

Bridge Capstone

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Understanding

We had to educate ourselves regarding the proper techniques and methods for building a bridge. We utilized the following site:

<http://www.pbs.org/wgbh/buildingbig/lab/forces.html>

This sites taught us about the types of forces applied to bridges and the shapes that are more structurally sound.

Explore

We utilized free bridge building games online in order to simulate possible designs.

Websites include:

Cargo Bridge

<http://www.hoodamath.com/games/cargobridge.html>

Cargo Bridge 2

<http://www.hoodamath.com/games/cargobridge2.html>

FWG Bridge

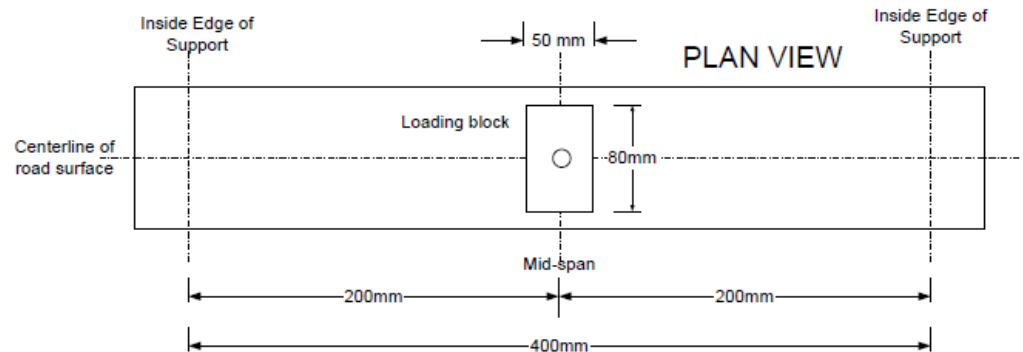
<http://www.hoodamath.com/games/fwgbridge.html>

Define

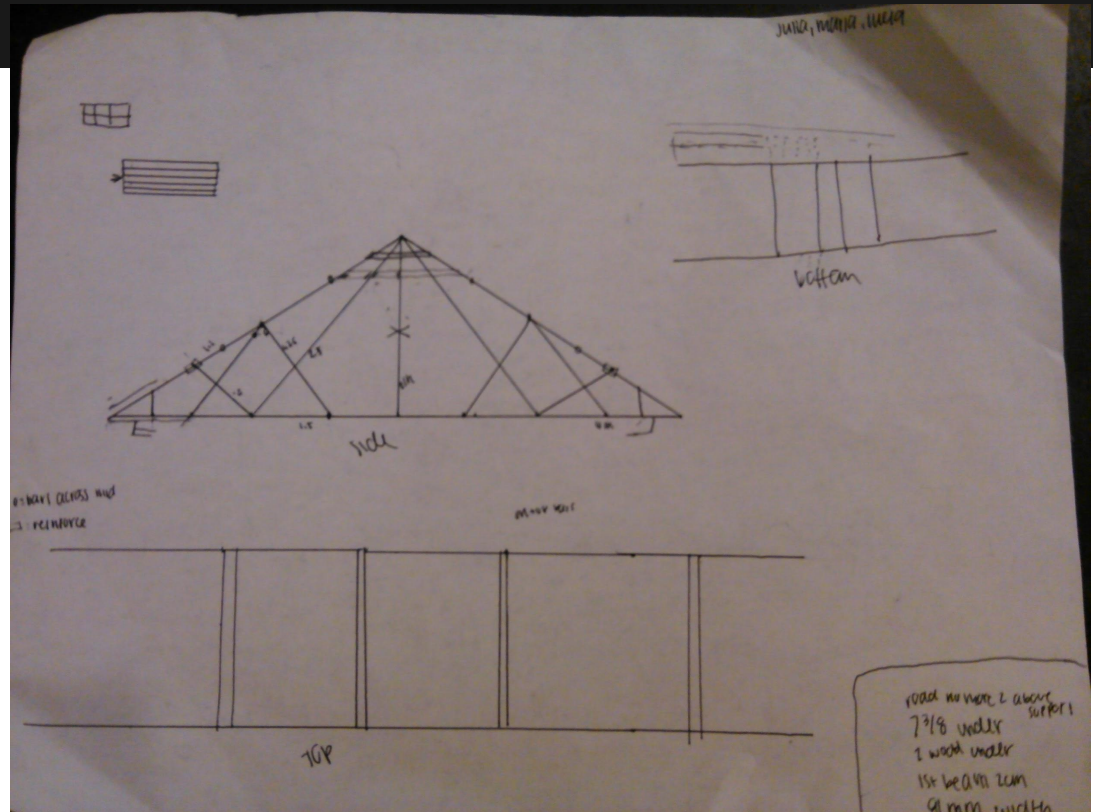
We had to stay within certain regulations.

Requirements included:

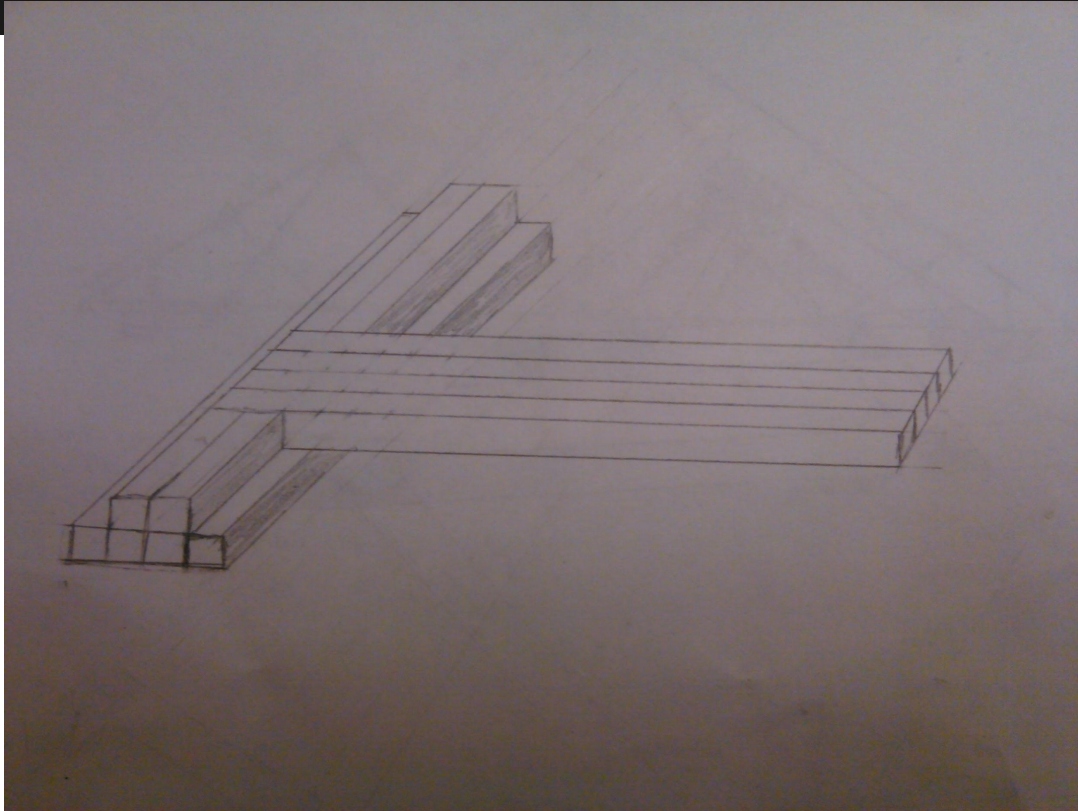
- The road can't be more than 2 pieces of wood above the support.
- $7 \frac{3}{8}$ under
- 2 wood under
- 1st beam 20 mm
- 81 mm width



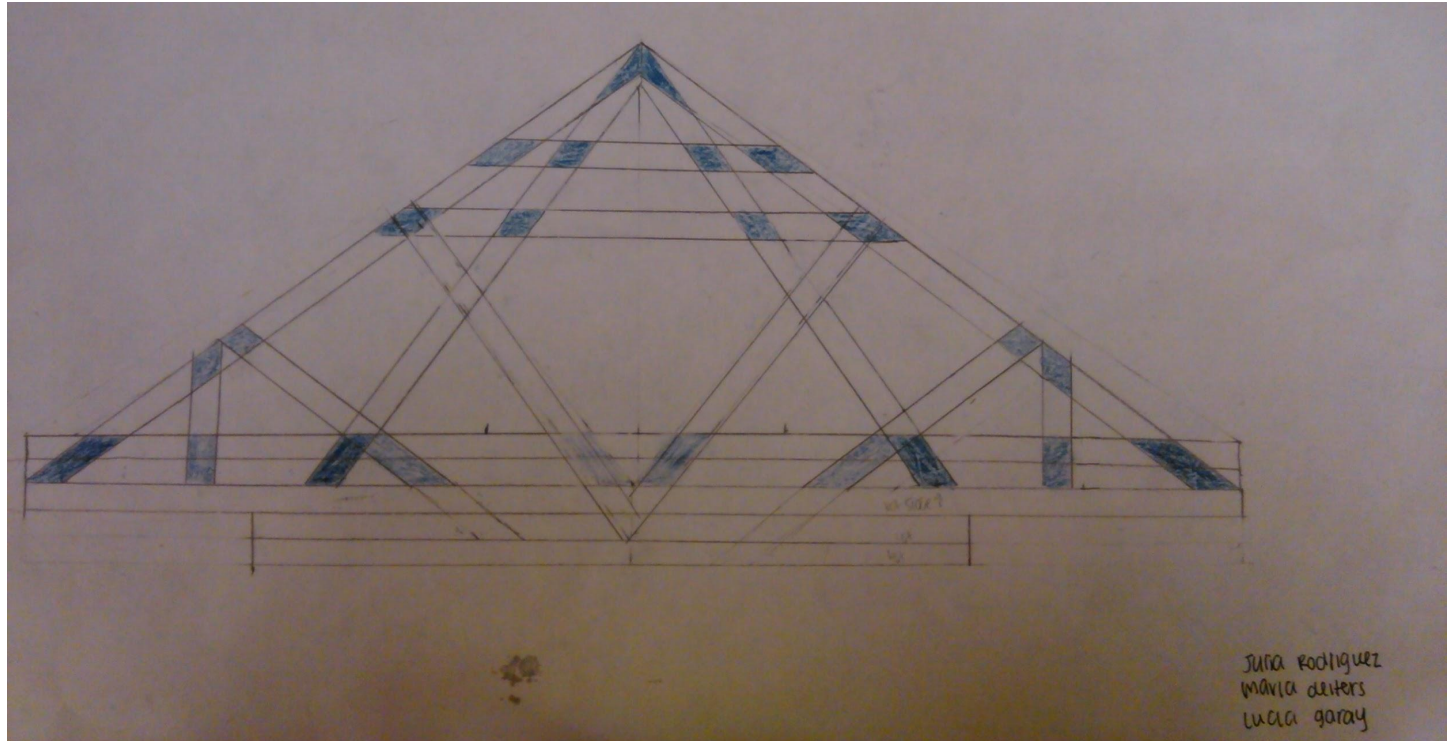
Ideate



Ideate



Ideate

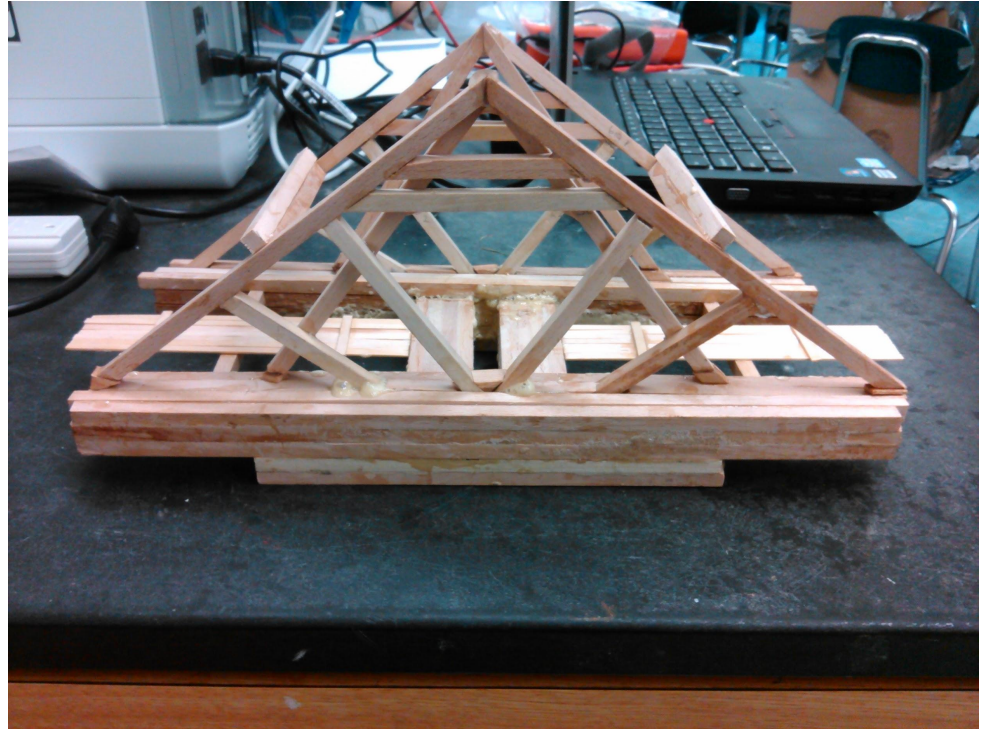


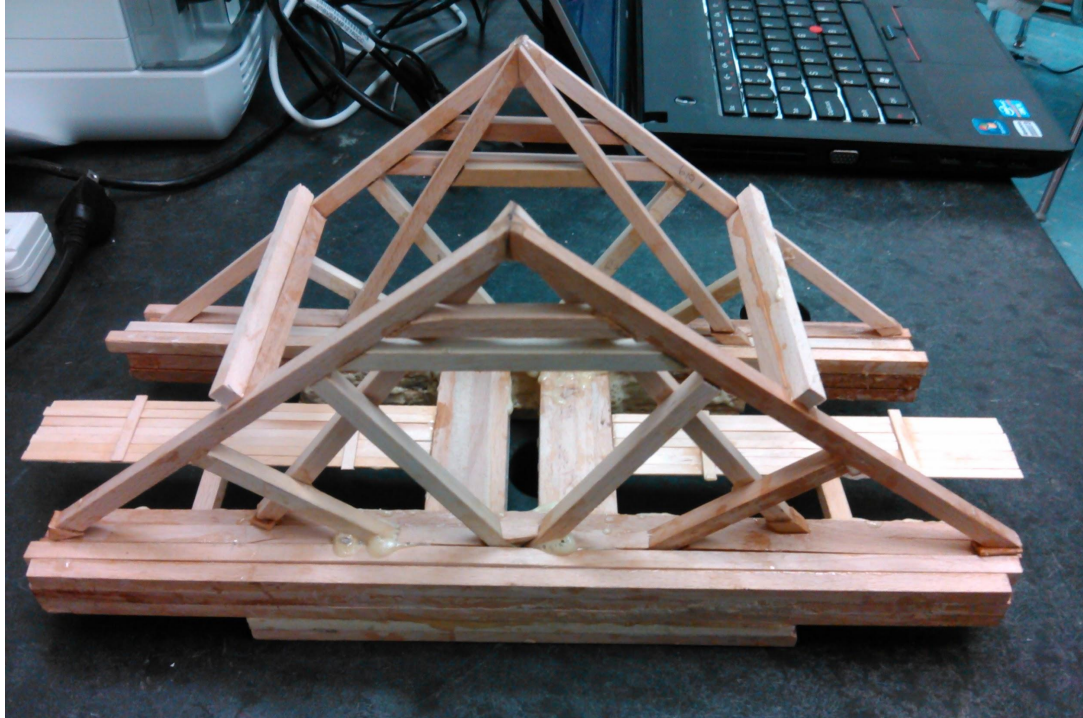
Refine

There were a few times in which we ran into problems as we were creating our design. For example, we had a miscalculation regarding the connection between the loading block area and the sides of the bridge so we had to change our connection plan.

Solution

Our final Product.

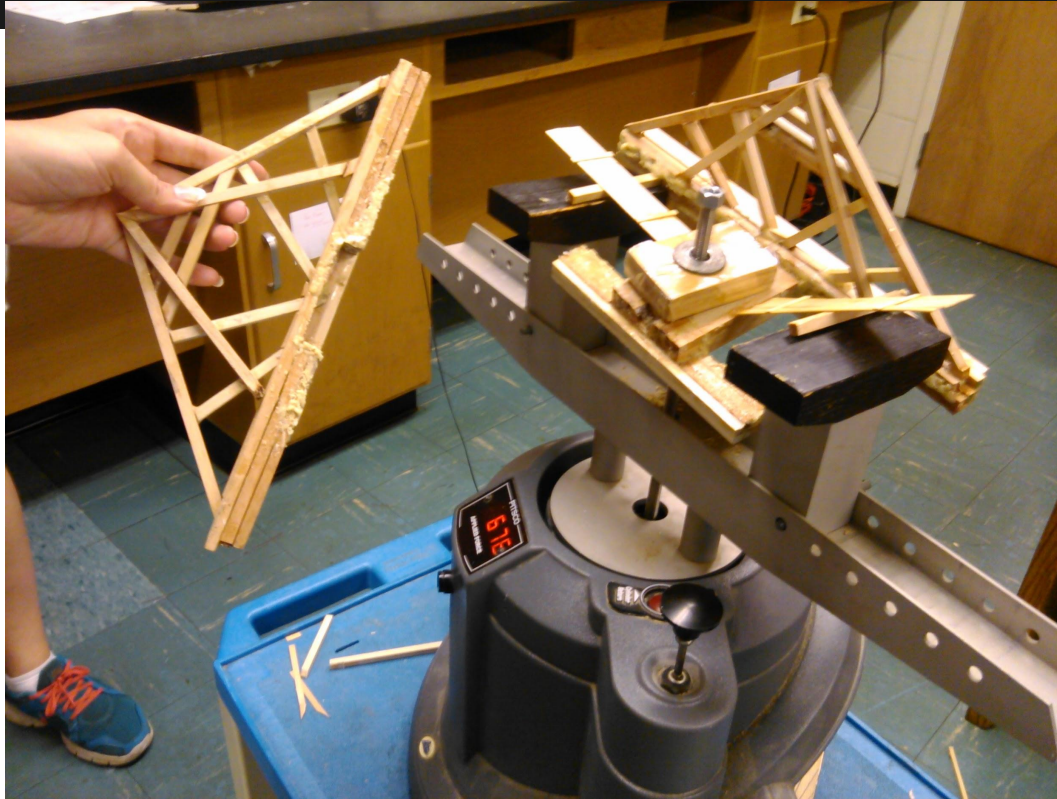




Results (JML)

GROUP	MASS g	Wt 76	DEF	STRENGTH FACTOR	STIFFNESS	STRA LOA MA STIF STRA DEF
LJT	289	1000 ± ??	.5cm	3.46	6.92	
GJR	320	500	.6cm	1.56	2.60	
HAE	319	456	.7cm	1.42	2.04	
TKL	286	680	.8cm	2.37	2.97	
FCM	353	636	.6cm	2.03	3.39	
JKD	487					
D	248	464	1cm	1.87	1.87	
CAM	413	336	1cm	.81	.81	
N	188					
JML	481	676	0.1cm	1.41	14.05	

Aftermath From Testing



Destruction

