



Portable Trail Bridge

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Proposal

Bridges within the USDA Forest Service, Uinta-Wasatch-Cache National Forest district can become damaged or unusable due to various circumstances. In the event of a downed trail bridge, users must find an alternative path. It is time consuming for the USDA Forest Service to replace damaged or unusable bridges; thus, a temporary solution is needed.

Design criteria includes:

- A maximum bridge span of 40 ft.
- Easy to transport and construct
- Adaptable to any site
- Reusable

Alternative Analyses

The alternatives for the project are included in two main categories: material type and overall design. Each category was analyzed using a pugh matrix to determine which alternative aligned with the design criteria the best.

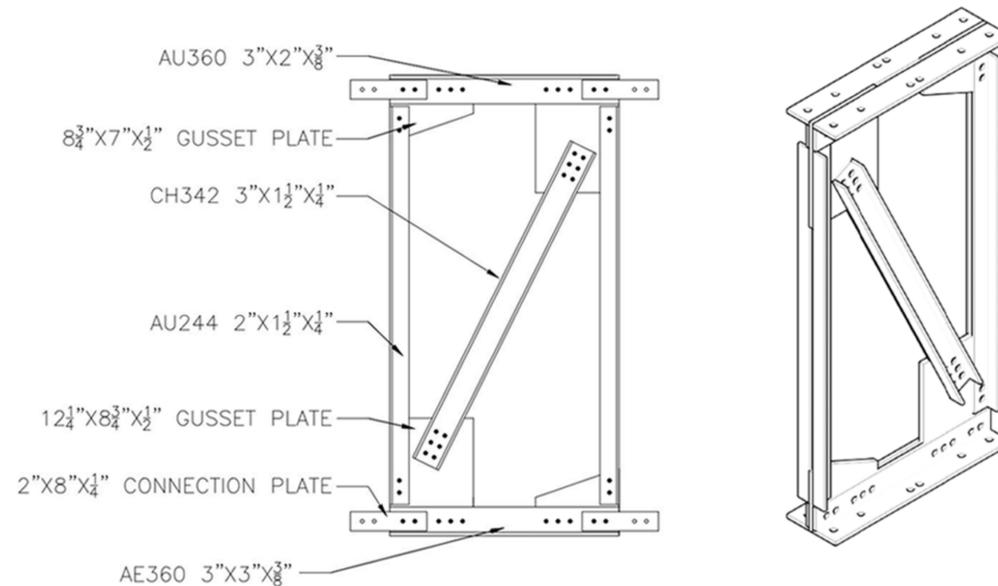
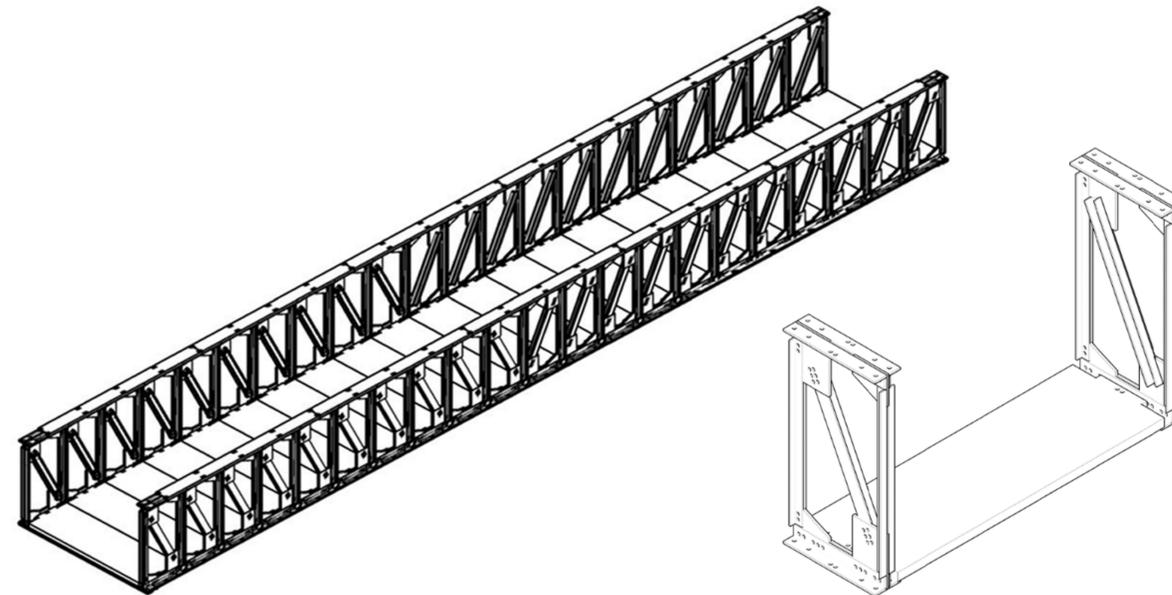
Material alternatives include:

- Aluminum
- Fiberglass
- Steel

Design alternatives include:

- Bailey Bridge
- Standard Truss Bridge
- "Do Nothing"

Criteria	Weight
Transportability	45%
Constructability	20%
Strength	5%
Durability	15%
Cost	10%
Aesthetic	5%
Total	100%



Selected Alternatives

The selected material for the decking and superstructure of the bridge is fiberglass. This material is durable, lightweight, and easy to install.

The selected design concept for the bridge is the bailey bridge. This design is transportable, adaptable, and has a high strength.

Final Design

The final design of the portable trail bridge can be seen in the 3D figure to the left. The overall design consists of:

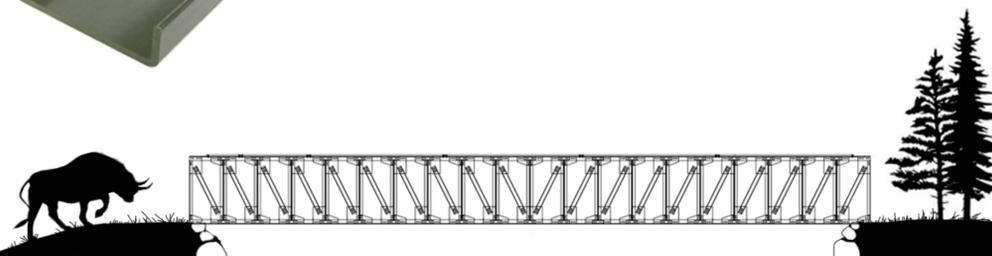
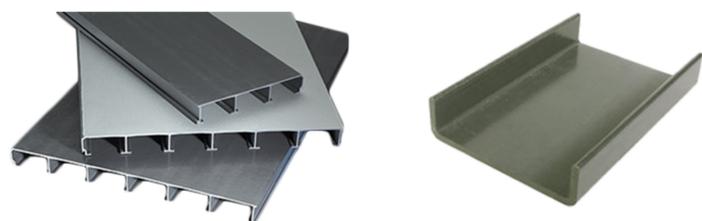
- Prefabricated 2'x4'x6' modules
- 2'x6' fiberglass deck sections
- Segmented top chords to prevent buckling

The estimated material cost for the bridge is \$130,000.00

Acknowledgements

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The Team



John



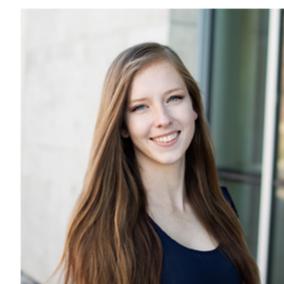
Cameron



Emily



Jacob



Maddi