TRUSS COMPETITION

WINTER 2024

INTRODUCTION

As part of the learning experience in ENGG102, a truss bridge competition will be conducted in lab. The main objectives of the competition are:

1. To encourage the students to learn how to work effectively in teams.
2. To give the students an experience in planning, designing, and implementing a project while working within specified constraints.

PARTICIPANTS

Students enrolled in ENGG102, in groups of three/four.

RULES

Materials

1. Truss must be made from: Balsa, White glue, glue

2. Materials will be supplied by the lab tutors to competitors.

3. It is not necessary to use all the material given but it is **absolutely prohibited to use any other material**.

Truss Specifications

1. The truss must span a gap of 450 - 500mm between 2 horizontal solid supports. NO part of the truss is allowed to touch the vertical faces of the abutments.

2. The truss shall be NO MORE than 160 mm above and 100mm below the horizontal support surfaces.

3. The truss shall not be more than 150 mm wide (perpendicular to its longitudinal direction).

4. Glue may only be used as an adhesive connector, NOT a coating. No other coating or painting shall be used.

Testing

The truss will be loaded at its top chord by two-point loads that are 150 mm apart and equally spaced from the truss center line.

Winning Criteria

Failure of the truss is considered to be when the truss reaches ultimate load (collapse) or obtains a deflection greater than 20mm. The truss that has the highest strength factor will be the winner. The strength factor is defined as:

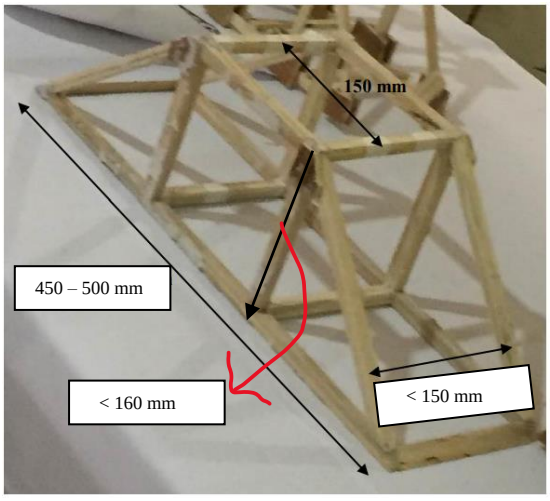
$$\text{Strength Factor} = \frac{\text{Load Carried Prior to Failure (N)}}{\text{Weight of the bridge (N)}}$$

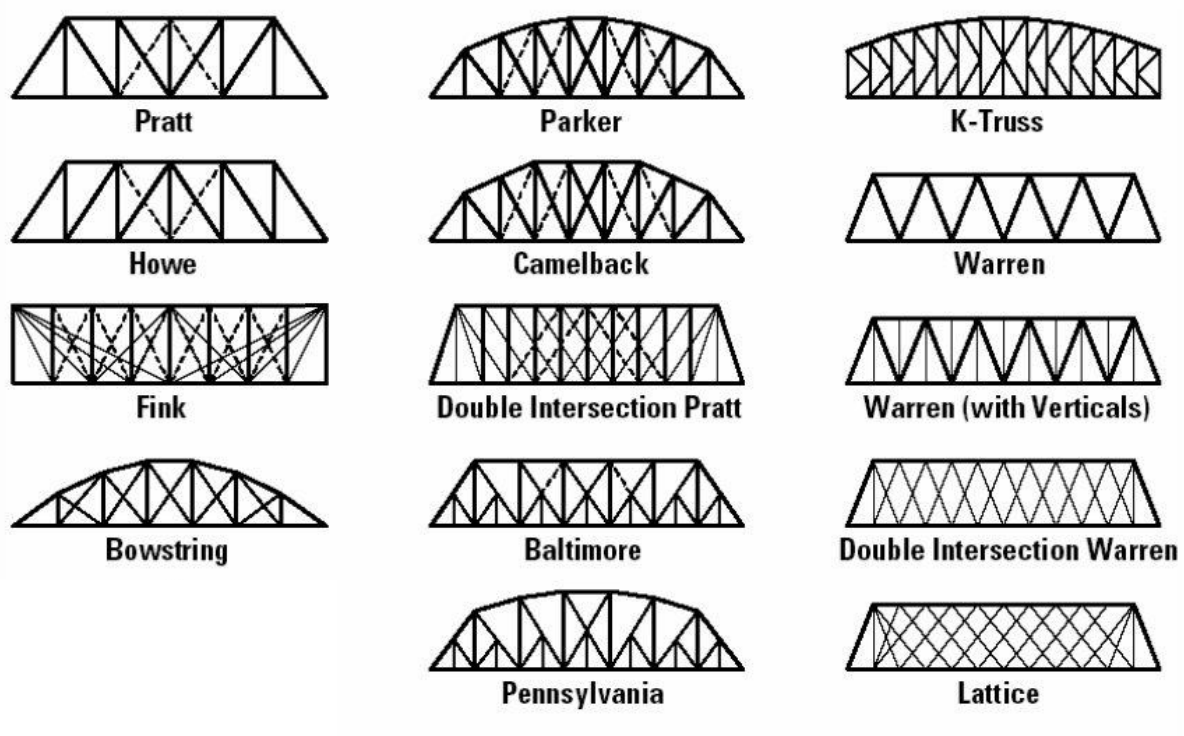
AWARD

Members of the group that achieves the highest strength factor will get bonus point in their course grade.

TIME AND VENUE

Week 10 lab




Pratt
Parker
K-Truss
Howe
Camelback
Warren
Fink
Double Intersection Pratt
Warren (with Verticals)
Bowstring
Baltimore
Double Intersection Warren
Pennsylvania
Lattice