



**Only go to next slide when
ready to start**

A wide-angle photograph of the Golden Gate Bridge in San Francisco, California. The bridge's iconic orange-red towers and suspension cables are prominent against a blue sky with scattered white clouds. The bridge spans across a body of water, with a hillside in the foreground. The text is overlaid on the image.

Our Bridge Design Process

**The Colonredesignationermizer
9000**

Ainesh, Landon, Tyce, Adam

Step 1: Define Problem

Goal: Make the Bridge Hold At Least 20 Pounds

Materials:

- Engineering notebook
- Ruler or Measuring Tape
- Scale for weighing
- 200 popsicle sticks
- Scissors
- Ball-point pen or pencil
- 2 Sheets of Wax paper
- White Glue/Wood Glue/5 Glue Sticks per bridge
- 1' Tape
- 1 Cardstock paper 11X18 inches

Constraints and Limitations:

- The width of the bridge cannot exceed 4".
- No more than 200 popsicle sticks
- You must make the bridge at least 14" for it to work
- The height cannot exceed 6".
- Your bridge should be able to hold at least 20 lbs.
- Budget \$200,000.00 (\$1,000 per popsicle stick and \$1,500 per additional stick)

In My Own Words:

For this project we needed to create a bridge with 200+ popsicle sticks, and with limited materials. It also has to have a high capacity, and look decent.

Step 2: Generate Ideas

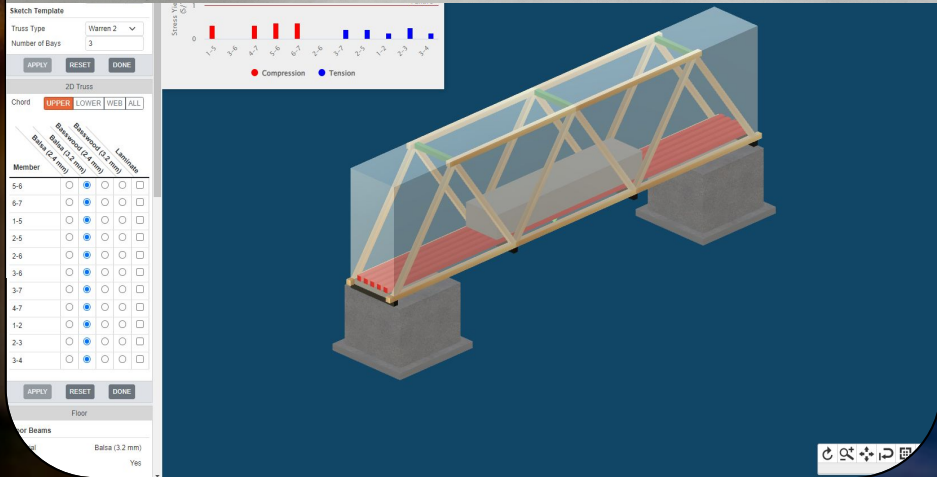
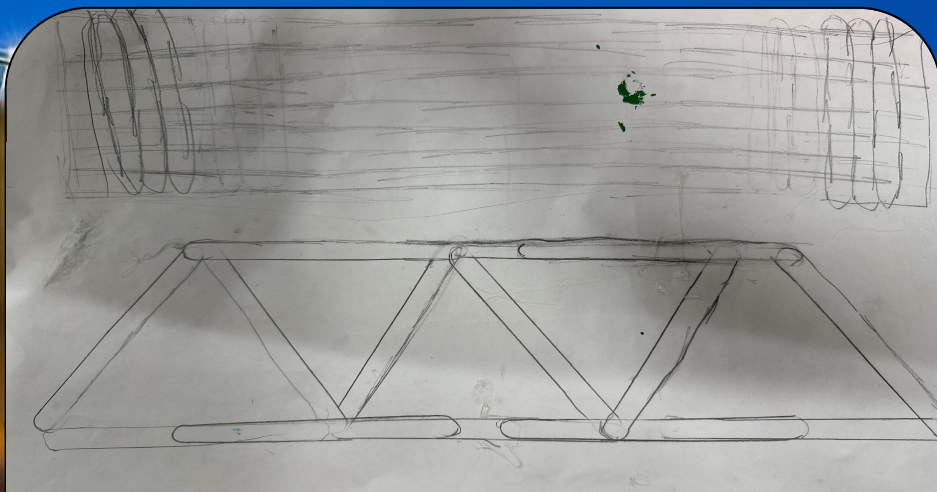
Warren 2 Truss

Our idea was to start with a Warren-2 Truss design. We thought of this design because of its effectiveness and its proven record of use and safety in the real world.



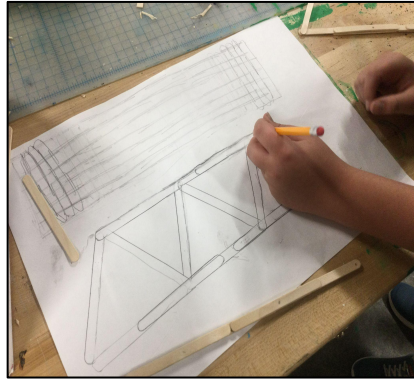
Step 3: Develop A Solution

Our final solution was to build a bridge with a Warren-style truss design. We wanted to make the bridge simple to build in order to minimize the chance of structural failure.

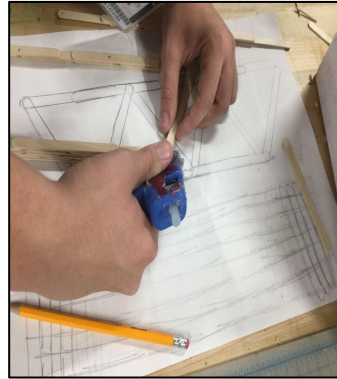


Step 4: Build and Test Prototype

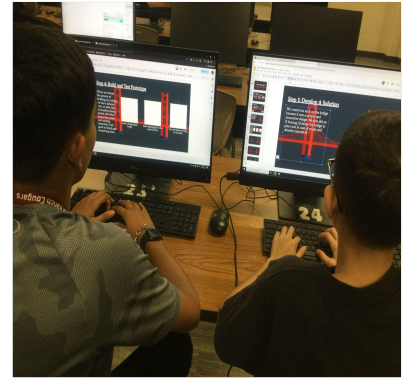
When we started the process of building our bridge, we had a delayed start, so after days of members being absent and other delays like stolen and missing materials, it felt good to finally get something done.



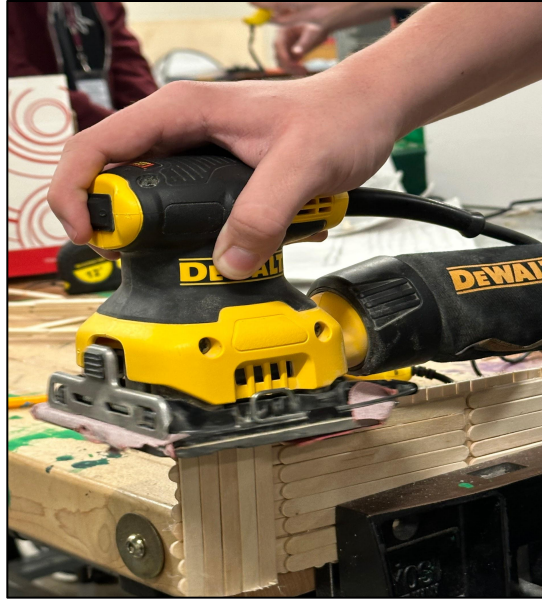
Landon designing the bridge



Adam Applying glue to the popsicle sticks



Tyce and Ainesh working on the slides



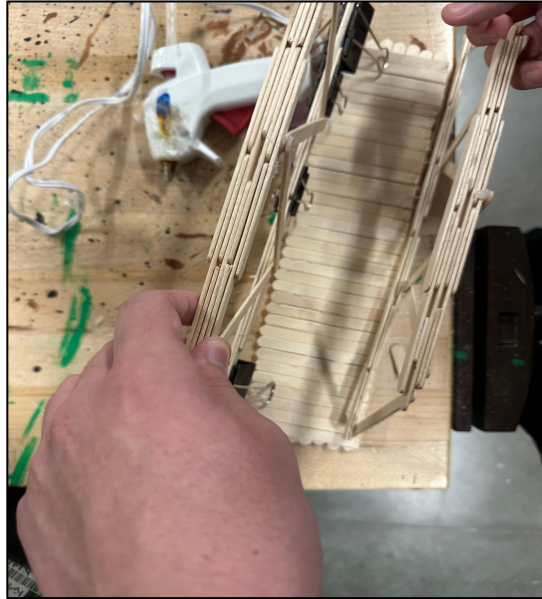
*Adam sanding the edge of
the deck*



*Adam Sawing the edge of
the deck*



*Landon gluing supports
under the deck*



Attaching the sides of the bridge to the deck

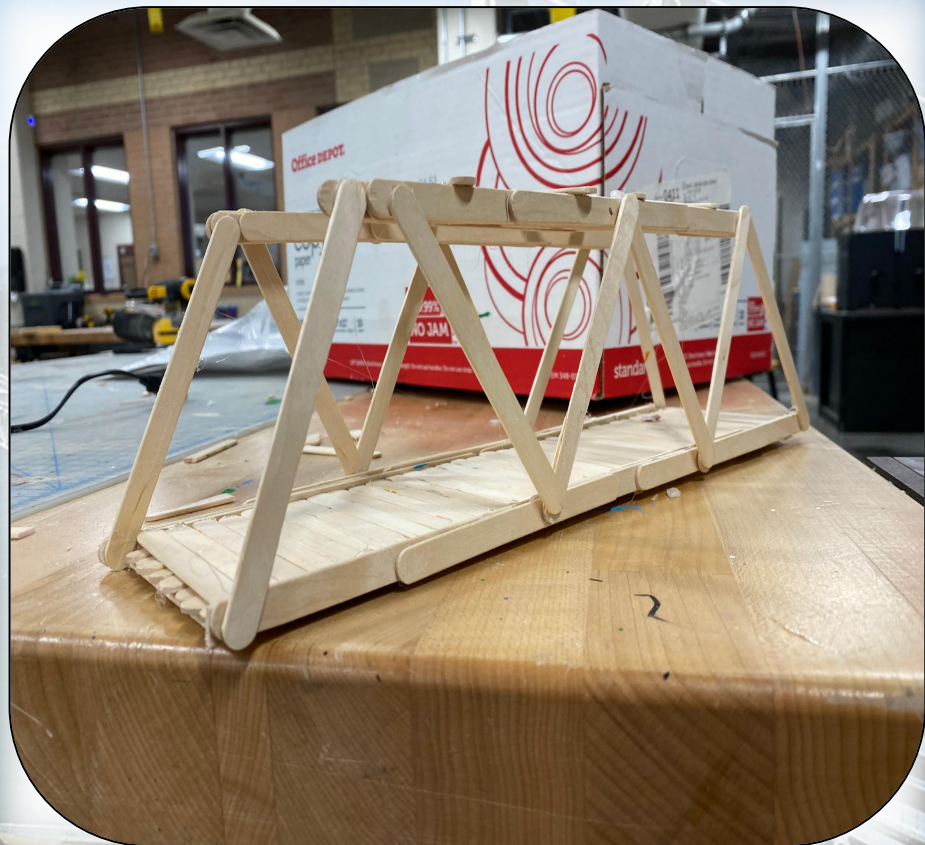


Landon measuring the edges of the deck



An x-bracing on the top of the bridge

Step 5: Picture of End Product



Step 6: Evaluate Solution

We got off to a pretty slow start, especially with the absences of our members being frequent and often hindering our progress. This was further worsened by some faffing around on our part and some materials being lost. However, after we got ourselves situated, we quickly got to work constructing the trusses first before moving on to the deck. After all of the components were built, we glued them together and began to design the x-bracing. Finally, we designed and installed the x-bracing and finished our bridge's construction. Looking back, it may have been unwise to construct the trusses and deck separately before gluing. It may have been easier to construct the two components together as one unit, also potentially providing greater structural stability and fewer points of failure.