



PRODUCT MANUAL FOR PRECAST CONCRETE MANHOLE COVER AND FRAME ACCORDING TO IS 12592: 2002

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	Product	:	IS 12592 : 2002
	Title	:	PRECAST CONCRETE MANHOLE COVER AND FRAME
	No. of Amendments	:	2
2.	Sampling Guidelines:		
a)	Raw material	:	Please refer ANNEX – A
b)	Grouping guidelines	:	Please refer ANNEX – B
c)	Sample Size	:	Manhole cover and frame – 1 set for all tests
3.	List of Test Equipment	:	Please refer ANNEX – C
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – D
5.	Possible tests in a day :		
	All tests		
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 12592 : 2002 with the following scope:		
	Product name	PRECAST CONCRETE MANHOLE COVER AND FRAME	
	Grade designation/ Shape & Size		

ANNEX - A

RAW MATERIAL

- 1) Cement - ISI marked conforming to the relevant Indian Standard as mentioned in IS 12592: 2002.
- 2) All types and sizes of coarse and fine aggregate – clause 4.2 of IS 12592 : 2002 and IS 383
- 3) Concrete - clause 4.3 of IS 12592: 2002. Strength of concrete shall be ensured by testing concrete cube.
- 4) All types and sizes of steel - ISI marked conforming to the relevant Indian Standard as mentioned in clause 4.4 of IS 12592: 2002.
- 5) Steel fibre - clause 4.5 of IS 12592 : 2002
- 6) Admixtures (if used) - IS 9103.
- 7) Water - clause 4.7 of IS 12592: 2002 and IS 456.

Note: If different type and/or sizes of steel for reinforcement are used, it shall be treated as additional raw material. Similarly, if source and/or size and types of coarse and fine aggregate have changed, it shall be treated as additional raw material.

ANNEX B**Grouping Guidelines**

1. IS 12592 : 2002 covers different varieties of Precast Concrete Manhole Cover and Frame as given below:

i) Grade and Grade Designation:

- Light Duty- LD 2.5
- Medium Duty –MD 10
- Heavy Duty – HD 20
- Extra Heavy Duty – EHD 35

ii) Shape of frame and cover:

- Lamp hole
- Circular
- Square
- Rectangular

iii) Sizes:

Shape	Grade Designation			
	LD-2.5	MD-10	HD-20	EHD-35
Circular	370	450	450	450
	450	500	500	500
	500	560	560	560
	560	600	600	600
Rectangular	450 x 600	450 x 600	900 x 450	900 x 560
Square	400 x 400	450 x 450	560 x 560	560 x 560
	450 x 450	600 x 600		
Lamp hole	-	-	350	-

2. Considering the above, following grouping guidelines for GoL/CSoL have been developed based on Grade and Grade Designation and shapes:

(a) Circular and Lamp Hole

- For circular shape, one sample of manhole cover and frame from highest grade designation and highest size shall be tested to cover all sizes and grade designations up to and including the grade designation and size tested.
- For lamp hole shape, the variety may be covered in the scope of licence if sample of circular shape manhole cover and frame of grade EHD-35 or HD-20 is tested.

(b) *Rectangular and Square*

- One sample of manhole cover and frame from highest grade designation and highest size from rectangular or square shape shall be tested to cover all sizes and grade designations of rectangular and square shape up to and including the grade designation and size tested.
3. The Firm shall declare the varieties they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
 4. During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation, to the extent possible.

ANNEX C**List of Test Equipment***Major test equipment required to test as per the Indian Standard*

S. No.	Tests used in with Clause Reference	Test Equipment
1	Dimension and tolerances (Clause 5.2) Edge protection and finishing (Clause 7.4)	<ul style="list-style-type: none"> - Steel tape/scale - Vernier calliper - Angle protractor - Micrometre
2	Load test (Clause 9.3)	<ul style="list-style-type: none"> - Hydraulic load test apparatus with load gauge - Suitable arrangement for measuring permanent set such as deflection gauge - Bearing block - Filler gauge of 0.2 mm thick
3	Design (Clause 6)	<ul style="list-style-type: none"> - Weighing balance - Compression testing machine for concrete cubes - Water bath for curing of cubes
4	Aggregates	<ul style="list-style-type: none"> - IS Sieves for sieve analysis

The above list is indicative only and may not be treated as exhaustive.

ANNEX – D

Scheme of Inspection And Testing

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipment.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. LABELLING AND MARKING – As per the requirements of IS 12592: 2002

4. CONTROL UNIT – 100 Manhole Covers and Frames or part thereof of same grade / shape / size and design manufactured under similar conditions i.e. same consignment of cement, mix design of concrete and curing condition in a month shall constitute a control unit.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of [Table 1](#) and the levels of control in column 3 of [Table 1](#), shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

5.1 All the production which conforms to the Indian Standard and covered by the licence should be marked with Standard Mark.

6. REJECTIONS – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
4.1	Cement	4.1	IS 12592	S	1	Each consignment	#
4.2	Aggregates	4.2	IS 12592 IS 383	S	One	Once in year for each size.	Additional sample shall be tested wherever there is change in source of raw material.
4.3	Concrete	4.3	IS 12592 IS 456	R	1	Once in a month	Concrete of each grade and mix design used during the month shall be tested for compressive strength.
4.4	Reinforcement	4.4	IS 12592	S	1 for each size and grade	Each consignment	#
4.5	Steel fibre	4.5	IS 12592	S	1	Each consignment	#
4.6	Admixture	4.6	IS 12592 IS 9103	S	1	Each consignment	#
4.7	Water	4.7	IS 12592 IS 456	S	1	Once in a year or whenever there is a change in source of water, whichever is earlier	
5.1	Shapes	5.1	IS 12592	-	Each cover and frame	-	-
5.2	Dimensions and tolerances	5.2 9.2	IS 12592	R	10	Each control unit	In case of failure of any sample, all cover and frames shall be tested and only those found passing shall be marked.
7.2.2	Clear cover	7.2.2	IS 12592	R	1	Every fifth control unit	-
7.4	Edge protection and finishing	7.4.1 to 7.4.4	IS 12592	R	Each cover and frame	-	-
8	Lifting hooks	8	IS 12592	R	Each cover and frame	-	-

9.1	General physical requirements	9.1	IS 12592	R	Each cover and frame	-	-
9.3	Load test	9.3 Table 2 Annex-C	IS 12592	R	1	Each control unit	Specified load shall be applied for 30 second and cover shall be checked for pass/fail requirement
					1	Every fifth control unit	Specified load shall be applied for 30 second and cover shall be checked for pass/fail requirement. The load is then increased till cover breaks. Breaking load shall be recorded.

Cement shall be ISI marked and accompanied with Test Certificate.

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.