Universiti Malaysia PAHANG
Engineering • Technology • Creativity

Mechanics of Materials

Project 1 – 1

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INTRODUCTION

- This project required designing a structure member that undergoes axial, shear, torsion, or bending. I-beam was chosen as the structure member, where it has a 'I' shaped cross section with a design and structure that makes it uniquely capable of handling a variety of loads.
- The 'I' shaped sections are very effective for carrying bending and shear loads in the plane of the web, which is widely used in the civil industries. Flanges is the horizontal elements, while the 'web' is the vertical element. The flange resist most of the bending moment, while the web resist the shear forces of forces experiences by the beam.
- From this design, axial, torsion, and bending are calculated. Force that acts directly on the center axis of an object is called, axial force, where these forces are typically stretching force or compression force that depend on the direction. Also, the twisting of an object due to an applied torque is called, torsion. In addition, beam is a commonly structural element subjected to the bending moment, where it is the reaction induced in structural element when an external force or moment is applied to the element causing the element to bend.

FREE BODY DIAGRAM