# **Christmas Ornament Display Structure**

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Retrieved from mystarofbethlehem.com/home

Northern Arizona University Department of Mechanical Engineering

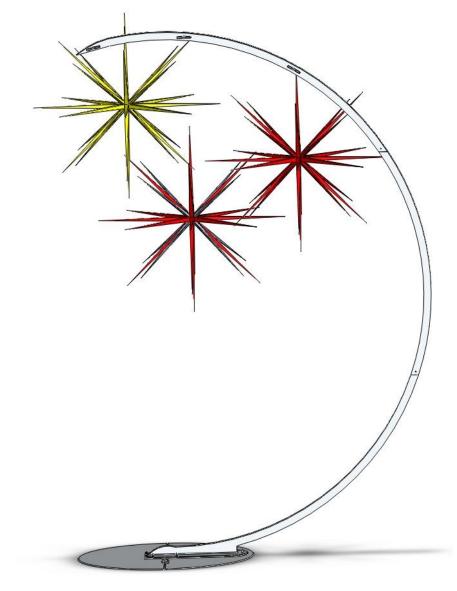
### Overview

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

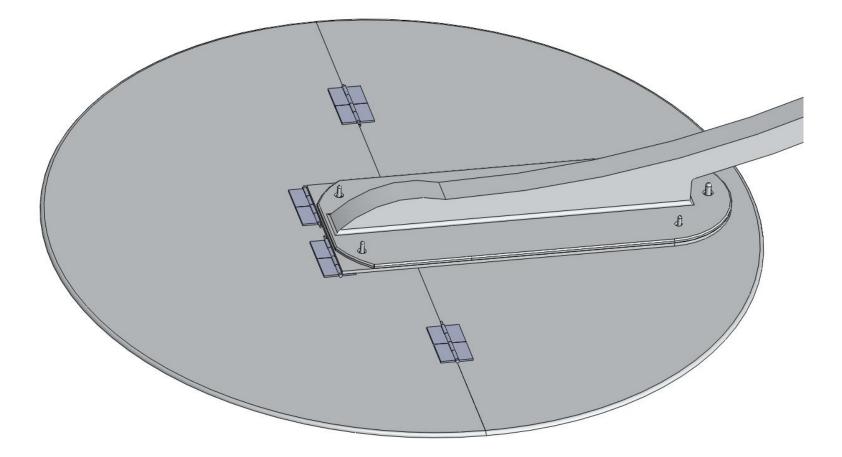
### **Client Background**

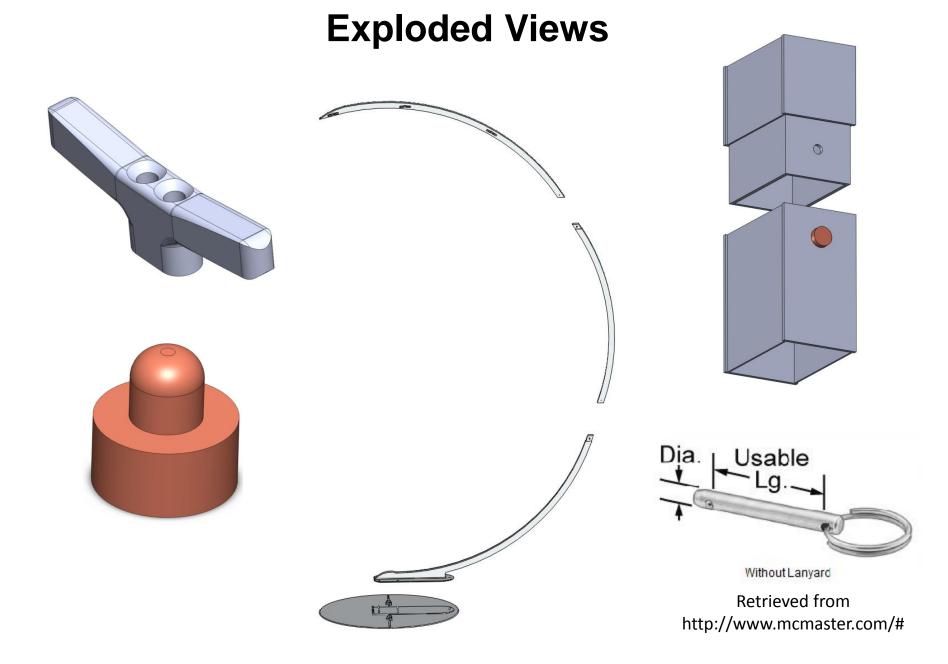
- My Star of Bethlehem LLC
- Online business
- Based in Sedona, AZ
- Import and sell decorative stars manufactured in Germany
- Need an aesthetically pleasing way to display their products when promoting at multiple venues

### **Final Design**

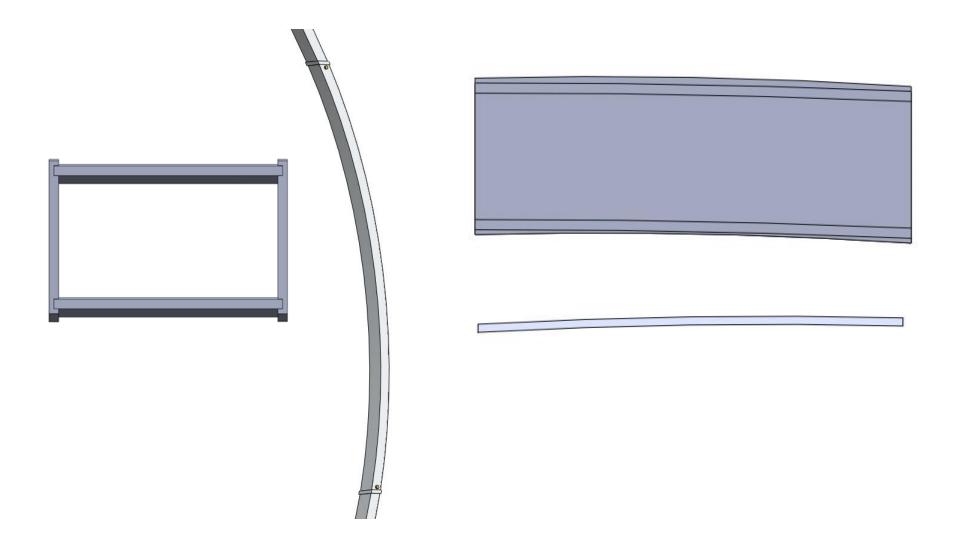


#### **Base With Hinge Plate**

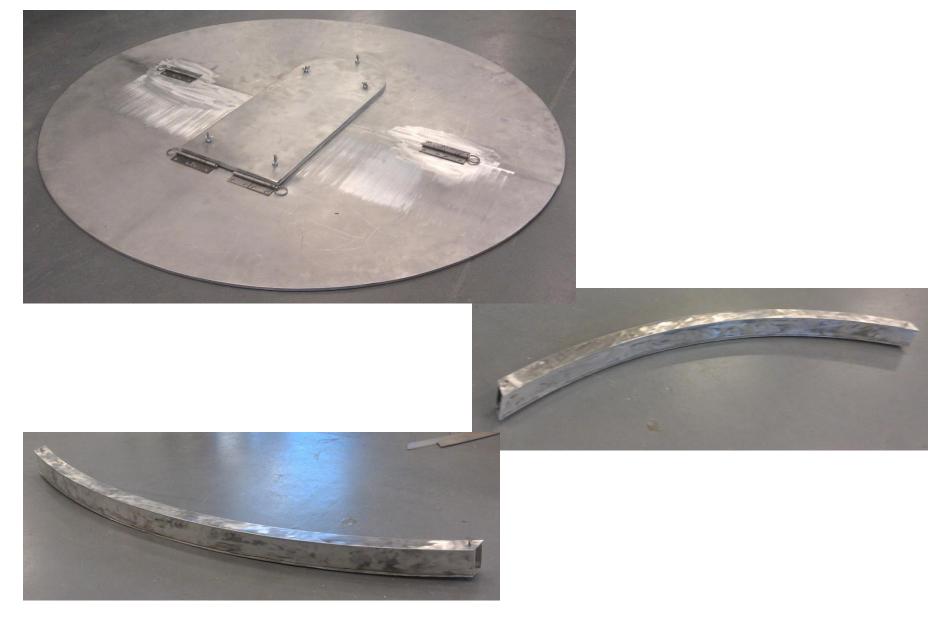




### **Middle Arch Section**



# **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

