

Trapezoid Coffee Table, Designed and Fabricated by Mark Langlois



About the man behind the design and fabrication of the Trapezoid Coffee Tables.

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, Buddy Miller, 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, Metalworking.

Author: Mark Langlois

Photography: Mark Langlois

Book Completion Date: December 6, 2025



Certification of Authentication and Registration Of Ownership

Trapezoid Coffee Tables

Trapezoid Coffee Tables: From the Mark Langlois Catalog of Designs, Iteration Number 121775-9A, Numbers 00004 and 00005.

Construction: Top, .125" Thick Steel Plate, Table Frame, 1" Steel Tube, Welded Construction, Design Creation Date, August, 2025.

Original Design By Mark Langlois, Created By Mark Langlois

Purchased By Gifted To Mark & Marianne Langlois

Date November 10th, 2024

Color Prismatic Color: Bronze Chrome/Metallic, PMB 4124, Clear Vision-PPS 2974

Design Iteration Number: **121775-9A**

Registration Number: **ML-ISC-9A-**

0	0	0	0	4
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Registration Number: **ML-ISC-9A-**

0	0	0	0	5
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Signature Plate Located
Under Top Plate In Back Center

	Designed & Created By Mark Langlois Reg. No. ML-ISC-9A-00004	
	Designed & Created By Mark Langlois Reg. No. ML-ISC-9A-00005	

Introduction:

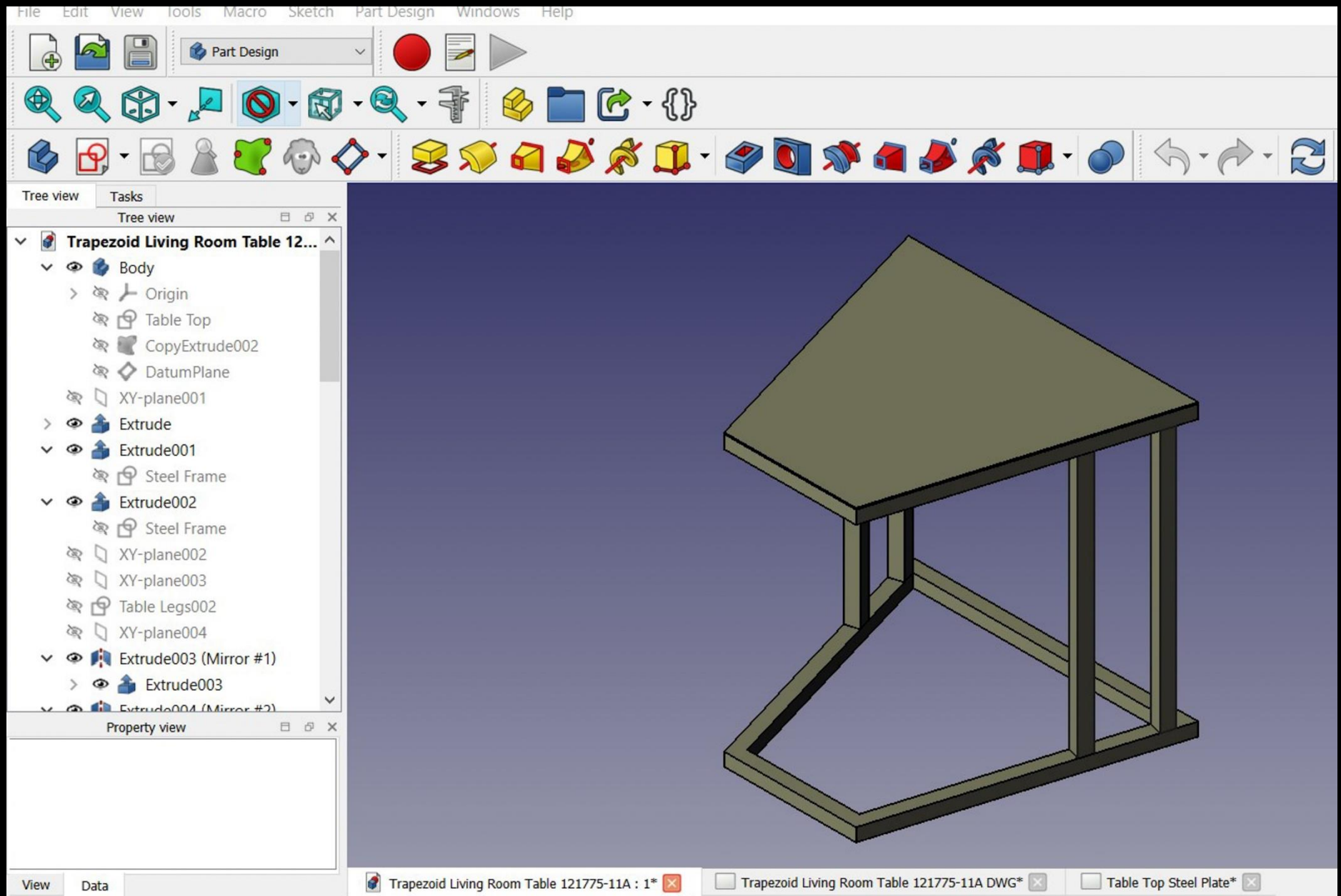
The creation of the Trapezoid Coffee Tables was driven by the need for a functional set of tables to complement the new living room chairs that my wife had purchased.

The criteria for the table design was driven by the geometric placement of the chairs in the living room. There are four chairs in the Livingroom; two sets opposite each other. Each set of chairs are angled inward toward each other, leaving a triangular space in between each of the two chairs.

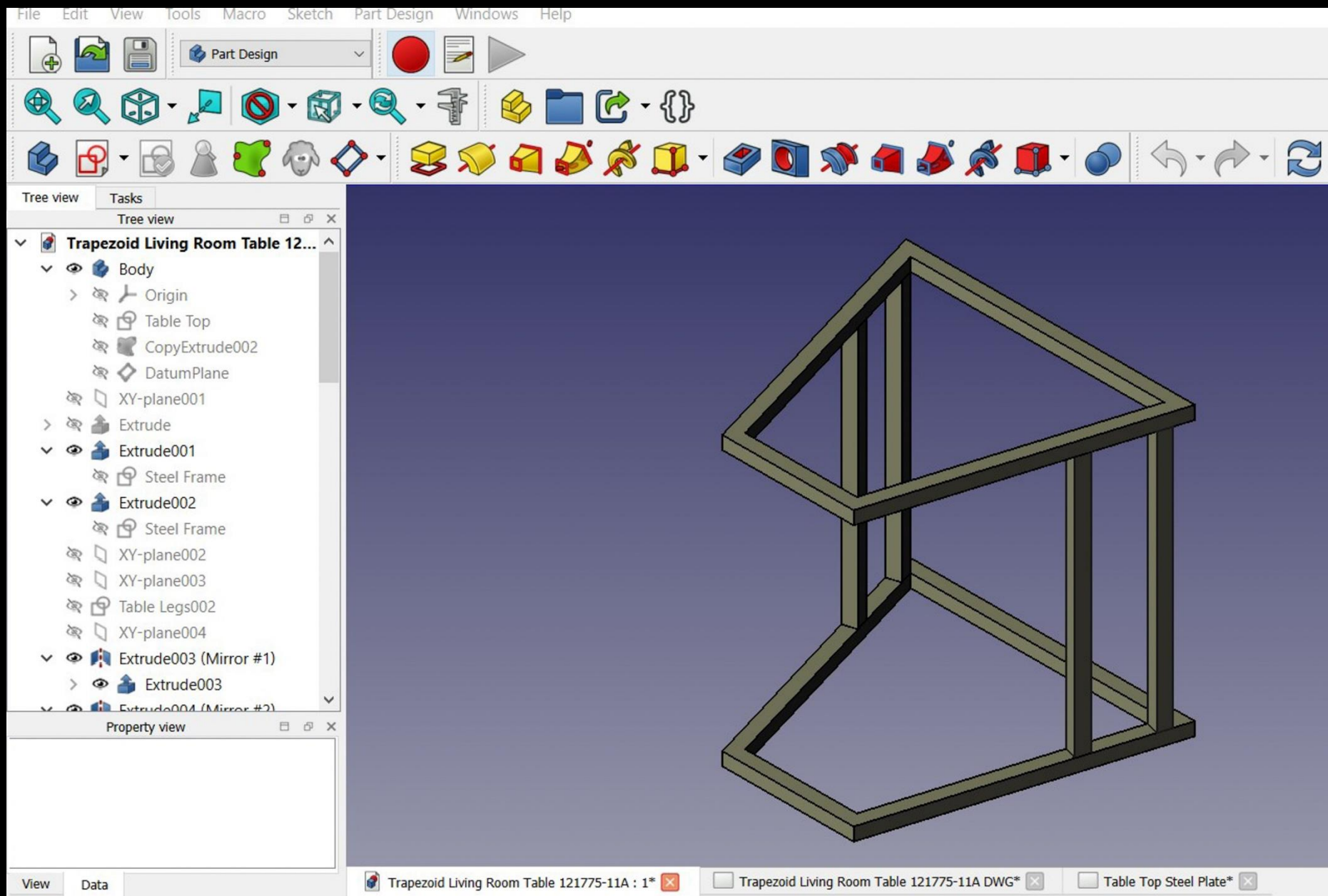
I measured the distance between the two chairs in the front to get a size and then the distance between the chairs at the back. I chose a depth that I felt provided a suitable reach for a person on either side. I decided to make the table shape a trapezoid rather than a triangle for aesthetic purposes. For further functionality, I designed the tables with an open base that allowed them to slide under a sofa, or put end to end, so they could be leveraged for other sitting configurations.

The table frames are 1" steel tube and the top is .125 steel plate. They are fabricated using welded construction and then powder coated. The tables are 10" in the front, 22" in the back and are 20" in height.

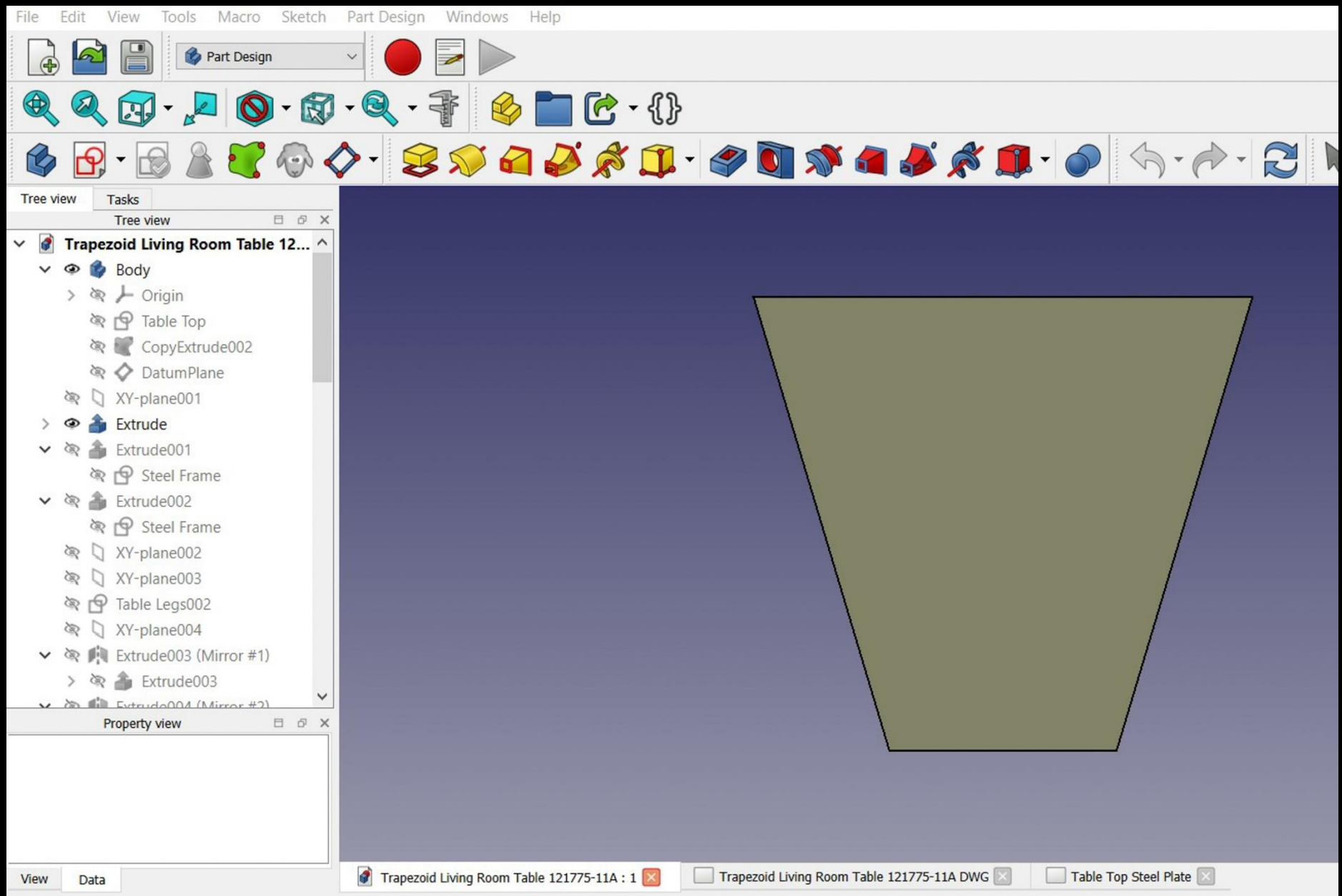
The Trapezoid Coffee Tables is part of a catalog of my other designs. The Trapezoid Coffee Tables is design iteration number ML-ISC-121775-9A-00004 & 00005.



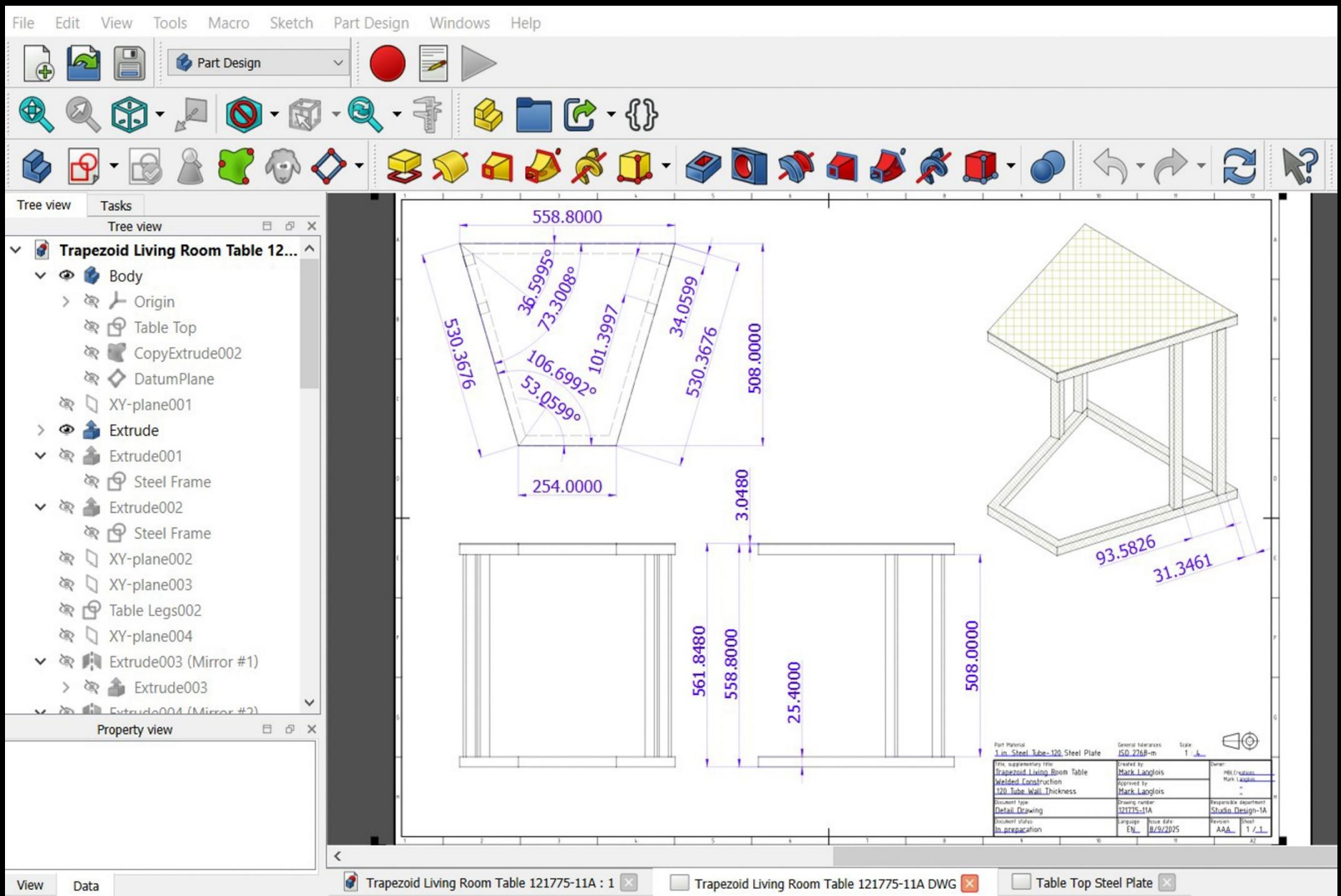
Parametric Solid Model Of Trapezoid Coffee Table In FreeCAD



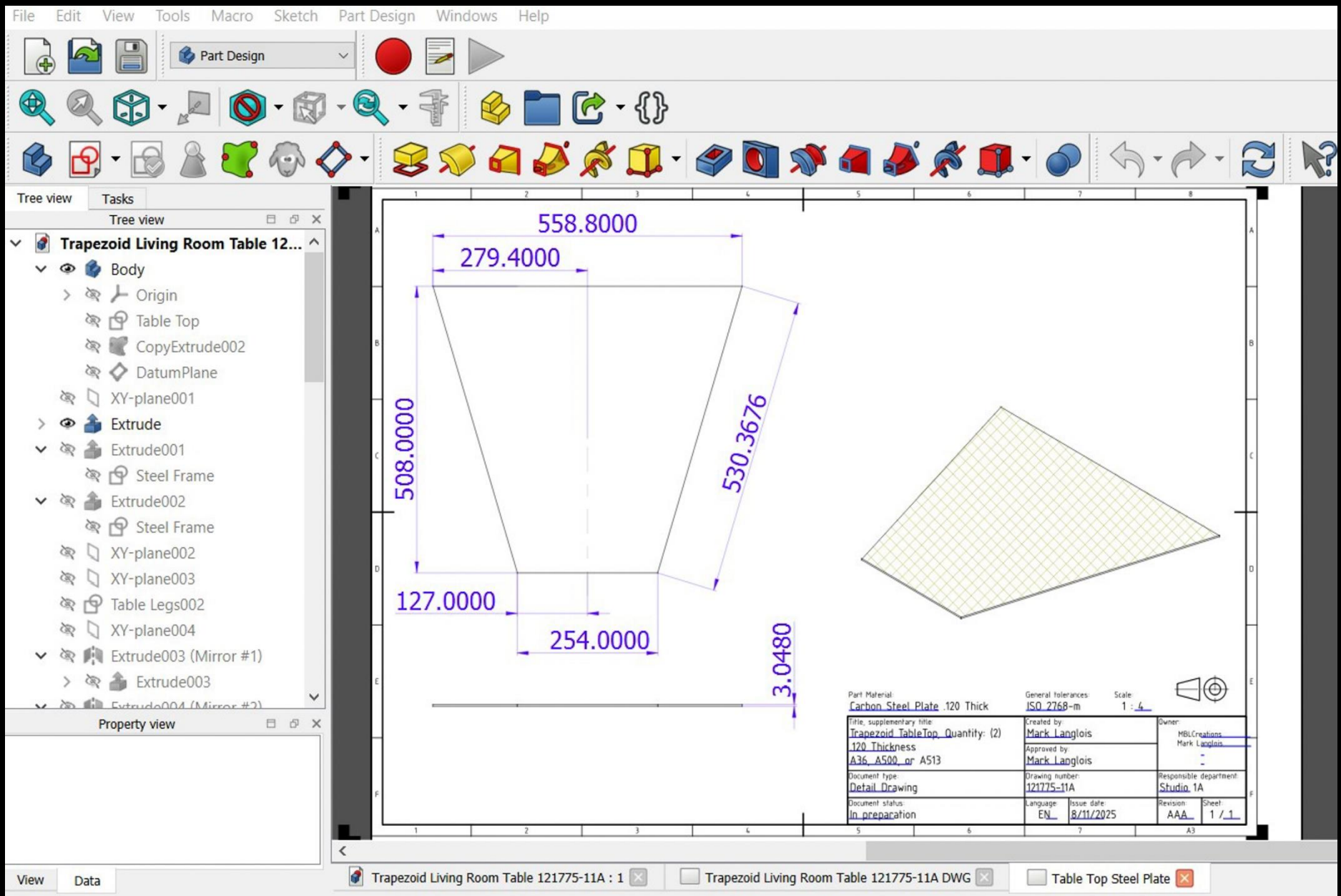
Parametric Solid Model of Trapezoid Coffee Table Frame In FreeCAD.



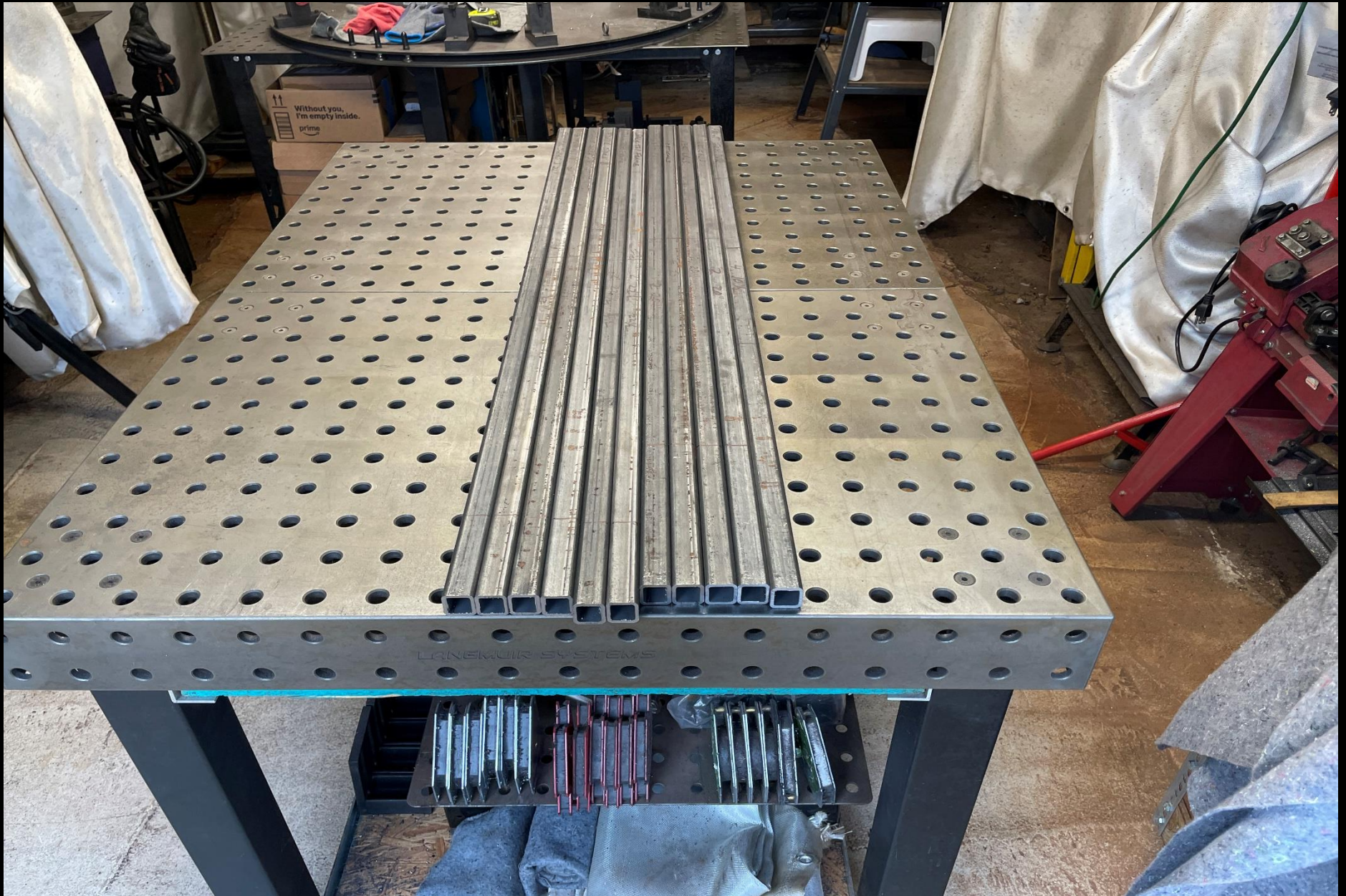
Parametric Solid Model of Trapezoid Coffee Table Top In FreeCAD.



Drawing Of Trapezoid Coffee Table In FreeCAD.



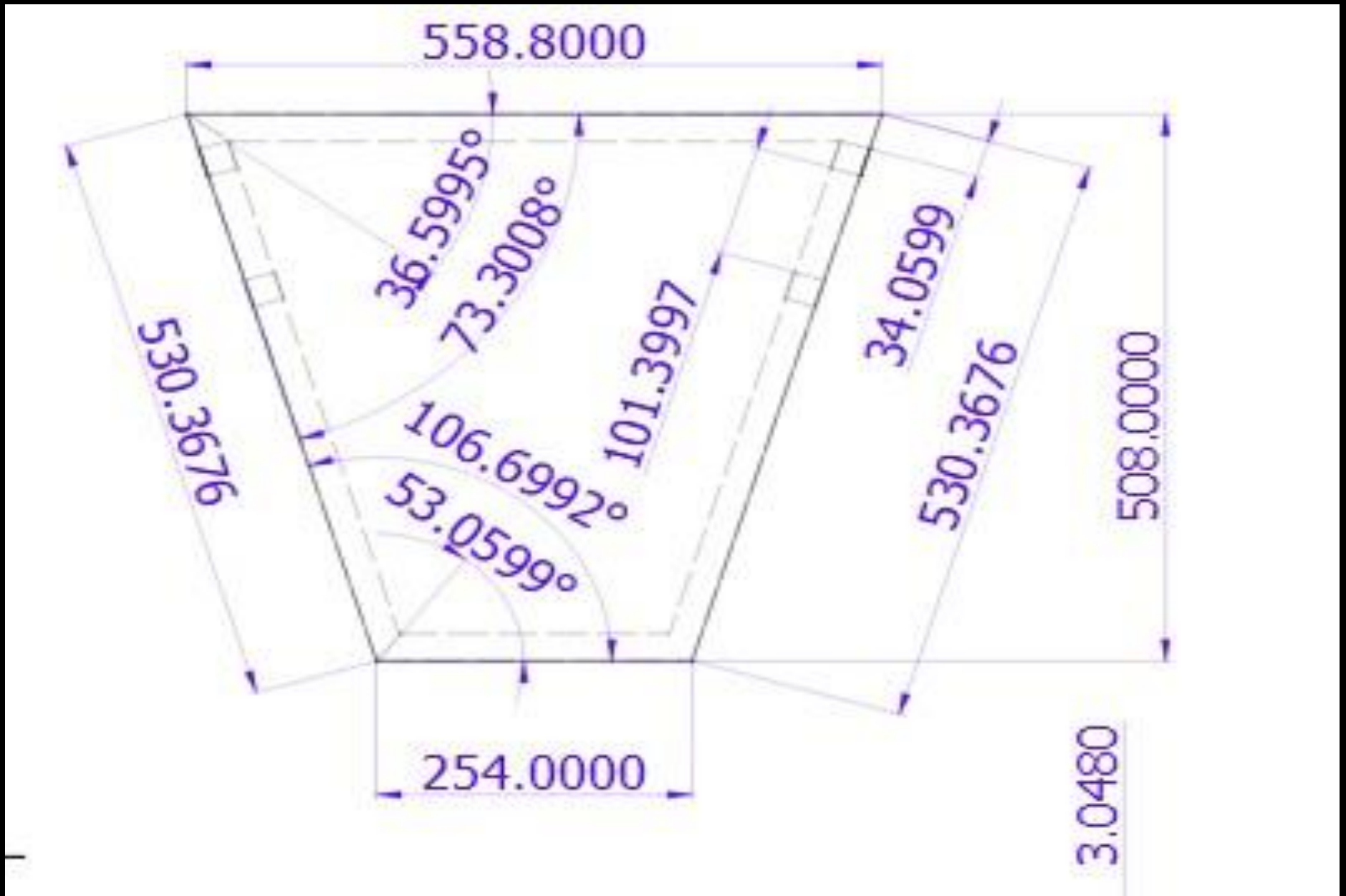
Drawing of Trapezoid Coffee Table Top In FreeCAD.



Steel bars ordered for the Trapezoid Coffee Table frame. The bars are 48" long & have a wall thickness of .120". These bars will be cut into the necessary component sizes.



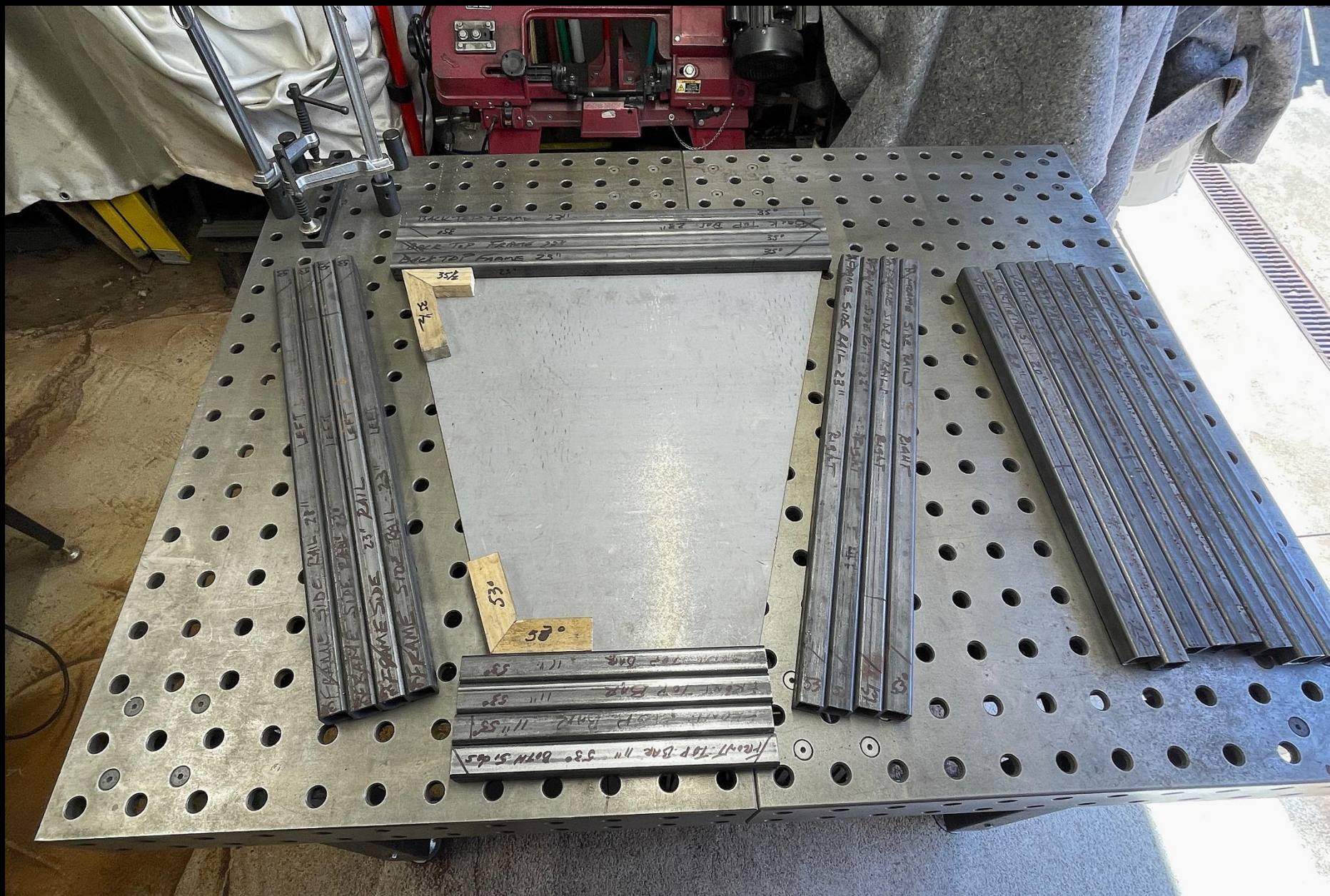
I've cut 48" bars into the necessary component sizes for the two tables. The bars in front are for the legs and side rails and the one's in the back are front and back rails.



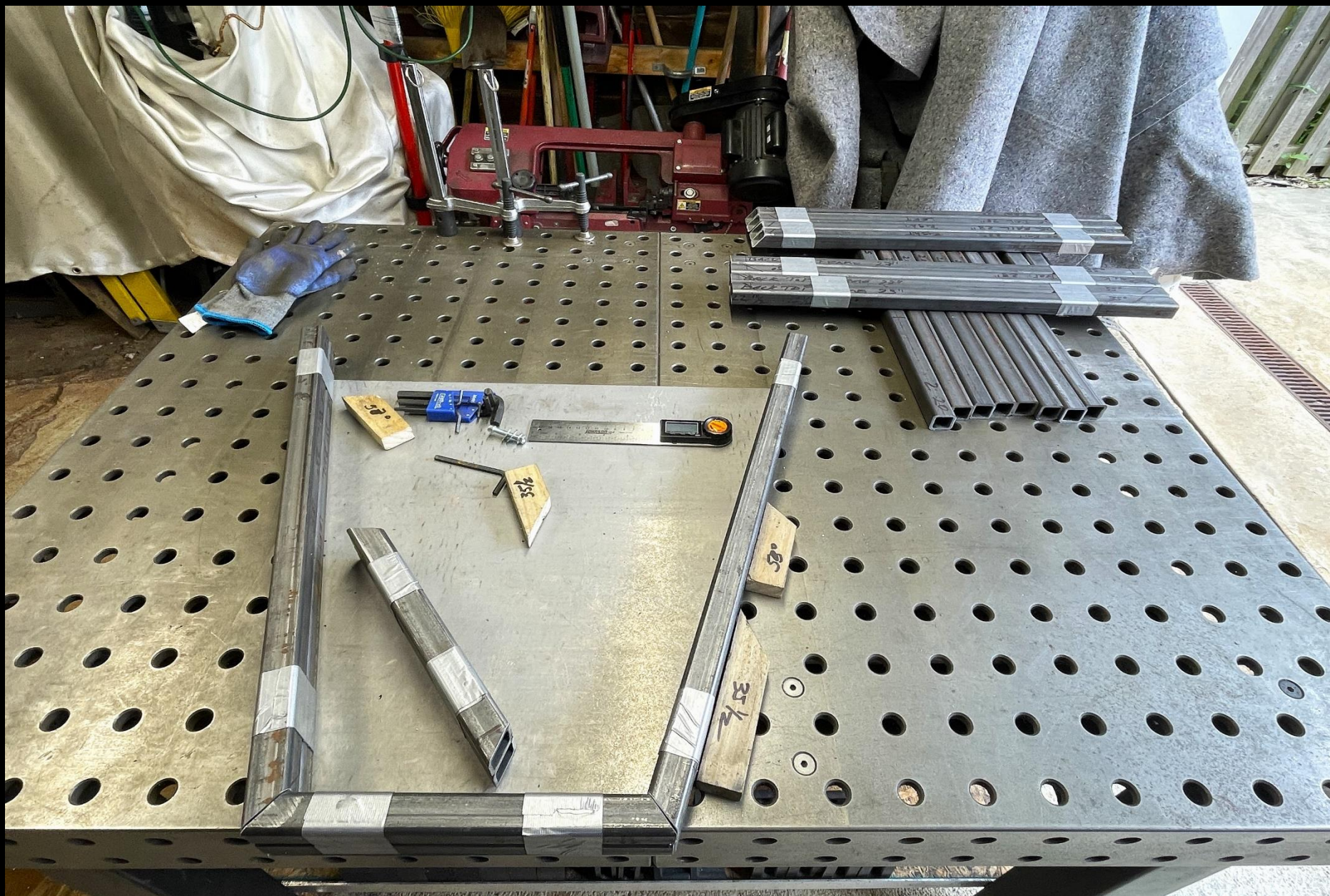
The Trapezoid Table requires the frame to be miter cut to 36.5 degree angles in the back and 53 degree angles in the front.



I experimented cutting the frame miters using wood to make sure that I had the correct angles. The frame bars have to be flipped in the saw to get the correct mating miter.



The table frame bars are laded out along the table top and marked with their respective mating miter angles; front miters are 53 degrees, back miters are 35 degrees.



I've completed the miter cuts on the front & front side frame bars to the mating angle of 53 degrees. The bars are taped together so I only have to make one cut to get two bars.



The miter cuts for back frame components at 35 degrees are done. Now, I must evaluate the miter cuts for fit around the table top and make adjustments as needed.



The mitered table top frame rails are positioned and clamped to the table top. I will tack weld the miter joints to keep the frame rails in the correct location.



The tack welding process was completed for the other top frame and both bottom frame rails using the table top. I now have a set of four duplicate frame rails to finish weld.



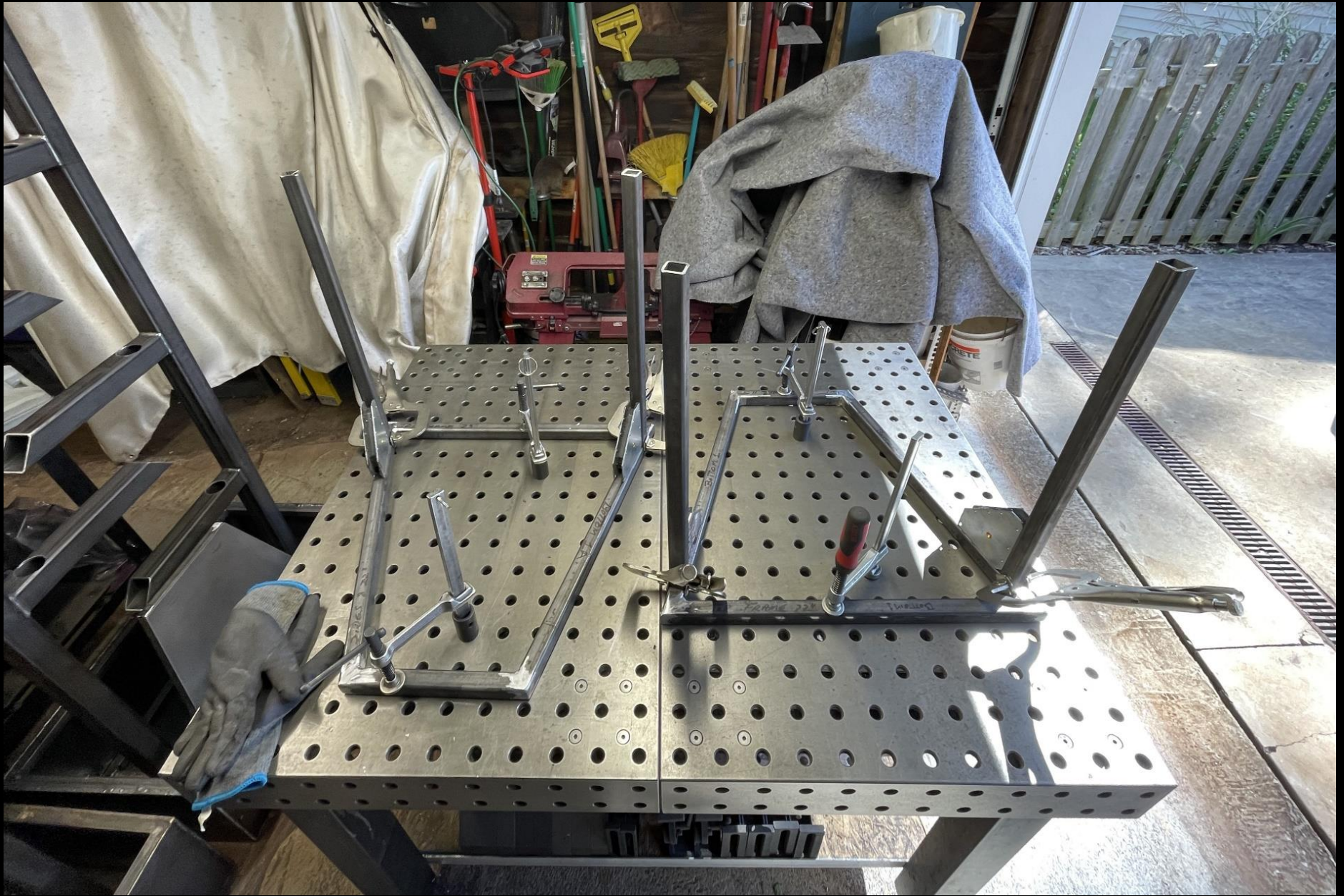
The frames are now welded. The step is to finish grind all of the welds on each of the miter joints, so I can weld the top plate to the top frame and legs to the bottom frame.



The finish ground top frame is mated to the table top and clamped in place for welding.



Both table tops and top table frames have been welded together.



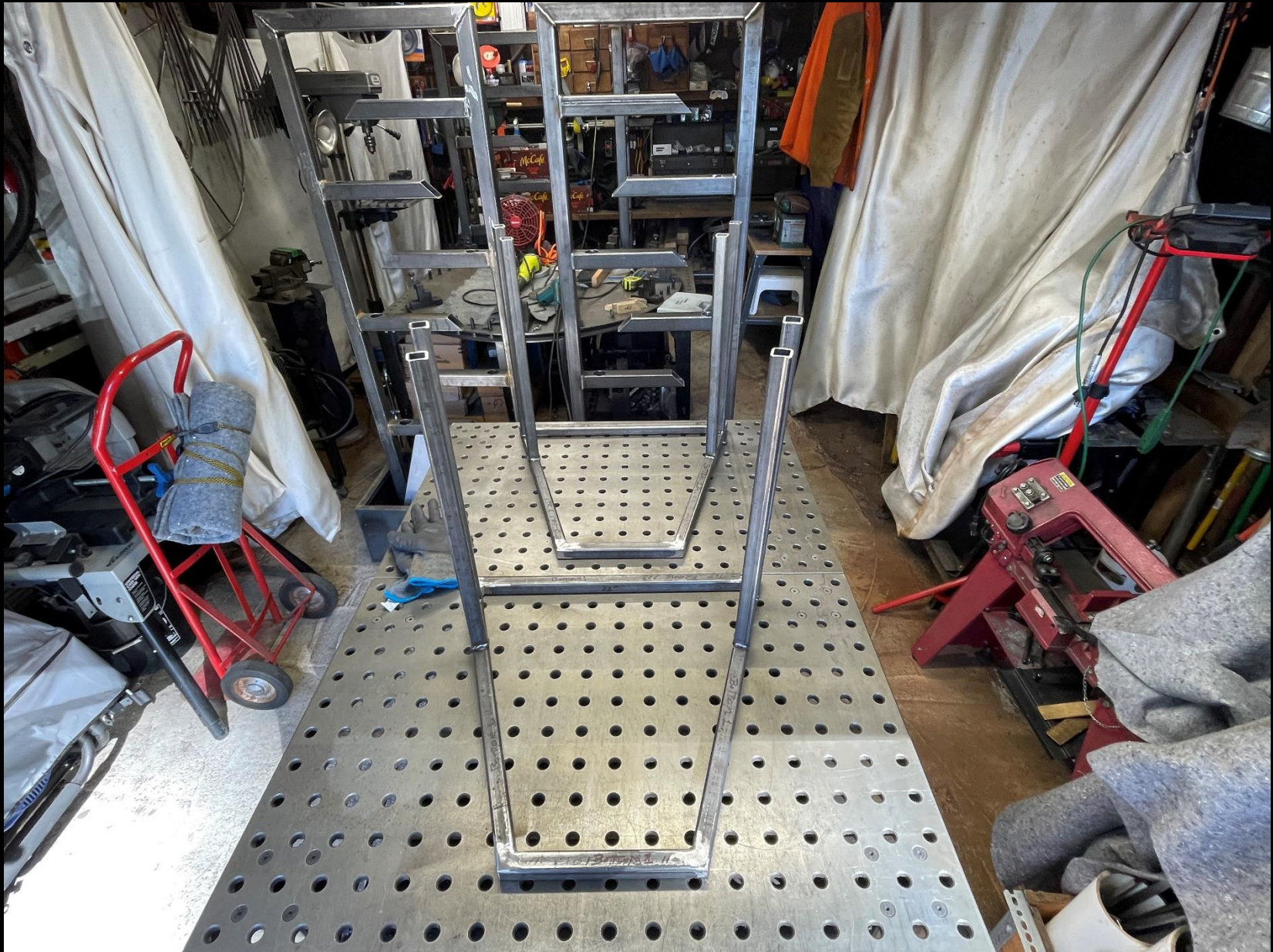
The finished ground bottom frames are fixtured to weld the first table leg onto the frames. I am using magnetic squares to keep the legs vertical and square to the frame.



I am using clamps to keep the legs parallel to the side rails at the bottom. I will tack weld these first set of legs to keep them in the correct location.



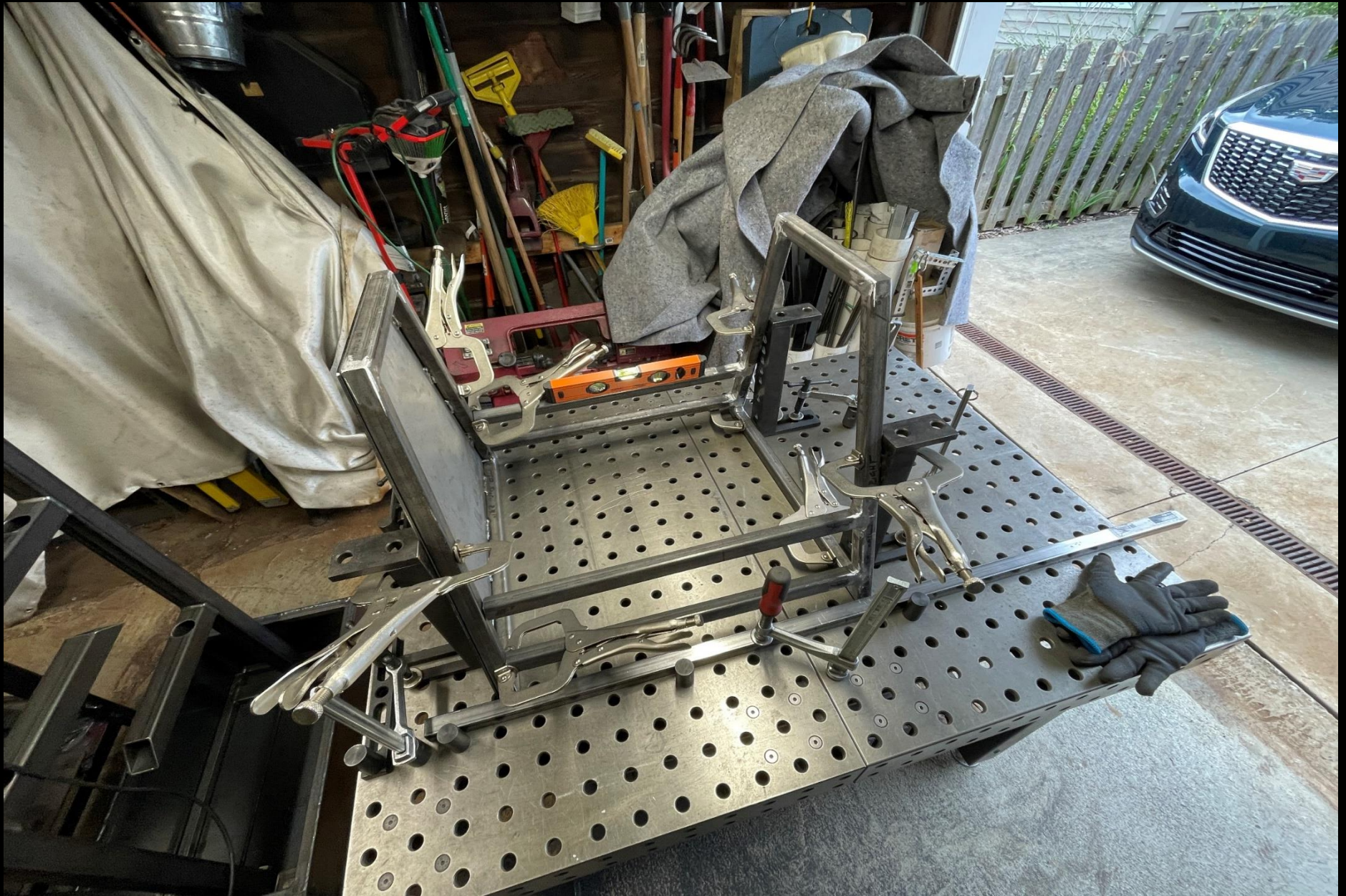
I repeated this same process for the second set of legs, however, I used a square vertical fixture bar to keep the legs parallel with the frame side rails.



The two legs for the table are now welded to the bottom frames. Now, I have to repeat the finish grinding process on the bottom frames where the legs are attached.



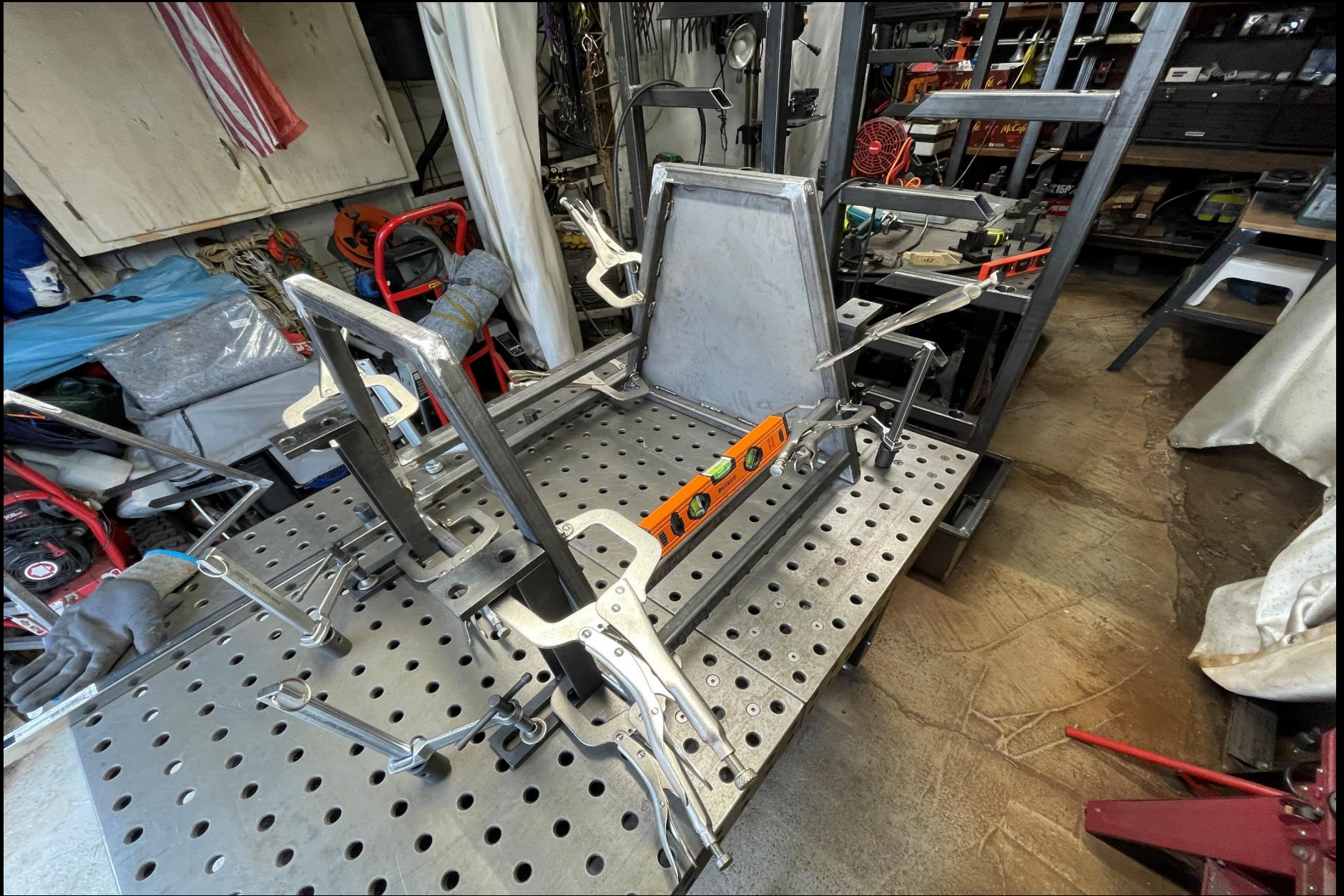
Mating the table top to the table legs/base was a very involved process. The top and bottom base need to be both parallel to each other and in the same location.



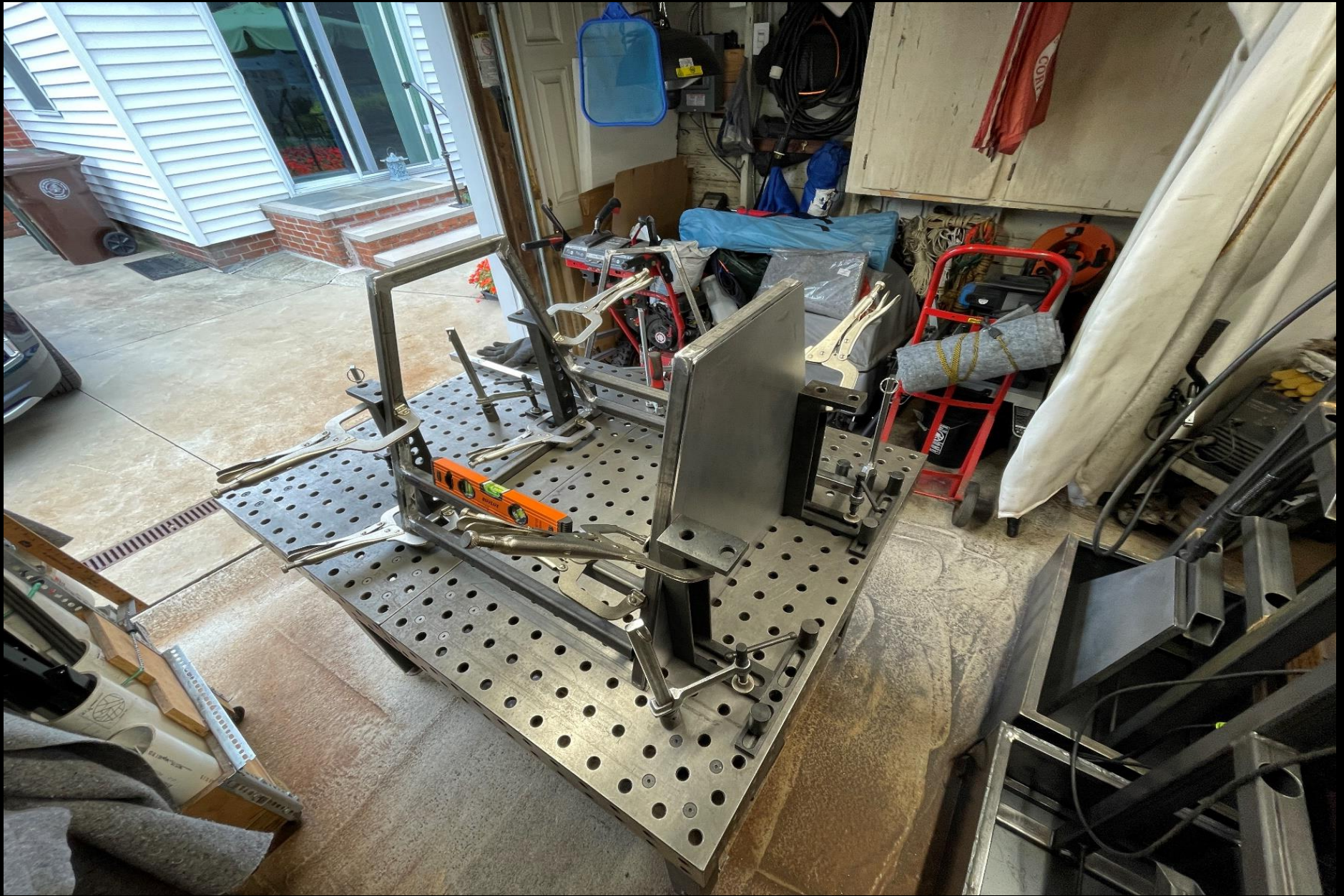
Two vertical fixture bars squared to the weld table provided the vertical position for the top. A parallel bar on the side fixed the horizontal position for the top and bottom.



I used the same method to keep the table base vertical & square as the top, using vertical fixture bars. I slid the base clamped on these bars until the legs hit the top.



I clamped one set of legs to the table top on both sides and checked to see how level and square the legs were to the top and bottom frames.



I tack welded one leg on each side and then checked to see if the legs had moved out of square. Then, I tack welded the other two legs to the table top.



I completed welding the table base to the table top. I repeated this process for the second table.



After welding both of the table bases to the tops, I need to finish grind these welds to a smooth finish to complete the tables.



The Trapezoid Coffee Tables are now finished and ready to go to powder coating.

Bill To:

**InterSystems Consulting LLC
Mark Langlois**

Date: 9/10/2023

- 1) Mask off Signature Plate on table before sandblast
- 2) Sandblast Tables
- 3) Mask off Signature Plate on tables before Powder Coating
- 4) Powder Coat Tables
- 5) Colors must match registration numbers on table

Customer: 7

Quantity: 2

Table# ML-ISC-9A 00004

ML-ISC-9A 00005

Bronze Chrome / Metallic

Prismatic Color: PMB 4124

Clear Coat: Clear Vision, PPS-2974



Signature Plate Location

ML

Designed & Created By Mark Langlois
Reg. No. ML-ISC-9A-00004

ML

Designed & Created By Mark Langlois
Reg. No. ML-ISC-9A-00005

Purchase order to powder coat the Trapezoid Coffee Tables.



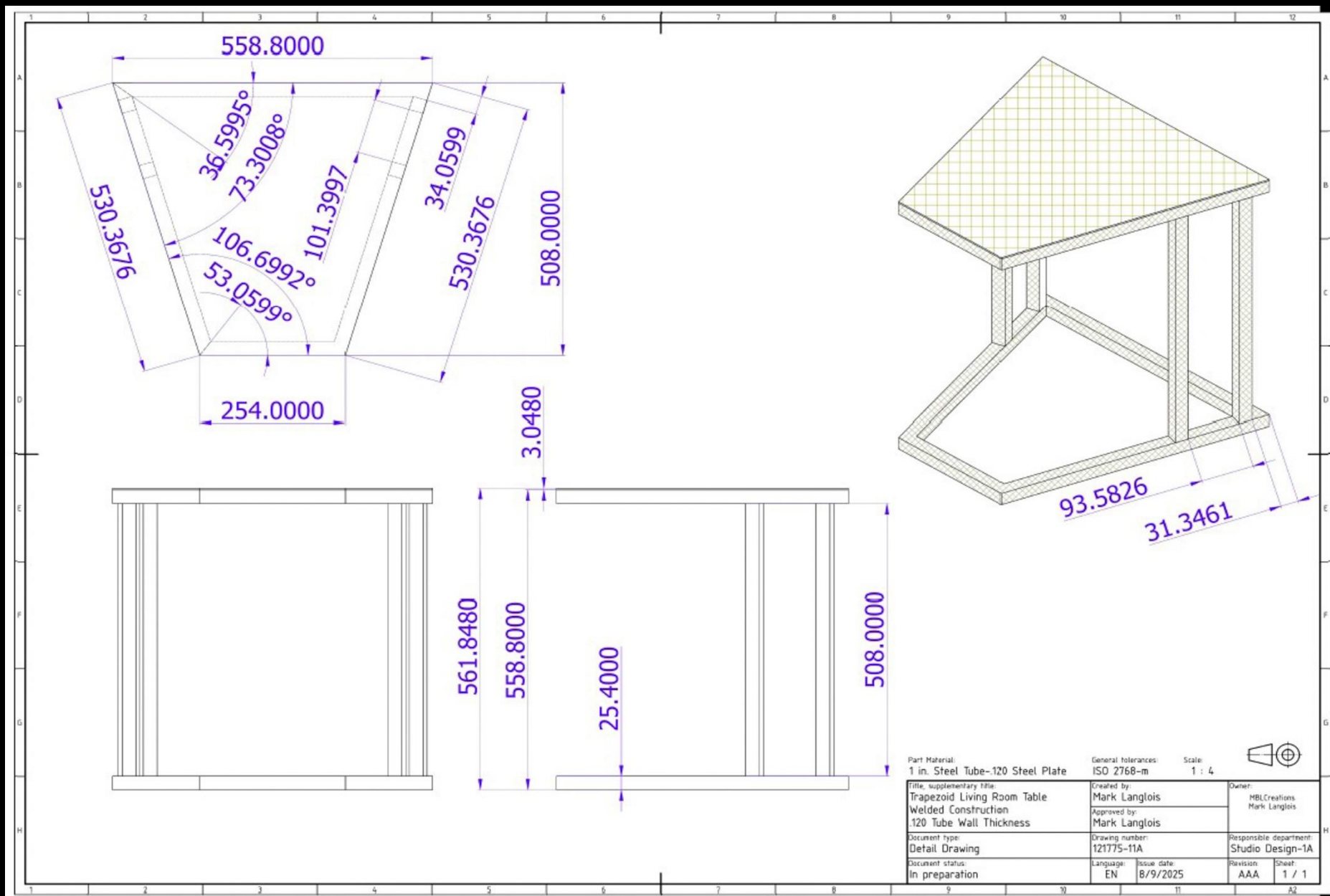
Trapezoid Coffee Tables after powder coating.



Trapezoid Coffee Tables installed in Living Room.



Trapezoid Coffee Tables installed in Living Room.



Trapezoid Coffee Table Construction Data Drawing.

	A	B
1	Trapezoid Coffee Table Construction Data	
2	Design Iteration Number	ML-ISC-121775-9A 00004 & 00005
3	Trapezoid Coffee Table Size	Front Face, 10", Back Face, 22" Height 22"
4	Material	Top: Steel Plate .125 Thickness, Table Frame: 1" Steel Tube
5	Construction	Welded Construction
6	Table Top: Steel Plate	320 Square Inches Each
7	Table Steel Frame: 1" Steel Tube, Wall Thickness: .120"	44 Linear Feet (Two Table Frames)
8	Table Top Steel Weight	11.36 lbs. each top
9	Table Frame Weight	31.6 lbs. each table
10	Total Weight of Trapezoid Coffee Table	42.96 lbs. each table
11	Steel Cost, Table Frame	\$250.35
12	Legacy Metal Services, Laser Cut Table Tops	\$92.16
13	Finish: Powder Coat	Bronze Chrome / Matillac, PMB 4124, PPS 2974
14	Powder Coat Cost	\$183.00
15	Number of Welds	84 welds
16	Table Top	20 welds each top
17	Table Frame	64 welds each frame
18	Hobart Welder Settings--Voltage	#2
19	Welding Wire Speed	#2
20	Apprximate Man Hours To Construct	60 per table
21	Total Cost To Construc Two Tables	\$525.51

Trapezoid Coffee Table Construction Data.