

## Problem

### Objective

Design, manufacture, and install features on Hole 16 of the Landa Park Mini Golf Course must have minimal to no maintenance for at least 5 years and last for over 20 years



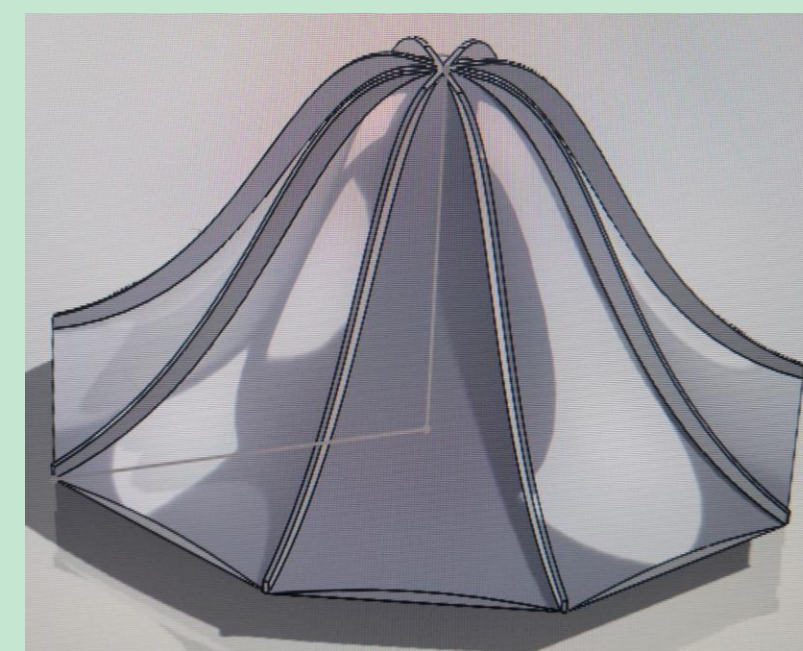
### History

- Faust Bridge was built in 1887 used to be a part of the State Highway but later was designated solely for pedestrian use
- Founders' Oak is over 300 years old used as a form of communication by Central Texas Native Americans, and recognized in 2012 as The Famous Tree of Texas
- Bandstand was added to plaza in 1905, served as stage for concerts given by the Waldschmidt Fire Department Band for years
  - Landa Park has been open to the public since 1936



## Design

Scaled Down Model:



Full Scale Model:



### Bandstand

3D printed to use as a mold  
Then sand casted with aluminum

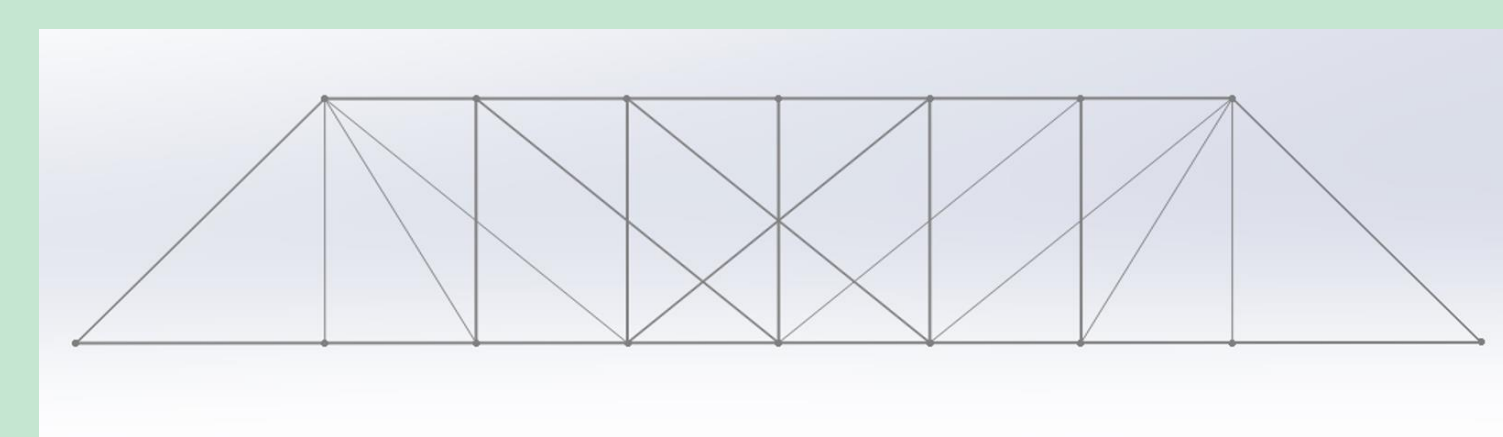
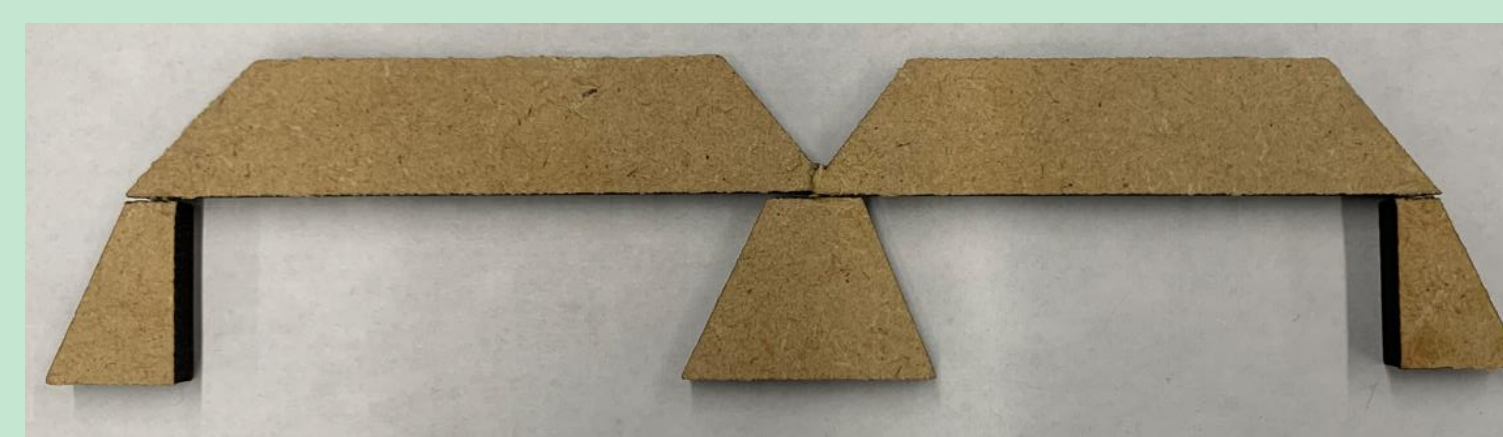
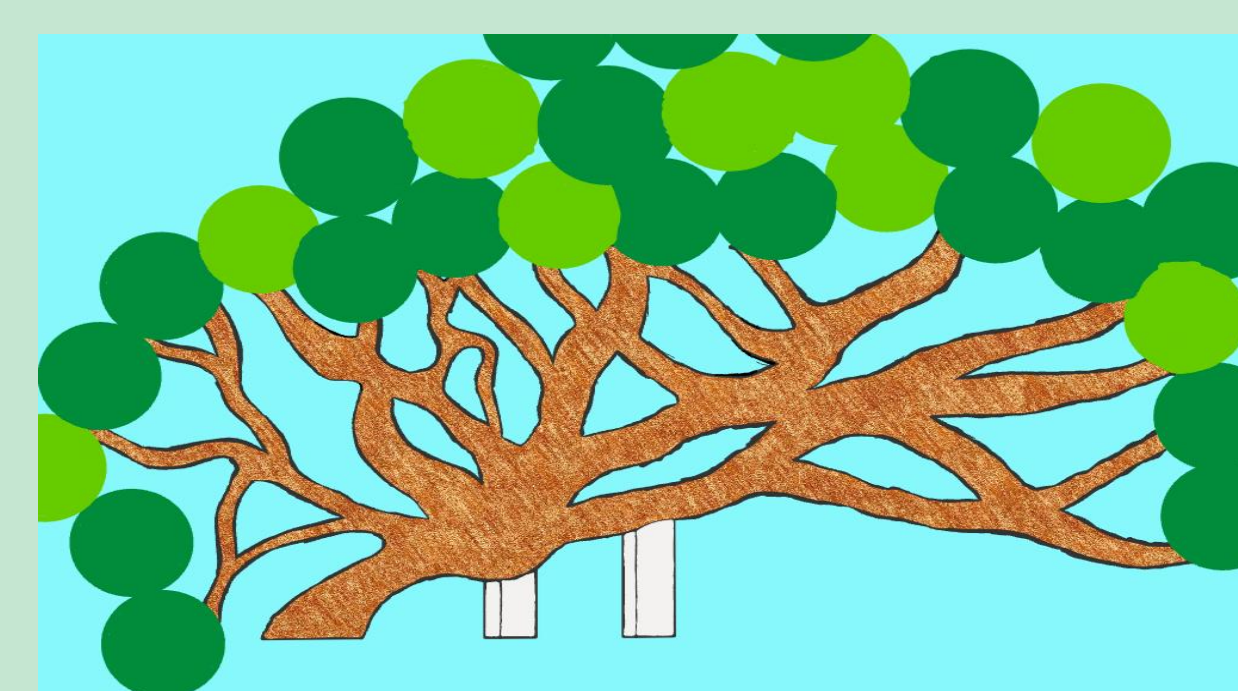
**Problems:**  
Shape of roof  
Casting needs drafts on molds

### Founders Oak

Waterjet aluminum circles  
Then stacked to make the shape of the tree  
Waterjet 2D cutout  
Canopy made of golf balls

**Problems:**

Unique shape  
Weight distribution  
2D vs 3D



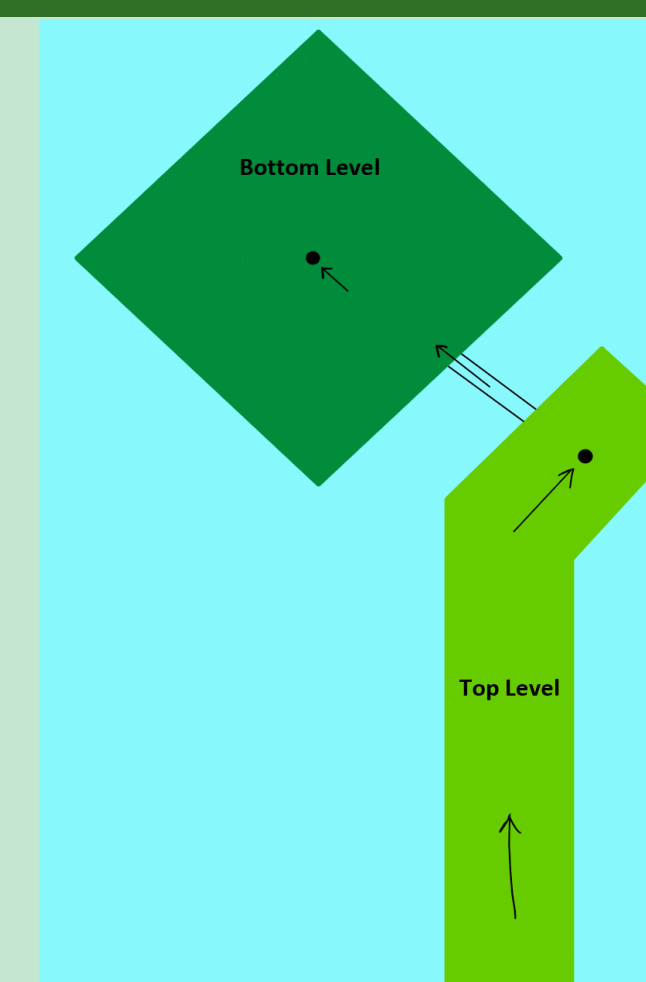
### Faust Bridge

Waterjet and layered to create height  
Laser etched and waterjet to create wire effect

**Problems:**  
Etch vs. Waterjet

### Customer Needs

- Must be durable and withstand weather
- Must Incorporate NB Heritage and Culture
- Must follow Playground Safety Regulations
- Must be < 5ft in length and weigh < 100lb



## Manufacturing Needs

### Materials

- Bandstand* – Molten Aluminum
- 3D Printing* - PLA Filament
- Waterjet Cutouts for Tree and Bridge* - 1/16 in. Aluminum
- Tree Prototype* - Cast Acrylic
- Tree Canopy* - Golf balls



### Testing

- Etch vs waterjet:** Issues with etch - powder coat first, reflection affects laser
- Issues with waterjet - Solidworks drawing of negative wire sketch
- Sand casting:** Work through mold issues of drafts
- 3D vs 2D tree:** Addressing actual shape of Founders Oak, weight issues, how to layer



### Manufacturing Processes

Waterjet, Plasma Cutter, Sand Casting, 3D Printing, Solidworks, Adobe Illustrator

Thank you to the Texas State Foundry Dept. and Ingram Hall Makerspace staff for helping us with these processes!