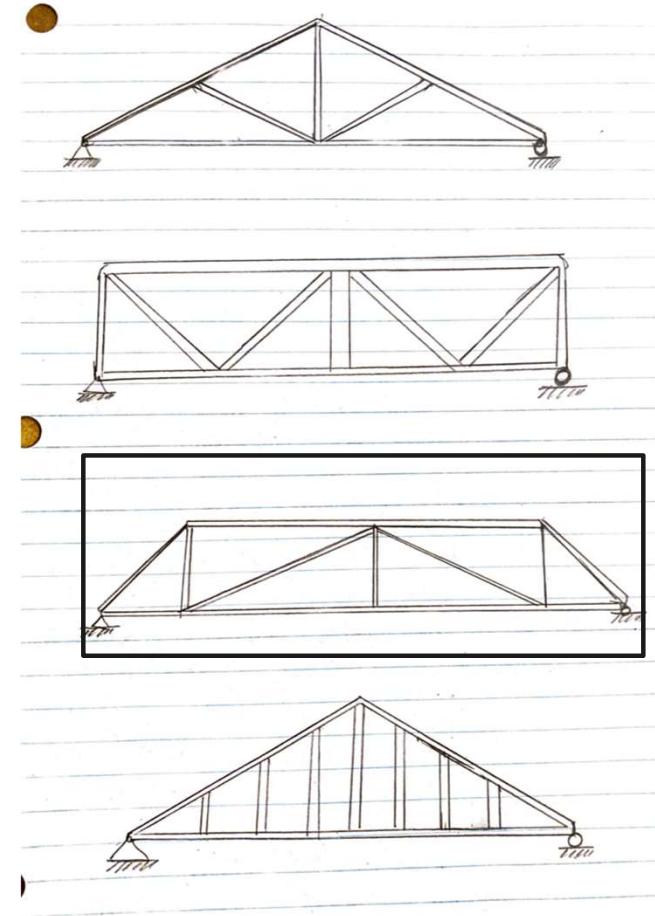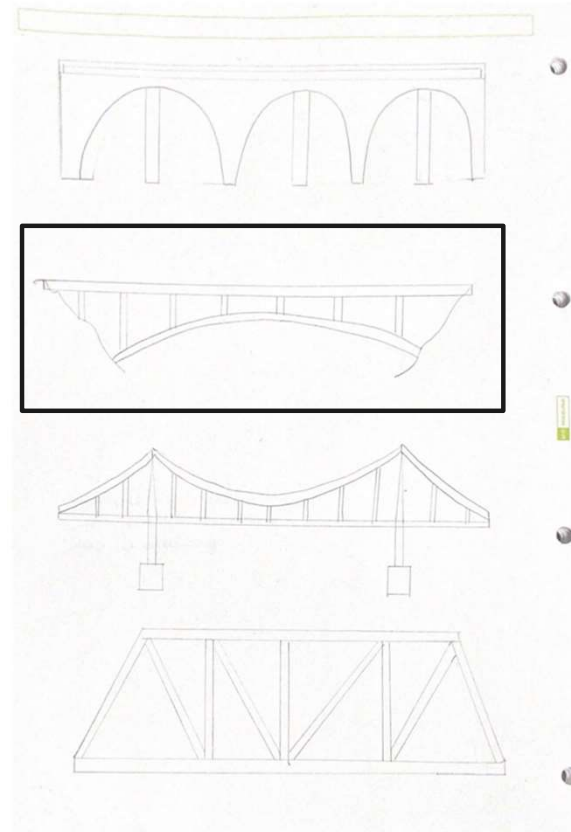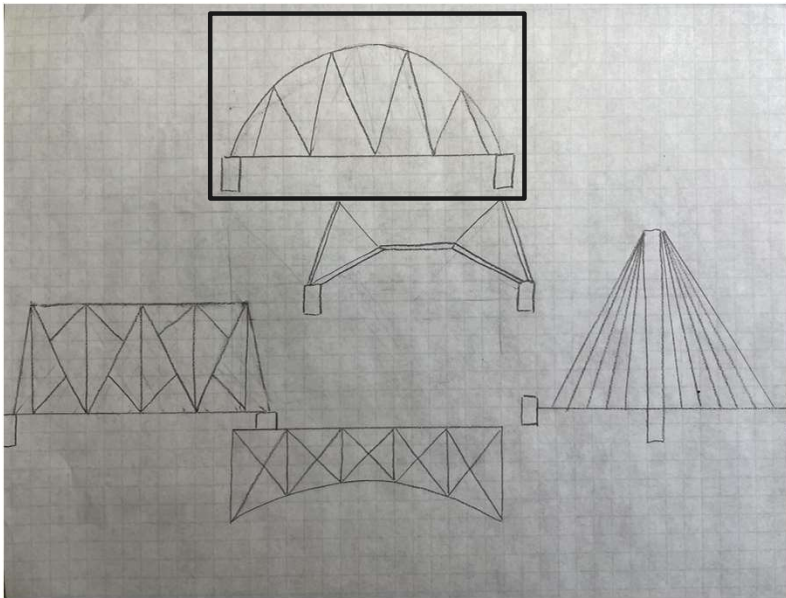# Bridge Design Project

By Will Chi, Kyumin Kim, and Paula Vilaboa
Group 1, TA: Amy Oh
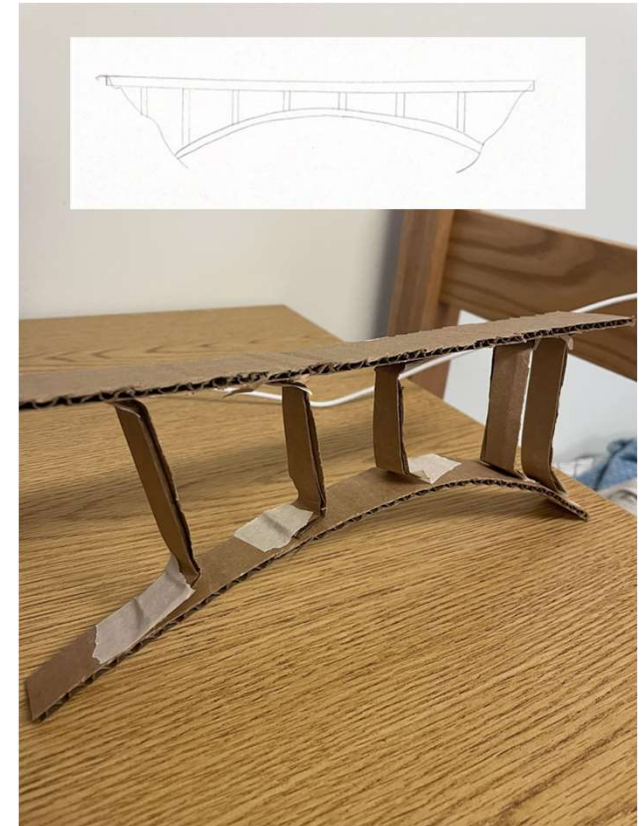
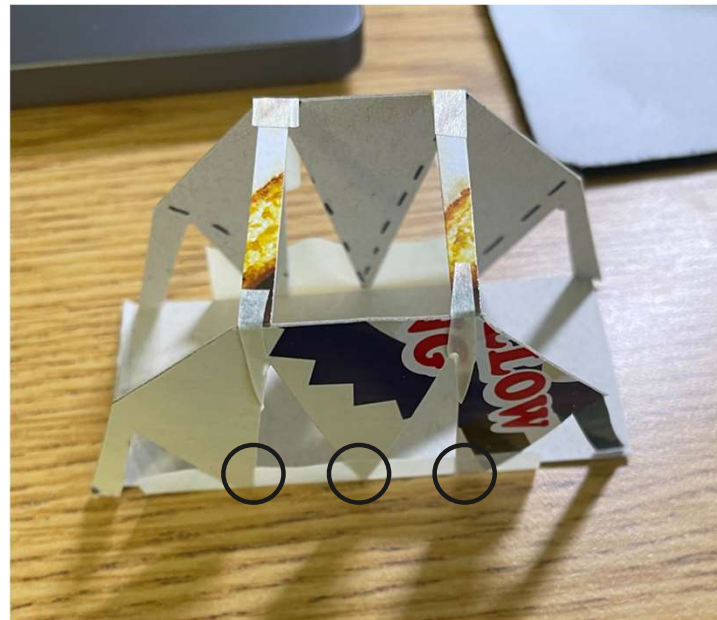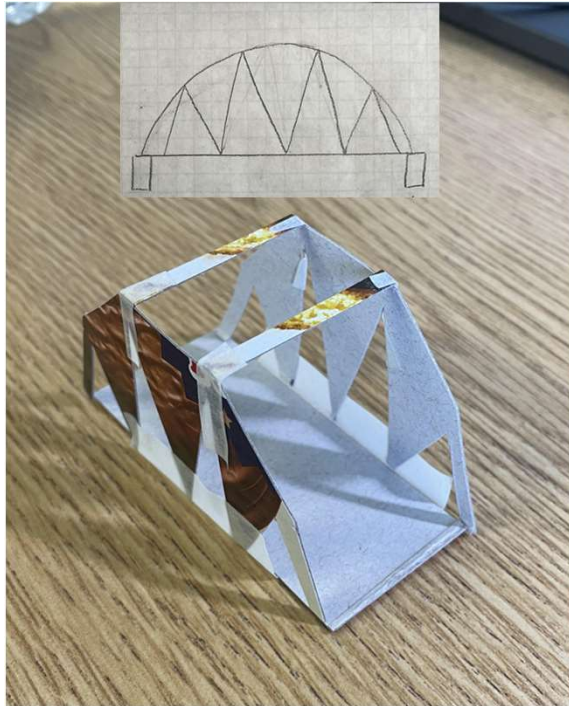# Design Process
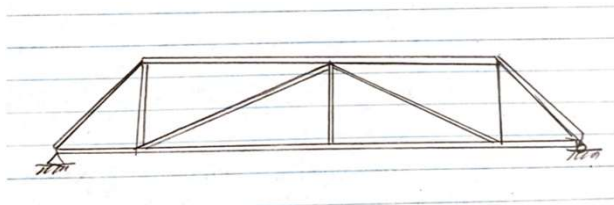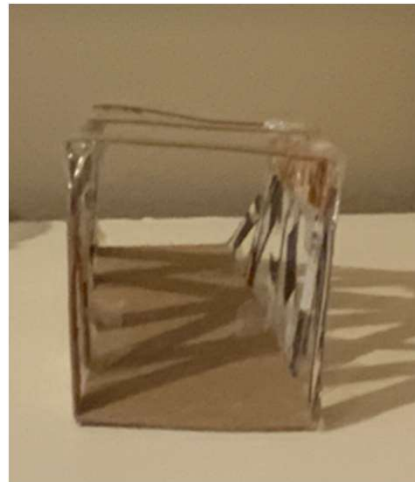
Sketches

Prototyping & Final Design
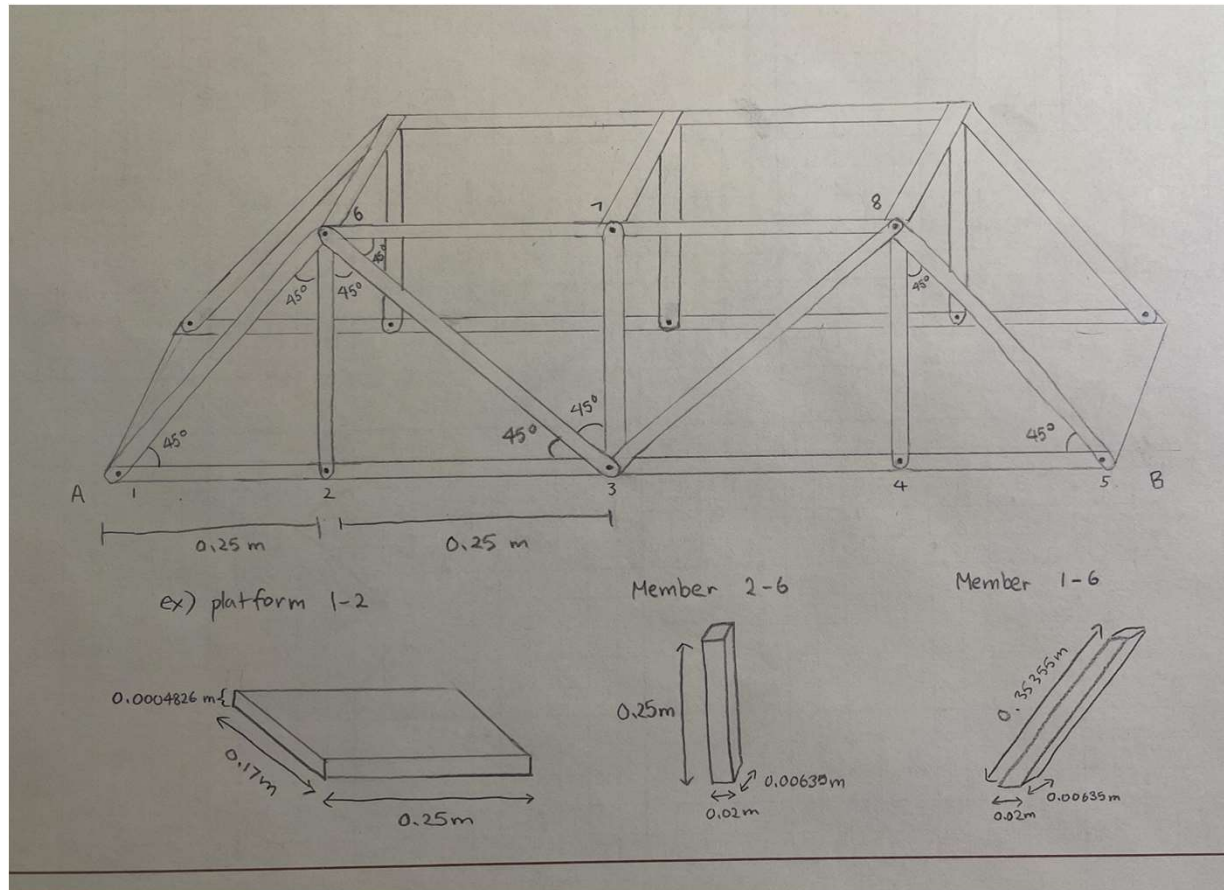
Prototyping & Final Design
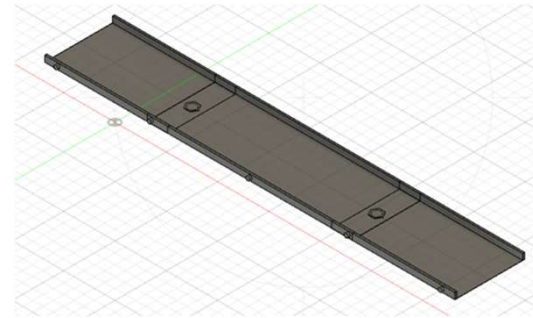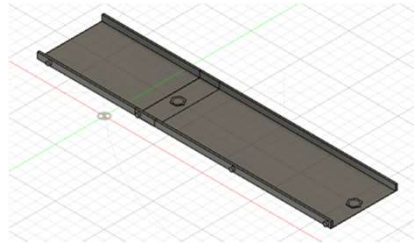
Materials

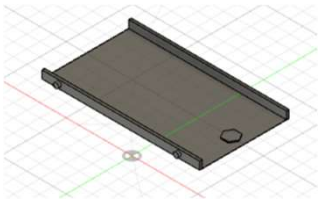¼" Masonite used for Members

0.019" Galvanized Steel for Platform
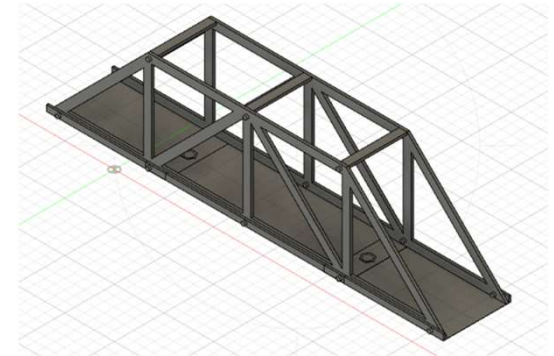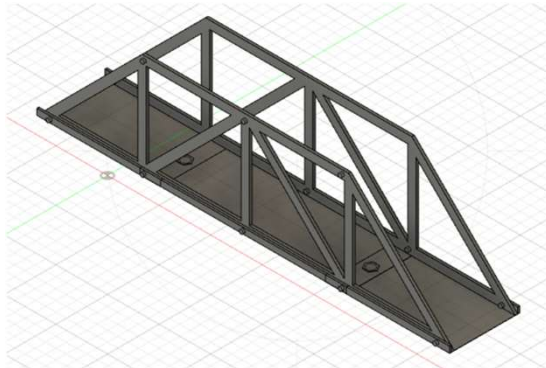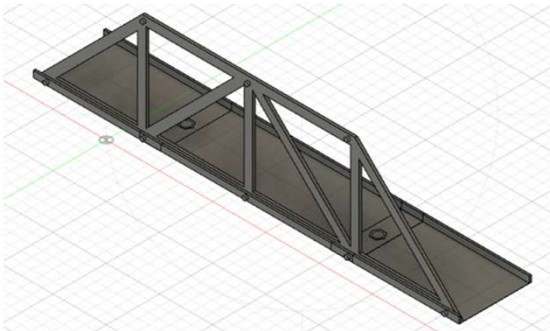
Final Design (Detailed Drawing)

Build Plan

First, we built the platform.

Then we built the truss, pinned it to the platform walls and joined both sides with three beams.

Analysis
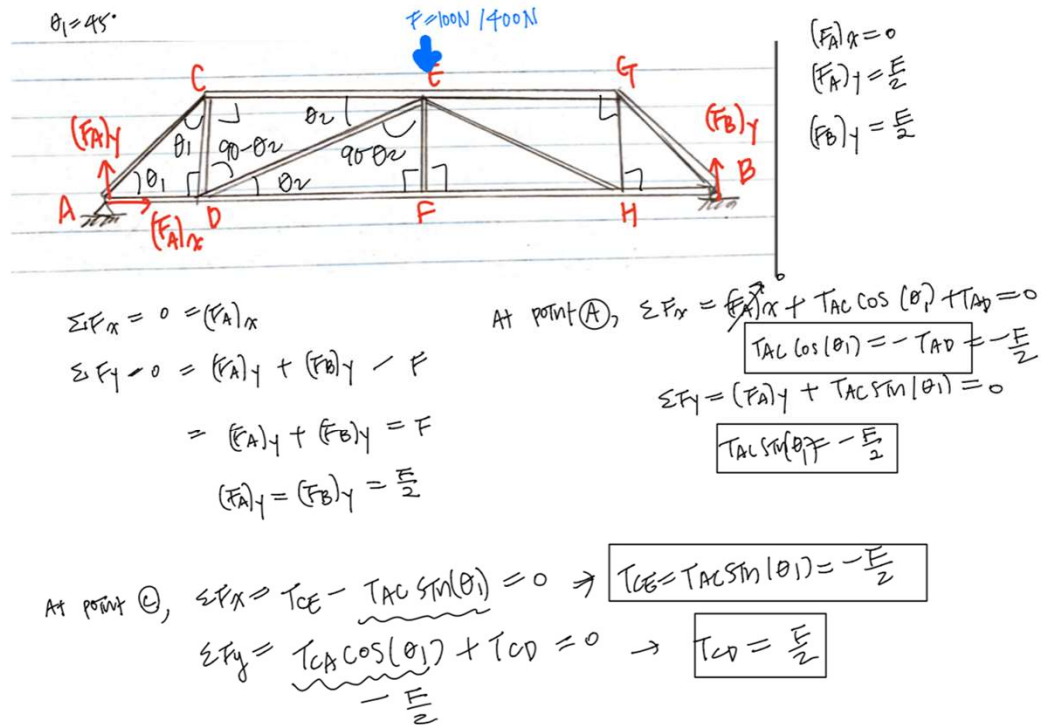
Member	Forces at At 100N (N)	Forces at 400N (N)
$(F_A)_Y$	25	100
$(F_B)_Y$	25	100
12	25	100
16	-35.36	-141.42
23	50	200
26	25	100
27	-35.36	-141.42
34	50	200
37	50	200
45	25	100
47	-35.36	-141.42
48	25	100
57	-35.36	-141.42
67	-25	-100
78	-25	-100

Analysis

Bridge holds 100 N
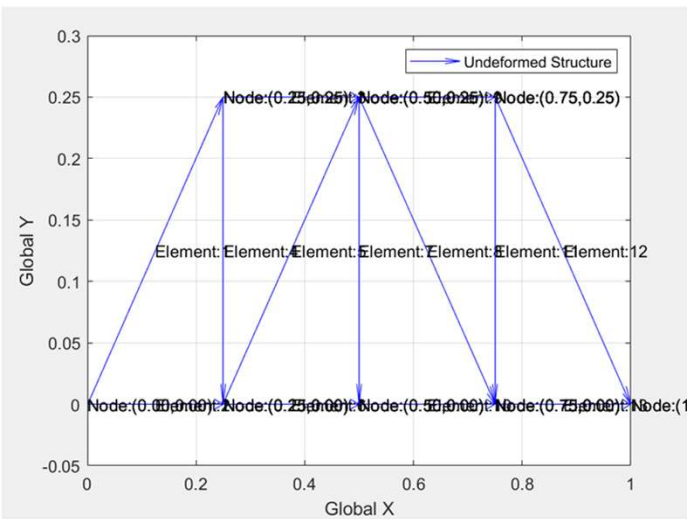
Element Forces
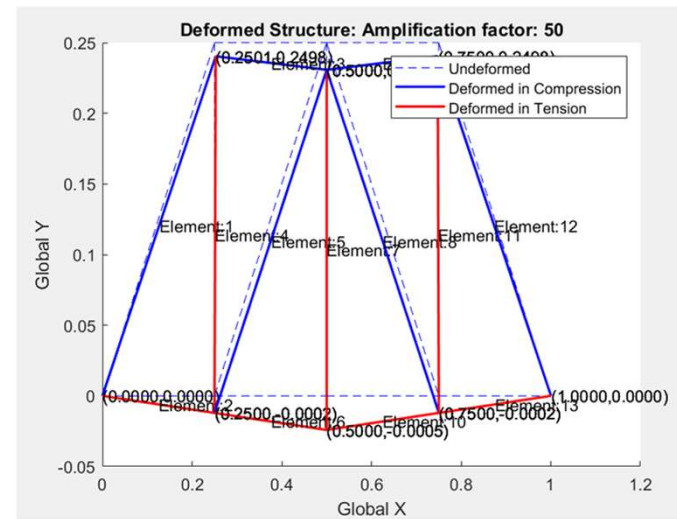-35.3553(does not buckle)
25(does not exceed YTS)
-25(does not buckle)
25(does not exceed YTS)
-35.3553(does not buckle)
50(does not exceed YTS)
50(does not exceed YTS)
-35.3553(does not buckle)
-25(does not buckle)
50(does not exceed YTS)
25(does not exceed YTS)
-35.3553(does not buckle)
25(does not exceed YTS)
This truss HOLDS at 50N

Bridge fails at 400 N

Element Forces
-141.4214(buckles)
100(does not exceed YTS)
-100(does not buckle)
100(does not exceed YTS)
-141.4214(buckles)
200(does not exceed YTS)
200(does not exceed YTS)
-141.4214(buckles)
-100(does not buckle)
200(does not exceed YTS)
100(does not exceed YTS)
-141.4214(buckles)
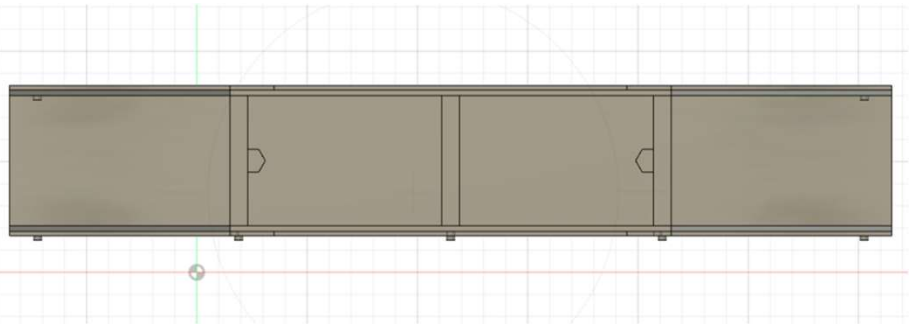100(does not exceed YTS)
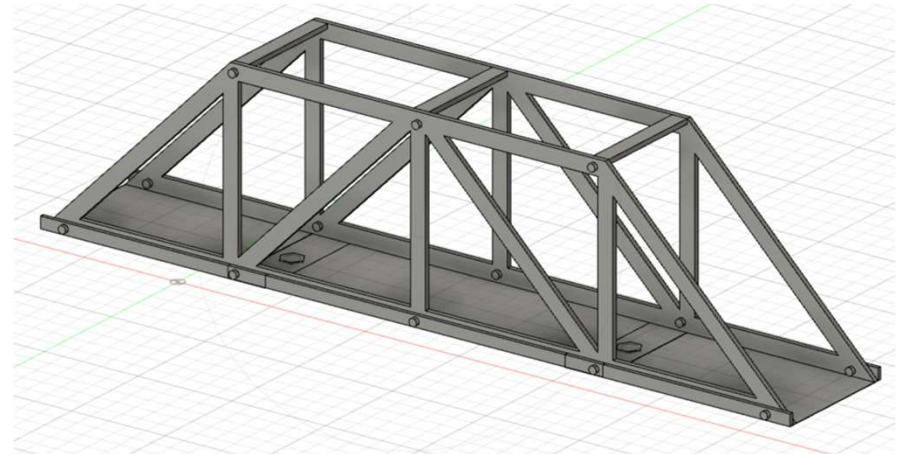This truss DOES NOT HOLD at 200N

CAD model

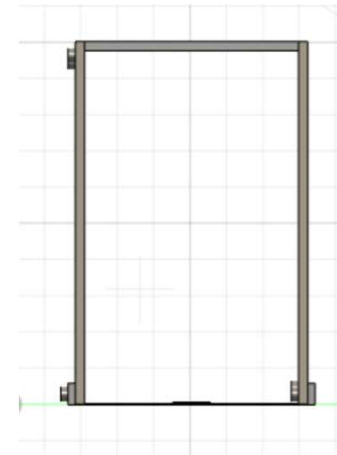## Isometric view

Front view
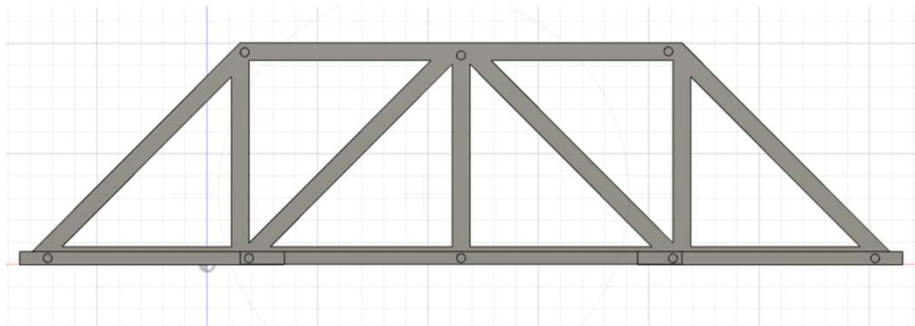
Top view

Right side view

Conclusion