



## PRODUCT MANUAL FOR REINFORCED CONCRETE FENCE POST ACCORDING TO IS 4996 : 1984

*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.	<b>Product</b>	:	IS 4996 : 1984
	<b>Title</b>	:	REINFORCED CONCRETE FENCE POST
	<b>No. of Amendments</b>	:	Nil
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	Please refer <a href="#">ANNEX – A</a>
b)	<b>Grouping guidelines</b>	:	Please refer <a href="#">ANNEX – B</a>
c)	<b>Sample Size</b>	:	Reinforced concrete fence post – 2 Nos
3.	<b>List of Test Equipment</b>	:	Please refer <a href="#">ANNEX – C</a>
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer <a href="#">ANNEX – D</a>
5.	<b>Possible tests in a day</b>	:	As the licence is operated on Factory Testing basis, complete testing of a sample shall be done in factory.
6.	<b>Scope of the Licence :</b>		
	Licence is granted to use Standard Mark as per IS 4996 : 1984 with the following scope:		
	Name of the product	Reinforced concrete fence post	
	Category	Line post/ Strainer post (Corner Post)/ Strut or brace (Angle Post)	
	Cross section	Square / Rectangular / Circular / Any polygonal	
	Uniformity of section	Uniform section throughout the length / Tapering on two sides/ Tapering on four sides	
	Dimensions of cross section and length of post	At top :---- mm x --- mm and At bottom : --- mm x --- mm Length : --- m	

**ANNEX A**

**RAW MATERIAL**

- 1) All types and sizes of steel used for reinforcement shall be ISI marked conforming to the relevant Indian Standard as mentioned in clause 3.1, Table 1 of IS 4996.
- 2) All types and sizes of coarse and fine aggregate – Clause 3.1, Table 1 and 3.2 of IS 4996 and IS 383
- 3) Cement used for the manufacture of concrete pipes shall be ISI marked conforming to the relevant Indian Standard as mentioned in clause 3.1, Table 1 of IS 4996.
- 4) Water used for mixing of concrete and curing of pipes – Clause 3.1, Table 1 of IS 4996 and clause 5.4 of IS 456.
- 5) Concrete used in manufacturing of fence post shall conform to clause 3.3 of IS 4996. Strength of concrete shall be ensured by testing concrete cubes.

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 has changed, it shall be treated as additional raw material.

## **ANNEX-B**

### **GROUPING GUIDELINES**

1. IS 4996 : 1984 covers Reinforced concrete fence posts which are classified as under:
  - a) Classification/ Category – Line Post / Strainer Posts (Corner Post) / Strut or Brace (Angle Post)
  - b) Cross section – Square / Rectangular / Circular / Any polygonal
  - c) Uniformity of section – Uniform section throughout the length / Tapering on two sides/ Tapering on four sides
  - d) Cross sectional dimensions and length – As per Appendix B or as specified by purchaser
3. Considering the above, the following grouping guidelines for GoL/CSoL have been developed:
  - (a) Reinforced concrete fence post of smallest cross sectional area and maximum length from each classification/category [1(a)] are tested for all requirements to cover fence posts of that classification/category in the scope of licence.
  - (b) Samples of fence post may be drawn in such a way that samples of different cross sections [1(b)] and uniformity of section [1(c)] are tested to cover fence posts of those cross sections and uniformity of sections in the scope of licence.
4. The Firm shall declare the varieties of fence post they intend to cover in the Licence. Details of mix design of concrete and reinforcement cage details for fence posts may also be obtained from the firm. The Scope of Licence may be restricted based on the Manufacturing capability and Testing facilities of the Manufacturer.
5. 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.
6. During surveillance visits, Cement Concrete cubes shall be cast in the factory for independent testing for ensuring quality of concrete used in manufacturing of fence post.

**ANNEX C****LIST OF TEST EQUIPMENT***Major test equipment required to test as per the Indian Standard*

<b>Sl. No.</b>	<b>Tests used in with Clause Reference</b>	<b>Test Equipment</b>
1	Size of aggregates Cl. 3.1, Table 1	Sieve Set IS Sieve and sieve shaker- Designations : 20 mm, 16 mm, 12.5 mm, 10 mm, 4.75 mm, 2.36 mm, 1.18 mm. 600 micron, 300 micron and 150 micron
2	Compressive strength of concrete cube Cl. 3.1, Table 1	Compressive Strength Test Machine fitted with Load Gauge suitable to test cement concrete/mortar test
		Cube Moulds of size 150 x 150 x 150
		Tamping rod
		Curing tank with temperature control mechanism and thermometer
		Humidity cabinet
3	Reinforcement Clause 4.2	Micrometer
		Steel scale
		Vernier caliper
4	Shape and dimensions Clause 5	Steel scale / Vernier caliper
		Steel tape
		Straightness bar
		Right angle/Tri square
5	Fixing and spacing of fencing wires Clause 6	Steel scale/ Steel tape
		Vernier caliper
6	Impact test Clause 7.1	Impact testing arrangement as per Fig 7 of IS 4996
		Drop weight – Metal rod of $20 \pm 1$ kg mass and cross sectional area minimum $25 \text{ cm}^2$
		Steel scale / Steel Tape
7	Static load test Clause 7.2	Static load testing arrangement as per Fig 8 of IS 4996
		Loads (adequate)
		Steel scale / Steel Tape

*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 equipments.

**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 4996 : 1984.

**4. CONTROL UNIT** – Every 100 fence posts or part thereof, of same classification and dimensions manufactured in a month under similar conditions (from same consignment of cement, same mix ratio for concrete and similar curing condition) shall constitute a control unit.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of [Table 1](#) and the levels of control submitted by the manufacturer 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 2.0 above.

**5.1** All the production which conforms to the Indian Standards 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 / S: Sub-contracting permitted	Recommended Levels of Control		
Clause	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
3, Table 1	<b>Materials</b>						
3.1	Cement	3.1	IS 4996	-	-	-	Cement received shall be ISI marked and accompanied with test certificate.
3.1	Water	3.1	IS 456	S	One	Once in a year or whenever there is a change in source of water, whichever is earlier	
3.1	Aggregates	3.1, 3.2	IS 4996 IS 383 IS 456	S	One	Once in year for each size.	Additional sample shall be tested wherever there is change in source of raw material.
3.1	Concrete	3.1, 3.3	IS 4996	R	One consisting of 3 cubes from each consignment of cement	Supply of cement executed against order spread over up to three months shall be taken as one consignment for this test only. One sample may be tested in a month in case same mix is used.	
3.1	Reinforcement	3.1	IS 4996	-	-	Reinforcement material received shall be ISI marked and accompanied with test certificate.	
4.1	Construction and finish	4.1.1 4.1.2	IS 4996	-	Each fence post	-	-
4.2	Reinforcement	4.2.1 to 4.2.4 Appendix B	IS 4996	R	Each fence post	-	-
5	Shape and dimensions	5.1, 5.2	IS 4996	R	1 % of total production	Daily	-

6.1	Fixing of fencing wires	6.1	IS 4996	R	Each fence post	-	-
6.2	Fencing wire spacing	6.2 Appendix B	IS 4996	R	Each fence post	-	-
7.1	Impact test	7.1 Appendix C	IS 4996	R	One	Each control unit	-
7.2	Static load test	7.2 Appendix C	IS 4996	R	One	Each control unit	Minimum static load specified for first crack in Clause 7.2 shall be applied and result shall be recorded as Pass/Fail.
					One	10 <sup>th</sup> control unit	Load shall be applied till first crack is detected and load shall be recorded as test load.

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.