

Sedona Wine Rack, Design and Construction by Mark Langlois



About the man behind the design and creation of the Sedona Wine Rack & the Sedona Wine Rack Configuration Catalog.

Name: Mark Bradford Langlois

Status: Married with Children, Grandchildren

Education: B.S. Liberal Arts, Central Michigan University
Sociology, Industrial Technology, Computer Science

Career: Design, Engineering, Product Life Cycle
Management, IT Consultant, Software Development

Music: J.J. Cale, Jackson Brown, Mark Knopfler, Snowy
White, Jazz, Classical

Favorite Book: Catcher in the Rye, by J.D. Salinger

Drink: Oban Single Malt Scotch, Jack Daniels or
whatever you have

Cigar: Rocky Patel Vintage 1990, 1992, Undercrown
Maduro Robosto

Hobbies: Travel, Photography, Music, Art, Creative
Design and Engineering

Book Photography by Mark Langlois

Book Completion Date: November, 2021



Certification of Authentication and Registration Of Ownership

**Sedona Wine Rack #12, From The Configuration Catalog, 70 Bottle Capacity
1"x 1" Steel Tube And .120" Steel Plate, With Under Mount Lighting
Original Design By Mark Langlois, Created By Mark Langlois**

Purchased By Gifted To The "Wine Cellar" Mark & Marianne Langlois

Date September 25, 2021

Color Illusion Copper PMS 4622, PSS 2974

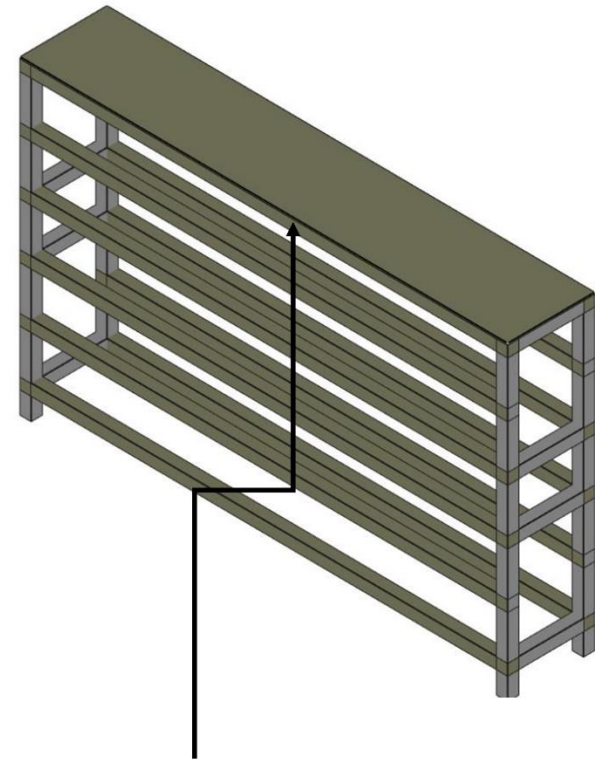
Design Iteration Number: 121775-4A

Registration Number: ML-ISC-4A- 0 0 0 0 1



ILLUSION COPPER

PMS-4622



Signature Plate Located
Under Top Plate In Back Center

MIL

Designed & Created By Mark Langlois
Reg. No. ML-ISC-4A-00001

Introduction:

The creation of the Sedona Wine Rack was driven by an unfortunate event on June 26th, 2021. A very heavy rain fell that night and due to a series of mishaps, resulted in the floor drains of our finished lower level to back-up, causing extensive damage to our home, along with literally thousands of other home owners in our area.

One of the areas of damage was the small wine cellar on the stairway landing of our lower level. A wooden, two drawer chest with a glass top, was the center piece of our little wine cellar. The wooden chest was contaminated by the water that had backed up along with many of our other personal belongings. The chest had to be removed and replaced.

I designed the Sedona Wine Rack (#12), to take the place of the wooden chest as the center piece of our restored wine cellar.

The Sedona Wine Rack (#12), is part of a catalog of wine rack configurations and also belongs to my catalog of other designs. The Sedona Wine Rack is, Design Iteration Number: ML-ISC-121775-4A.



Our wine cellar prior to June 26th, 2021



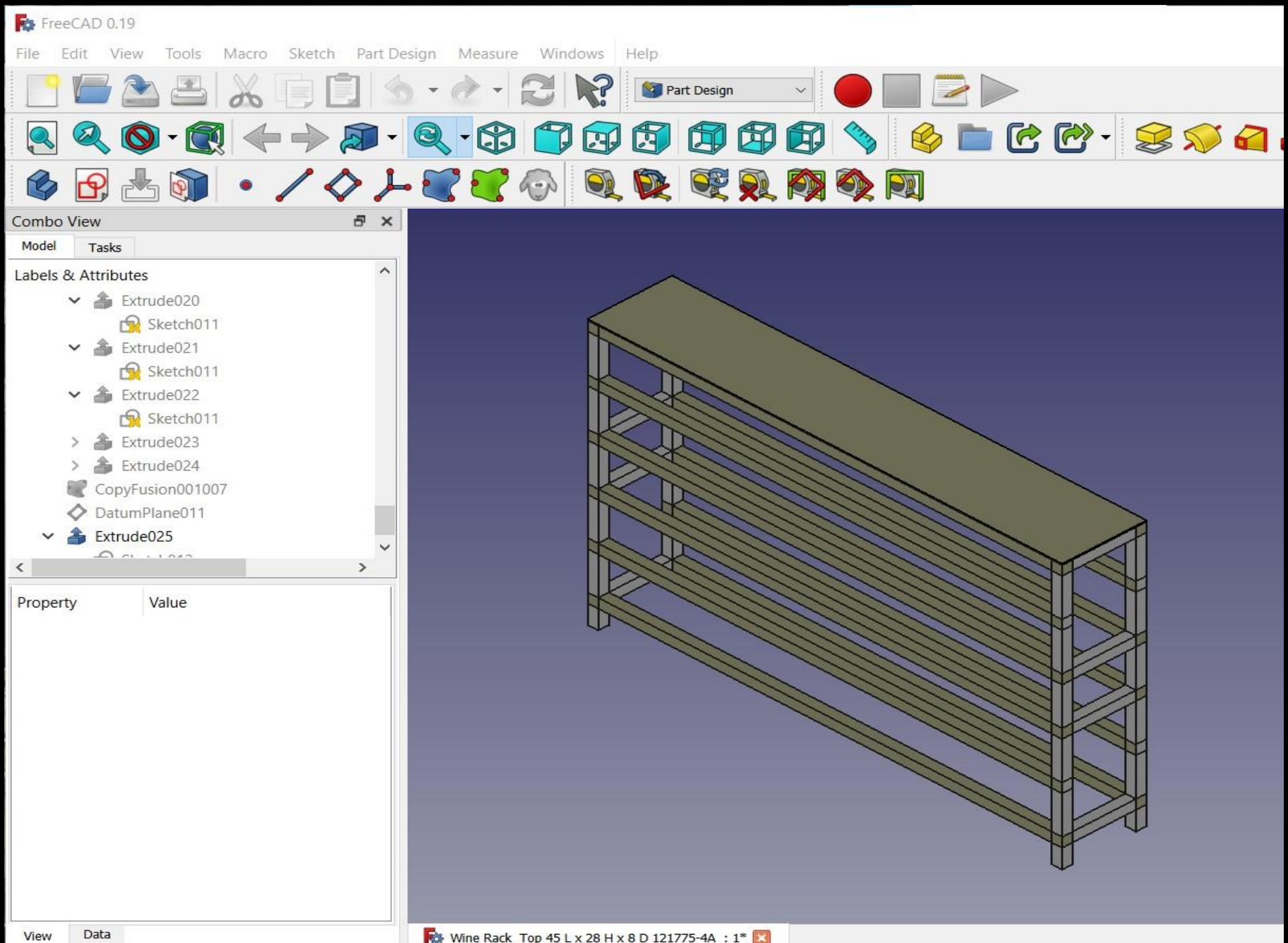
Our wine cellar two weeks following June 26th, 2021



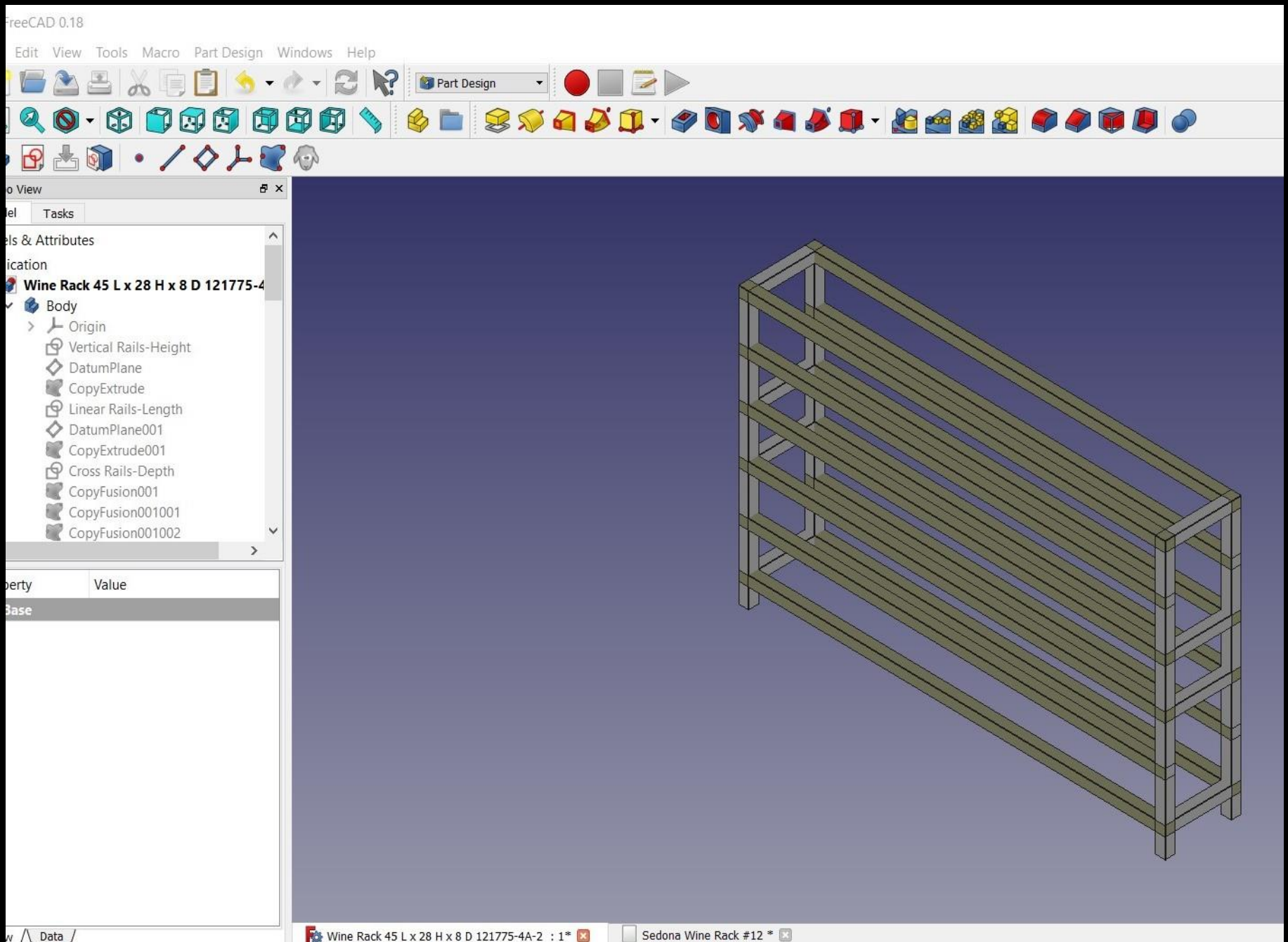
Our wine cellar following 3 months of restoration



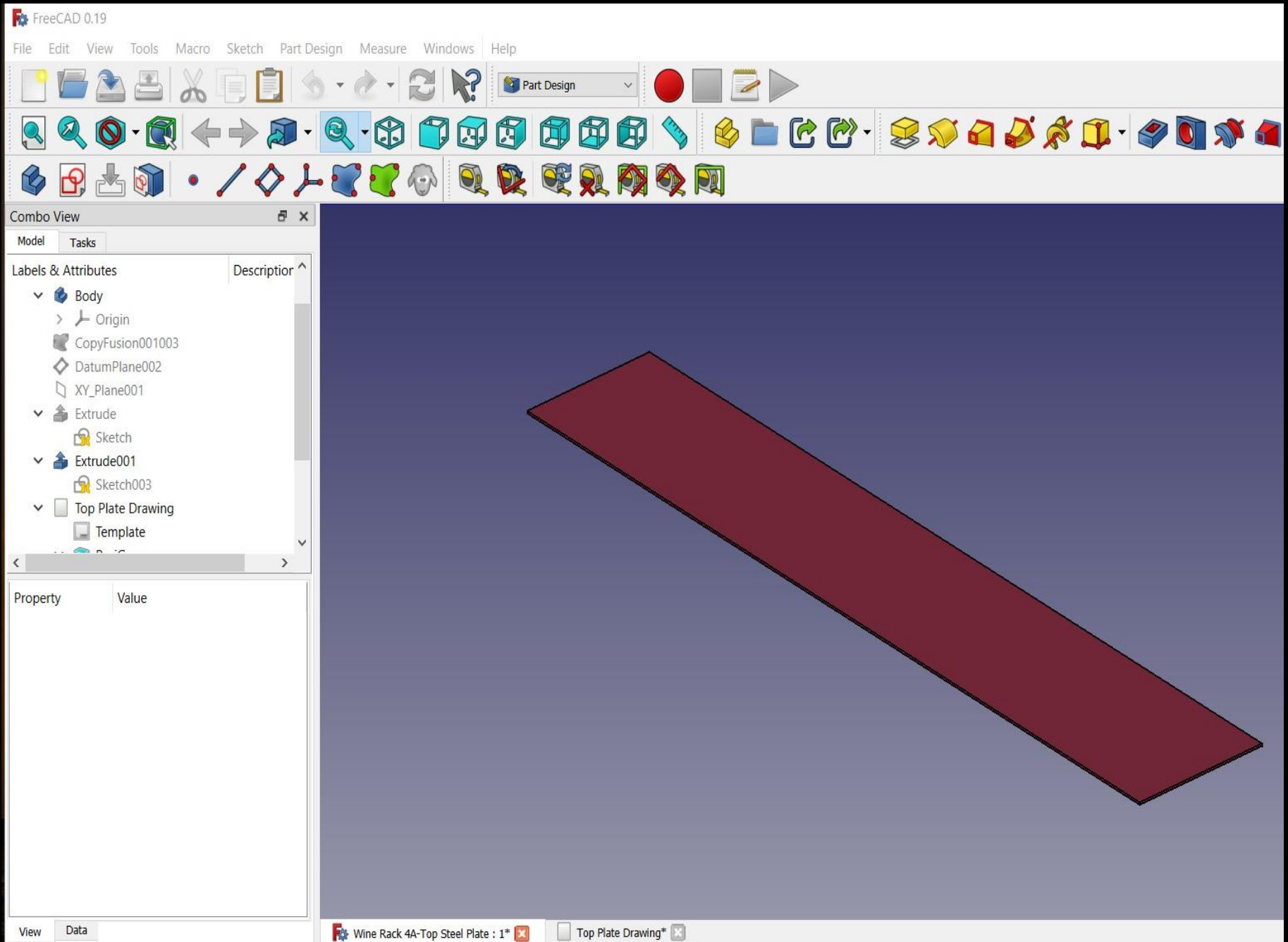
Our wine cellar today, showing my Sedona Wine Rack #12 with under mount lighting



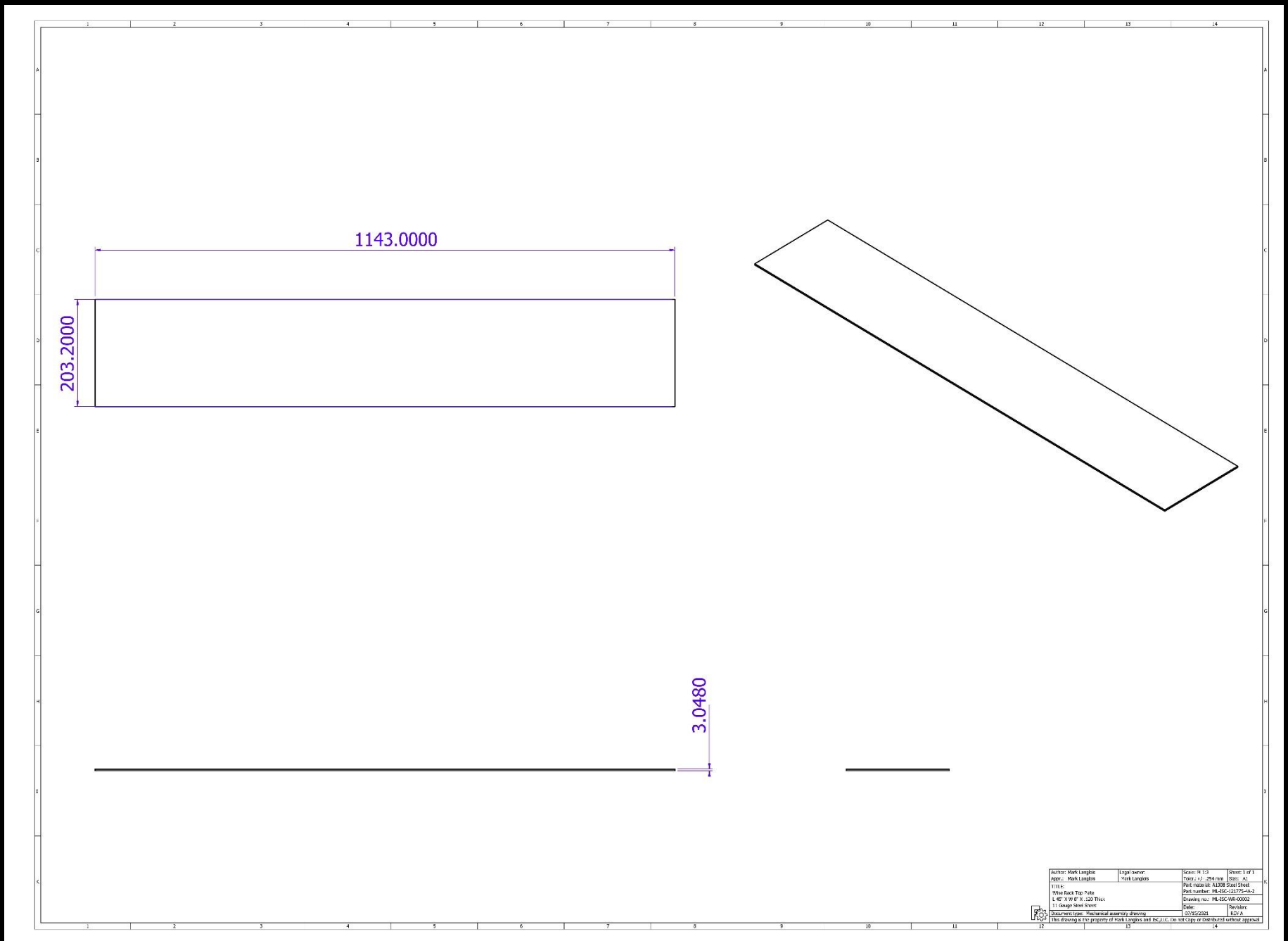
Parametric solid model of the Sedona Wine Rack, designed using FreeCAD



Parametric solid model of Sedona Wine Rack Steel Frame, designed using FreeCAD

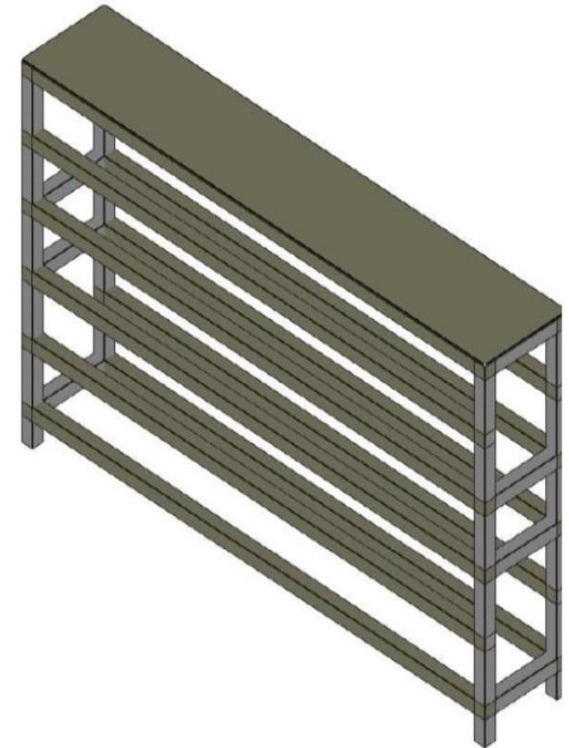


Parametric solid model of Sedona Wine Rack Top Shelf, designed using FreeCAD



Drawing of Sedona Wine Rack Top Shelf, designed using FreeCAD

Wine Rack Sizing & Number Of Bottles			
Wine Rack #	Inside Length	Outside Length	# Of Bottles Per Row
1	11 Inches	13 Inches	3.666
2	13 Inches	15 Inches	4.666
3	17 Inches	19 Inches	5.666
4	19 Inches	21 Inches	6.666
5	22 Inches	24 Inches	7.666
6	25 Inches	27 Inches	8.666
7	28 Inches	30 Inches	9.666
8	31 Inches	33 Inches	10.666
9	34 Inches	36 Inches	11.666
10	37 Inches	39 Inches	12.666
11	40 Inches	42 Inches	13.666
12	43 Inches	45 Inches	14.666
13	46 Inches	48 Inches	15.666



Row & Length chart for wine rack bottle capacity

FreeCAD 0.19

File Edit View Tools Macro Sketch Part Design Measure Windows Help

Part Design

Combo View

Model Tasks

Labels & Attributes

- Sedona Wine Rack 53 Inch Height Catalog
 - Body
 - Origin001
 - X_Axis001
 - Y_Axis001
 - Z_Axis001
 - XY_Plane001
 - XZ_Plane001
 - YZ_Plane001
 - Sketch
 - Spreadsheet
 - XY_Plane002

Property Value

Base	Value
Label	Spreadsheet

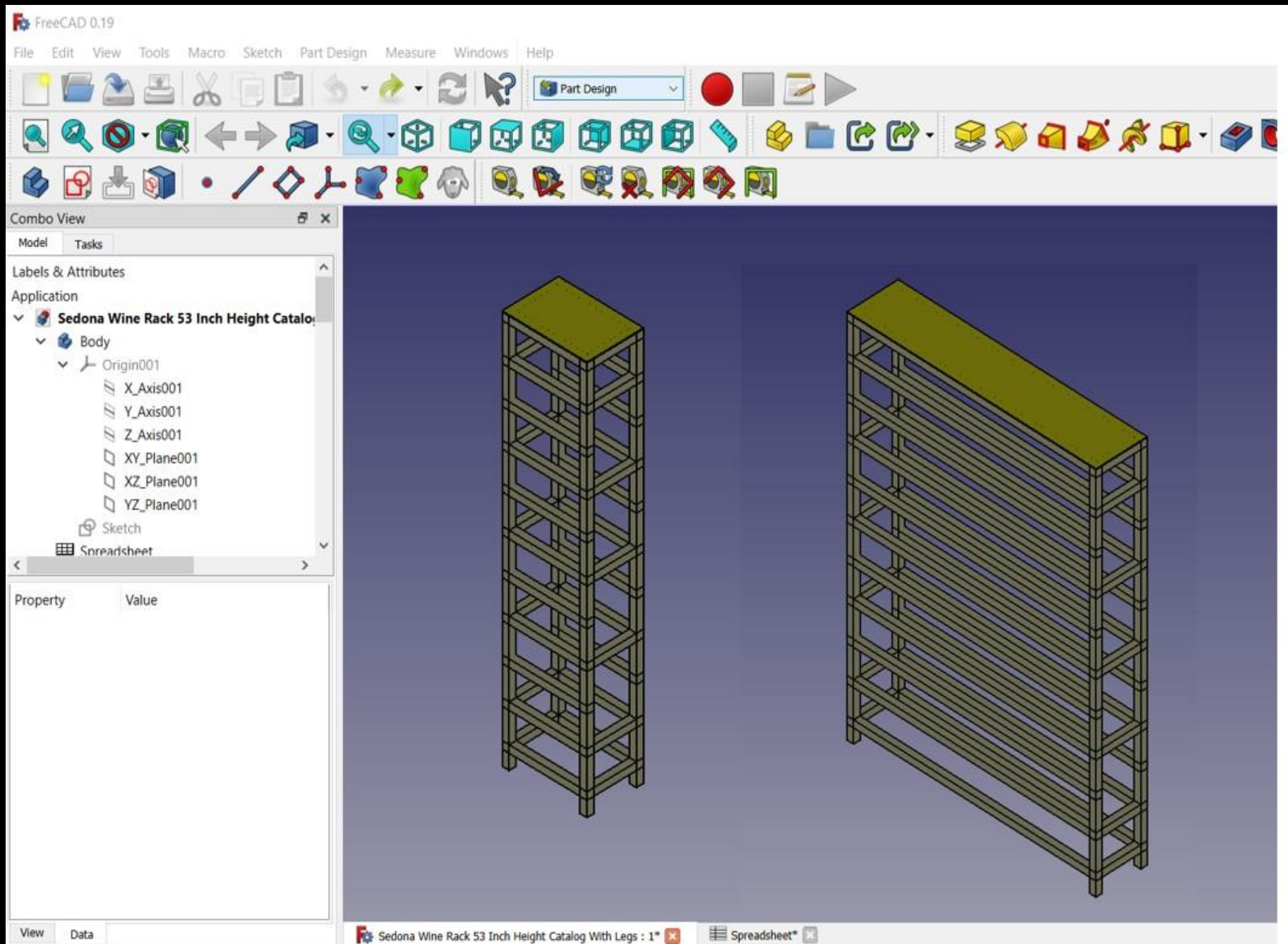
	A	B	C
1	Master Control Variable Spreadsheet For 53 Inch Height Family		
2	Master Sketch CatFam Length Variable	152.4000	
3	Master List of Valid Variable Length Sizes For Catalog Family: 53" Height Through 69" Length Configurations		
4	Horizontal_Rail_Master_Length_Cat_1_10	152.4000	CatFam 10-1 53 Inch Height 12 Length configuration
5	Horizontal_Rail_Master_Length_Cat_2_10	190.5000	CatFam 10-2 53 Inch Height 15 Length configuration
6	Horizontal_Rail_Master_Length_Cat_3_10	228.6000	CatFam 10-3 53 Inch Height 18 Length configuration
7	Horizontal_Rail_Master_Length_Cat_4_10	266.7000	CatFam 10-4 53 Inch Height 21 Length configuration
8	Horizontal_Rail_Master_Length_Cat_5_10	304.8000	CatFam 10-5 53 Inch Height 24 Length configuration
9	Horizontal_Rail_Master_Length_Cat_6_10	342.9000	CatFam 10-6 53 Inch Height 27 Length configuration
10	Horizontal_Rail_Master_Length_Cat_7_10	381.0000	CatFam 10-7 53 Inch Height 30 Length configuration
11	Horizontal_Rail_Master_Length_Cat_8_10	419.1000	CatFam 10-8 53 Inch Height 33 Length configuration
12	Horizontal_Rail_Master_Length_Cat_9_10	457.2000	CatFam 10-9 53 Inch Height 36 Length configuration
13	Horizontal_Rail_Master_Length_Cat_10_10	495.3000	CatFam 10-10 53 Inch Height 39 Length configuration
14	Horizontal_Rail_Master_Length_Cat_11_10	533.4000	CatFam 10-11 53 Inch Height 42 Length configuration
15	Horizontal_Rail_Master_Length_Cat_12_10	571.5000	CatFam 10-12 53 Inch Height 45 Length configuration
16	Horizontal_Rail_Master_Length_Cat_13_10	609.6000	CatFam 10-13 53 Inch Height 48 Length configuration
17	Horizontal_Rail_Master_Length_Cat_14_10	647.7000	CatFam 10-14 53 Inch Height 51 Length configuration
18	Horizontal_Rail_Master_Length_Cat_15_10	685.8000	CatFam 10-15 53 Inch Height 54 Length configuration

View Data

Sedona Wine Rack 53 Inch Height Catalog With Legs : 1*

Spreadsheet*

Wine rack family sketch configurations are driven by this master spreadsheet



Family model sizing is defined by height, the master spreadsheet controls rack length

Sedona Wine Rack Configurations Generated in Python Program	Version 12	Output to Text File & Imported Into Excel	
Sedona Wine Rack Catalog: 12" Length Configurations:			
1. Configuration:1-1 Length 12" x Height 8" x Depth 8"	Capacity 3	Product ID	C-1-1-L-12-H-8-D-8-CAP-3-R1-SH-1-V-121-A4-CLR-PP-47
2. Configuration:1-2 Length 12" x Height 13" x Depth 8"	Capacity 6	Product ID	C-1-2-L-12-H-13-D-8-CAP-6-R2-SH-1-V-121-A4-CLR-PP-47
3. Configuration:1-3 Length 12" x Height 18" x Depth 8"	Capacity 9	Product ID	C-1-3-L-12-H-18-D-8-CAP-9-R3-SH-1-V-121-A4-CLR-PP-47
4. Configuration:1-4 Length 12" x Height 23" x Depth 8"	Capacity 12	Product ID	C-1-4-L-12-H-23-D-8-CAP-12-R4-SH-1-V-121-A4-CLR-PP-47
5. Configuration:1-5 Length 12" x Height 28" x Depth 8"	Capacity 15	Product ID	C-1-5-L-12-H-28-D-8-CAP-15-R5-SH-1-V-121-A4-CLR-PP-47
6. Configuration:1-6 Length 12" x Height 33" x Depth 8"	Capacity 18	Product ID	C-1-6-L-12-H-33-D-8-CAP-18-R6-SH-1-V-121-A4-CLR-PP-47
7. Configuration:1-7 Length 12" x Height 38" x Depth 8"	Capacity 21	Product ID	C-1-7-L-12-H-38-D-8-CAP-21-R7-SH-1-V-121-A4-CLR-PP-47
8. Configuration:1-8 Length 12" x Height 43" x Depth 8"	Capacity 24	Product ID	C-1-8-L-12-H-43-D-8-CAP-24-R8-SH-1-V-121-A4-CLR-PP-47
9. Configuration:1-9 Length 12" x Height 48" x Depth 8"	Capacity 27	Product ID	C-1-9-L-12-H-48-D-8-CAP-27-R9-SH-1-V-121-A4-CLR-PP-47
10. Configuration:1-10 Length 12" x Height 53" x Depth 8"	Capacity 30	Product ID	C-1-10-L-12-H-53-D-8-CAP-30-R10-SH-1-V-121-A4-CLR-PP-47
11. Configuration:1-11 Length 12" x Height 58" x Depth 8"	Capacity 33	Product ID	C-1-11-L-12-H-58-D-8-CAP-33-R11-SH-1-V-121-A4-CLR-PP-47
12. Configuration:1-12 Length 12" x Height 63" x Depth 8"	Capacity 36	Product ID	C-1-12-L-12-H-63-D-8-CAP-36-R12-SH-1-V-121-A4-CLR-PP-47
13. Configuration:1-13 Length 12" x Height 68" x Depth 8"	Capacity 39	Product ID	C-1-13-L-12-H-68-D-8-CAP-39-R13-SH-1-V-121-A4-CLR-PP-47
14. Configuration:1-14 Length 12" x Height 73" x Depth 8"	Capacity 42	Product ID	C-1-14-L-12-H-73-D-8-CAP-42-R14-SH-1-V-121-A4-CLR-PP-47
15. Configuration:1-15 Length 12" x Height 78" x Depth 8"	Capacity 45	Product ID	C-1-15-L-12-H-78-D-8-CAP-45-R15-SH-1-V-121-A4-CLR-PP-47
16. Configuration:1-16 Length 12" x Height 83" x Depth 8"	Capacity 48	Product ID	C-1-16-L-12-H-83-D-8-CAP-48-R16-SH-1-V-121-A4-CLR-PP-47
17. Configuration:1-17 Length 12" x Height 88" x Depth 8"	Capacity 51	Product ID	C-1-17-L-12-H-88-D-8-CAP-51-R17-SH-1-V-121-A4-CLR-PP-47
18. Configuration:1-18 Length 12" x Height 93" x Depth 8"	Capacity 54	Product ID	C-1-18-L-12-H-93-D-8-CAP-54-R18-SH-1-V-121-A4-CLR-PP-47
19. Configuration:1-19 Length 12" x Height 98" x Depth 8"	Capacity 57	Product ID	C-1-19-L-12-H-98-D-8-CAP-57-R19-SH-1-V-121-A4-CLR-PP-47
20. Configuration:1-20 Length 12" x Height 103" x Depth 8"	Capacity 60	Product ID	C-1-20-L-12-H-103-D-8-CAP-60-R20-SH-1-V-121-A4-CLR-PP-47
Sedona Wine Rack Catalog: 15" Length Configurations:			
21. Configuration:2-1 Length 15" x Height 8" x Depth 8"	Capacity 4	Product ID	C-2-1-L-15-H-8-D-8-CAP-4-R1-SH-1-V-121-A4-CLR-PP-47
22. Configuration:2-2 Length 15" x Height 13" x Depth 8"	Capacity 8	Product ID	C-2-2-L-15-H-13-D-8-CAP-8-R2-SH-1-V-121-A4-CLR-PP-47
23. Configuration:2-3 Length 15" x Height 18" x Depth 8"	Capacity 12	Product ID	C-2-3-L-15-H-18-D-8-CAP-12-R3-SH-1-V-121-A4-CLR-PP-47
24. Configuration:2-4 Length 15" x Height 23" x Depth 8"	Capacity 16	Product ID	C-2-4-L-15-H-23-D-8-CAP-16-R4-SH-1-V-121-A4-CLR-PP-47
25. Configuration:2-5 Length 15" x Height 28" x Depth 8"	Capacity 20	Product ID	C-2-5-L-15-H-28-D-8-CAP-20-R5-SH-1-V-121-A4-CLR-PP-47
26. Configuration:2-6 Length 15" x Height 33" x Depth 8"	Capacity 24	Product ID	C-2-6-L-15-H-33-D-8-CAP-24-R6-SH-1-V-121-A4-CLR-PP-47

I created a python program to generate the Sedona Wine Rack catalog and product id's

You Have Entered A Search Length Of: 34 Inches

Input is Validated

You have selected search method A For Length & Height

You Have Entered A Search Height Of: 68

Input is Validated

Catalog Search For An Exact Match From The User Input Is Complete

No Exacct Match Was Found, Searching Catalog For Alternate Matches

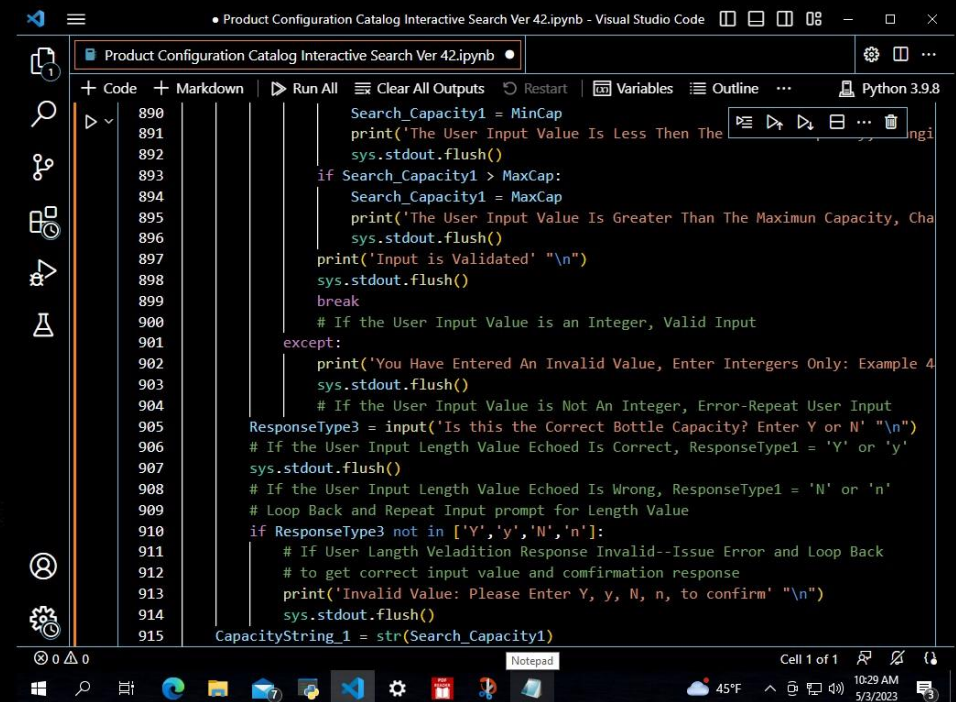
An Alternate Wine Rack Was Found In Catalog, With Length 33" Length -1 Inch

153. Configuration:8-13 Length 33" x Height 68" x Depth 8" !Capacity 130 !Weight lbs.

An Alternate Wine Rack Was Found In Catalog, With Length 36" Length +2 Inches

173. Configuration:9-13 Length 36" x Height 68" x Depth 8" !Capacity 143 !Weight lbs.

Alternate Catalog Search Complete for Length & Height, Method A



```
Product Configuration Catalog Interactive Search Ver 42.ipynb
+ Code + Markdown + Run All + Clear All Outputs + Restart + Variables + Outline + Python 3.9.8
890 Search_Capacity1 = MinCap
891 print('The User Input Value Is Less Than The Minimum Capacity, Enter A Valid Value')
892 sys.stdout.flush()
893 if Search_Capacity1 > MaxCap:
894     Search_Capacity1 = MaxCap
895     print('The User Input Value Is Greater Than The Maximum Capacity, Change To Maximum Capacity')
896     sys.stdout.flush()
897     print('Input is Validated' "\n")
898     sys.stdout.flush()
899     break
900 # If the User Input Value is an Integer, Valid Input
901 except:
902     print('You Have Entered An Invalid Value, Enter Integers Only: Example 4')
903     sys.stdout.flush()
904     # If the User Input Value is Not An Integer, Error-Repeat User Input
905     ResponseType3 = input('Is this the Correct Bottle Capacity? Enter Y or N' "\n")
906     # If the User Input Length Value Echoed Is Correct, ResponseType1 = 'Y' or 'y'
907     sys.stdout.flush()
908     # If the User Input Length Value Echoed Is Wrong, ResponseType1 = 'N' or 'n'
909     # Loop Back and Repeat Input prompt for Length Value
910     if ResponseType3 not in ['Y','y','N','n']:
911         # If User Length Validation Response Invalid--Issue Error and Loop Back
912         # to get correct input value and confirmation response
913         print('Invalid Value: Please Enter Y, y, N, n, to confirm' "\n")
914         sys.stdout.flush()
915     CapacityString_1 = str(Search_Capacity1)
```

I created another python program to search the 400 configurations in the catalog for a user defined Length & Height, Length, Height, Length & Capacity or Height & Capacity



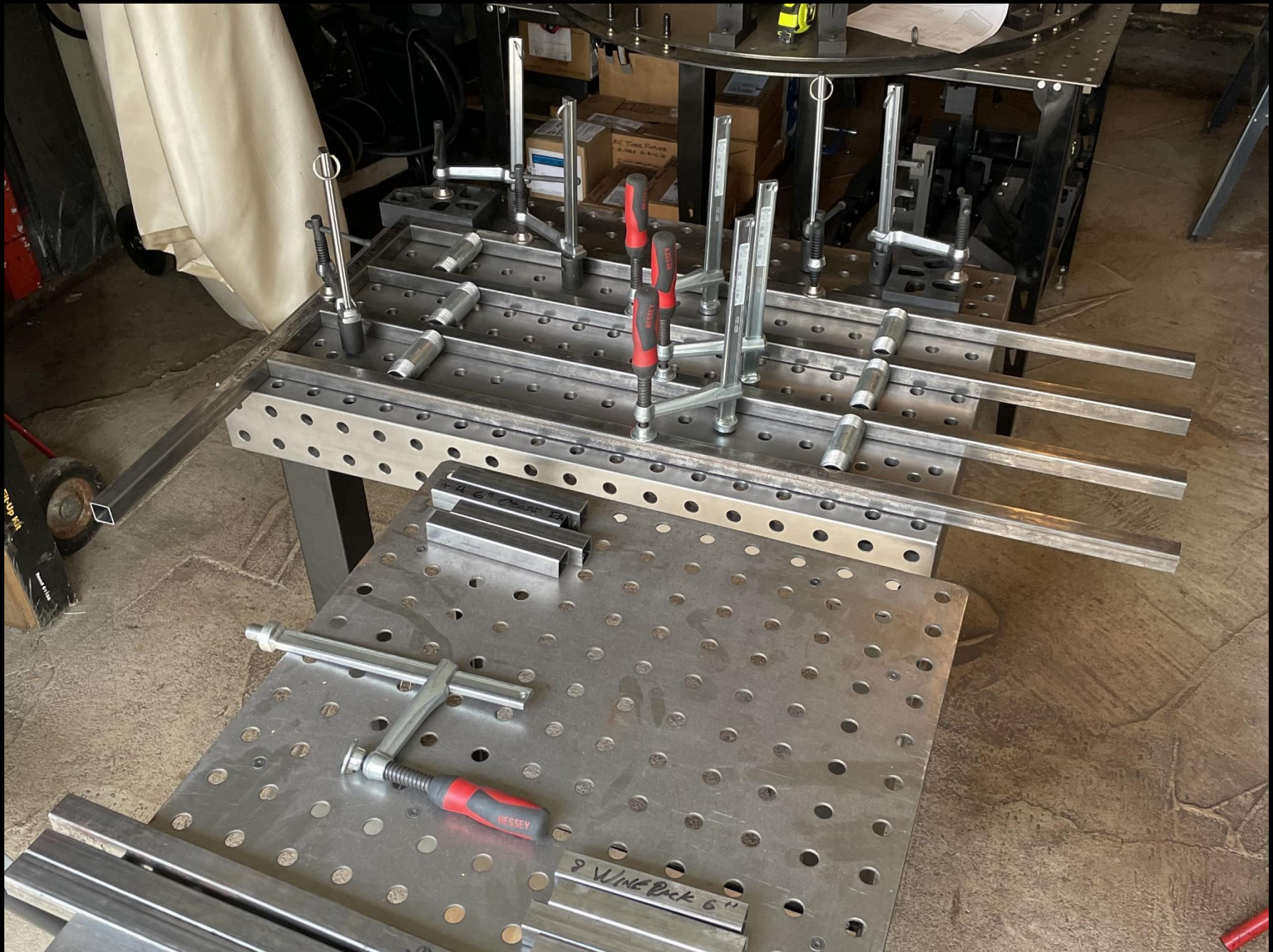
Sedona Wine Rack #12: Design mockup of wine rack spacing



Sedona Wine Rack #12: Design mockup of felt on back rail



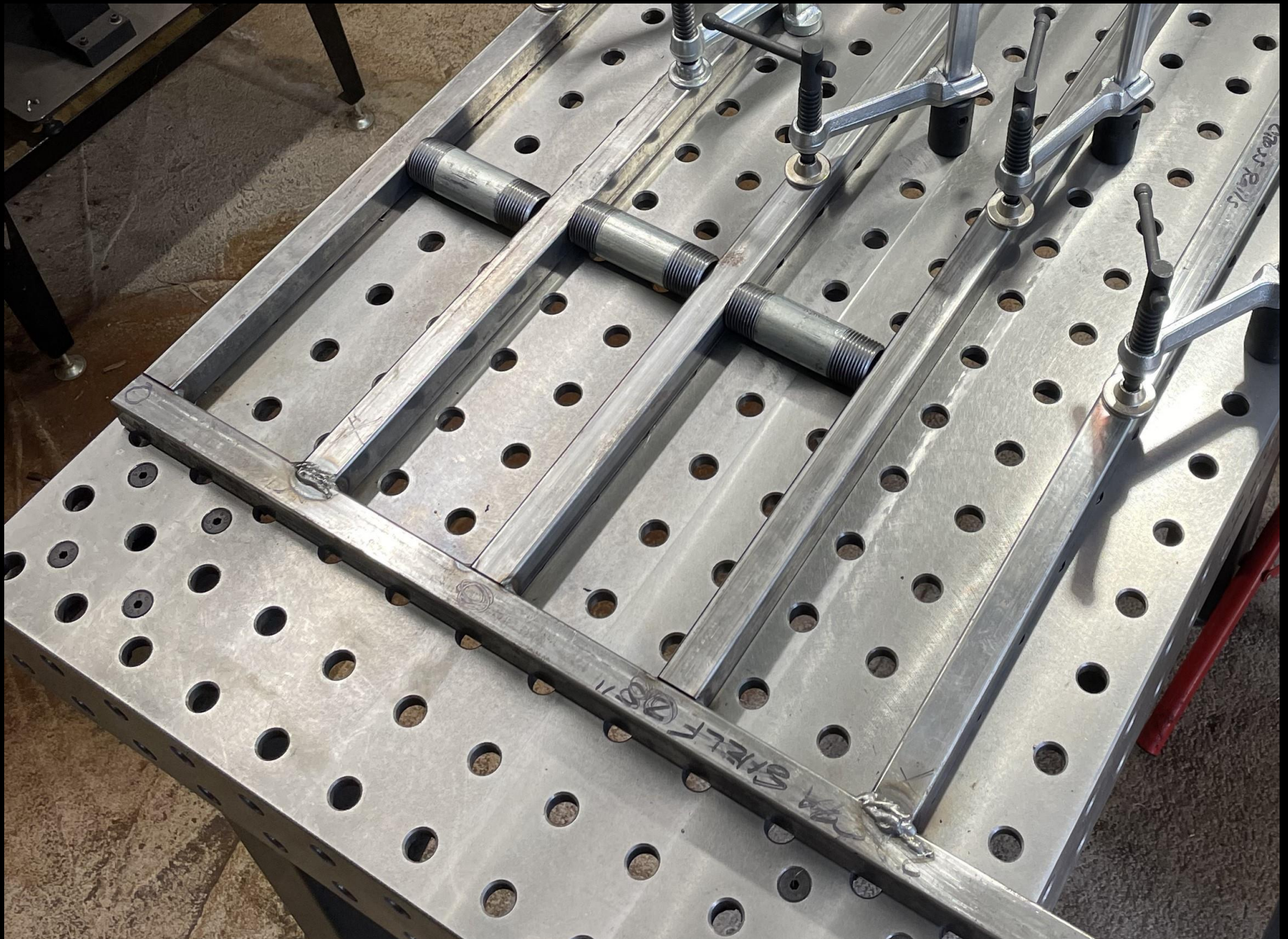
Sedona Wine Rack #12 Fabrication Sequence:



Sedona Wine Rack #12 Fabrication Sequence: 1 Steel tube cut to size for layout



Sedona Wine Rack #12 Fabrication Sequence: 2 4" pipe nipples keep spacing accurate



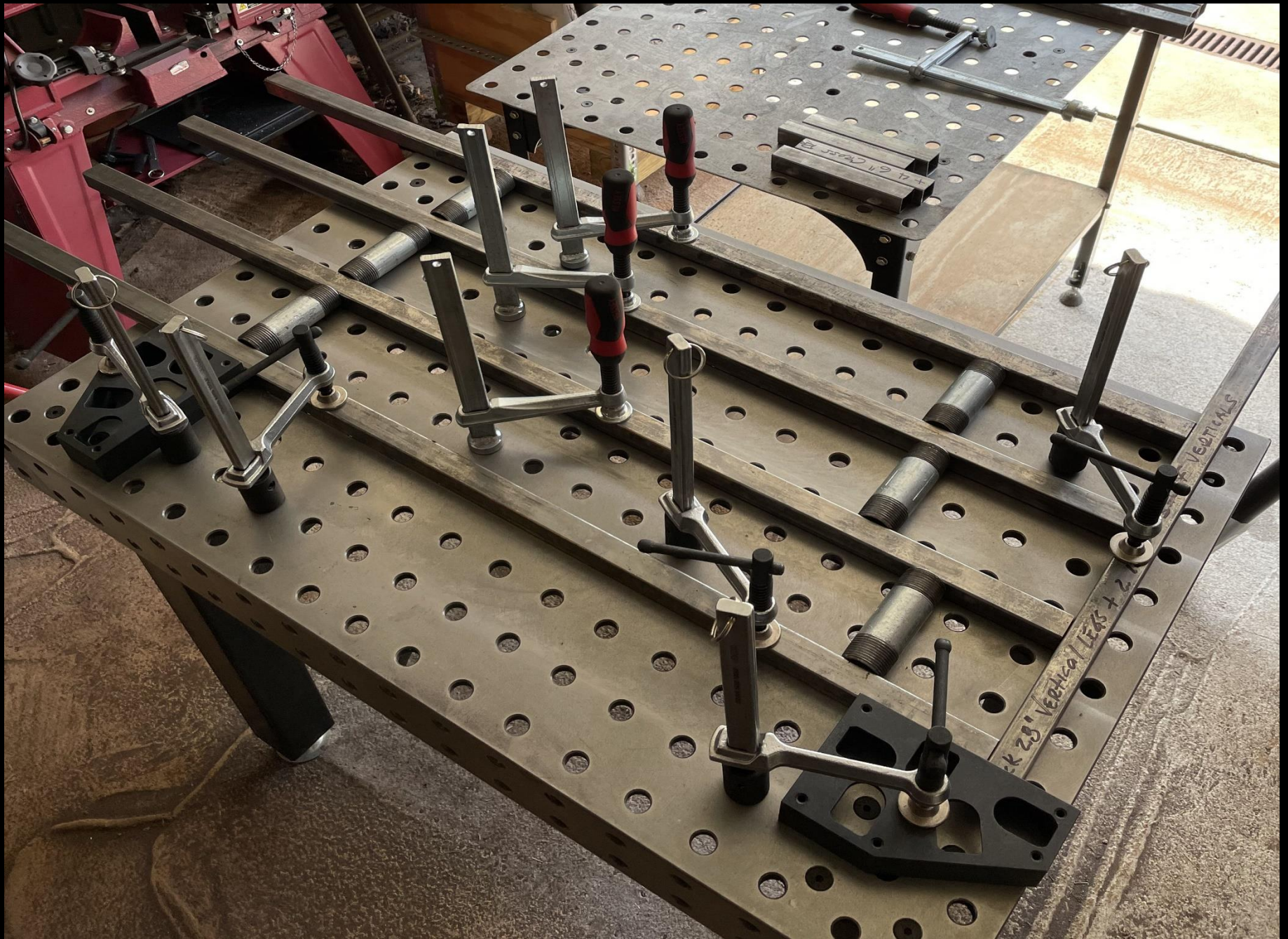
Sedona Wine Rack #12 Fabrication Sequence: 3 Top welds, side 1 complete



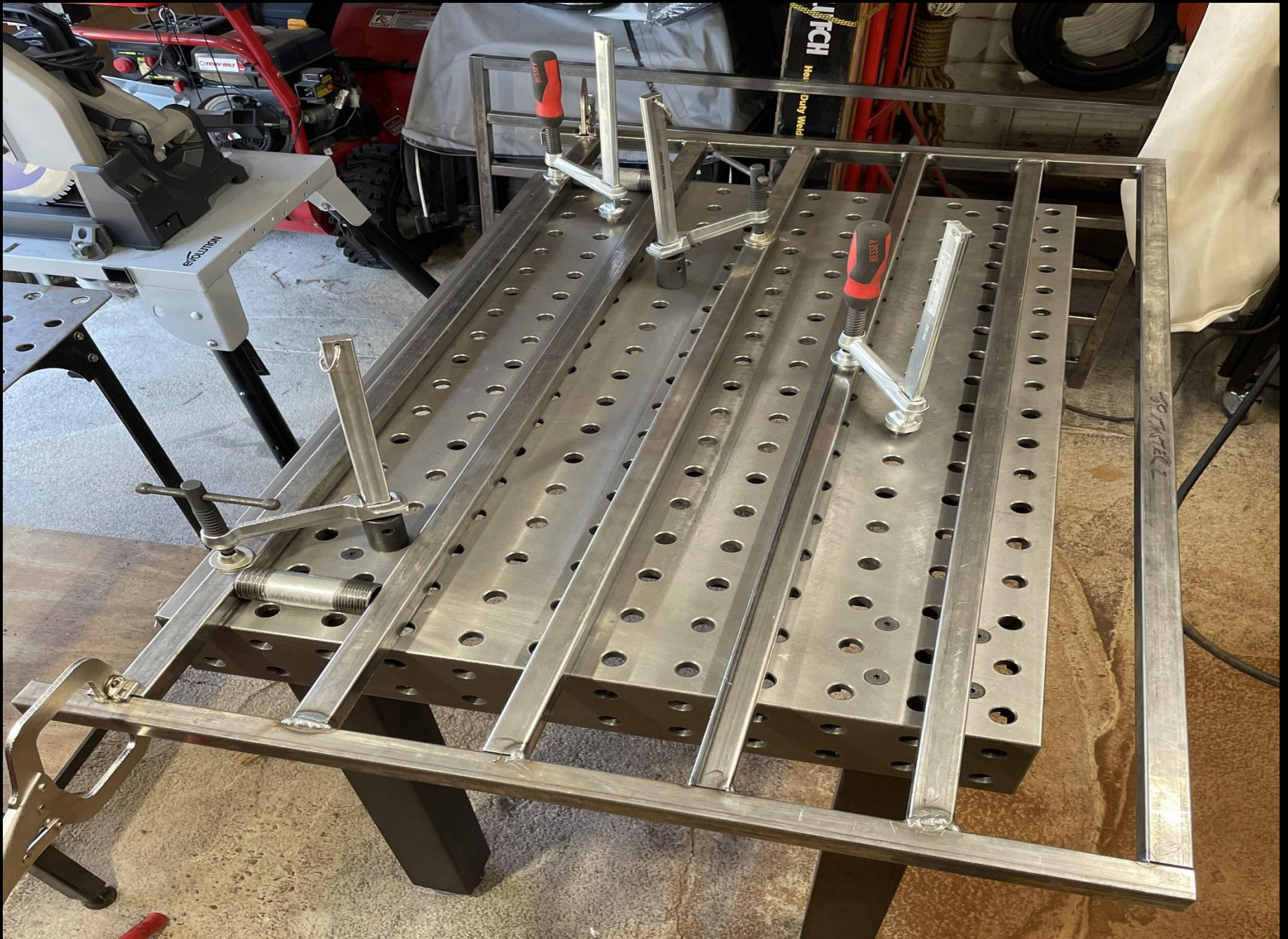
Sedona Wine Rack #12 Fabrication Sequence: 4 Inside rail welds, side 1, complete



Sedona Wine Rack #12 Fabrication Sequence: 5 Bottom rail welded onto panel 1



Sedona Wine Rack #12 Fabrication Sequence: 6 Repeat the rail welds for panel 2



Sedona Wine Rack #12 Fabrication Sequence: 7

Welding bottom rail on panel 2



Sedona Wine Rack #12 Fabrication Sequence: 8 Panels 1 & 2 are now welded



Sedona Wine Rack #12 Fabrication Sequence: 10 Panels 1 and 2 can now be welded



Sedona Wine Rack #12 Fabrication Sequence: 11 6" Pipe nipples keep spacing accurate



Sedona Wine Rack #12 Fabrication Sequence: 12 Bottles are loaded to check the fit



Sedona Wine Rack #12 Fabrication Sequence: 13 Locating cross rails for welding



Sedona Wine Rack #12 Fabrication Sequence: 14 Mid level cross rails are welded first



Sedona Wine Rack #12 Fabrication Sequence: 15 Bottom cross rails are welded next



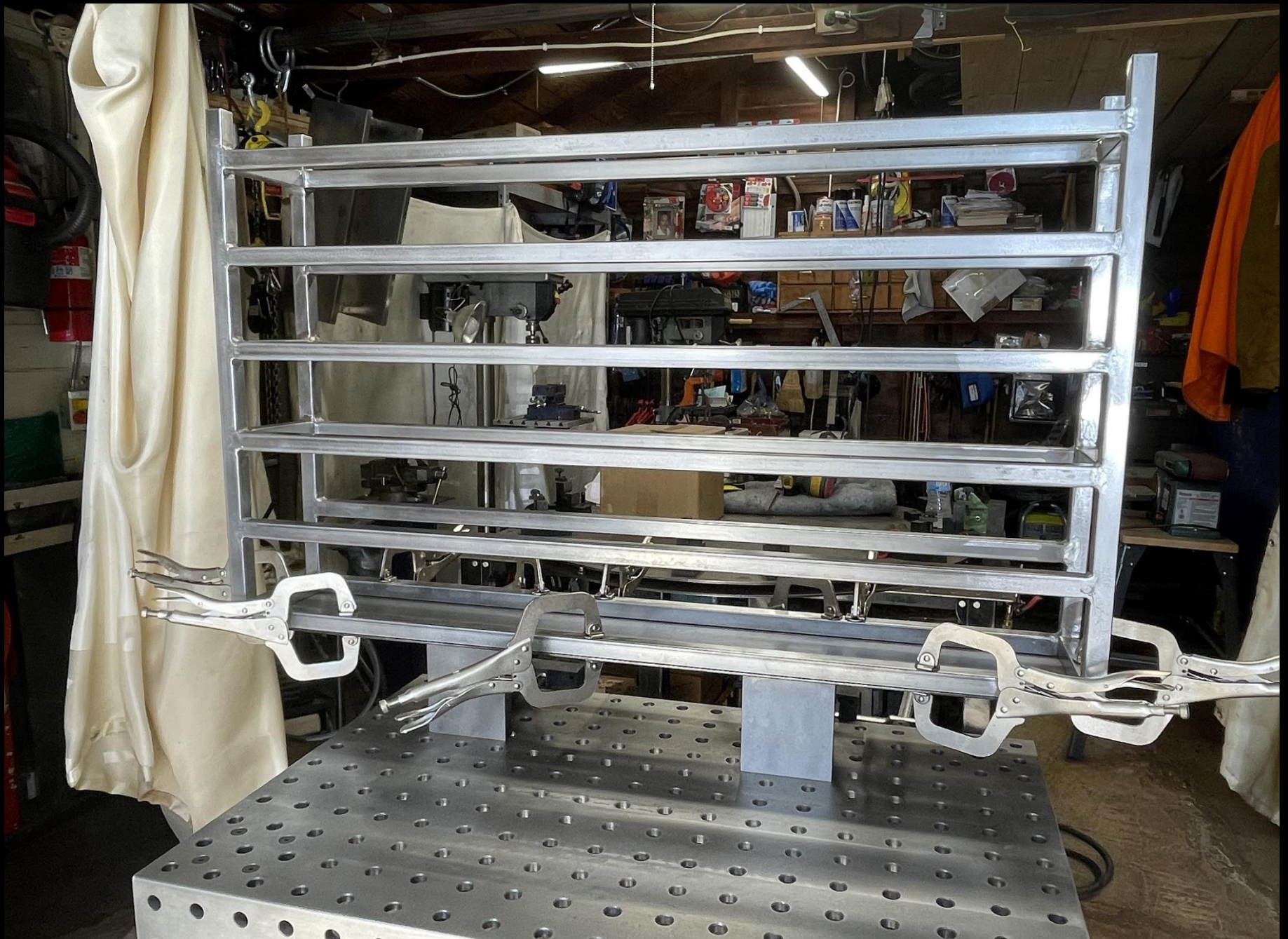
Sedona Wine Rack #12 Fabrication Sequence: 16 Top cross rails are welded last



Sedona Wine Rack #12 Fabrication Sequence: 17 Clean up all cross rail welds



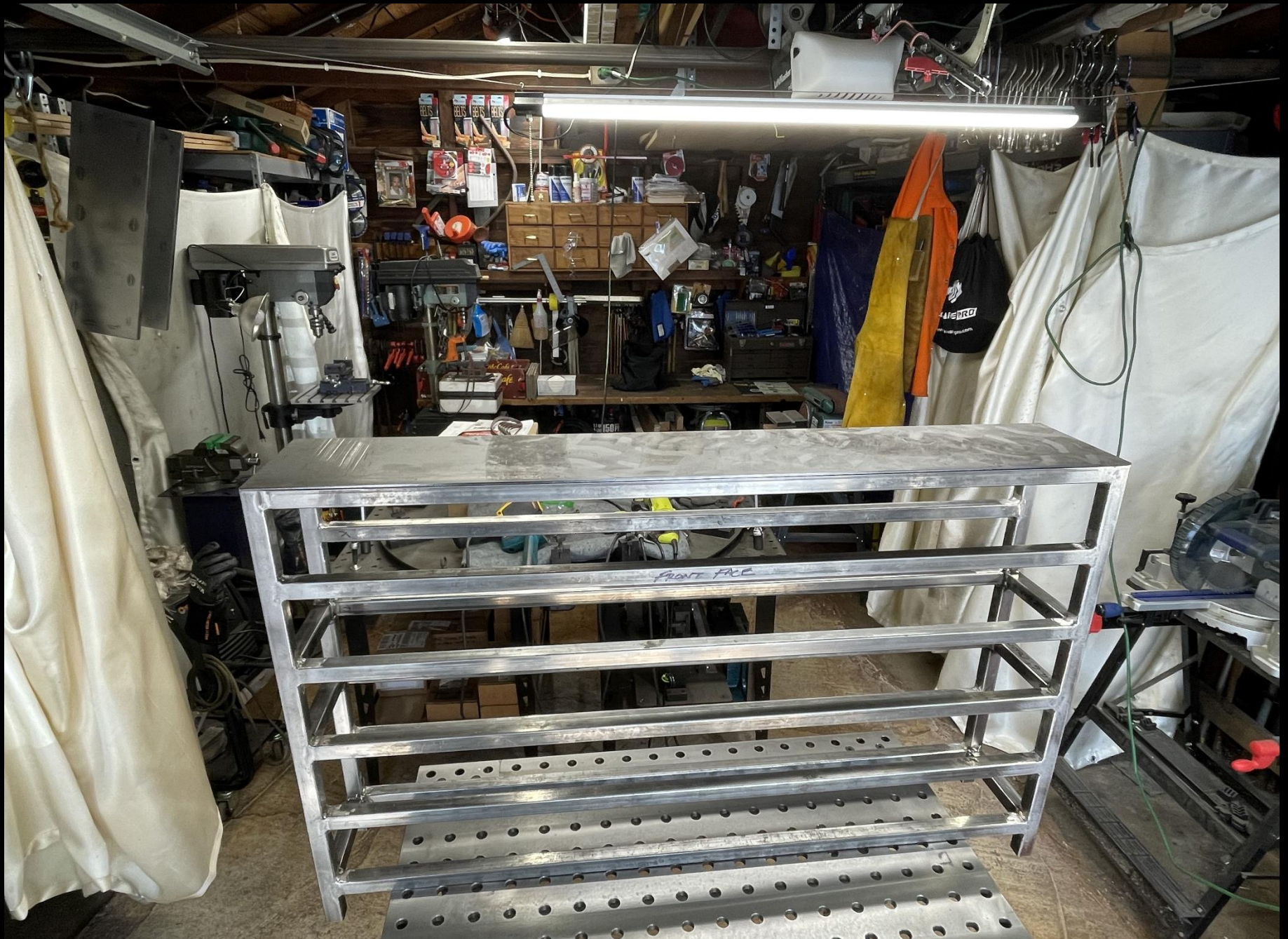
Sedona Wine Rack #12 Fabrication Sequence: 18 Check top shelf for fit & flatness



Sedona Wine Rack #12 Fabrication Sequence: 19 Top shelf fitted & clamped for welding



Sedona Wine Rack #12 Fabrication Sequence: 20 Locate and weld signature plate



Sedona Wine Rack #12 Fabrication Sequence: 21

Finish sand all surfaces



Sedona Wine Rack #12 Fabrication Sequence: 22 Rack feady for powercoating



BASE: Illusion Copper PMS 4622

TOP: Clear Vision PPS 2974

COLOR VARIES WITH THICKNESS

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Sedona Wine Rack #12 Fabrication Sequence: 24 Rack after powercoating



Sedona Wine Rack #12 Fabrication Sequence: 25 Apply felt to wine rack rails



Sedona Wine Rack #12 Fabrication Sequence: 26 Felt .12" thick applied to front rails



Sedona Wine Rack #12 Fabrication Sequence: 27 Felt cross strips applied to back rails



Sedona Wine Rack #12 Fabrication Sequence: 28 Felt overlay applied to cross strips



Sedona Wine Rack #12 Fabrication Sequence: 29 Wine rack with felt & leveling feet



Sedona Wine Rack #12 Fabrication Sequence: 30 Wine rack with under mount lighting



Sedona Wine Rack #12 Installed in the wine cellar

Wine Rack #12 Construction Data	
Design Iteration Number	ML-ISC-121775-4A
Size	L 45" x H 28" x D 8"
Configuration #12	43" Width, 5 Rows, 14.333 Bottles Per Row
Bottle Capacity	70 Bottles Of Wine
Material	1"x 1" Steel Tube, .120" Steel Plate
Construction	Welded Construction
Steel Base: Linear Feet	56 Linear Feet 1" x 1" x 1/16" Steel Tube
Steel Plate: Square Feet	2.5 Square Feet, .120" Steel Plate L 45" x H 8"
Steel Base: Weight	46.321 lbs.
Steel Plate: Weight	12.5 lbs.
Wine Rack Total Weight, Unloaded	58.821 lbs.
Wine Rack Total Weight, Loaded	244.3 lbs. (70, 750 ml Bottles Of Wine Loaded)
Steel Cost: Steel Tube	\$224.00
Steel Cost: Steel Plate	\$30.86
Wine Rack # 12, Total Steel Cost	\$254.86
Total Number of Welds	196
Finish: Powder Coat	Illusion Copper PMS 4622, PPS 2974
Powder Coat Cost	\$200.00
Felt For Rails	1" Wide x .120 Thick Felt. 35.83 ft.
Felt Cost	\$37.25
Inserts for leveling feet	4 1/4-20 Inserts For 1" x 1" Steel Tube
Leveling Feet	4 1/4-20 Leveling Feet
Leveling Feet Cost	\$44.90
Wine Rack Total Cost	\$537.01

Sedona Wine Rack #12 Construction Data