Christmas Ornament Display Structure

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Retrieved from mystarofbethlehem.com/home

Northern Arizona University Department of Mechanical Engineering

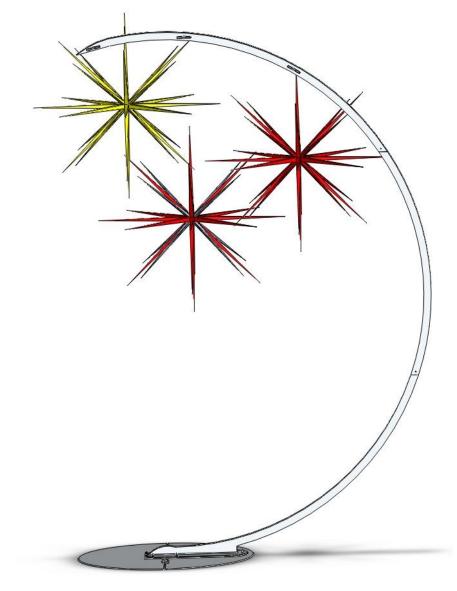
Overview

- Client background
- Final Design
- Manufacturing
- Cost analysis
- Project timeline
- Conclusion
- References

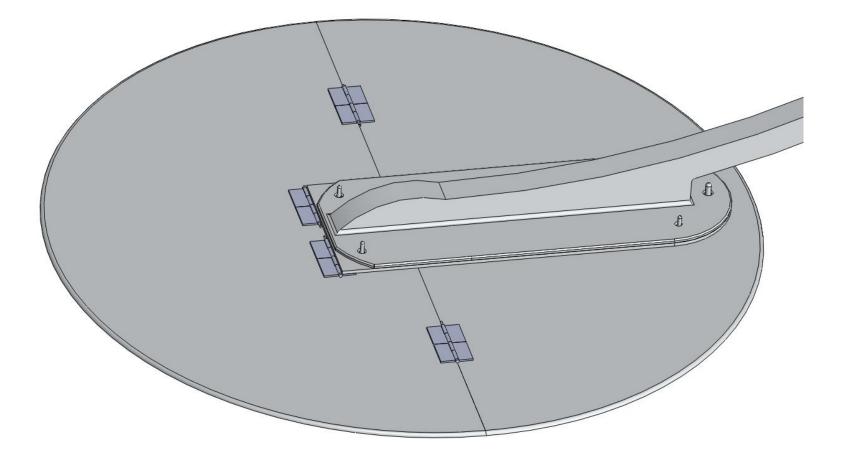
Client Background

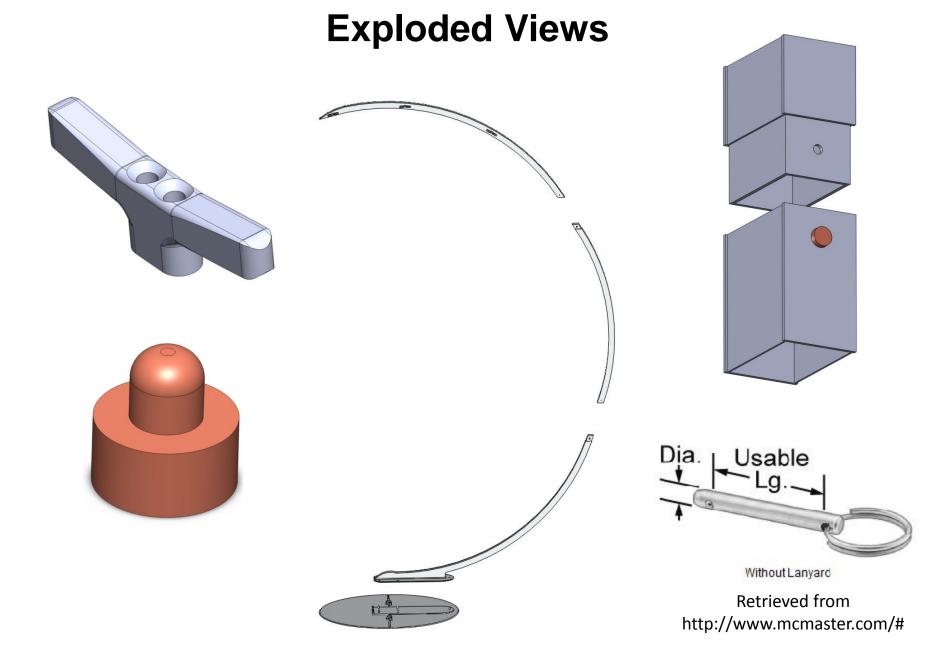
- My Star of Bethlehem LLC
- Online business
- Based in Sedona, AZ
- Import and sell decorative stars manufactured in Germany
- Need an aesthetically pleasing way to display their products when promoting at multiple venues

Final Design

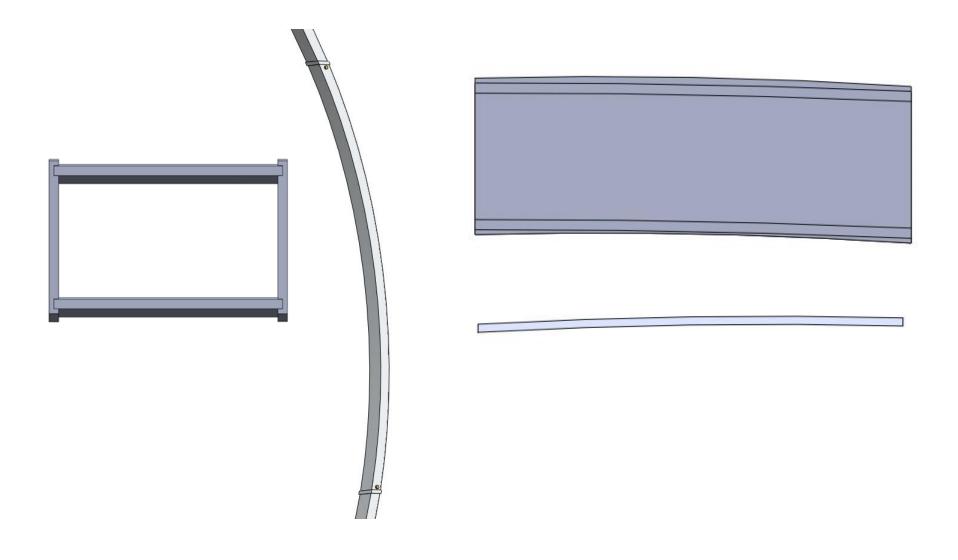


Base With Hinge Plate

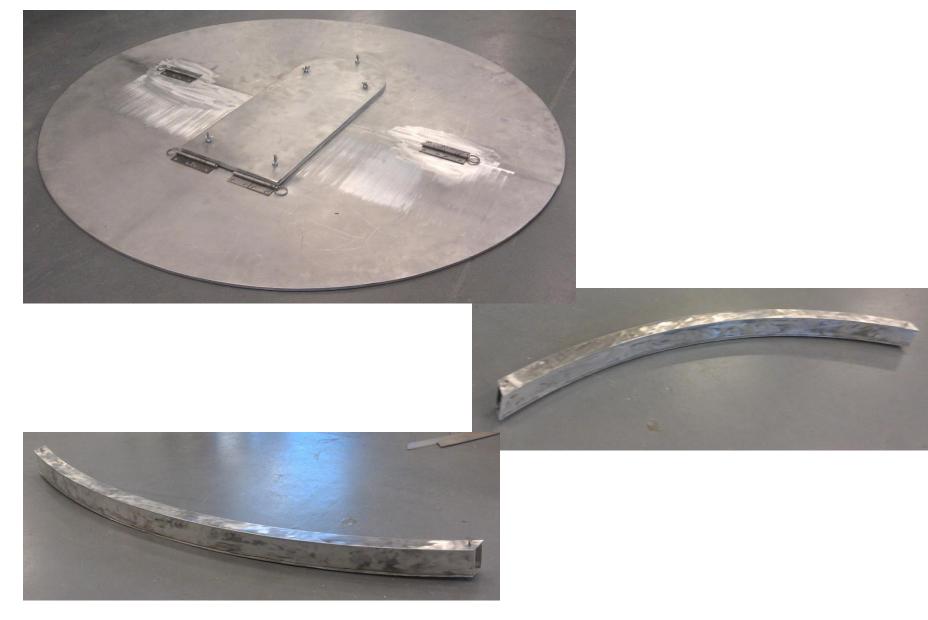




Middle Arch Section



Completed So Far



Cost Analysis

Qty	Item Description	Size (w x t)	Length	Price (each)	Total Cost
1	6061-T6 Aluminum Sheet	48 x 0.13	144	\$295.80	\$295.80
2	6061-T6 Aluminum Plate	24 x 0.25	48	\$115.55	\$231.10
2	6061-T6 Aluminum Plate	24 x 48 x 0.25	24	\$62.65	\$125.30
		Size (D)			
4	18-8 Stainless Steel Quick Release Pin	0.19 (pin)	3	\$2.18	\$8.72
4	Retractable Captive Panel Plunger Press in	0.25 (pin)	0.75	\$4.12	\$16.48
6	Surface-Mounted Lift-Off Hinge without holes	0.19 (pin)	2	\$3.56	\$21.36
6	Rope Cleat Wing Style	0.25 (rope)	3.5	\$0.92	\$5.52
1	Press-In Captive Stud 18-8 Stainless Steel (Pack of 10)	0.25	1.5	\$9.26	\$9.26
	Fasteners, quick release pins, adhesive, hinges, drill bits etc.				\$280.50
				Sales Tax	\$60.65
				Shipping	\$73.50
				Final Cost	\$1128.19
All dime	All dimensions are in inches				
w = widt	h, t = thickness, D = diameter				
Sales tax	Sales tax only applies to products bought in Arizona				

Project Timeline

	2/5	2/15	2/25	3/7	3/17	3/27	4/6
Order material	s 📕						
Aluminum cutting and routing	g 📕						
Hinge plate modification							
Cutting hinge plate & mounting PEM studs	;						
Installing hardware on middle arch section							
Gluing middle section	n						
Gluing of lower arch section							
Mounting hinges on base with PEM studs	;						
Preparing arch joints for assembly	,						
Drilling & mounting cleats	;						
Communicate with client/preliminary assembly	y						
Controlled environment testing	g						
Variable environment testing outside	e						
Time for unforeseen changes	;						
Spring break (OFF)						
Testing assembly time with designers	s						
Testing assembly time with general public	c 📃						
Portability testing	g						
Aesthetics testing	;						
Communicate with clien	t						

Conclusion

- Client Background
 - My Star of Bethlehem LLC
 - Small online business
 - Based in Sedona, AZ
- Final design
 - Modifications studs moved back & collars
- Manufacturing
 - Arch sections gluing instead of welding
 - Hinges fastening instead of welding
- Cost analysis
 - Costs have increased \$280
- Project timeline
 - Changes made
 - Future tasks

References

[1] Dr. Dieter Otte

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[2] McMaster-Carr. (n.d.). *McMaster-Carr.* Retrieved from http://www.mcmaster.com/#

[3] Industrial Metal Supply Co. (2010). *Industrial Metal Supply Co.* Retrieved from http://www.industrialmetalsupply.com/

Questions

