

4.3.1 GENERAL

- 1. Minimum design life of the steel structure shall be 50 years unless otherwise specified.
- 2. The aim of structural design should be to provide, with due regard to economy, a structure capable of fulfilling its intended function and sustaining the specified loads for its intended life.
- 3. The design should facilitate safe fabrication, transport, handling and erection. It should also take account of the needs of future maintenance, final demolition, recycling and reuse of materials.
- 4. The structure should be designed to behave as a one three-dimensional entity. The layout of its constituent parts, such as foundations, steelwork, joints and other structural components should constitute a robust and stable structure under normal loading to ensure that, in the event of misuse or accident, damage will not be disproportionate to the cause.
- 5. The basic anatomy of the structure by which the loads are transmitted to the foundations should be clearly defined.
- 6. Any features of the structure that have a critical influence on its overall stability should be identified and taken account of in the design.
- 7. Each part of the structure should be sufficiently robust and insensitive to the effects of minor incidental loads applied during service that the safety of other parts is not prejudiced.
- 8. The design intention should be to adopt a layout so as to rationalize the use of member sizes and details to achieve maximum structural efficiency and to obtain a combination of materials and workmanship consistent with the overall requirements of the structure.
- 9. Design shall include all limit states in addition to the limit states of strength and serviceability as follows:
  - a. Strength limit states including general yielding, rupture, yielding, buckling and transformation into a mechanism.
  - b. Serviceability limit states
  - c. Stability against overturning & sway.
  - d. Fracture due to fatigue and brittle fracture.
  - e. Corrosion and durability.

- 10. Details of members and connections should be such as to realize the assumption made in design with out affecting any other part of structure.

4.3.2 LOADING

All relevant loads should be considered separately and in such realistic combinations as to comprise the most critical effects on the elements and the structure as a whole.

- 1. Dynamic loads shall be considered for cranes and for members supporting machineries as per the manufacturer’s recommendations and as per the applicable codes.
- 2. Temperature effects shall be included in the design of the structure including temperature effects during erection stage, operational aspect, etc.

4.3.3 LIMIT STATE OF STRENGTH

In checking the strength and stability of the structure all loads shall be multiplied by the applicable load factors and all combinations of loads producing the worst effects on the structure and its constituent elements shall be identified and used in the strength limit state design. Load factors and combinations given in Table 1 below shall be used when BS 5950 is adopted for design.

- 1. Factors and combinations shall be used consistently throughout the project as per the design code adopted. Mixing factors and combinations from different codes are not allowed.