

# Palmer Lake Bridge Project

## GLUE-LAMINATED BEAM

Description: GLULAMs are large timber members made from layers of wood which are glued together. This is the primary member of this design. The handrail and decking will be wood.

### Pros:

- Cost estimate:
  - \$10,507 for the 2-member bridge
  - \$13,162 for the 4-member bridge
- Natural wood aesthetic
- 4-member bridge has easy construction
- Low maintenance

### Cons:

- Lower constructability for the 2-member bridge
- Shorter lifespan than steel, but still likely in the 60-year range

## STEEL WIDE FLANGE

Description: Steel Wide Flange shapes resemble an I-beam and could be used as the primary structural element for the bridge. The handrails and decking will be wood.

### Pros:

- Cost estimate:
  - \$11,165 for the 2-member bridge
  - \$12,377 for the 4-member bridge
- Greater expected lifespan than Glue laminated option ~ 100 years
- Low maintenance
- Maintain the wood aesthetic

### Cons:

- Decreased material workability
- Increased construction complexity

## OPEN WEB STEEL JOIST

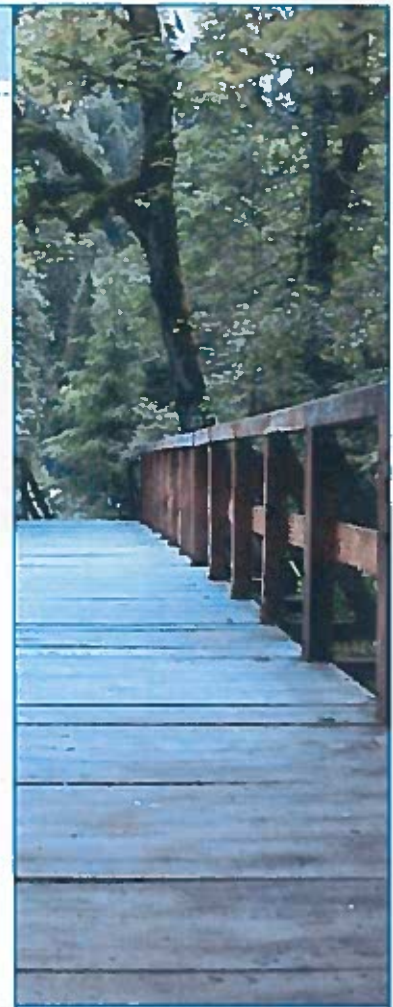
Description: The main members look like a triangular truss system made of metal (similar to what you would see in a school gymnasium ceiling) with wood handrails and decking.

### Pros:

- Cost estimate: \$5,329
- Lightweight (best for span length)
- Easy installation

### Cons:

- Increased maintenance
- Little natural wood aesthetic
- Increased amount of soil evacuation



### OUR RECOMMENDATION:

4 glue laminated beams with posts harvested from the Palmer Lake area.

### OTHER INFORMATION:

- All handrail and decking for each option are pressure treated lumber and are the same design and cost.
- Pressure treated 4x6 inch posts could be used in lieu of locally harvested materials for the hand-rail posts.