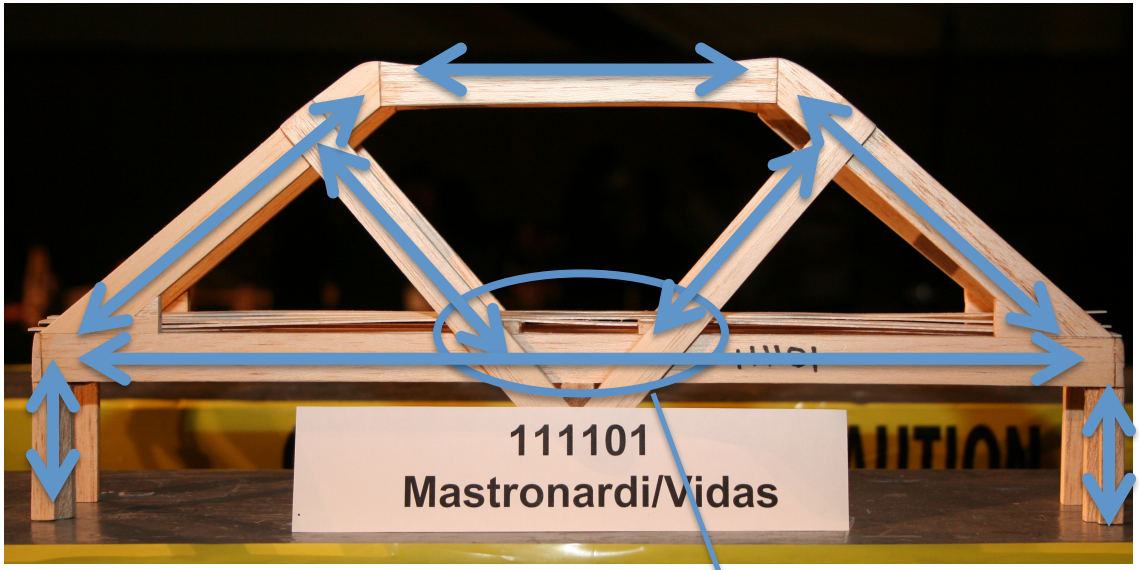
Bridge types: simple beam, arch, truss, suspension, cable-stayed (suspension (e.g. Lions Gate Bridge) and cable-stayed bridge (e.g. new Port Mann Bridge) designs aren't applicable to the Physics Balsa Bridge Building Contest as they require material outside the scope of our event).



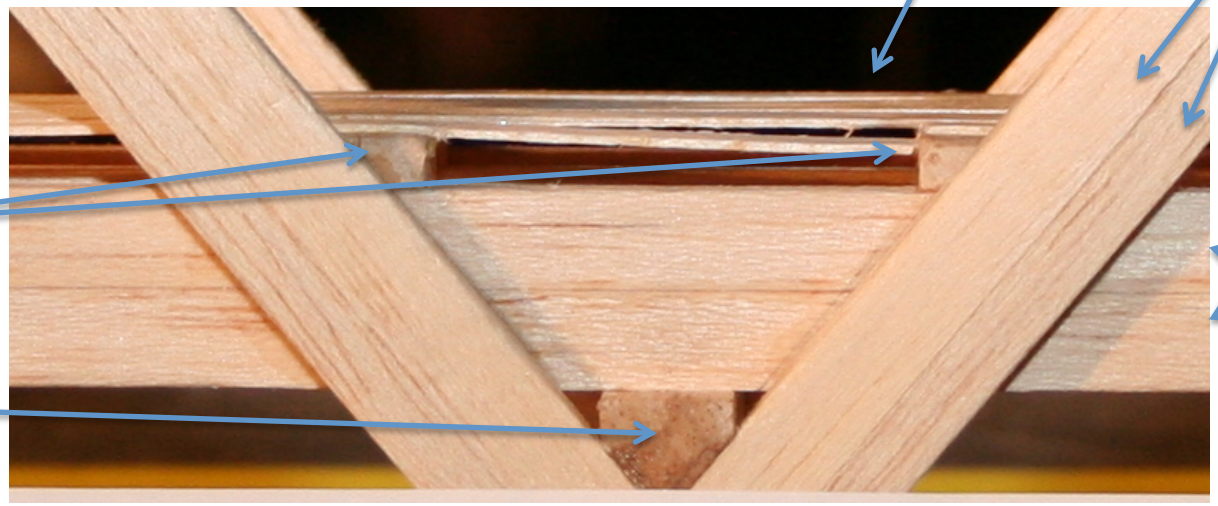
Modified truss design, laminated beams, simple feet, simple roadway.

Arrows show distribution of forces in key parts of the bridge once weight is applied near the bridge centre.

Roadway made of very thin strips, glued only at two support points

Laminated (i.e. two, or more) diagonals

Closeup

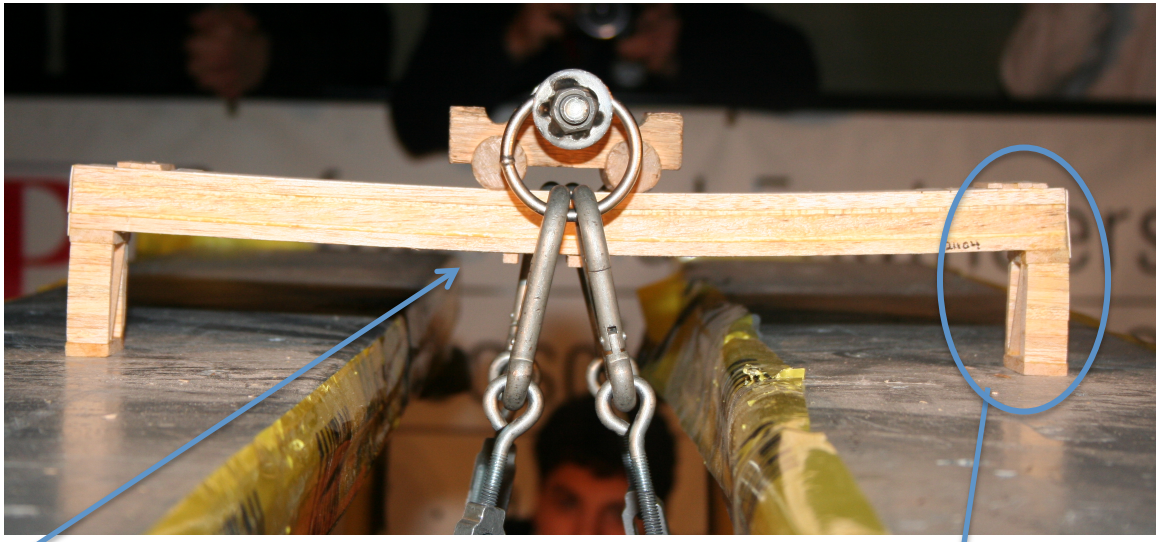


Key supports for test frame

Laminated main horizontal beam

Laminated cross member interlocked with diagonals

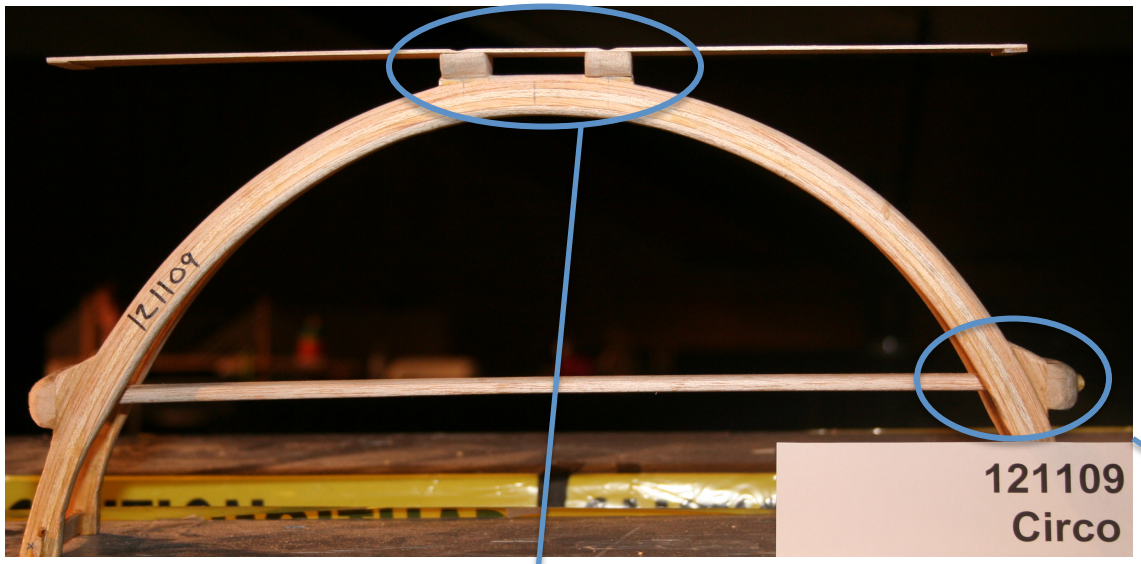
Basic beam bridge with no superstructure to distribute the applied load.



Note the deflection (bending) of this structure. A bridge may not deflect more than 1.0 cm at its centre.

Laminated horizontal beams, inefficient stacked blocks function as pedestals (feet). Significant weight is wasted here.

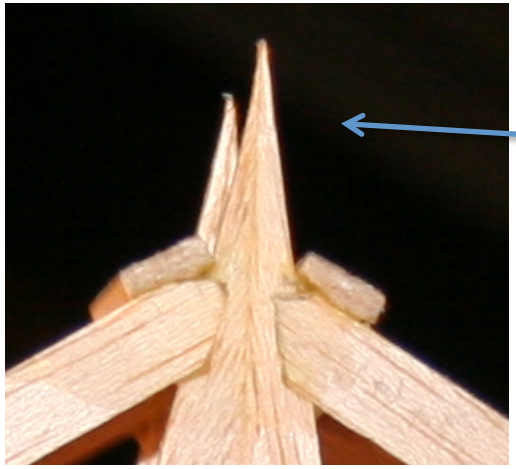
Arch bridge

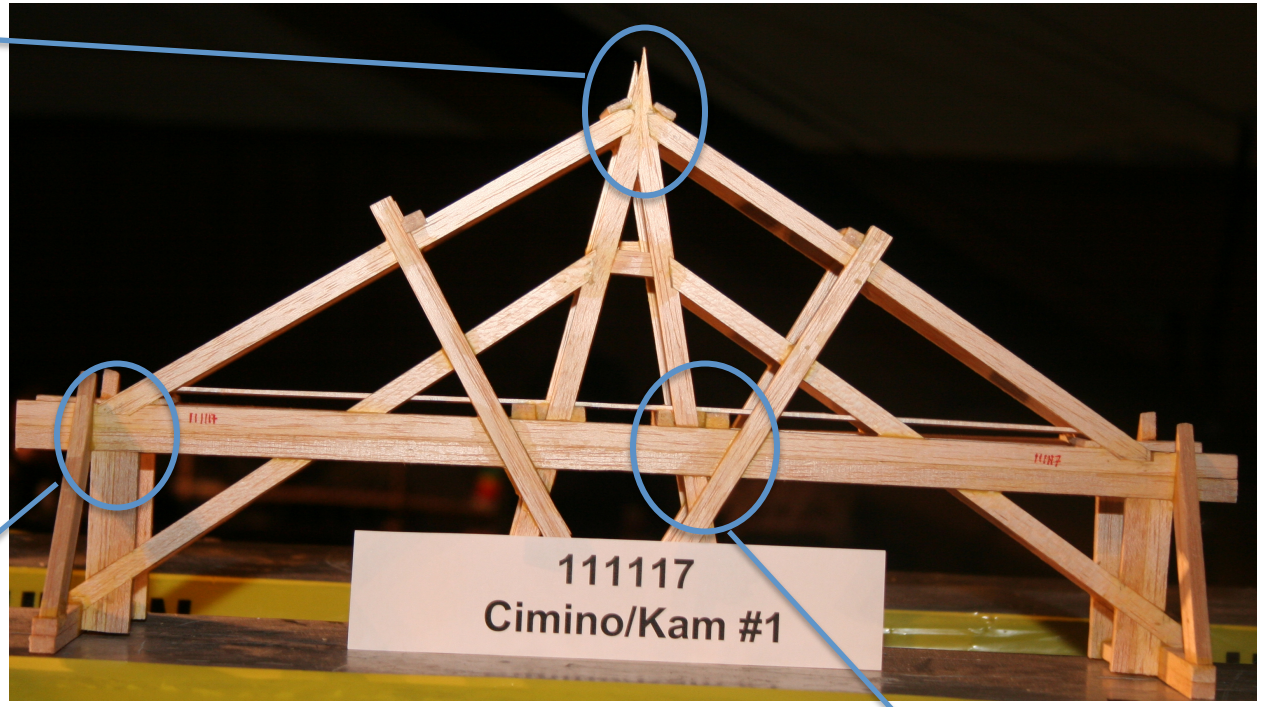


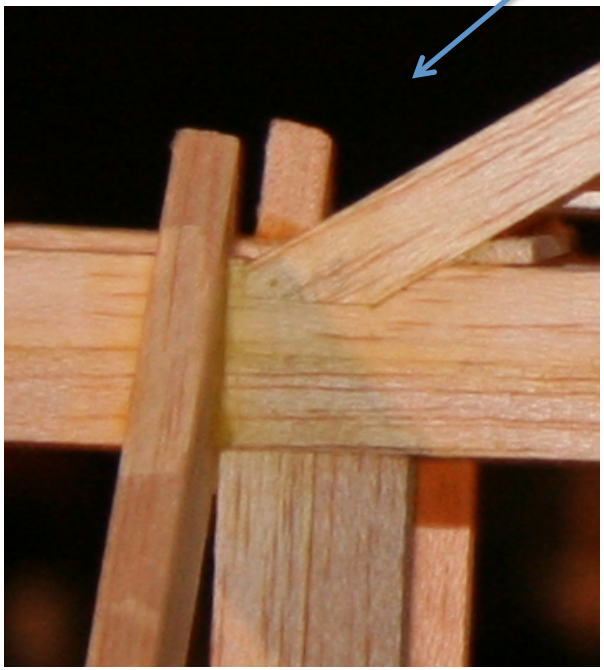
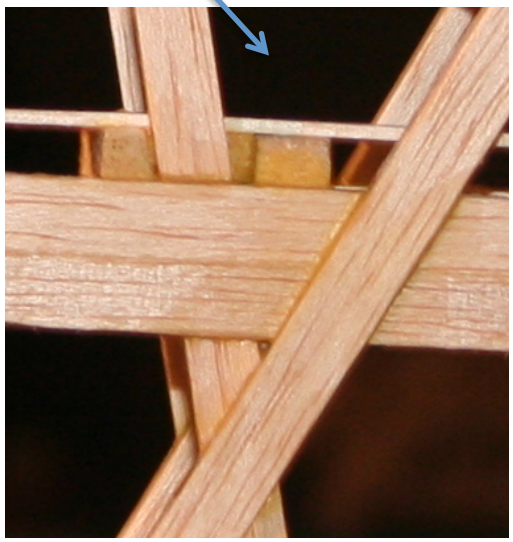
All-time record holder, Gino Circo's classic laminated arch with a single horizontal tie rod. Weight applied at the top of the arch is distributed through the arch down to the base. Without the horizontal tie rod the arch would spread apart and snap. This bridge supported an incredible 219.95 kg!

Single horizontal tie rod cleverly attached to the two arches. Again, note the lamination layers of the arch.

Five-layer laminated arch, with carefully placed roadway supports.







Truss-beam bridge showing examples of interlocking, laminating and notching (where one piece fits into a cutout in another piece. Note also how the roadway is only supported at the location where the test frame will be positioned.