

6. BEAMS

6.1 Introduction

One of the frequently used structural members is a beam whose main function is to transfer load principally by means of flexural or bending action. In a structural framework, it forms the main horizontal member spanning between adjacent columns or as a secondary member transmitting floor loading to the main beams. Normally only bending effects are predominant in a beam except in special cases such as crane girders, where effects of torsion in addition to bending have to be specifically considered.

The type of responses of a beam subjected to simple uniaxial bending are shown in Table 6.1. The response in a particular case depends upon the proportions of the beam, the form of the applied loading and the type of support provided. In addition to satisfying various strength limits as given in the Table, the beam should also not deflect too much under the working loads i.e. it has to satisfy the serviceability limit state also.

Recently, IS: 800, the structural steel code has been revised and the limit state method of design has been adopted in tune with other international codes of practice such as BS, EURO, and AISC. This chapter attempts to throw light on the provisions for bending members in this code.