

1.8 Limit State philosophy as detailed in IS code

DESIGN BASED ON LIMIT STATE METHOD:

Types of limit states:

Two categories of limit states are considered in design.

Limit states of collapse:

- Limit state of collapse in flexure
- Limit state of collapse in compression
- Limit state of collapse in compression and uniaxial bending.
- Limit state of collapse in compression and biaxial bending.
- Limit state of collapse in shear
- Limit state of collapse in bond
- Limit state of collapse in torsion
- Limit state of collapse in tension

Limit state of serviceability:

- Limit state of deflection
- Limit state of cracking
- Other limit states, such as vibration, fire resistance, durability etc.

1. Limit state of collapse:

The limit state of collapse of the structure or part of the structure could be assessed from rupture of one or more critical sections and from buckling due to elastic or plastic instability or overturning. The resistance to bending, shear, torsion and axial loads at every section shall not be less than the appropriate value at that section produced by the probable most unfavorable combination of loads on the structure using the appropriate partial safety factors.

2. Limit state of serviceability:

The limit state of serviceability relate to the performance or behavior of structure at working loads. Normally, design is based on the considerations of limit states of collapse on ultimate loads and on serviceability limit states of deflection and cracking under service loads. Durability is taken care of by prescribing appropriate grade of concrete, nominal cover for various exposure condition, cement content etc.