2020

Panama Bridge Project

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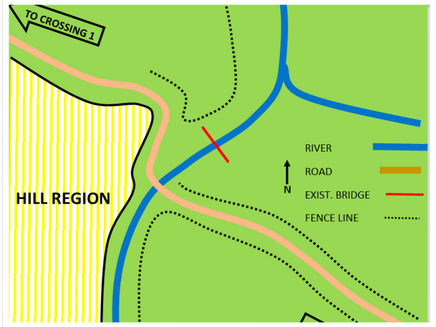
THE PANAMA BRIDGE PROJECT

Zach Hartman, Mikayla Eyster, Crosby Harro, Drew Moyer

Problem Statement

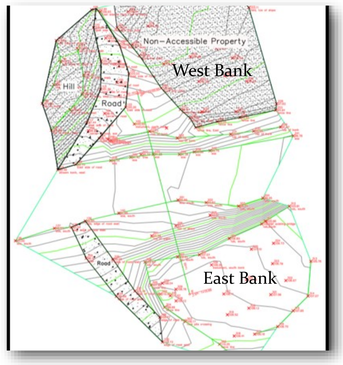
The Panama Bridge project partnered with Rio Missions Panama to design a bridge for the village of La Gigi, Panama. During heavy rains the stream floods and becomes impassable. The mountain residents are effectively cut off from the village during this time. To accommodate this need, the Panama Bridge Team designed an aluminum truss bridge, spanning 90 feet. The design includes a unique construction strategy to deal with challenging site constraints.



Design Constraints

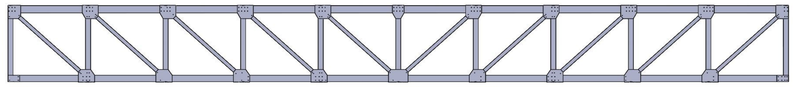
In creating a solution for the community, the team had multiple design constraints to consider

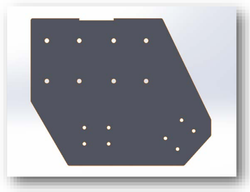
- Remote location
- Corrosive environment
- Unknown stream hydraulics
- Material accessibility
- Limited space on west bank



Truss Design

A Pratt style truss was chosen in order to deal with limited space for construction on the west bank. The bridge is 8ft tall and 4ft wide, and covers a span of 90ft. Aluminum channels and gusset plates make up the entire bridge, except for the decking that is made of repurposed steel carriolas from the launching sequence.





Connections

Slip-critical connections between truss members are provided by aluminum gusset plates fastened to members by steel bolts and washers.

Unique Construction Sequence

Form cast in place abutments

↓

Construct rail system over the crossing and east bank

↓

Assemble superstructure on east bank on existing rail

↓

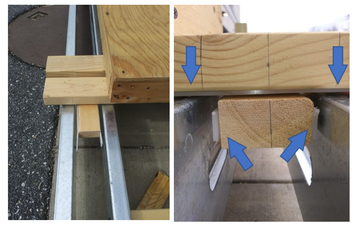
Use winches to pull bridge across in series of assembly and pulling

↓

Use jacks to lower bridge onto abutment bearing pads

↓

Attach decking, backfill, and complete abutment finishes

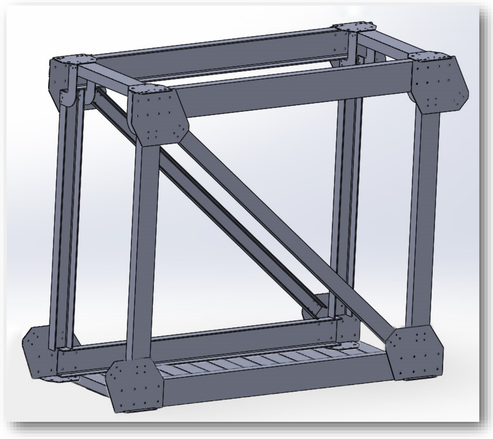


Structure Type Selection

An aluminum truss superstructure was selected for the site. The choice was driven by constructability and life cycle considerations.

Prototyping

In order to ensure proper fit-up of the many aluminum members one tenth of the bridge (one panel) will first be assembled on campus.



Partner

Dan Cotton and Pete Davis of Rio Missions, located the community of La Gigi, developed a relationship with the local church leader, and identified the need for a bridge at this site. Eventual Construction of the bridge will be led by Rio Missions.

RIO MISSIONS PANAMA

Acknowledgements

Mentors

Dr. Brian Swartz
Mark Raup
Doug Stumpp
Steve Deller
Jeff McIlhenny
Brent Basom
Caleb Comeaux

Team Members

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Sponsors

EBY
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