

-2

F.No. 010/VGL/066  
Central vigilance commission

Satarkata Bhawan,  
Block A, GPO Complex,  
INA, New Delhi - 110023  
Dated 07-10-2010

Circular No. 34/10/10

**Subject: Design Mix Concrete**

During inspection of works of many organisations, it has been observed that provisions of IS 456:2000 are neither being followed for designing the concrete mix nor for acceptance criteria. Instances of acceptance of concrete on basis of false certification and without actually testing the cubes for 28 days strength have also been observed. The following deficiencies are brought to the notice of all organisations for immediate corrective action:

1. Minimum cement content, maximum water cement ratio and minimum grade of concrete for different exposures are not adopted as per the details given in Table 5 of above code.
2. Value of standard deviation is not being established on the basis of results of 30 samples as provided in Table 11 of the above code even for works where more than 30 samples have been tested.
3. For acceptance criteria mean of a group of 4 non overlapping consecutive test results is not being calculated.
4. The samples where individual variations are more than  $\pm 15\%$  of average of three specimens are not declared invalid as per the provisions of clause 15.4 of the Code.
5. The concrete is being declared meeting the acceptance criteria which is not in conformity of codal provisions.

Most of the organisations are not even aware about the amendment No. 3 of 2007 modifying clause 15.1.1 of IS 456:2000. All organisations are directed to ensure that provisions of IS 456:2000 read with amendment No. 3 should be followed scrupulously for cement concrete and reinforced cement concrete. Non compliance of the provisions shall be viewed seriously.

  
(V.K. Gupta)  
Chief Technical Examiner

7.10.10

All CVOs

(As per annexure-J of amendment No.3 August 2007 to IS 456: 2000)

Guidelines for Self Compacting Concrete are available as a free download from [www.efnarc.org](http://www.efnarc.org)

#### 40. FIBER REINFORCED CONCRETE

1. Fiber Reinforced Concrete (FRC) is a technology, which addresses some basic shortcomings of concrete as commonly produced. It renders the concrete with vastly improved performance characteristics, suitable for a range of applications.

2. Concrete is inherently a brittle material with low tensile strength and limited ductility. Contribution of the conventional steel reinforcements in RCC construction in taking care of the tensile stresses is limited in its own plane.

3. Fibers may be added to concrete for special applications to enhance properties, for which specialist literature may be referred to. (As per 5.7 Fibers of amendment No.3 August 2007 to IS: 456:2000). **Fibers influence the mechanical properties of concrete (and mortar) in all modes of failure especially those that induce fatigue and tensile stress.** The various types of fibers that can be used in cement based composites are steel, glass polypropylene, asbestos and natural fibers.

4. Fiber efficiency and the fiber content are the important variables controlling the Performance of Fiber Reinforced Concrete (FRC). Fiber efficiency is controlled by the resistance to pullout, which depends on the bond at the fiber matrix interface.

5. FRC finds application in hydraulic structures like dams, spillways, tunnel lining, underground roof support with Shotcrete, roads and airfield pavements, runways and taxiways, overlays, industrial floors, blast resistant structures, repairs and restoration and many others. **Improved ductility is of advantage in earthquake resistant structures.**