**Abstract**  
Flat Bed trailers are employed in heavy automobiles to carry ton’s of loads safely. These trailers have a big role to play as far as the safety of the cargo loaded is concerned. With more and more industrialization the rate at which these trailers are fabricated are increasing. This work has been carried out on one of the major I-Beams, C-sections and box sections carrying a larger load comparatively. The CAD model of the “I” beam is initially prepared with the help of existing drawings. It is then followed by implementation of Finite element method in the static structural analysis of SOLID WORKS 2014 SOFTWARE. FEM results led us to the determination of stress and deflections in the existing model