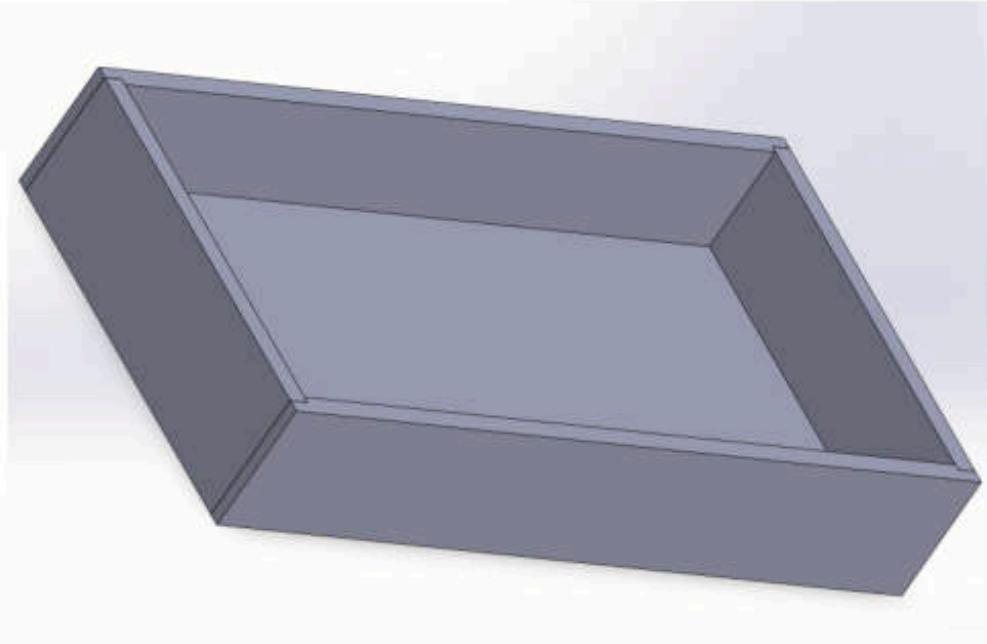
27.44 available



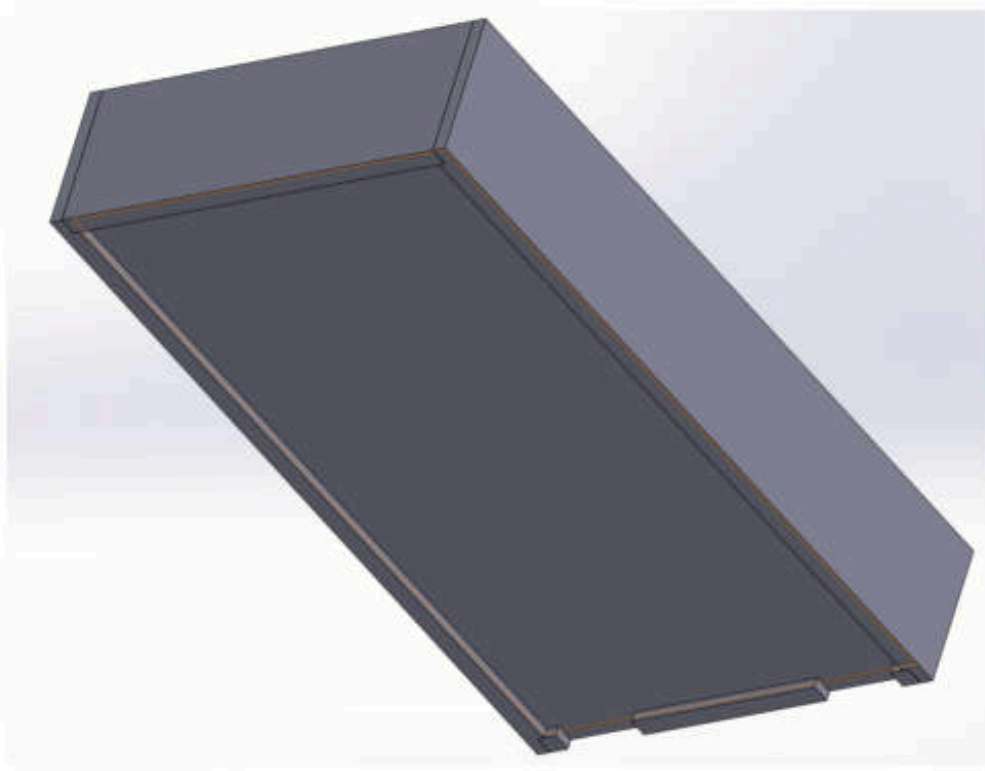
Drawer Math



Drawer CAD



Drawer CAD

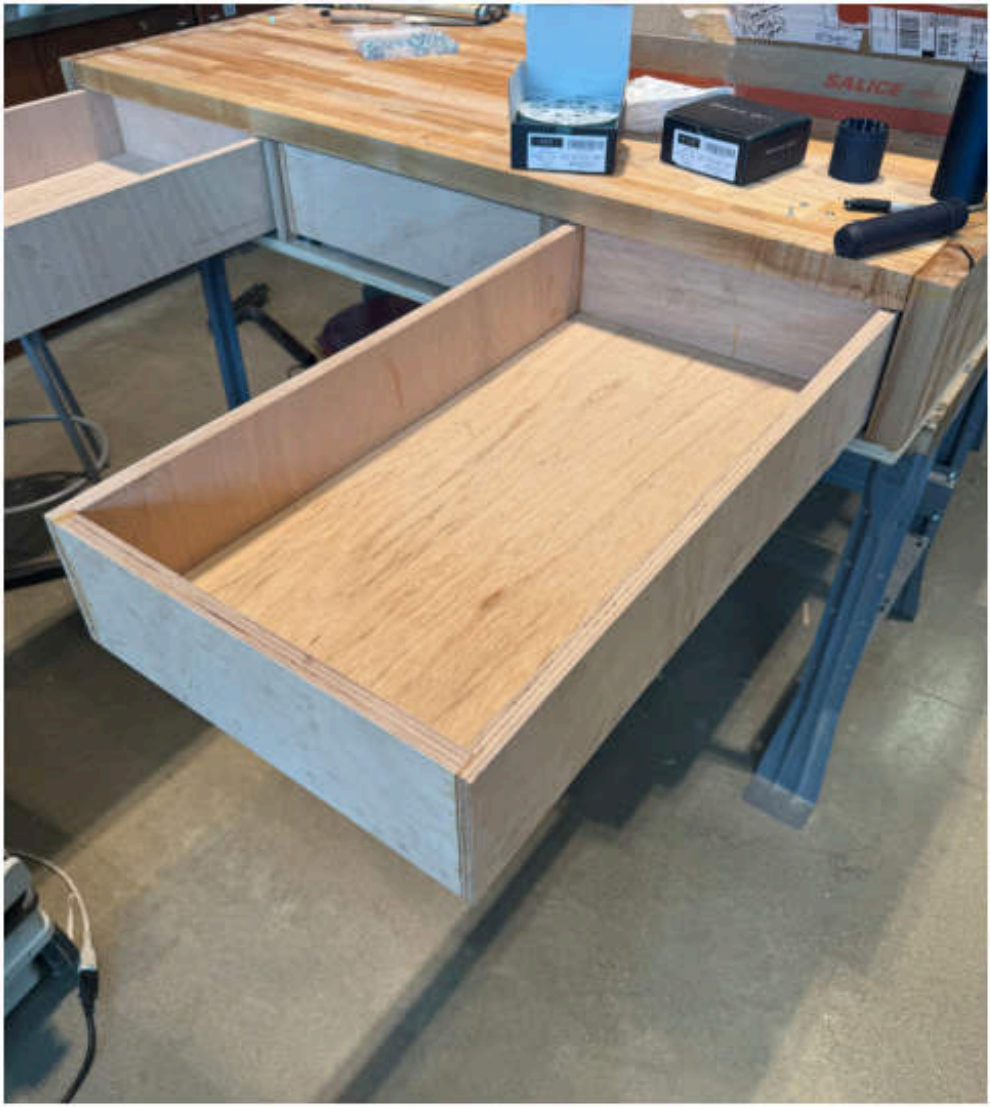


Drawers + Slides attached



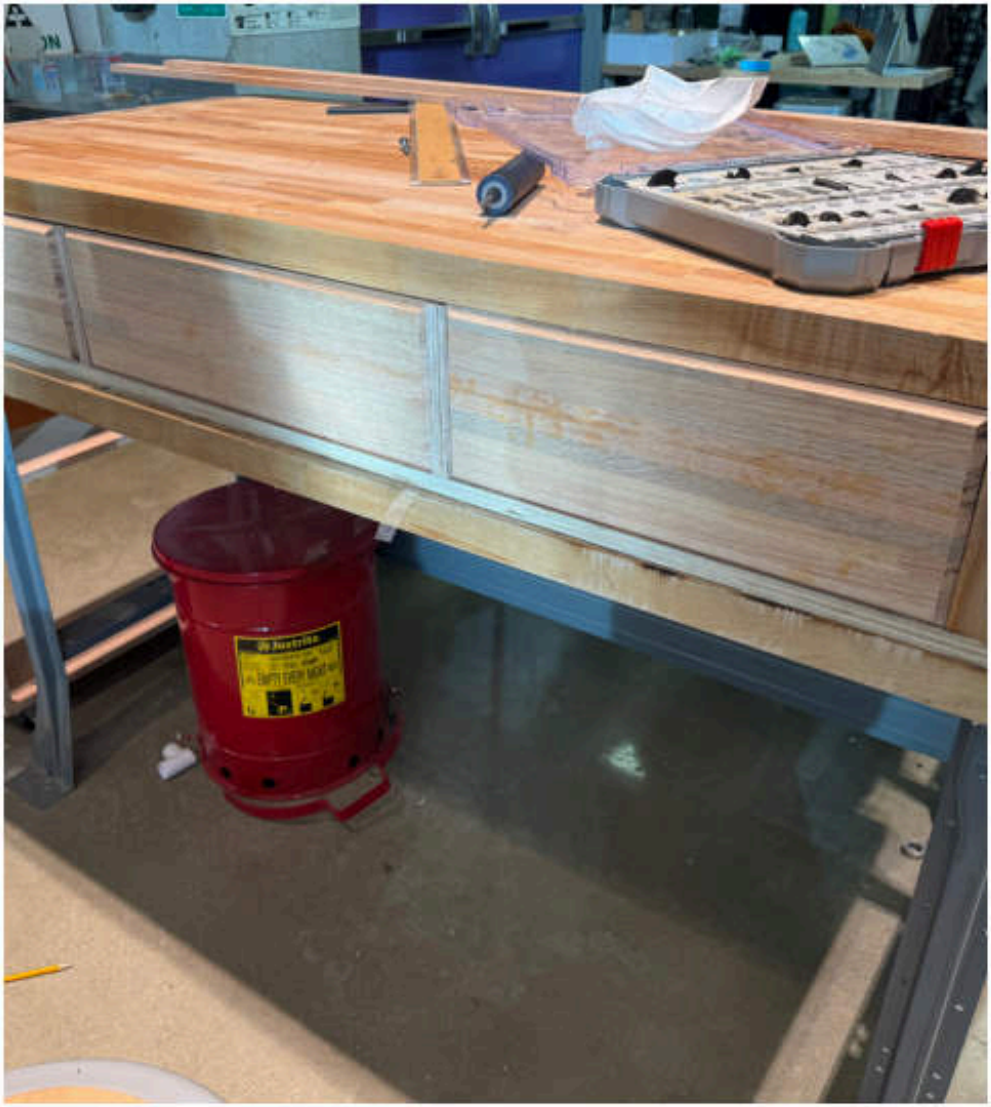
Drawers Full Extension

Very stable



Drawer Fronts made

Fillet cut with router



Testing drawer gridfinity placement



Gridfinity Spacer Math

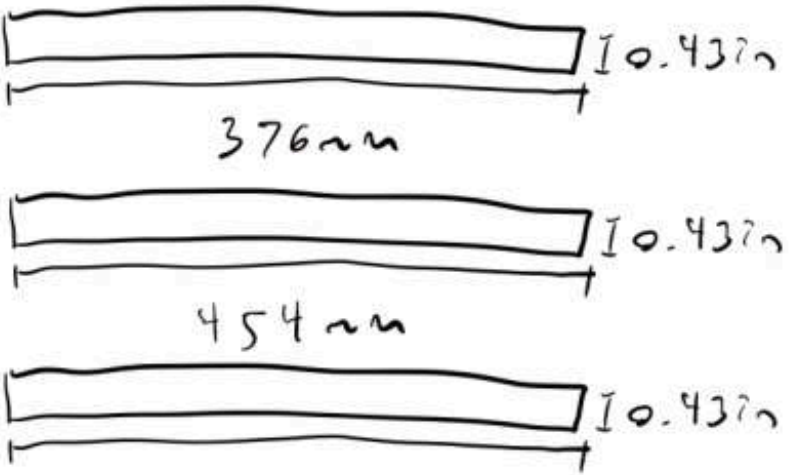


$28\frac{9}{16} = 28.5625$ in

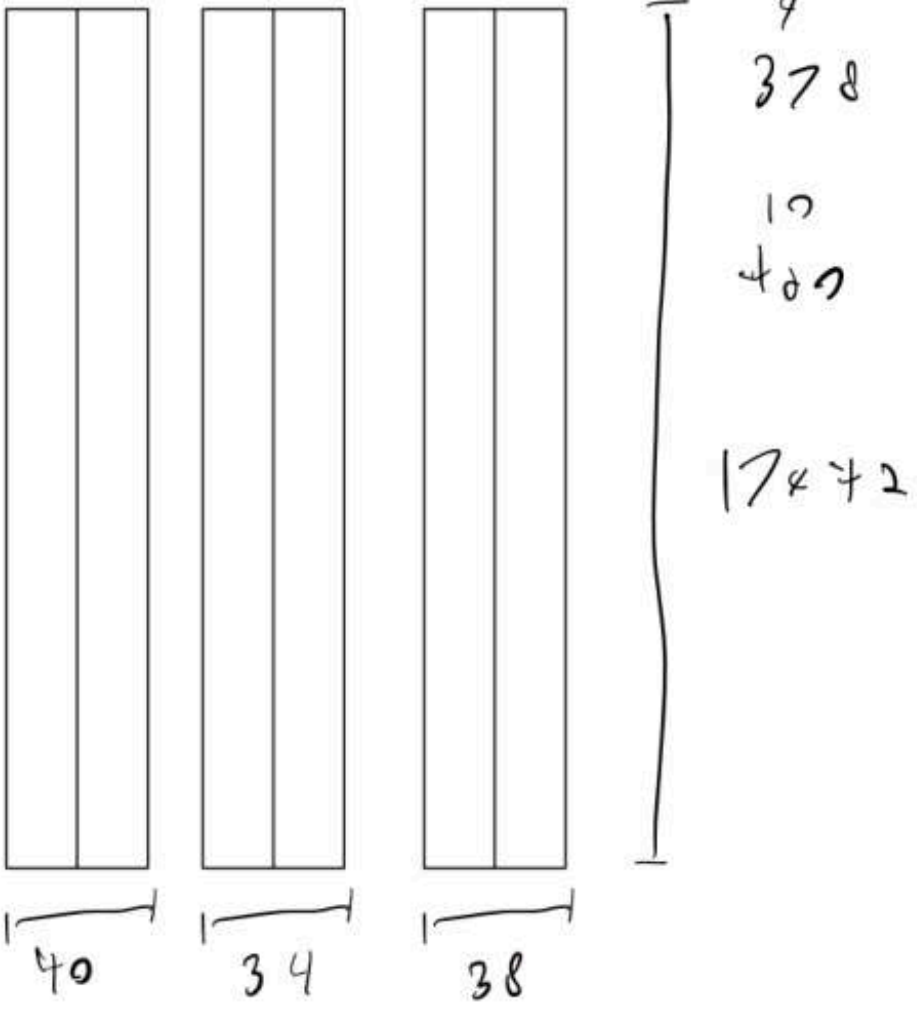
42mm × 17 = 714mm

= 28.11 in

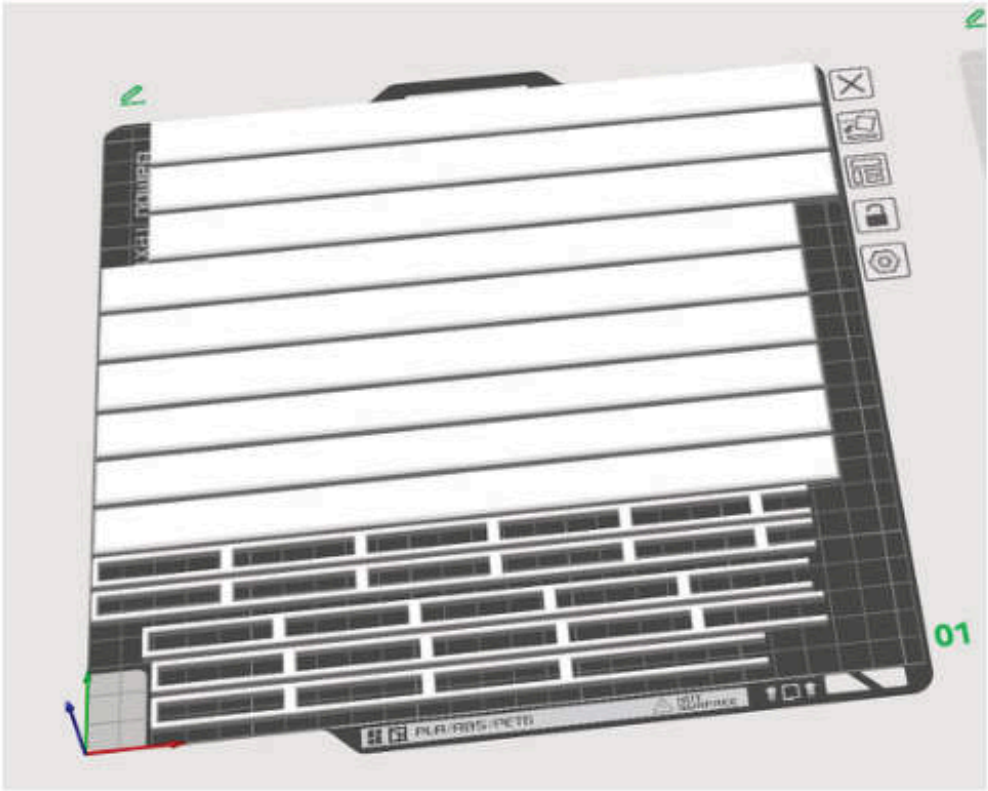
0.4525 left



Gridfinity Spacer Math



Designing + Printing Spacers



Finalized CAD based on real dimensions

