



GUIDELINES: TELECOMMUNICATION TOWER COMPETITION

1. INTRODUCTION

The Telecommunication Tower Model Competition is organized by the Faculty of Civil Engineering and Built Environment (FKAAB) at Universiti Tun Hussein Onn Malaysia (UTHM). The competition will take place on 11 November 2025. This project aims to showcase innovation among students from schools and higher education institutions. In addition to highlighting their creativity, students will present their findings and designs of telecommunication towers while gaining hands-on experience using software to analyse forces on truss tower members. Participants will also develop essential skills such as problem-solving, research, analysis, teamwork, communication, and digital literacy through this competition.

2. OBJECTIVES

- 2.1 To foster interest and talent among students in research and development of science, engineering, and mathematics innovation.
- 2.2 To enhance skills and develop innovation in designing Telecommunication Tower models to produce innovative projects.
- 2.3 To improve communication and social skills during the project development process.

3. COMPETITION RULES AND REGULATIONS

- 3.1 Each entry is to be in a group (maximum of 5 participants).
- 3.2 Each Telecommunication Tower model produced must be new. Models that have been previously competed and won any prizes are not accepted.
- 3.3 The model idea must be original and not previously commercialized, displayed, or submitted anywhere.
- 3.4 Models that have been submitted in commercial samples, published articles, prototypes, plans, drawings, images, and texts are not accepted.

3.5 The jury's decision is final.

3.6 Participation is in physical mode only.

4. TELECOMMUNICATION TOWER MODEL SPECIFICATIONS

Students must comply with the model specifications, and the model design should be either statically determinate or statically indeterminate up to 2 degrees only. The evaluation is based on the lightest tower weight and maximum load capacity, aside from creativity.

4.1 Dimensions

The tower height must be 800mm including the support pillars as shown in Figure 1. The base dimensions are 300 x 300 mm, either square, equilateral triangle or polygon. The distance from the support to the horizontal truss members must be at least 80 mm. Additional members are allowed in this section. Figure 2 shows examples of square, polygon and triangular base dimensions.

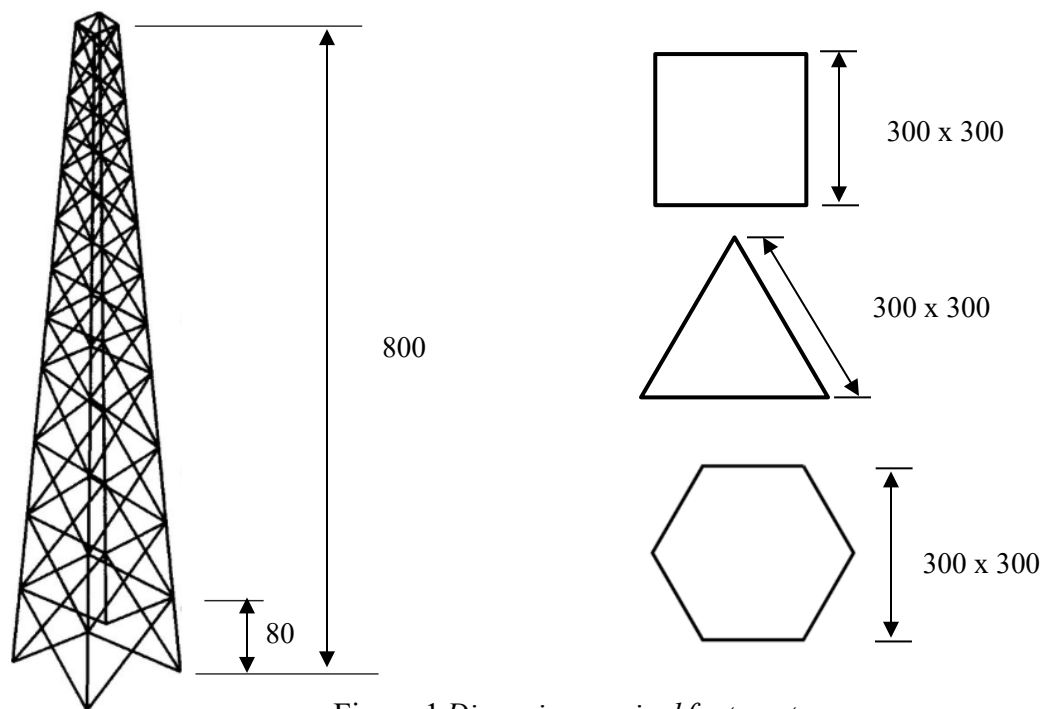


Figure 1 *Dimension required for truss tower*



(a) Example of a square base



(b) Example of a triangular base

Figure 2 *Example of base dimension*

4.2 Material

The materials for the truss tower design are to be made only using satay sticks of 3mm, 4mm, or 5mm sizes as shown in Figure 3 and the maximum allowed combined diameter is 8mm.

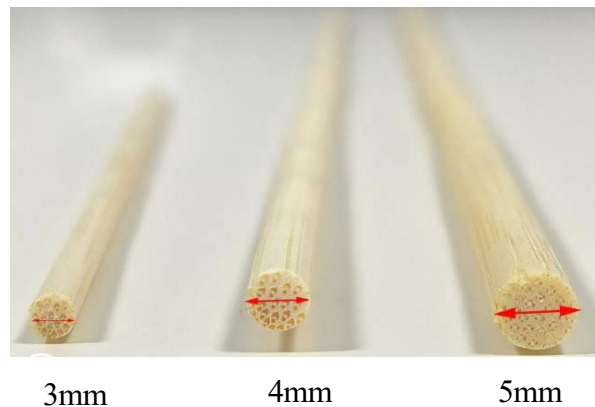


Figure 3 *Satay sticks with different diameter*

4.3 Joints Connection

Only glue or thread for clothing sewing is allowed for tying between truss members.

The use of epoxy or rubber bands (any type of rubber) is not allowed. Painting is not allowed, but colored thread is permissible.

4.4 Top Base

The top base must be flat and not bumpy to facilitate load placement.

4.5 Tower design

All shapes are acceptable, provided **they are not uniform in cross-section from top to bottom.**

4.6 Cross arm design

The use of a cross arm is permitted without a microwave dish. However, in the absence of a cross arm, a microwave dish must be installed, as illustrated in Figure 4.

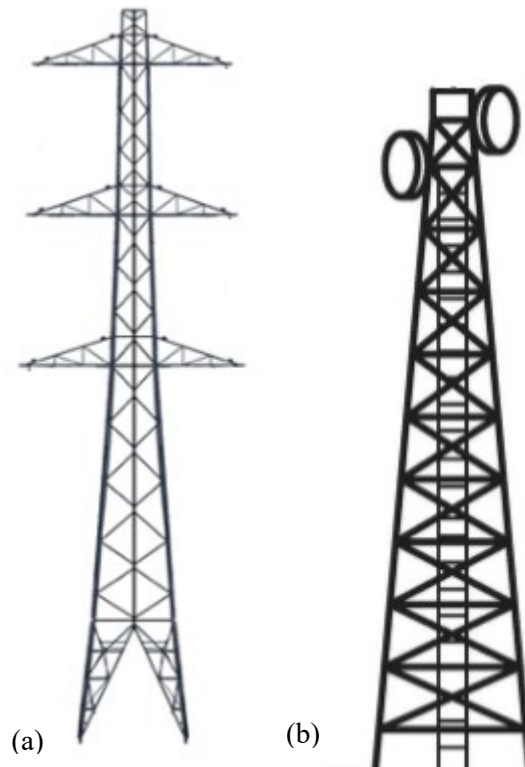


Figure 4 Tower with (a) cross arm and ((b) microwave dish

5. COMPETITION DAY

The judging process will take place on the competition day. Each group must be ready with the completed Truss Tower model. Evaluation is based on structural efficiency, aesthetics, truss performance. The judging schedule will be provided before the competition day.

6. PRIZES

The winner will be selected based on;

Structural Efficiency

Judging will be based on the efficiency of the tower, determined by how much load it can sustain relative to its own weight. Prior to the load test, each model will be weighed and its dimensions recorded.

Overall Performance

The winner is selected based on the total marks for all required criteria.