

# Truss Bridge Design

**Introduction:** Truss bridges have been used for centuries to cross deep valleys, dangers, water and to allow for more efficient travel. As people evolved from a hunter gatherer society to an agricultural based community, the need to transport more cargo became more pervasive. Bridges were originally limited to small, wooden or stone beams and columns applicable for short distances or vine and rope suspension beams which were light and sometimes spanned great distances.

*Answer this?* What were the positive and negative aspects of the first bridges man made?

*Answer this?* How do modern trusses differ from these bridges? How are they similar?

**Challenge:** Construct a modern style truss bridge to determine how much strength an engineered truss can hold over basic material strength.

**Parameters:** No pieces of wood may be laminated together into multiple layers. The tolerances of the bridge must be as follows:

Direction	Minimum	Maximum
Height	3.5"	4.75"
Width	2.5"	3.5"
Length	17.75"	18.25"

Clamping techniques may be altered from demonstration as groups prefer, students must use standard wood glue provided and are expected to work together professionally and efficiently.

**Outcome:** The group should produce:

1. Accurate 1:1 scaled drawings and templates to be laminated and evaluated before construction begins
2. Two complete structures attached to one another with cross members within the allotted time frame
3. All worksheets, self/team evaluation, and lab report

**Testing and Evaluation:** Evaluation will be per Rubric

1. Attach the bridge to the tester.
2. Turn on and zero the machine.
3. Begin applying live load to the bridge (note the flexing of the trusses in the center.
4. Watch the test screen for your maximum score.
5. Record your maximum score and evaluations.
6. Complete the lab report.

