

Sustainable Chair

Nicholas Skiba

September 2025

Criteria	Weight	Baseline	Design 1	Design 2	Design 3
Dimensions	4	0	0	0	0
Chair Weight	4	0	+	0	0
Looks	1	0	0	0	0
Comfort	1	0	-	0	+
Ease of Build	2	0	+	-	0
Ease of Design	2	0	+	-	0
Number of Parts	3	0	0	0	0
Fasteners	4	0	0	0	0
Chance of Success	6	0	-	+	+
Total (raw)		0	1	-1	2
Weighted Total		0	1	2	7

Table 1: Chair Pugh Chart

Best Design: Design 3

This is my Pugh chart. There are many different criteria, from functionality, requirements, ease of fabrication, and looks and comfort. I choose requirements such as dimensions, weight, and fasteners to have the second highest weight(4) because it matters because it is a requirement for the project; otherwise, I can lose points. I choose the chance of success to be the highest weight as if it does not work, then the project will have failed. I choose things like ease of build and design and number of parts to have some weight as it makes fabrication time greater or less, which does not matter for the grade, however, it should not take forever to do as there are due dates. Finally, I choose the looks and comfort to have the least weight, as they really do not matter much. With these criteria and weights, I found that my third design is the best option, so I will continue with it and start CAD modeling.

FEA Images

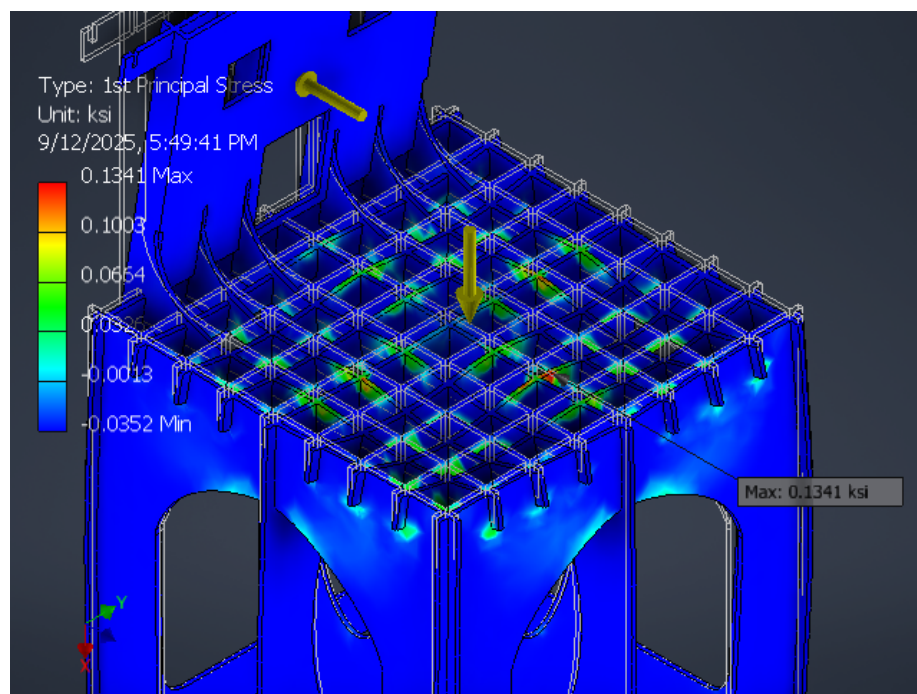


Figure 1: Stress Analysis of All Weight On Seat of Chair

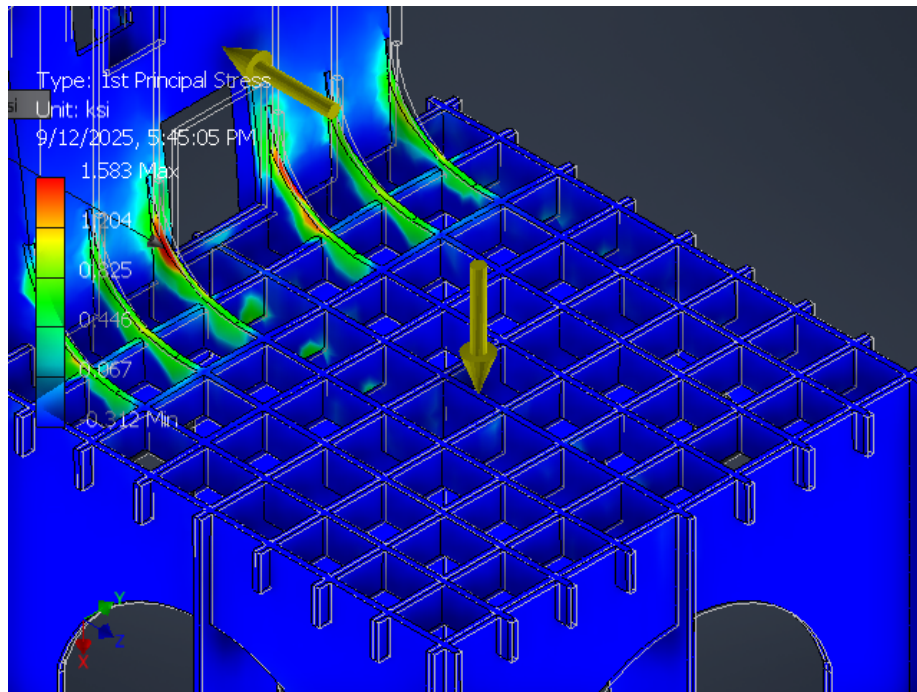


Figure 2: Stress Analysis of Half Weight On Back of Chair

Properties

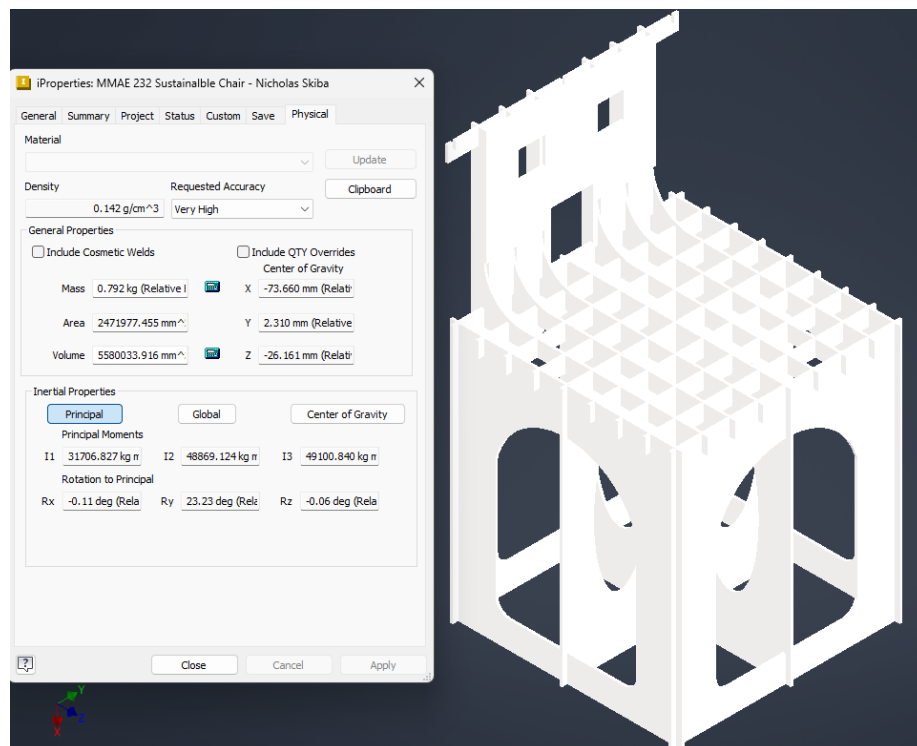
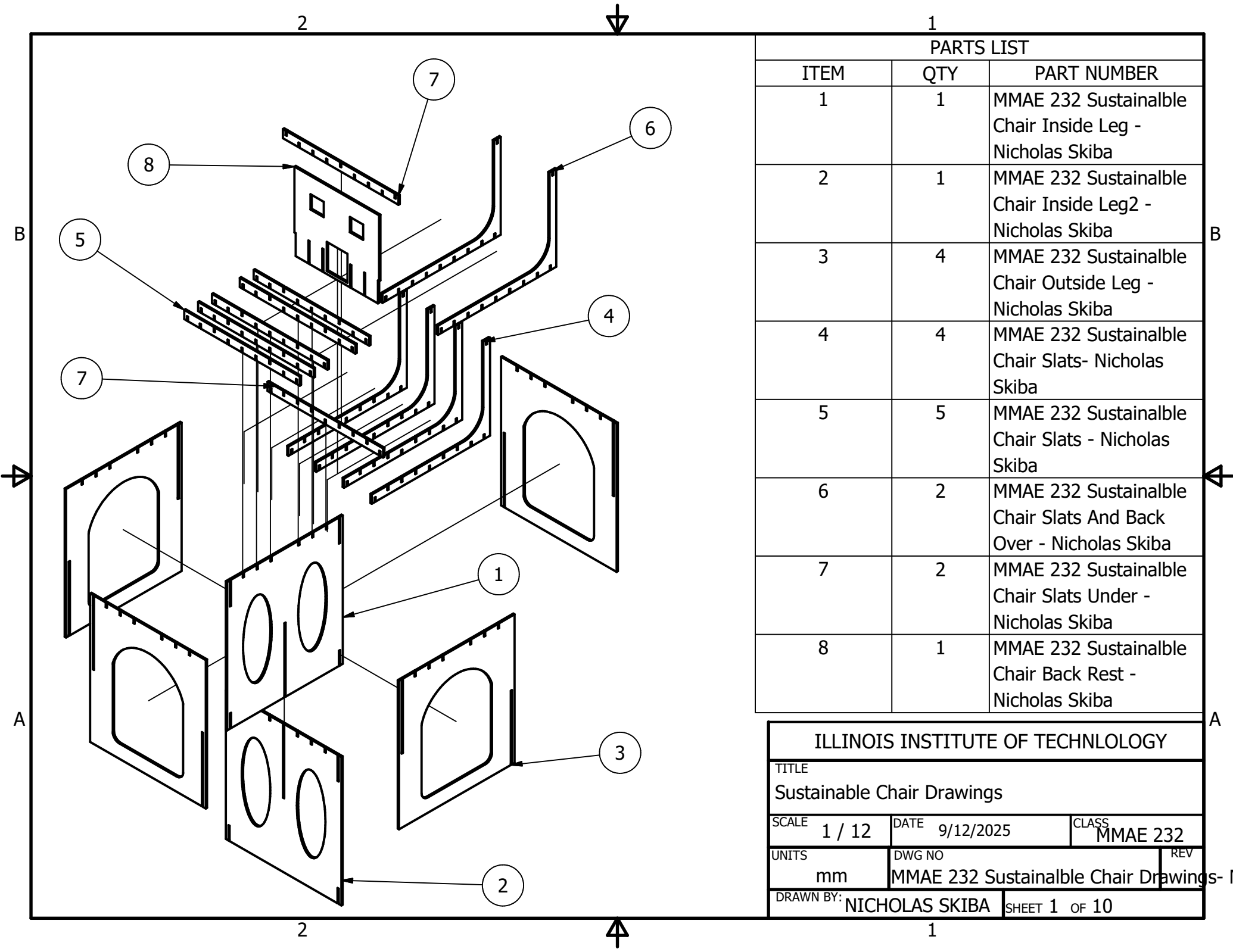
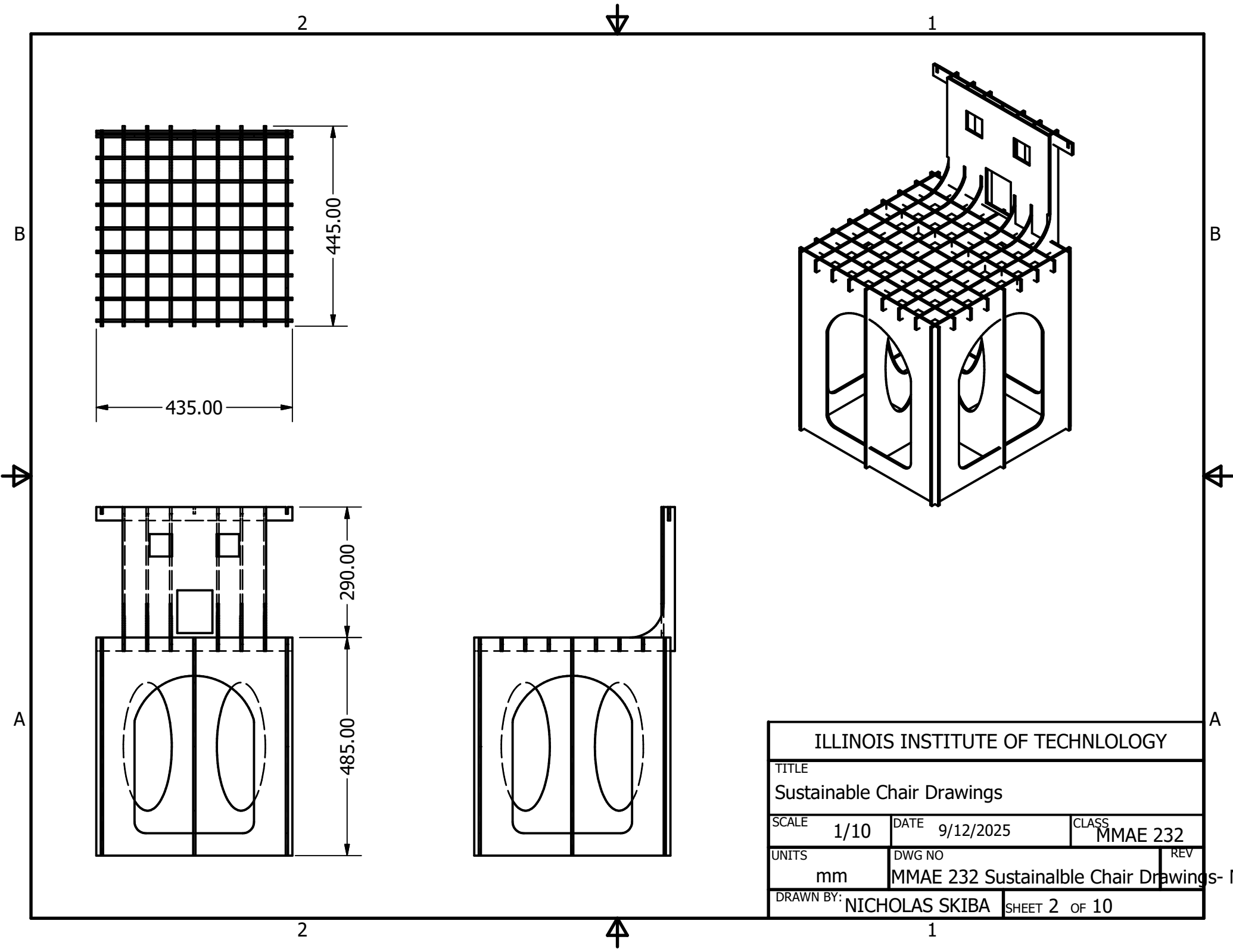


Figure 3: Properties(Correct Density of Material So Mass is Correct (792g)

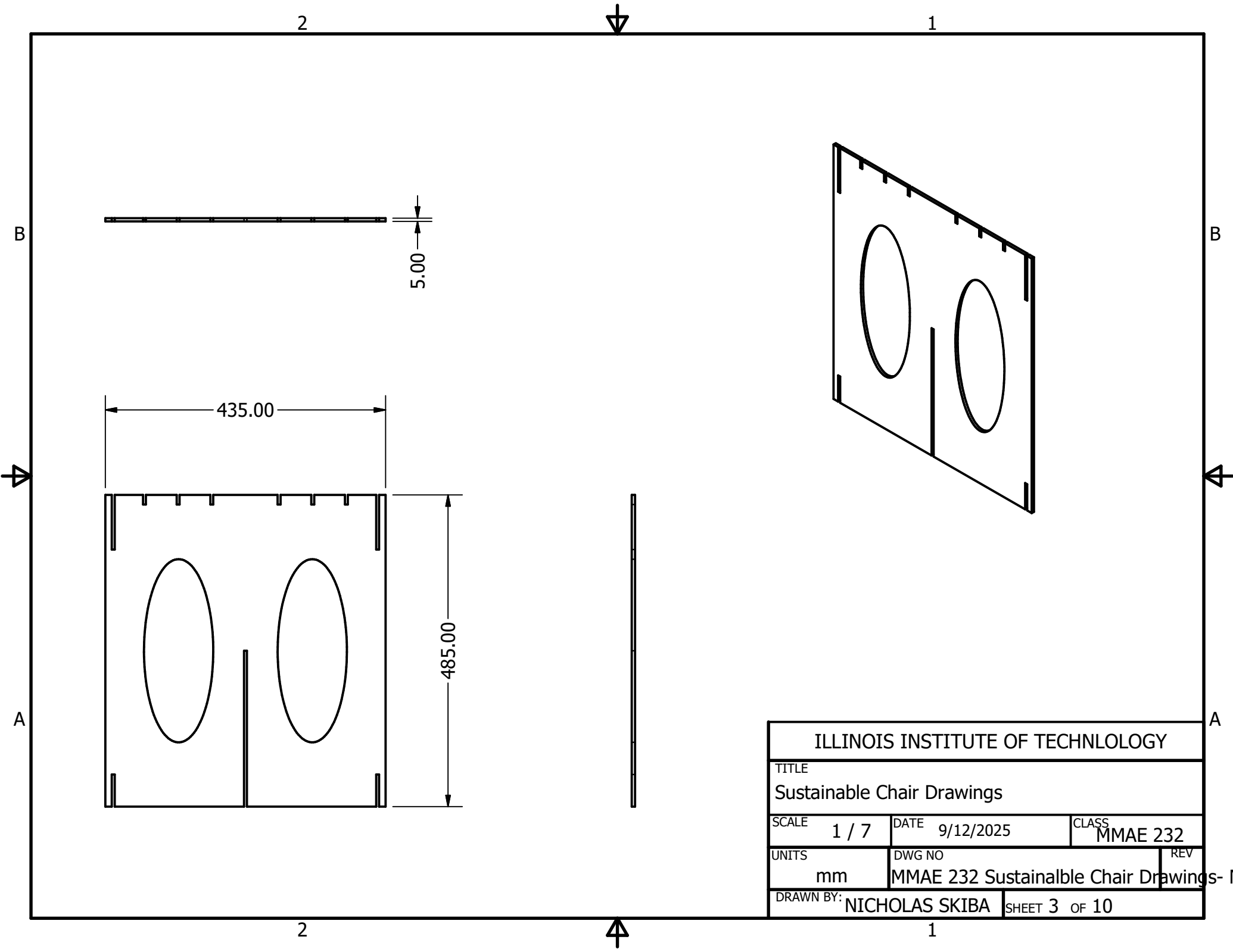


PARTS LIST		
ITEM	QTY	PART NUMBER
1	1	MMAE 232 Sustainable Chair Inside Leg - Nicholas Skiba
2	1	MMAE 232 Sustainable Chair Inside Leg2 - Nicholas Skiba
3	4	MMAE 232 Sustainable Chair Outside Leg - Nicholas Skiba
4	4	MMAE 232 Sustainable Chair Slats- Nicholas Skiba
5	5	MMAE 232 Sustainable Chair Slats - Nicholas Skiba
6	2	MMAE 232 Sustainable Chair Slats And Back Over - Nicholas Skiba
7	2	MMAE 232 Sustainable Chair Slats Under - Nicholas Skiba
8	1	MMAE 232 Sustainable Chair Back Rest - Nicholas Skiba

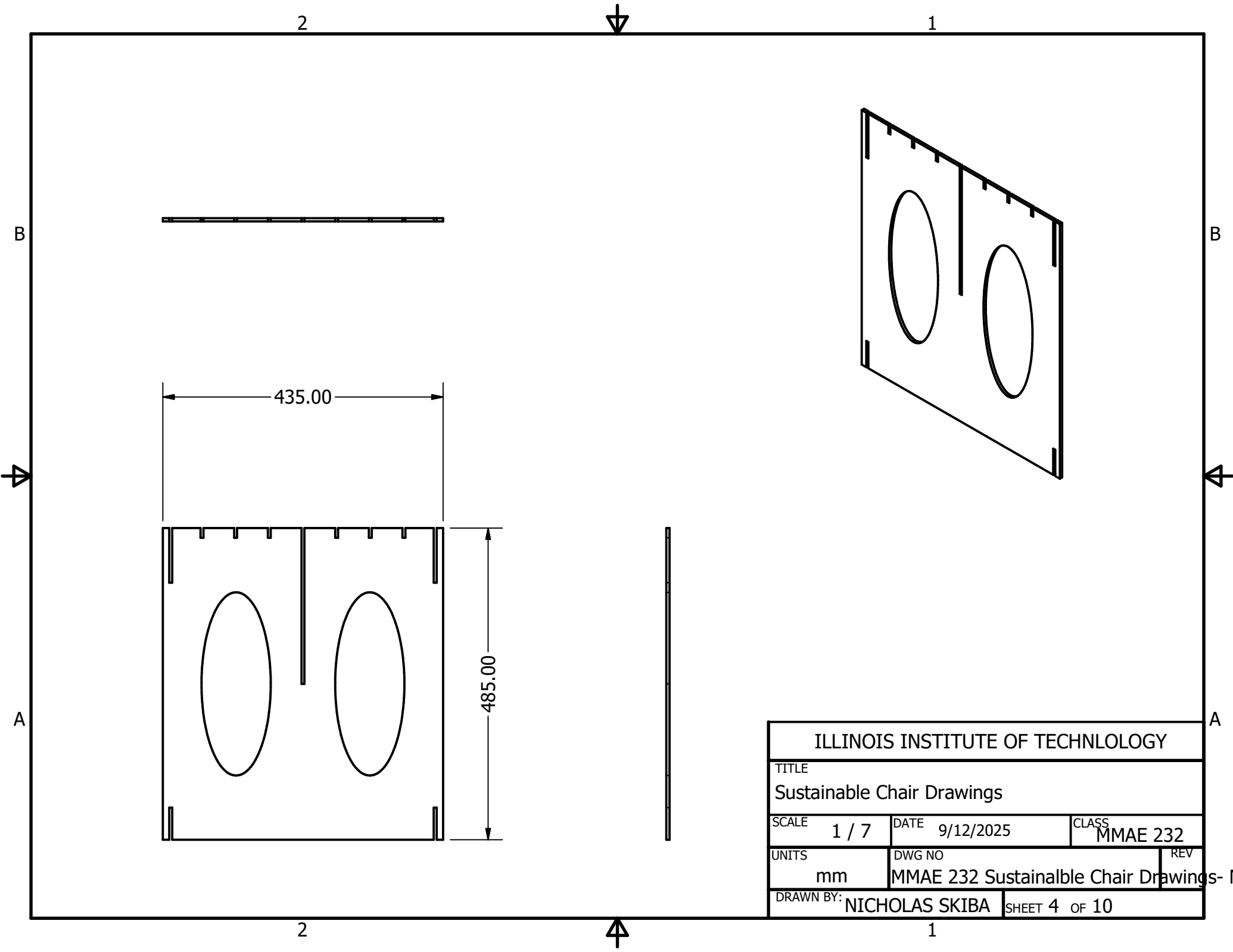
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TITLE Sustainable Chair Drawings		
SCALE 1 / 12	DATE 9/12/2025	CLASS MMAE 232
UNITS mm	DWG NO MMAE 232 Sustainable Chair Drawings-	REV
DRAWN BY: NICHOLAS SKIBA		SHEET 1 OF 10



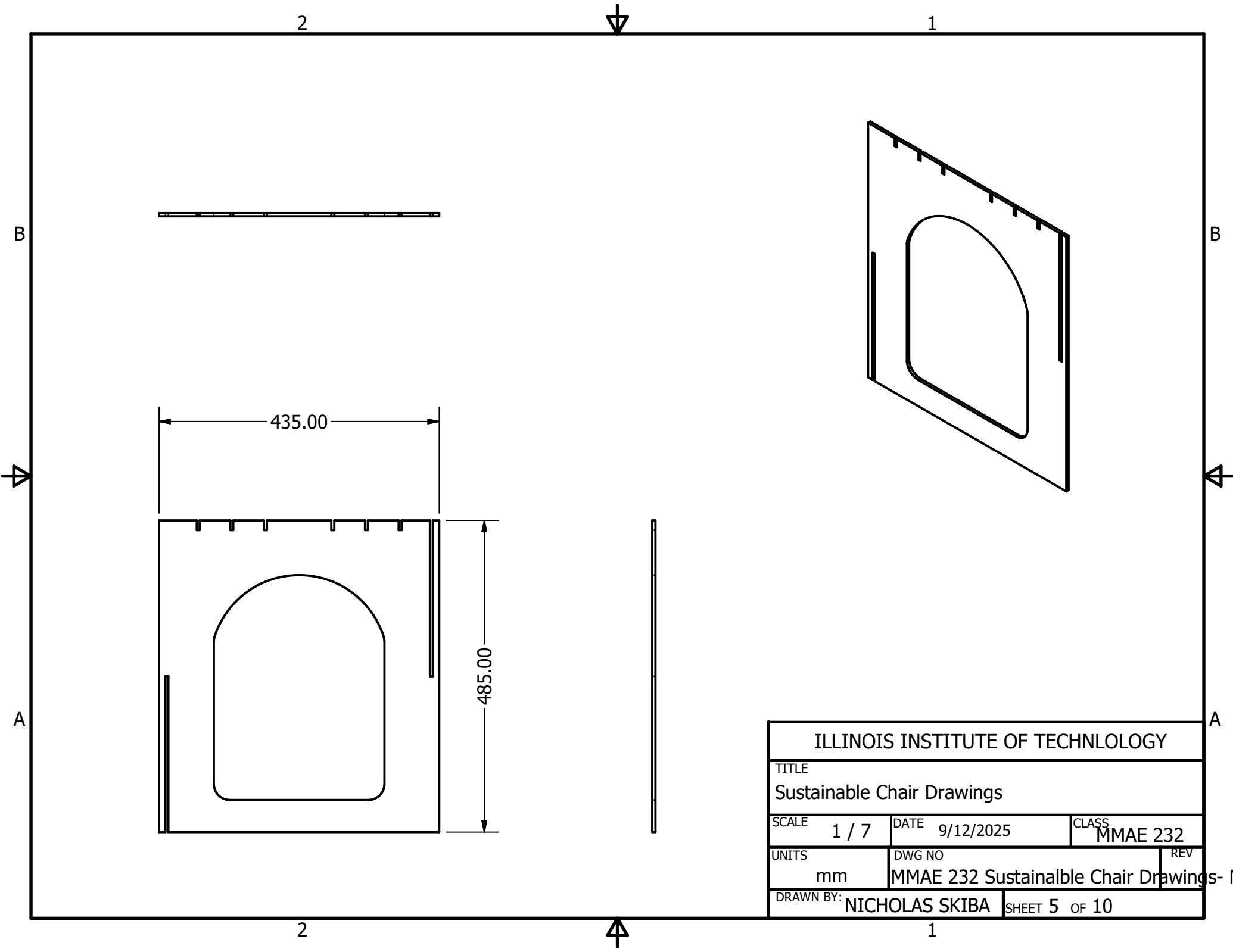
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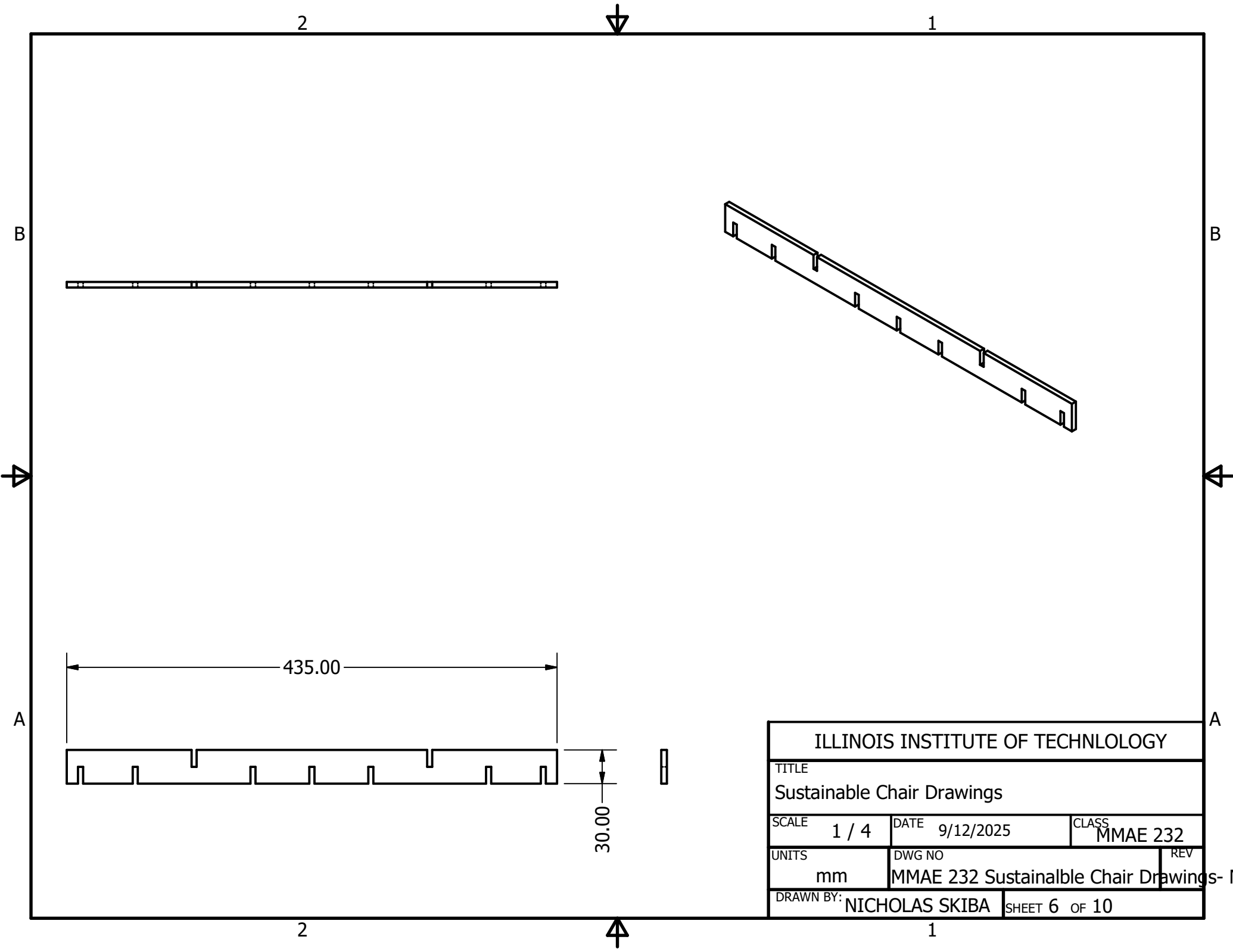
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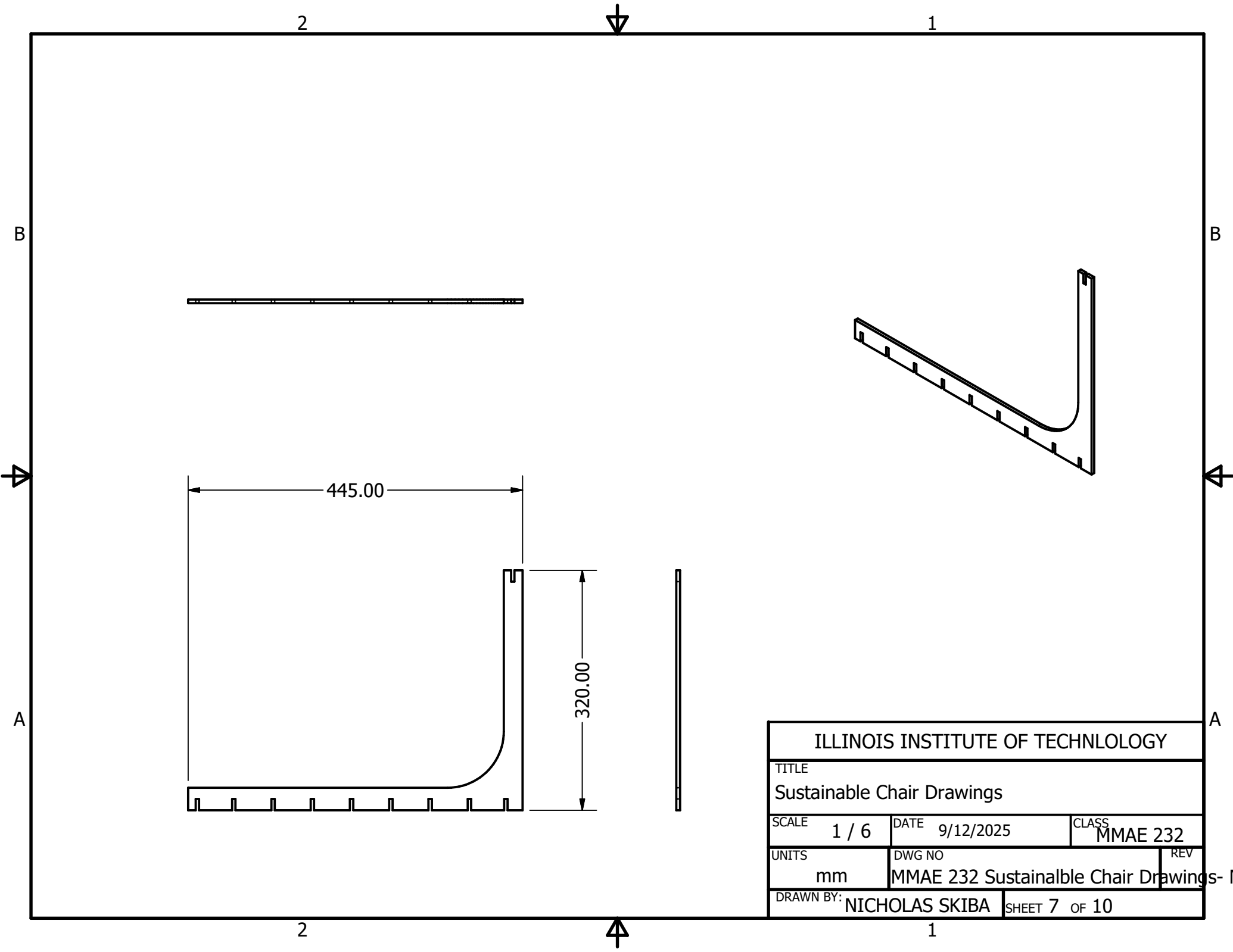
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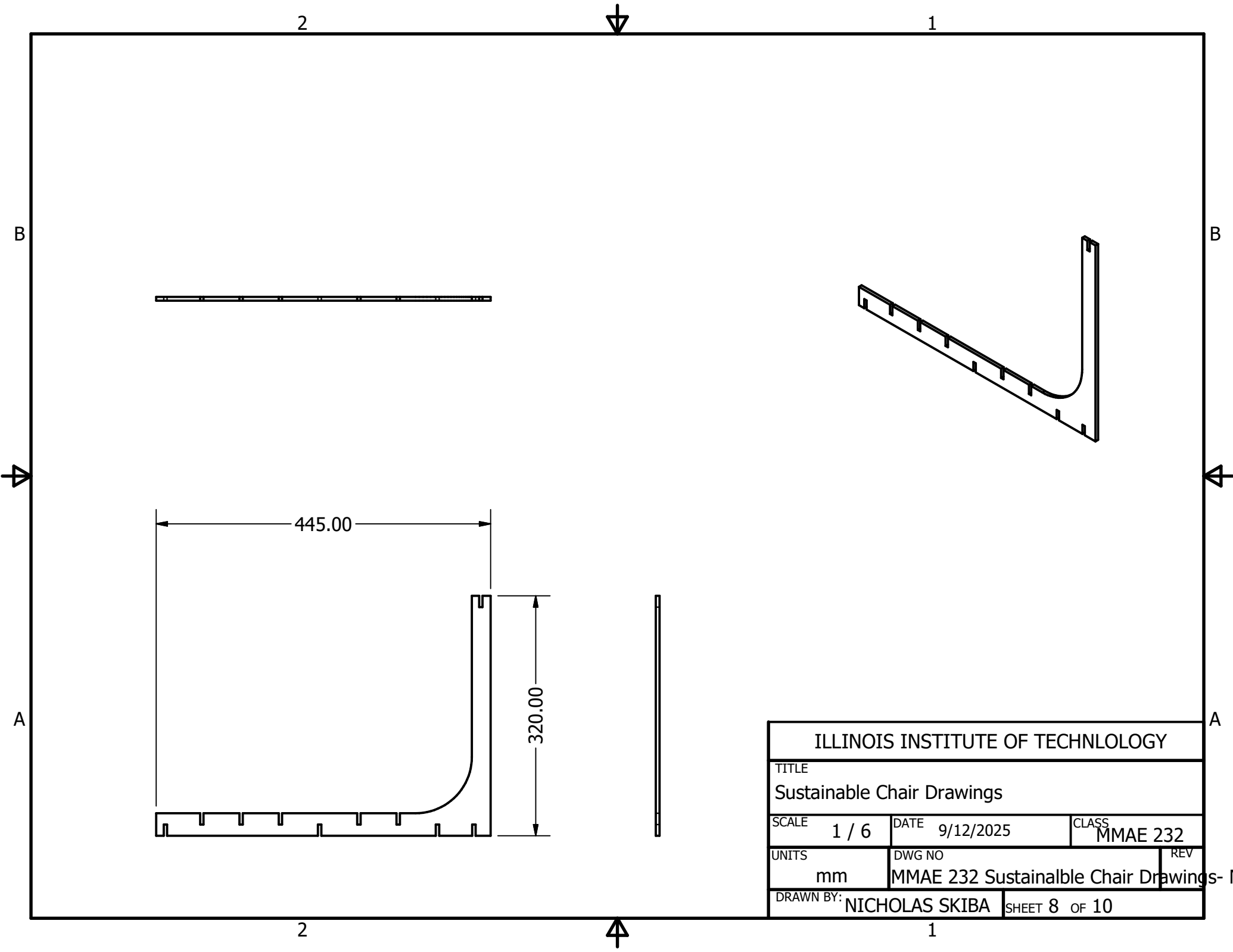
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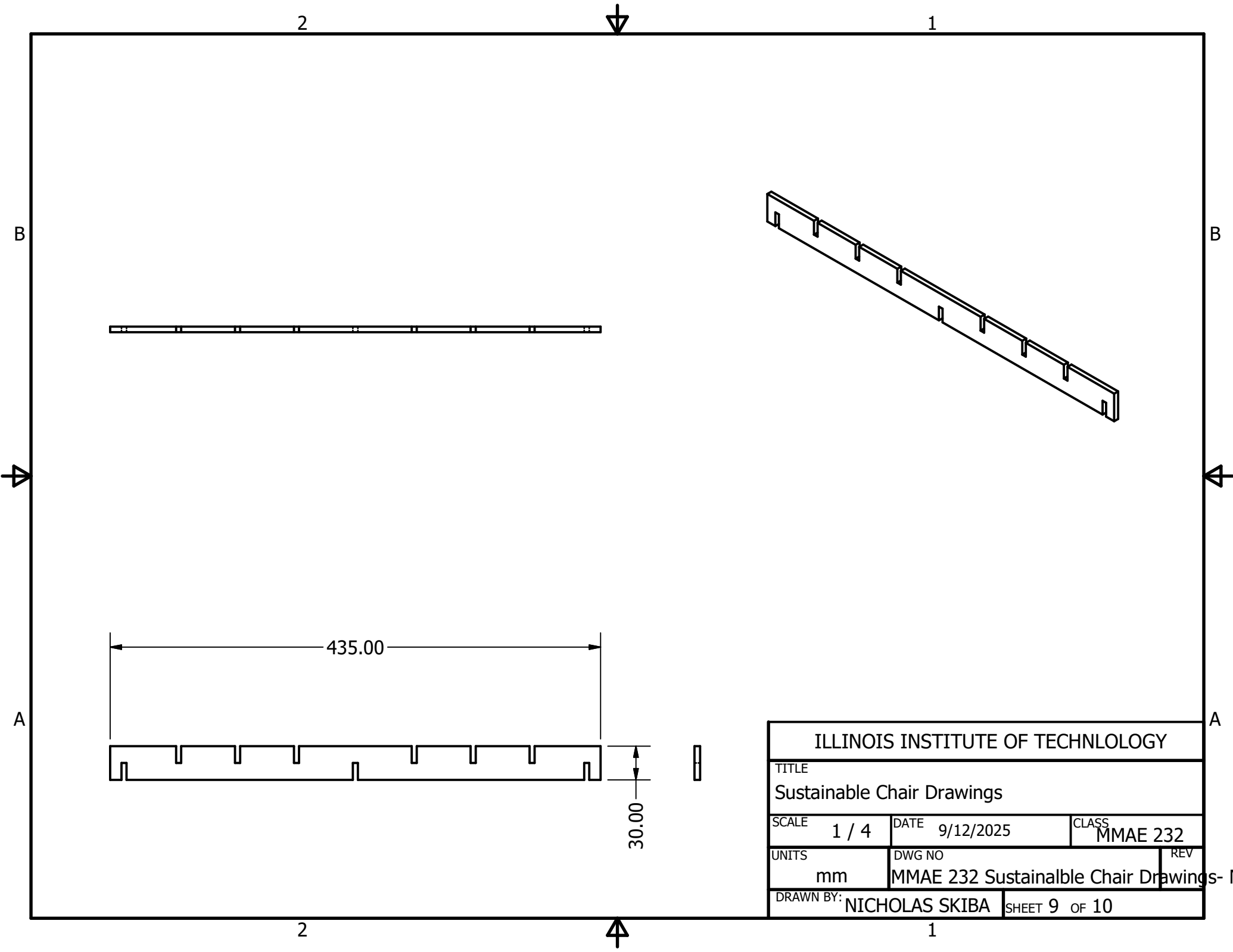
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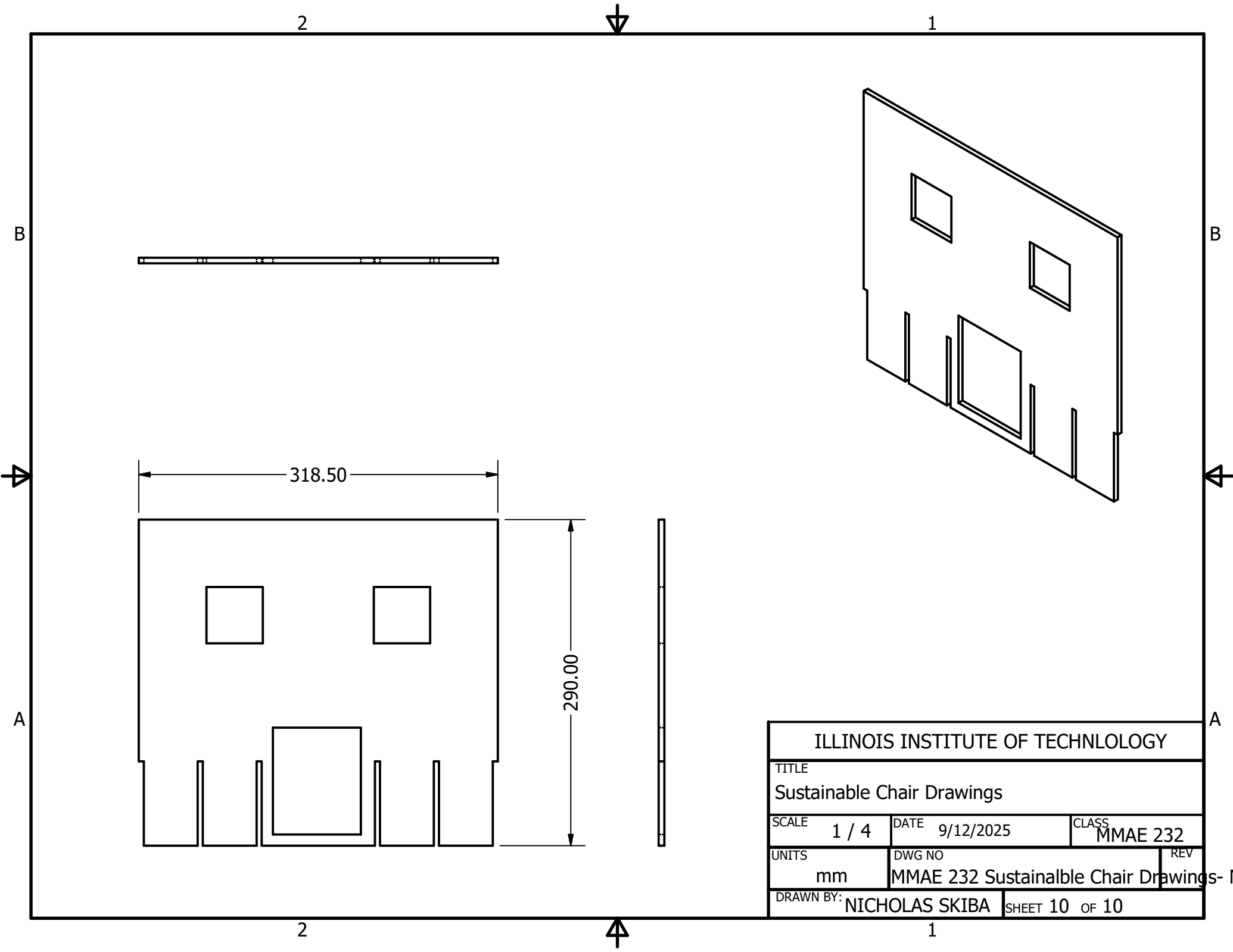
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