CONNECTION DESIGN OF AN ARCH BRIDGE (FOOT BRIDGE)

By

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DECLARATION BY THE CANDIDATE.

I Nur Raihana Bt Mohd Abdul Rashid, UiTM no. 2003339837 confirm that the work is my own and that appropriate credit has been given where reference has been made to the work of others.

Signed :.....Raihana.....

Date :.....30 NOV 2006.....

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ABSTRACT

This research is conducted on connection design an arch bridge for pedestrian. The designed stresses were compared between manual calculation and model analysis (LUSAS). The significant of the project is to come out with new knowledge on design connection of an arch bridge. Other than that, joint is an important parts at the pedestrian bridge that joining all structural members. It is important to consider every joints at pedestrian bridge safe, high strength to sustain design load, and efficient (less cost for construction) to avoid any structural failure. For design elements, there are three main element would to design. There are main truss (250x250x25-single angle), internal truss (200x200x20-single angle) and primary beam (203x133x30-UB). For design connections, there are three connections would be design. There are connection between two main trusses and internal truss (Connection 1), connection between main truss and primary beam (Connection 2) and connection between two primary beams (Connection 3). All bolts were designed used black bolt grade 8.8. The size of bolt for Connection 1 is 24mm, Connection 2 is 22mm and Connection 3 is 20mm. The final bolt stress for Connection 1 is 183.69 N/mm^2 (manual) and $1.127x10^6$ N/mm^2 (model), Connection 2 is 218.7 N/mm^2 (manual) and $250x10^3$ N/mm^2 (model) and Connection 3 at web cleat is 739 N/mm^2 (manual) and 13.2 N/mm^2 (model), while at flange plate is 292.5 N/mm^2 (manual) and 1.331 N/mm^2 (model).