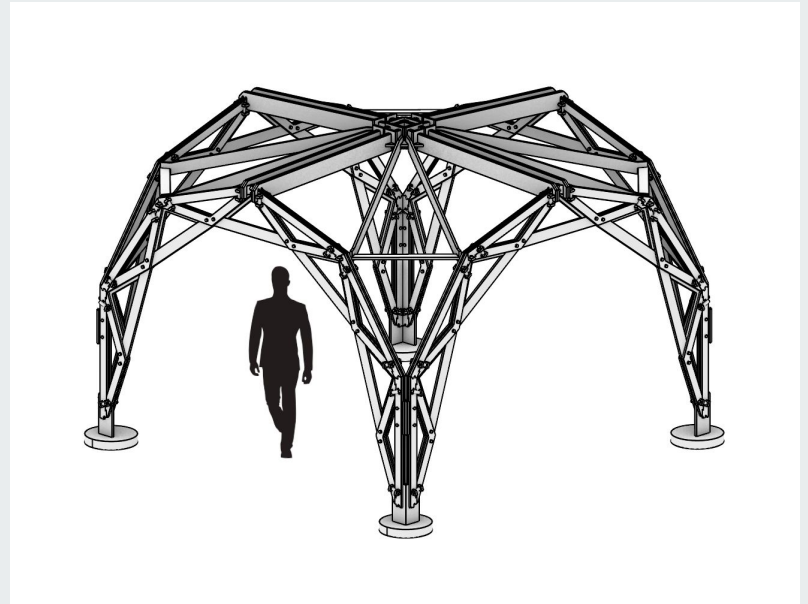




Conduit

Charlie Kirkendall, Zac Abadi, Ryan Smith



Project Statement:

The primary objective of this design is to form a unique threshold that fulfills the needs of both Philomath, Oregon and Lima, Peru. By forming a visually appealing and successfully inviting wooden structure that honors locals and visitors, the **Conduit** showcases trusses in a captivating formation to form an “*illusion of curvature*.”



Early Precedents

Informed our vision of threshold and place creation, along with early ideas of how trusses/wooden components can unify into a larger structure



SYNEGIC Office / UENOA

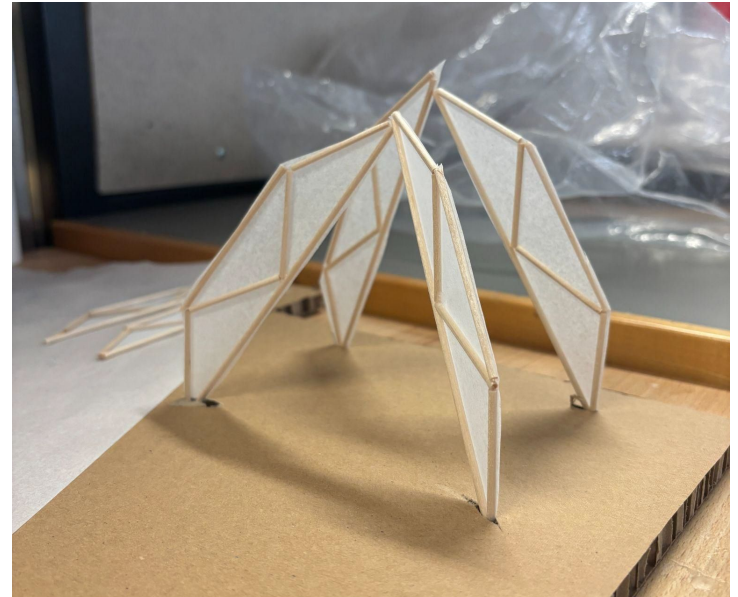


Geodesic Domes

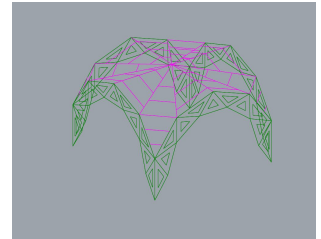
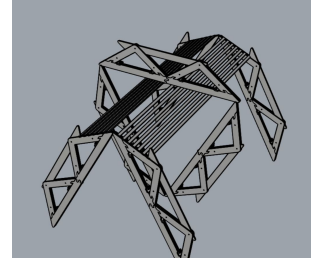
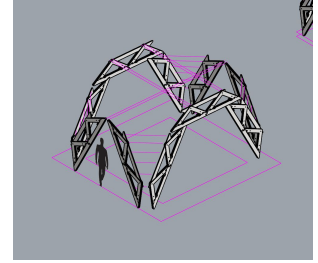
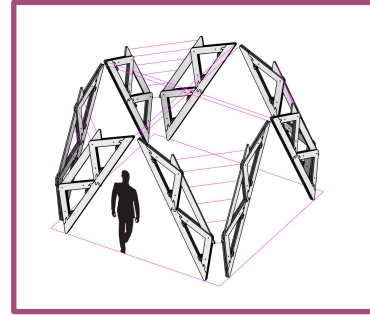
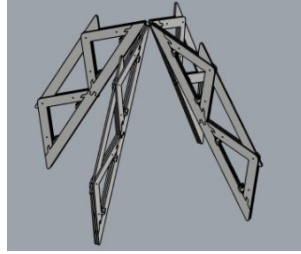
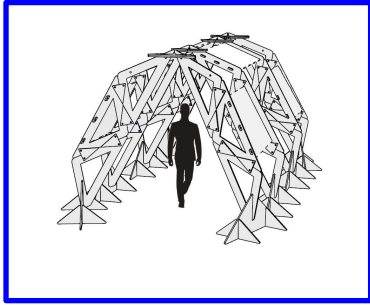
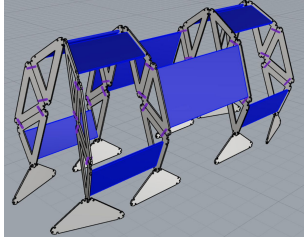
Initial Ideas

Through our exploration of formation of trusses, we found aimed to showcase trusses that meet at their ends to form the overall structure of the threshold.

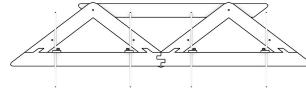
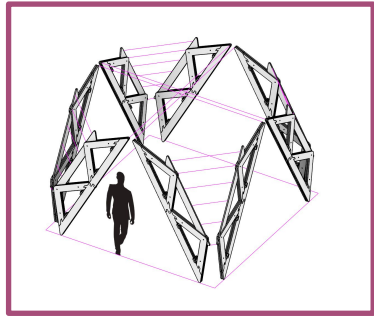
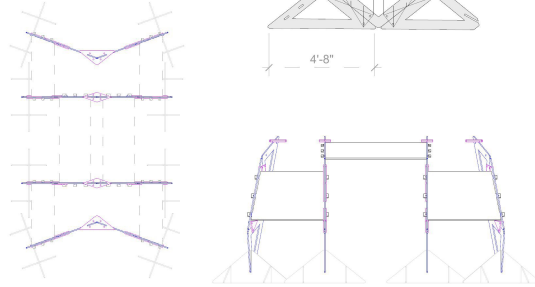
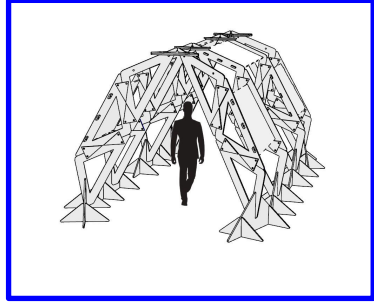
It was vital that the formed space invites movement and passage within while also providing a space to linger.



Previous Iterations and Formations



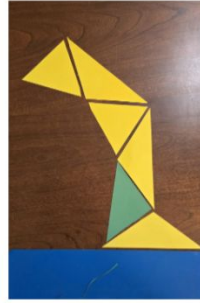
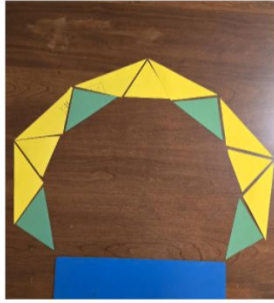
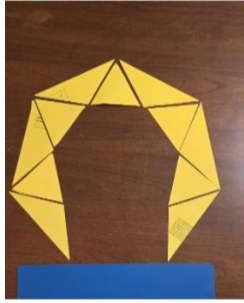
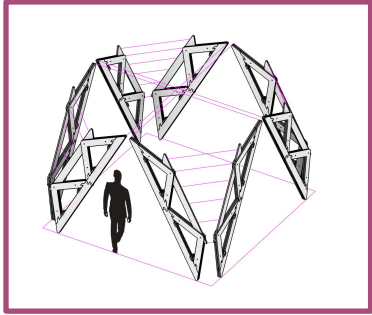
Previous Iterations and Formations



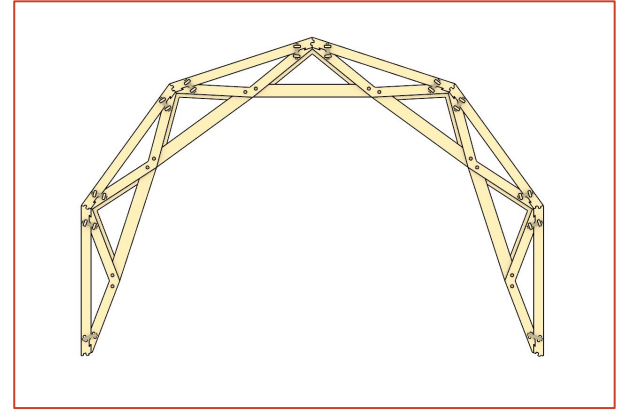
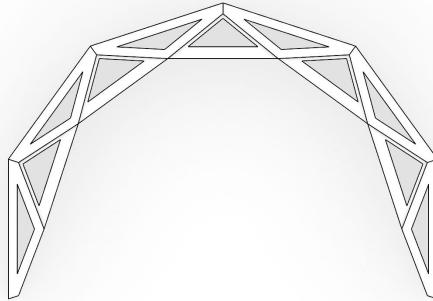
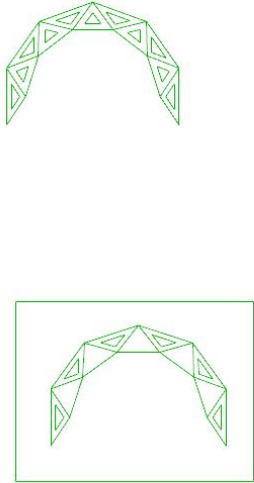
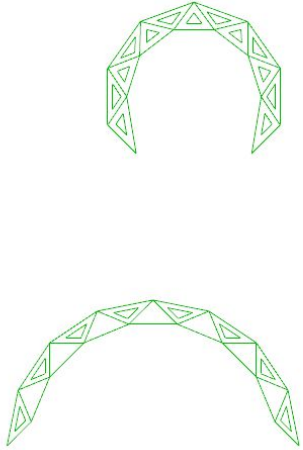
Strengths and Adaptations

- Strong homage to timber industry and Philomath through trusses
- Messy connection points, try layering trusses together for stronger connection
- Formation of trusses forms a strong threshold towards multiple directions
- Layered truss formation provides stronger connection points
- Trusses lack “illusion of curvature” and visual draw

PROPOSED DESIGN - PROCESS

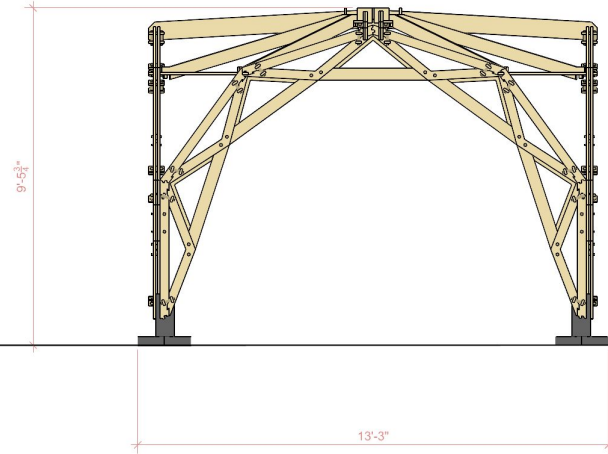
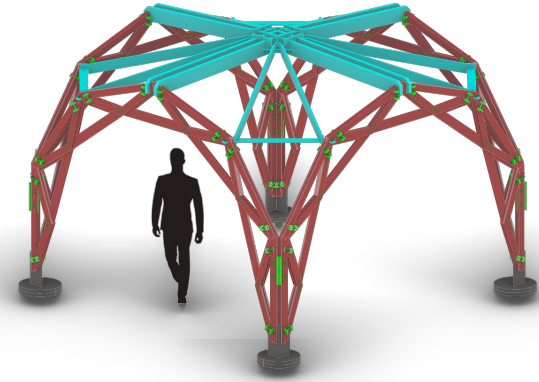


TANGRAMS

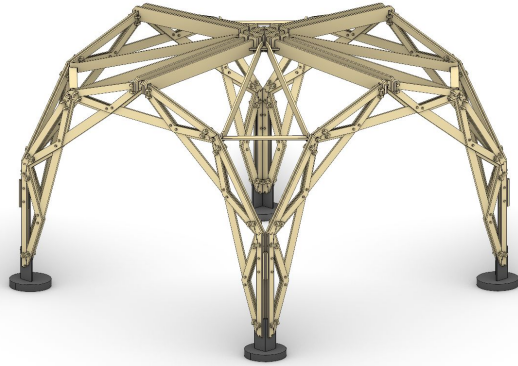


Proposed Design

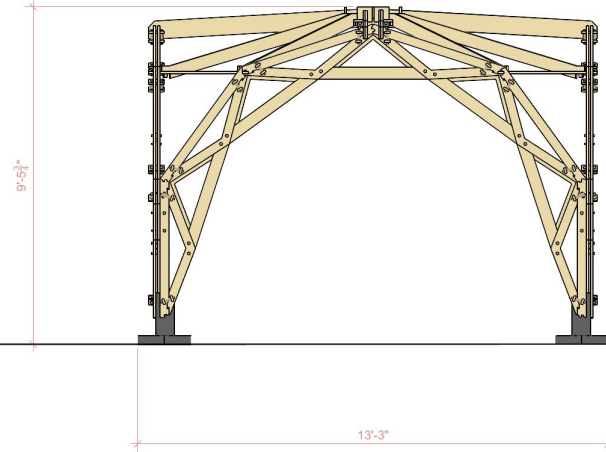
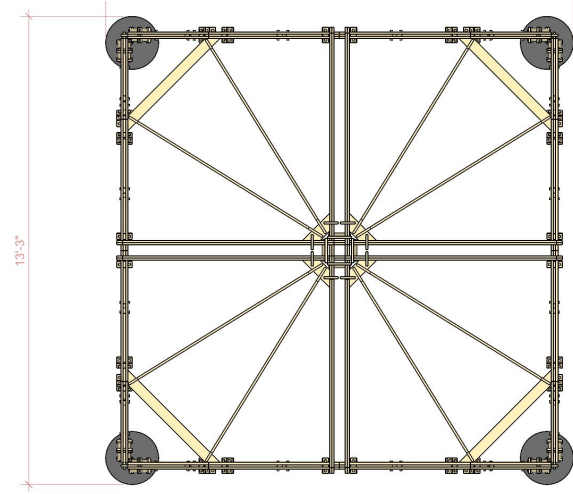
- 19 Unique Parts
 - 10 for Truss Members
 - 4 for Spanning Members
 - 5 for Connection Pieces
- 284 Total Pieces



PROPOSED DESIGN



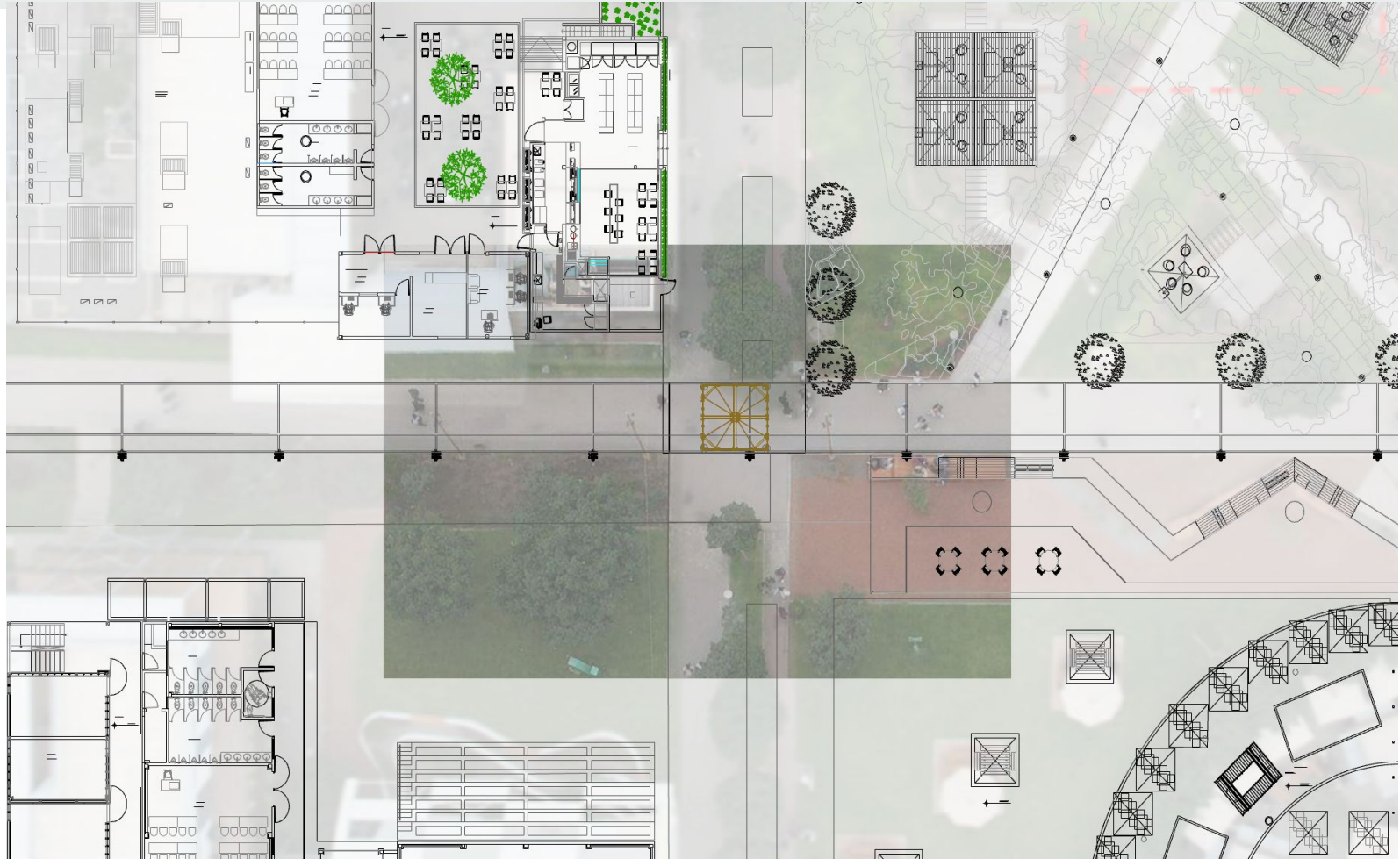
13'-3" x 13' 3" x 9' 5 3/4"



PROPOSED DESIGN



PROPOSED DESIGN - LIMA SITE VIEW



KIT OF PARTS

Cut layout + Dimension

1: Top Coord A

Member Count: 16
Member Dimensions: 3'-11" x 0'-3"
Member Surface Area: 0.92 ft²

2: Top Coord B

Member Count: 8
Member Dimensions: 3'-11" x 0'-3"
Member Surface Area: 0.91 ft²

3: Top Coord C

Member Count: 8
Member Dimensions: 3'-11" x 0'-3"
Member Surface Area: 0.92 ft²

4: Top Coord D

Member Count: 8
Member Dimensions: 3'-11" x 0'-3"
Member Surface Area: 0.91 ft²

5: Top Coord E

Member Count: 8
Member Dimensions: 3'-11" x 0'-3"
Member Surface Area: 0.92 ft²

6: Bottom Coord

Member Count: 20
Member Dimensions: 3'-3" x 0'-4"
Member Surface Area: 1.02 ft²

7: Long Cross Member

Member Count: 48
Member Dimensions: 3'-9" x 0'-9.5"
Member Surface Area: 0.84 ft²

8: Short Cross Member A

Member Count: 8
Member Dimensions: 3'-0" x 1'-3"
Member Surface Area: 1.05 ft²

9: Short Cross Member B

Member Count: 8
Member Dimensions: 3'-0" x 1'-3"
Member Surface Area: 1.06 ft²

10: Short Cross Member C

Member Count: 4
Member Dimensions: 3'-0" x 1'-3"
Member Surface Area: 1 ft²

Red and Orange:
Framing Elements

Blue:
Lattice/Top

Green:
Connection Pieces

Total Wood Volume:
~13.064 ft³

Total Member Surface Area:
~208.72 ft² of 640 ft²

Total Structure Weight:
~480.06 lbs (not including
dowels)

Total Piece Count:
284 plywood pieces
180 dowels

11: Primary Span A

Member Count: 8
Member Dimensions: 6'-6" x 0'-6.25"
Member Surface Area: 3.11 ft²

12: Primary Span B

Member Count: 8
Member Dimensions: 6'-6" x 0'-6.25"
Member Surface Area: 3.04 ft²

13: Outer Span

Member Count: 4
Member Dimensions: 0'-5" x 3'-11.5"
Member Surface Area: 1.11 ft²

14: Diagonal Span

Member Count: 8
Member Dimensions: 6'-6.5" x 0'-5.5"
Member Surface Area: 2.17 ft²

15: Span Connection A

Member Count: 4
Member Dimensions: 1'-1" x 0'-4.25"
Member Surface Area: 0.22 ft²

16: Span Connection B

Member Count: 8
Member Dimensions: 0'-5" x 0'-6.5"
Member Surface Area: 0.16 ft²

17: Small Connection Piece

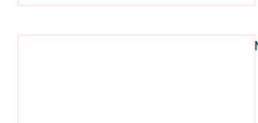
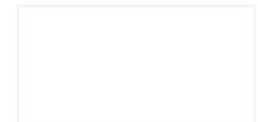
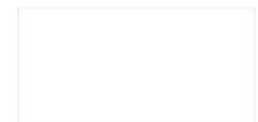
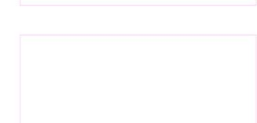
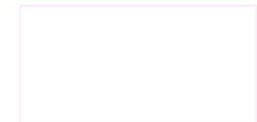
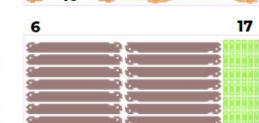
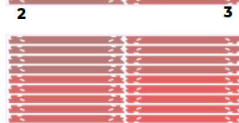
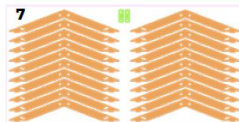
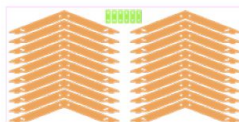
Member Count: 96
Member Dimensions: 0'-2" x 0'-5.25"
Member Surface Area: 0.06 ft²

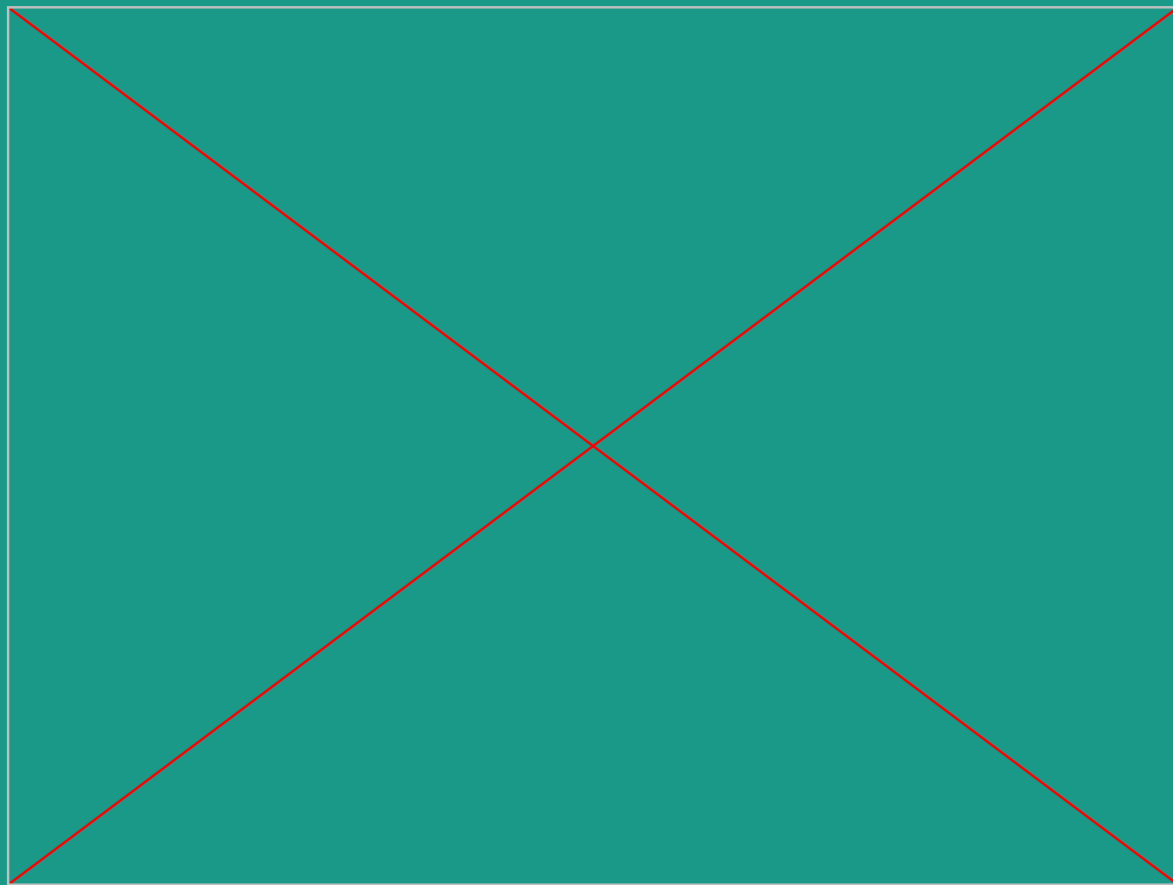
18: Low Connection Piece

Member Count: 8
Member Dimensions: 0'-5" x 1'-0"
Member Surface Area: 0.39 ft²

19: Primary Span Spacer

Member Count: 4
Member Dimensions: 0'-8.25" x 0'-7.5"
Member Surface Area: 0.31 ft²

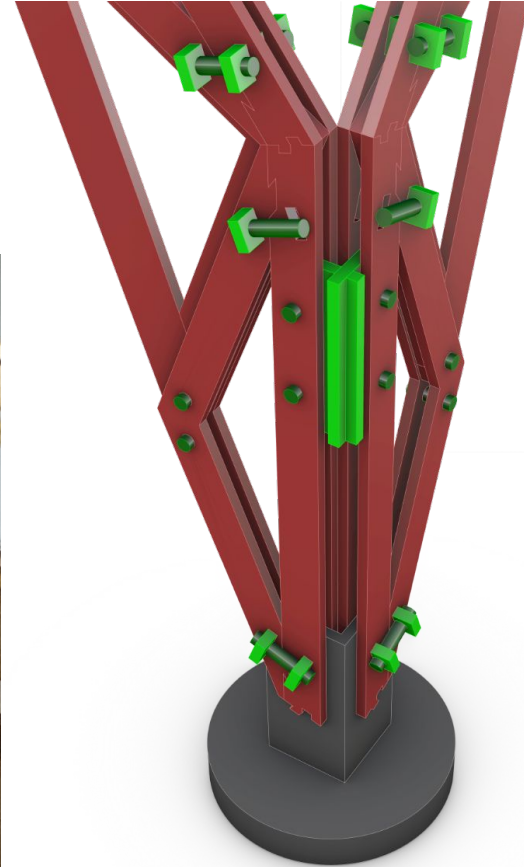
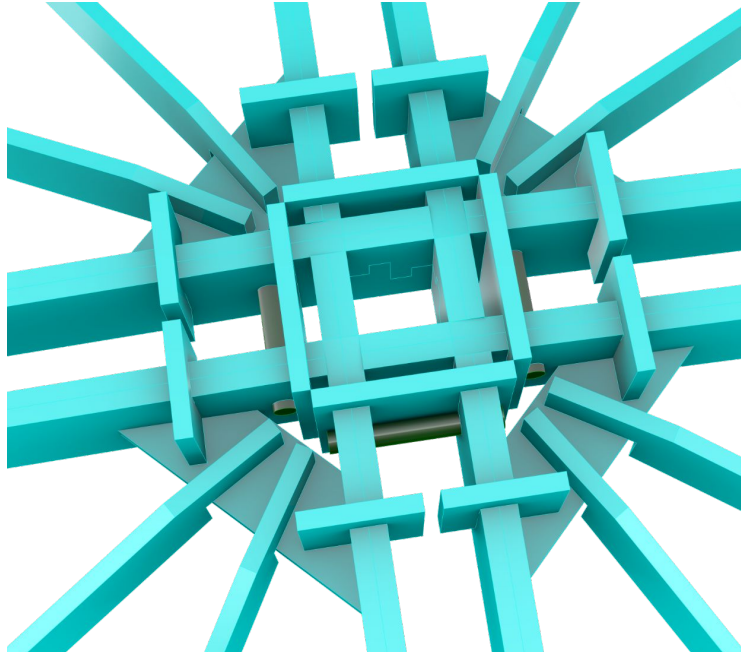


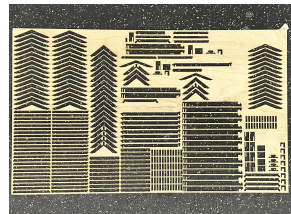
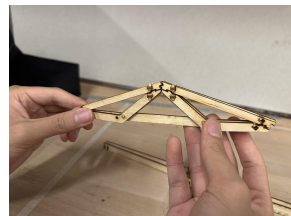
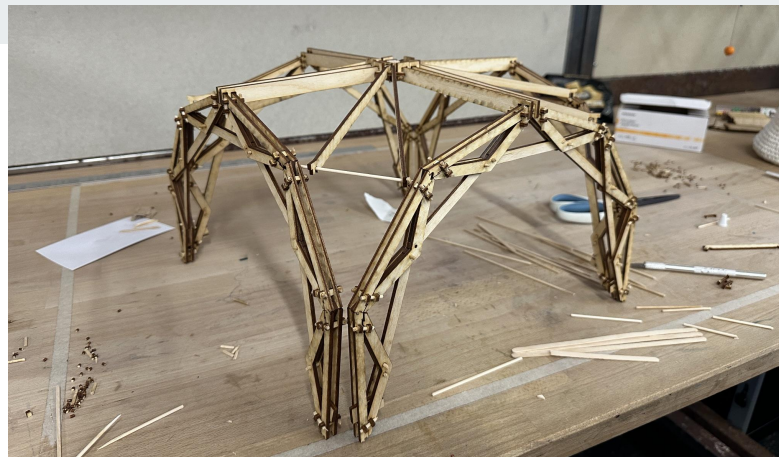


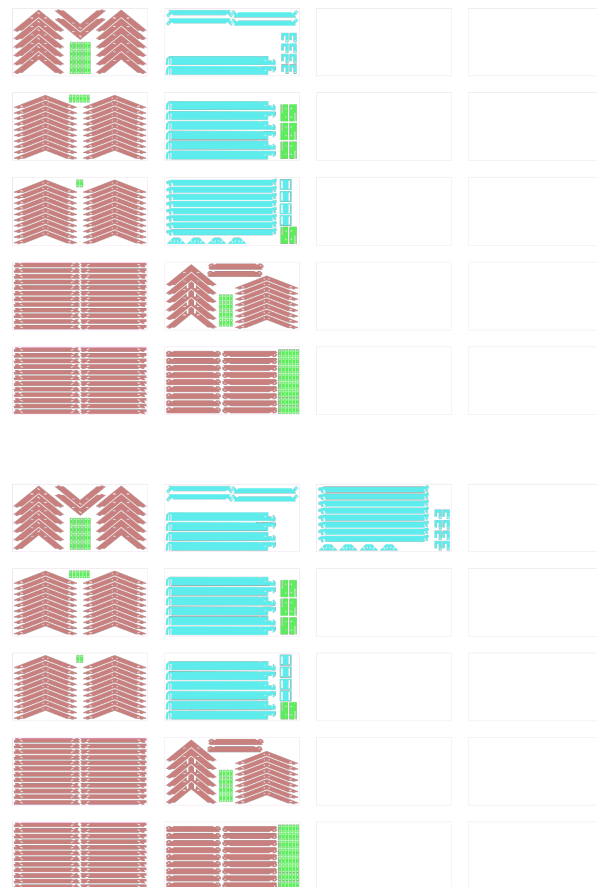
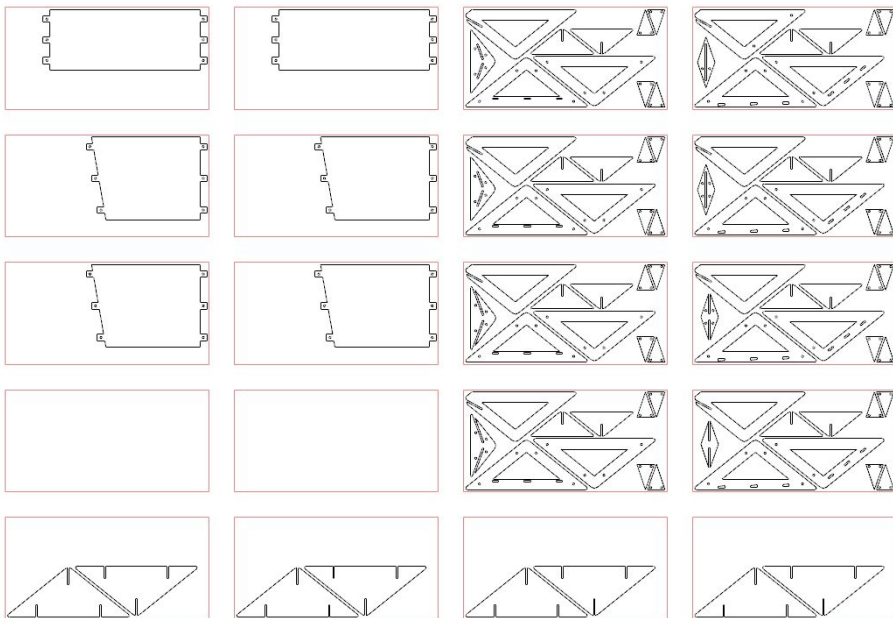
CONSTRUCTION



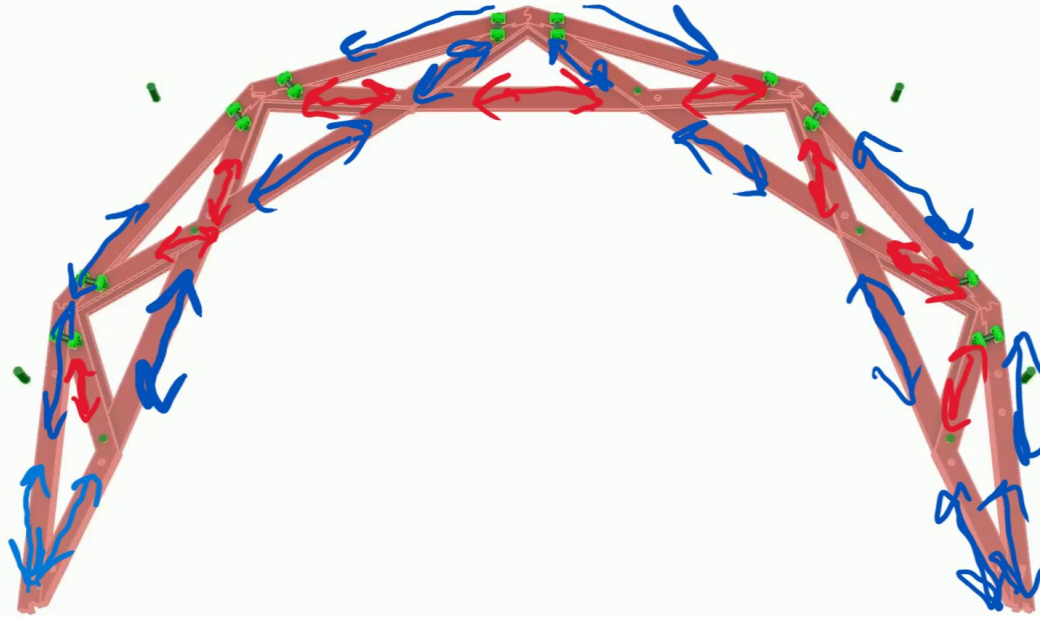
Connections

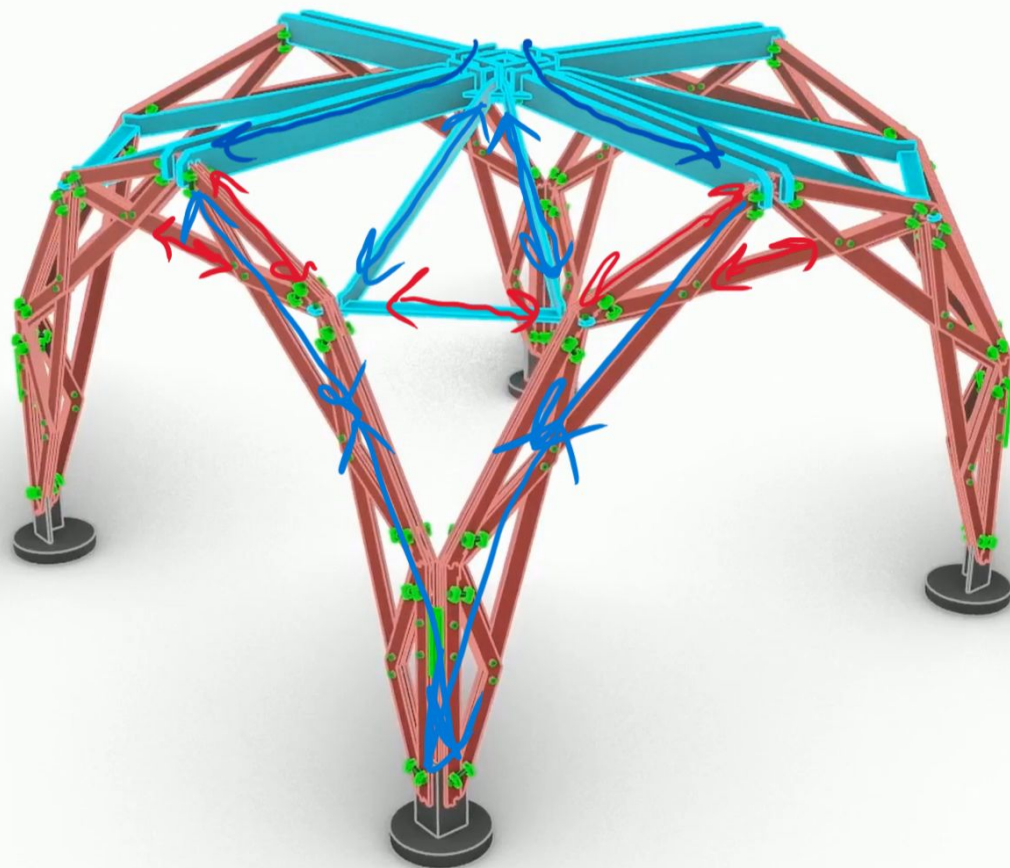






Compression/ Tension Diagrams

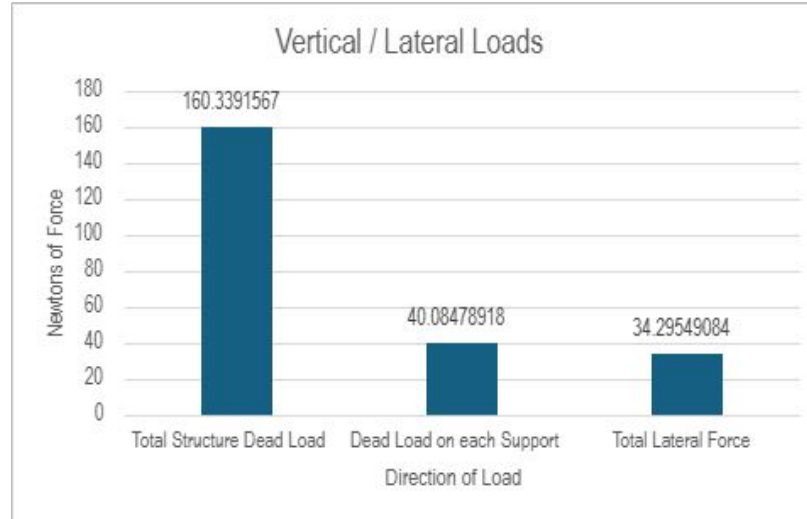




Vertical (Dead) and Lateral Loads



Total Structure Dead Load	160.3391567
Dead Load on each Support	40.08478918
Total Lateral Force	34.29549084



Red and Orange:
Framing Elements

Blue:
Lattice/Top

Green:
Connection Pieces

Total Wood Volume:
~13.064 ft³

Total Member Surface Area:
~208.72 ft² of 640 ft²

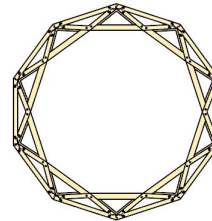
Total Structure Weight:
~480.06 lbs (not including
dowels)

Total Piece Count:
284 plywood pieces
180 dowels

REFLECTION

Achievements and Areas for further Development

- The Conduit provides homage to the timber industry through the forms of creative trusses
- The design minimizes waste, and with further refinement, the allotted material can even create 2 thresholds.
- With the way connections were made, alternative configurations such as the “Portal” are possible.




Thank You!

