

## ABSTRACT

A structure is usually made up of footing, Beams, Columns, slab. Structure is a series of connected, interrelated elements that form together a system that can resist a series of external load effects applied to it, which includes its own self weight, and provide adequate rigidity. Reinforced concrete beam designs consist primarily of producing member details which will adequately resist the ultimate bending moment, shear force and torsional moments. At the same time serviceability requirements must be considered to ensure that the member will behave satisfactorily under working loads.

Expressing the equivalent shear and bending moment, this project illustrates the step by step design procedure of beam under combined bending, shear and torsion. The requirements of IS 456 regarding the design are also explained. Structural analysis is important because it can evaluate whether a specific structural design will be able to withstand external and internal stresses and forces expected for the design. The primary reason that structural analysis is beneficial is to determine the cause of a structural failure. A beam with different dimensions are designed and analysed for various conditions of bending, shear and torsion. A beam designed and programmed in Microsoft Excel, this program allows the structural engineer to define loads, dimensions and to choose a structural steel section to resist the loads. The traditional typical hand calculations take up time for the engineer is reduced by using this program. It is comprehensive structural analysis program that uses the structural RCC codes in its design equations. This program used for detailing of each end of span.

**Key words:** Bending moment, Shear force and Torsional moment.