Awareness of various Codes & Standards governing Infrastructure development

> IS: 800-2007 & IS: 456-2000

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Bureau Of Indian Standards

Agency overview

Formed	23 December, 1986; 32 year ago
Headquarters	Manak Bhawan
Agency executive	Surina Rajan IAS, Director General
Parent agency	Ministry of Consumer Affairs, Food and Public Distribution
Website	Bis.gov.in

Activities

Standard formulation and promotion

One of the major functions of the bureau is the formulation, recognition and promotion of the Indian Standards.

As on 01 January 2019, over 20,000 Standards have been formulated by BIS, are in force. The standards are regularly reviewed And formulated in the line with the technological development to maintain harmony with the international standards.

International Activities



What is Standards?

Standards can be define as a set of technical definitions and guidelines- or simply a instructions for designers and manufacturers. It gives all the necessary requirements for the products, services and operations.

A designer use the standard to design the product and the manufacturer uses the standards to manufacturing the product.

ASTM, API, ISP, IS are some example of standards.

What is Code?

When governmental bodies adopt the standard and become legally enforceable, or when it has been incorporated into a business contract, the standard will became a code.

Code will serve as generally accepted guidelines for design, fabrication, construction and installation.

Civil Engineering Thrust Area for Standards



IS: 800-2007--- Indian Code of Practice for Construction in Steel (Third Revision)

- The Indian standard (Third Revision) was adopted by the Bureau of Indian standards, after the draft finalized by the structural Sections sectional Committee by the Civil engineering Division Council.
- IS 800:1956 was the first in the series of Indian standards brought out under the STEEL ECONOMY PROGRAMME was initiated by the Indian Institute of Standards in the year 1950.
- IS 800 was first revised in the year 1962 and subsequently in 1984, incorporating certain very important changes.
- ▶ IS 800:2007 is the latest revision available since Feb, 2008





- This standard applies to general construction using hot rolled steel sections joined using riveting, welding and bolting.
- This standard gives only general guidance as regards the various load to be considered in design.
- > Fabrication and erection requirements covered in this standard
- For seismic design, recommendations pertaining to steel frames only are covered in this standard

Third Revision of IS 800

- The revision of the standard was based on a review carried out the proposals framed by Indian Institute of Technology Madras (IIT Madras). The project was supported by Institute of Steel Development and Growth (INSDAG) Kolkata.
- There has been considerable contribution from INSDAG and IIT Madras, with assistance from a number of academic, research, design and contracting institute/organizations, in the preparation of the revised standard.

Need for Revision

- Earlier version of the code was much outdated compared to the recent developments in steel design all over the world.
- IS 800 --- Basic Code for Design of Steel Structures
- Earlier IS: 800 was based on Allowable Stress design (ASD) methodology.
- Revision of many other steel related codes in India are also dependent on revision of IS 800.
- > An out-dated code is detrimental to the very purpose of the code of practice itself.
- Thus, revision of IS 800 was essential to include design stipulations as are prevalent all over the world and to ensure availability of efficient sections.

Major modification in the Third Revision

The revised standard enhance the confidence of designers, engineers, contractors, technical institutions, professional bodies and the industry and will open a new era in safe and economic construction in steel.

- This modification would render steel design novel and will facilitate accuracy of design.
- The standard is based on limit state method, reflecting the latest development and the state of art.
- The standard has made reference to the Indian standards now available for rivets, bolts and other fasteners.

IS 456:2000 Indian Code of Practice for Plain and reinforced Concrete (Fourth Revision)

- The Indian standard (Fourth Revision) was adopted by the Bureau of Indian standards, after the draft finalized by the cement and concrete sectional Committee by the Civil engineering Division Council.
- IS 456 was first published in 1956 under the title 'Code of Practice for plain and reinforced for general building construction' and subsequently revised in 1957.
- The code was further revised in 1964 and published under modified title 'Code of practice for plain and reinforced concrete'.
- > The limit state approach was introduced in the third revision in the year 1978.
- ➢ IS 456:2000 is the latest revision of this standard with four amendments.

Specifications



Specifications





- This standard deals with the general structural use of plain and reinforced concrete.
- For the purpose of this standard, plain concrete structures are those whose reinforcement, if provided is ignored for determination of strength of the structure.
- Special requirement of structure such as hydraulic structures, earthquake resistance structures, etc. are not been covered in this standard; these standards are may be used in conjunction of this standard.

Major modification in the Fourth Revision

- Design of durable structures has bee incorporated.
- Formula for estimation of modulus of elasticity of concrete has been revised.
- The permissible limits for solid in the water have been modified in keeping in view the durability requirement.
- All the three types of OPC along with sulphate resistant Portland cement has been added to the list of type of cement used.
- > A clause on 'Quality Assurance Measures' has been incorporated.
- Sampling and acceptance criteria for concrete has been revised.



- The code has been mainly modeled in line with the <u>Eurocodes</u> which are generally referred for design in the European Countries.
- Additional references have been taken from the existing <u>British Codes</u> also.
- An important aspect of this latest code is that this code does not totally exclude the existing <u>Allowable Stress Design</u> (ASD) method of analysis.
- One chapter in this code has been totally dedicated to design concepts based on the ASD method, with certain modification from the Indian Standard (IS 800- 1984) Code.
- > In American code, both ASD and LRFD method of design is equally prescribed.
- In case of IS 800, ASD method with minor modification has been included to help in making a smooth and proper transition of design practice in India from ASD philosophy to LSM philosophy



- In the formulation of this standard assistance has been derived from the <u>British</u> <u>Standard institution.</u>
- Additional reference has been taken from <u>American Concrete Institute</u> and <u>Standards Association of Australia.</u>
- > Details of the minor consideration has also been updated in the fourth revision.
- > Major importance is given to the Quality Assurance.
- Common methods of design and construction has been covered in this code

IS Code No.	Title
456:2000	Code of practice for plain and reinforced concrete
800:2007	code of practice for general construction in steel
875:1987	code of practice for design loads (other than earthquake) for building and structure
875(Part-1):1987	Dead load
875(Part-2):1987	Imposed load
875(Part-3):1987	Wind load
875(Part-4):1987	Snow loads
875(Part-5):1987	Special loads and combinations
1343:1980	Code of Practice for Prestressed concrete
1893:2002	Criteria for earthquake resistance design of structures
3370:1965	Code of Practice for the storage of liquids
10262:2009	Guideline for concrete mix proportioning
13920:1993	Code of Practice for ductile detailing of reinforced Concrete structure subjected to seismic forces
SP 6(1):1964	Handbook for structural engineers (Structural Steel Section)
SP 16: 1980	Design aid for reinforced concrete to
SP 23:1982	Handbook on concrete mixes
SP 24:1983 -	Explanatory handbook on IS 456:2978
SP 34:1987	Handbook on concrete reinforcement and detailing



1. IS 800:2007, Indian Standard Code of Practice for General Construction in Steel, Bureau of Indian Standards, New Delhi.

2. IS 800:1984, Indian Standard Code of Practice for General Construction in Steel, Bureau of Indian Standards, New Delhi.

3. Dr. Subramanian. N, (2008), "Code of Practice on Steel Structures - A Review of IS 800: 2007", Civil Engineering & Construction Review.

4. IS 456:2000, Indian Standard Code of Practice for Plain and Reinforced Concrete, Bureau of Indian Standards, New Delhi.

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