In order to develop an event space for the city of Falera, Switzerland, a basic floor plan was developed with the understanding that attendees would arrive from the village through the natural path created by the astrological installation. Through the use of hanging chain studies, a funicular form was found that respects the nearby cathedral, provides a comfortable performance space, and allows for astrological observation in the evenings.
Funicular Form Finding

First Concept

Plan

- Concrete Shell
  - Thickness: 15 cm
  - Weight: 1,620 k
  - Expected Buckling Location: Factor 1.91
  - Max Deflection: 4.1 in
  - Max Stress: -3000 psi
Final Concept

Cloth Model
The Approach
View up the Hill
Sun Study & Lighting Layout

March

June

Sept

Dec

Light Path Plan

June 21st

Stage

Audience

9 am 12 pm 3 pm
Structural Schematic

Force Flow Diagram

SAP Model

Shell Parameters
Thickness: 4 in
Weight: 258 kips

Max Compressive Stress: 2.54 ksi

Expected Buckling Factor: 393.1

Design Loads
Dead Load: 50 psf
Snow Load: 25 psf

Max Deflection: 0.0045 in
When we designed the formwork for our concrete cast, we did not anticipate some of the issues encountered due to human error. While we were working with the CNC machine for the first time, we realized that our cut file pieces were too close together so some of them got torn up. Then while nailing and screwing the smaller pieces together there was some splitting that created some semi flimsy pieces that then needed extra reinforcement. Finally our corner/top condition pieces didn’t fit exactly where they were supposed to, also due to human error in putting the layers together. Even though putting the formwork together caused some issues, the take down worked perfectly.