*भारतीय मानक* **IS 5820 : 2024**

***Indian Standard***

# पूर्व ढलित कंक्रीट का केबल का कवर — विशिष्टि

*( पहला पुनरीक्षण )*

# Precast Concrete Cable Covers — Specification

*( First Revision )*

ICS 91.100.30



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**July 2024** **Price Group 6**

Cement Matrix Products Sectional Committee, CED 53

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Cement Matrix Products Sectional Committee had been approved by the Civil Engineering Division Council.

Precast reinforced and unreinforced concrete cable covers are used for covering cables with a view to giving a warning of the presence of underground cables and also to protect cables against blows from excavating tools. It serves as a protective barrier against damage of various utility cables or pipelines; like electrical cables, telecom cables, signal cables, oil pipelines, gas pipelines, water pipelines, sewer pipelines, chemicals pipelines, etc. Precast concrete cable covers are reducing the likelihood of accidents and the need for costly repairs. It is also used to discover and identify subsurface utilities. This standard was published in 1970 to provide guidance in the manufacture and use of the above mentioned cable covers.

The precast concrete cable covers may be of the type reinforced or unreinforced depending on the user requirements. Reinforced concrete cable covers generally provide higher degree of safety against shattering than unreinforced concrete cable covers. The use of unreinforced concrete covers is recommended mainly for locations where dangers from pick-axing are not significant and in situations of secondary importance.

This revision of the standard has been brought out to incorporate the modifications found necessary in the light of the experiences gained in its use. The significant modifications incorporated in this revision are as follows:

a) New class and sizes of products have been included as per the current practice;
b) Interlocking end treatment of units has been introduced;
c) Various additional materials for the manufacturing have been included;
d) References to various Indian Standards have been updated; and
e) Marking clause has been made comprehensive.

This standard contributes to the Sustainable Development Goal 9 ‘Industry innovation and infrastructure’ Build resilient infrastructure promote inclusive and sustainable industrialization and foster innovation.

The composition of the Committee responsible for the formulation of this standard is given in Annex C.

This standard contains **6**, **10**, note under **6**, which gives option to the purchaser and **3.2** and **5**, which call for agreement between the purchaser and the supplier.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*

# PRECAST CONCRETE CABLE COVERS — SPECIFICATION

*( First Revision )*

## 1 SCOPE

This standard covers the requirements for reinforced and unreinforced precast concrete covers used for covering cables.

## 2 REFERENCES

The standards listed in Annex A contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

## 3 CLASSIFICATION

**3.1** The precast concrete cable covers may be reinforced or unreinforced depending on the user requirements. Reinforced concrete cable covers generally provide higher degree of safety against shattering than unreinforced concrete cable covers. Whether the concrete cable cover is to be reinforced or unreinforced shall be decided based upon the type of protection required by the user. Use of unreinforced precast concrete cable cover is recommended for situations of secondary importance or where the danger from pick-axing is not significant. The precast concrete cable covers are also used as a protective barrier against damage of various utility cables or pipelines; like electrical cables, telecom cables, signal cables, oil pipelines, gas pipelines, water pipelines, sewer pipelines, chemicals pipelines, etc.

**3.2** The precast concrete cable covers are manufactured in three shapes, namely flat top (*see* Fig. 1), peak top (*see* Fig. 2) and arched (*see* Fig. 3). Dimensions of reinforced and unreinforced precast concrete cable covers with different shapes shall be classified as given in Table 1. Precast concrete cable covers may be manufactured with plain ends or with end features to facilitate interlocking. As per the agreement between the manufacturer and purchaser, other sizes may also be manufactured. However, minimum thickness for all sizes shall be maintain as given in Table 1.

## 4 MATERIALS

### 4.1 Cement

Cement complying with any of the following Indian Standards may be used:

a) Ordinary Portland cement, conforming to IS 269;

b) Portland slag cement, conforming to IS 455;

c) Portland pozzolana cement: fly ash based, conforming to IS 1489 (Part 1);

d) Portland pozzolana cement: calcined clay based, conforming to IS 1489 (Part 2);

e) Sulphate resisting Portland cement, conforming to IS 12330;

f) Supersulphated cement, conforming to IS 6909;

g) Rapid hardening Portland cement, conforming to IS 8041; and

h) Hydrophobic Portland cement, conforming to IS 8043.

### 4.2 Aggregates

**4.2.1** Fine aggregates used shall conform to IS 383.

**4.2.2** Coarse aggregates used shall conform to IS 383. Coarse aggregates shall be of a size appropriate to the sections of the products being produced but shall not exceed 10 mm maximum nominal size.

### 4.3 Pulverized Fuel Ash

Pulverized fuel ash shall conform to IS 3812 (Part 1).

### 4.4 Water

The water used in production shall conform to the requirements specified in IS 456.

### 4.5 Steel Wire or Rod

Steel wire or rod for reinforcement shall conform to IS 432 (Part 1), IS 432 (Part 2), IS 1566, IS 2062 or IS 1786.

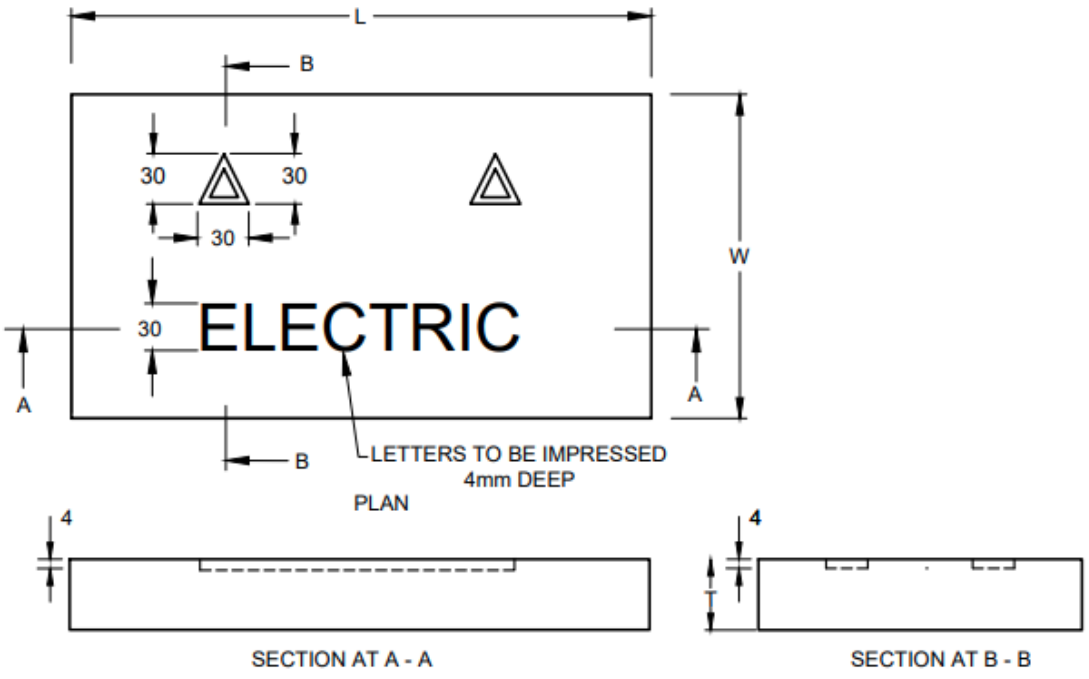
### 4.6 Chemical Admixtures

Chemical admixtures, when used, shall conform to IS 9103. Previous experience with, and existing data on such materials shall be considered in relation to the specified standards of mechanization, supervision and workmanship in production of concrete cable covers. They may be added for specific requirements without affecting the quality parameters.

**Table 1 Dimensions of Precast Concrete Cable Covers**

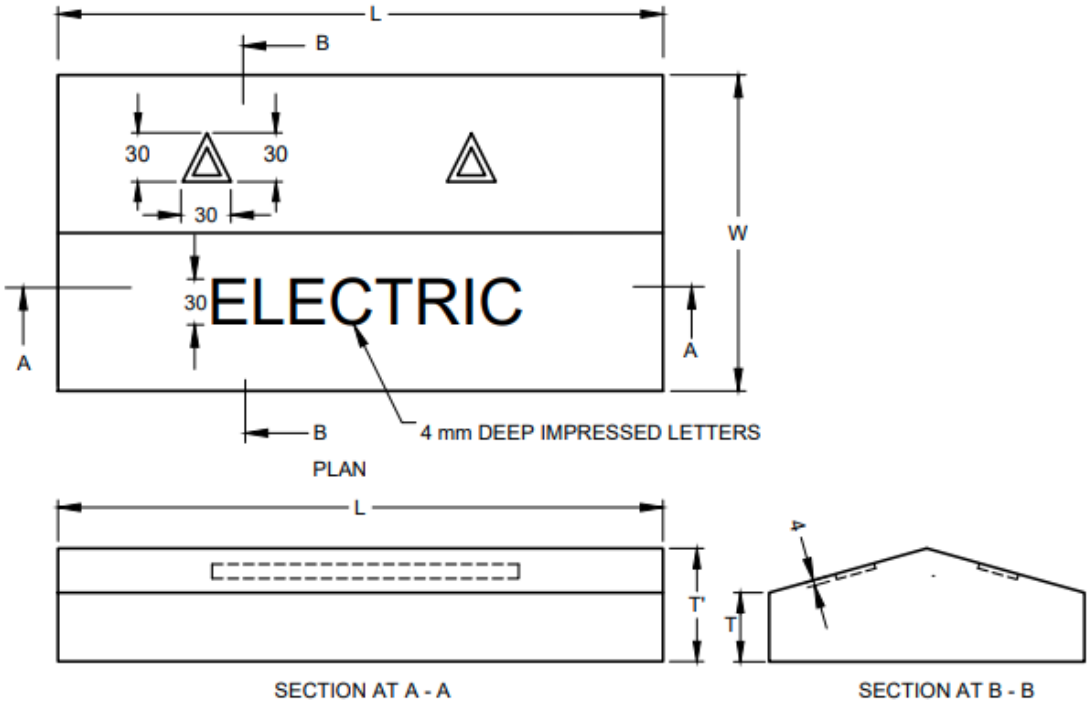
(*Clauses* 3.2 *and* 7.2)

| Sl No. | Class | Shape | Dimension in mm | | | | Description |
|---|---|---|---|---|---|---|---|
| | | | *L* | *W* | *T* Min | *T'* Min | |
| (1) | (2) | (4) | (5) | (6) | (7) | (8) | (10) |
| i) | Reinforced precast cable cover with peak | Peak | - | - | 50 | 75 | RP |
| ii) | Unreinforced precast cable cover with peak | Peak | - | - | 50 | 75 | UP |
| iii) | Reinforced precast cable cover with flat | Flat | - | - | 50 | - | RF |
| iv) | Unreinforced precast cable cover with flat | Flat | 200 to 1 000 | 100 to 350 | 50 | - | UF |
| v) | Reinforced precast cable cover with arch | Arch | - | - | 50 | - | RA |
| vi) | Unreinforced precast cable cover with arch | Arch | - | - | 50 | - | UA |




All dimensions in millimetres.

FIG. 1 TYPICAL UNREINFORCED PRECAST CONCRETE CABLE COVER FLAT TOP




All dimensions in millimetres.

FIG. 2 TYPICAL UNREINFORCED PRECAST CONCRETE CABLE COVER PEAK TOP

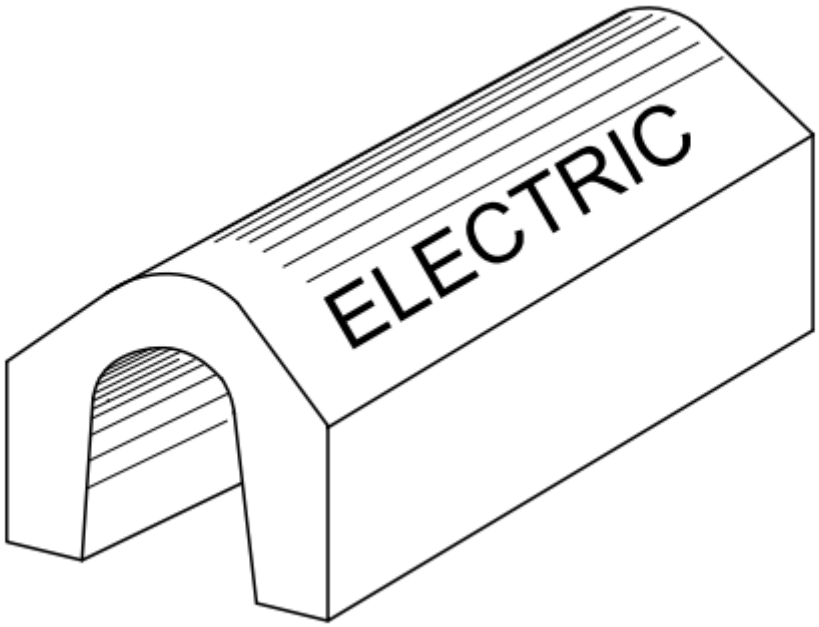



FIG. 3 TYPICAL UNREINFORCED PRECAST CONCRETE CABLE COVER ARCH TOP

## 5 MANUFACTURE

The concrete used in the manufacture of cable covers shall conform to IS 456. The minimum grade of concrete shall not be lower than M35. Concrete shall be mixed in a mechanical mixer. Mixing shall be continued until there is a uniform distribution of the materials and the mass is uniform in colour and consistency. The concrete shall be compacted in moulds by hydraulic or vibratory press or hydraulic-cum-vibratory press, and finished to proper size without broken edges. Polymer or steel fibres may be added while ensuring quality parameters as per this standard. Previous experience with, and data on such materials shall be considered in relation to the specified standards of mechanization, supervision and workmanship in production of covers. The upper side of each cable cover shall be marked longitudinally by means of impression of 4 mm ± 0.5 mm deep with word 'ELECTRIC' or any other word as per the utility requirement, in capital letters, with a symbol 'Δ' as show in the Fig. 1 and Fig. 2. The height of the word and the symbol shall not be less than 30 mm.

NOTE — Words other than 'ELECTRIC' may be marked as per the agreement between the manufacture and purchaser in view of the end use.

## 6 DESIGN

The precast concrete cable covers shall be designed in accordance with the provisions of IS 456. If required by the purchaser, the manufacturer shall furnish the specification and drawing. Reinforced precast concrete cable covers shall be provided with steel reinforcement conforming to **4.5**. Diameter and spacing of reinforcement shall be designed as per IS 456. All precast concrete cable covers manufactured with reinforcement shall have a clear cover of 25 mm minimum.

NOTE — If desired by the purchaser the reinforcement details may be verified against the drawings furnished by the manufacturer by breaking a cover/frame.

## 7 PHYSICAL CHARACTERISTICS

### 7.1 General

Visually, the cable covers shall be sound, free from visible cracks, and uniform in shape and colour. They shall have smooth faces with sharp corners. Minor chipping resulting from customary method of handling during delivery shall not be deemed ground for rejection.

### 7.2 Dimensions

Dimensions of reinforced and unreinforced precast concrete cable covers shall be as indicated in Table 1. The overall dimension and interlocking features, if available, shall be declared by the manufacturer. Tolerances on length and width shall be ± 3 mm and on thickness shall be ± 2 mm.

### 7.3 Impact Strength

The precast concrete cable cover when tested in accordance with the method described in Annex B, shall not show transverse crack, that is, a crack across the full width of the cable cover.

## 8 SAMPLING AND INSPECTION

### 8.1 Scale of Sampling

**8.1.1** *Lot*

In any consignment, precast concrete cable covers of same size, class and shape manufactured in one day shall be grouped together to constitute a lot.

**8.1.2** For ascertaining the conformity of the materials in the lot to the requirements of this standard, samples shall be tested from each lot separately.

**8.1.3** The number of cable covers to be selected from the lot shall depend on the size of the lot and shall be according to Table 2.

### 8.2 Number of Tests

**8.2.1** All the cable covers selected according to **8.1.3**, shall be inspected for visual defects (*see* **7.1**) and checked for dimensions (*see* **7.2**).

**8.2.2** Out of the cable cover selected according to **8.1.3**, number of cable covers as given in col (4) of Table 2 shall be tested for impact test (*see* **7.3**).

## 9 CRITERIA FOR CONFORMITY

**9.1** The lot shall be considered as conforming to the requirements of the standard, if conditions mentioned in **9.2** are satisfied.

**9.2** The number of cable covers with dimensions outside the tolerance limit and/or with visual defects among those inspected shall be less than or equal to the corresponding acceptance number given in col (3) of Table 2. The cable covers tested for impact shall conform to **7.3**.

**Table 2 Scale of Sampling and Permissible Number of Defectives**

(*Clauses* 8.1.3, 8.2.2 *and* 9.2)

| Sl No. | No. of Cable Covers in the Lot | Sample Size | Acceptance | Sample Size for Impact Test |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| i) | Up to 1 000 | 10 | 1 | 1 |
| ii) | 1 001 to 2 000 | 15 | 1 | 1 |
| iii) | 2 001 to 5 000 | 20 | 2 | 2 |
| iv) | 5 001 and above | 30 | 3 | 2 |

## 10 MANUFACTURER'S CERTIFICATE

The manufacturer shall satisfy himself that the cable cover conforms to the requirements of this Indian Standard, and, if requested, shall supply a certificate to this effect to the purchaser or his representative.

## 11 MARKING

**11.1** Following information shall be clearly and permanently marked on top of each cable cover:

a) Source of identification of the manufacturer;
b) Designation of the of the cable cover;
c) The word ‘ELECTRIC’ and ‘Δ’(*see* note under 5);
d) Batch number; and
e) Any other word or mark as required by the purchaser.

### 11.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

## ANNEX A

(*Clause* 2)

## LIST OF REFERRED STANDARDS

| *IS No.* | *Title* | *IS No.* | *Title* |
|---|---|---|---|
| IS 269 : 2015 | Ordinary Portland cement — Specification (*sixth revision*) | IS 1566 : 1982 | Specification for hard-drawn steel wire fabric for concrete reinforcement (*second revision*) |
| IS 383 : 2016 | Coarse and fine aggregate for concrete — Specification (*third revision*) | IS 1786 : 2008 | High strength deformed steel bars and wires for concrete reinforcement — Specification (*fourth revision*) |
| IS 432 | Specification for mild steel and medium tensile steel bars and hard-drawn steel wire for concrete reinforcement: | IS 2062 : 2011 | Hot rolled medium and high tensile structural steel — Specification (*seventh revision*) |
| (Part 1) : 1982 | Mild steel and medium tensile steel bars (*third revision*) | IS 3812 (Part 1) : 2013 | Pulverized fuel ash — Specification: Part 1 For use as pozzolana in cement, cement mortar and concrete (*third revision*) |
| (Part 2) : 1982 | Hard-drawn steel wire (*third revision*) | IS 6909 : 1990 | Supersulphated cement — Specification (*first revision*) |
| IS 455 : 2015 | Portland slag cement — Specification (*fifth revision*) | IS 8041 : 1990 | Rapid hardening Portland cement — Specification (*second revision*) |
| IS 456 : 2000 | Plain and reinforced concrete — Code of practice (*fourth revision*) | IS 8043 : 1991 | Hydrophobic Portland cement — Specification (*second revision*) |
| IS 1489 | Portland pozzolana cement — Specification: | IS 9103 : 1999 | Concrete admixtures — Specification (*first revision*) |
| (Part 1) : 2015 | Fly ash based (*fourth revision*) | IS 12330 : 1988 | Specification for sulphate resisting Portland cement |
| (Part 2) : 2015 | Calcined clay based (*fourth revision*) | | |

## ANNEX B

(*Clause* 7.3)

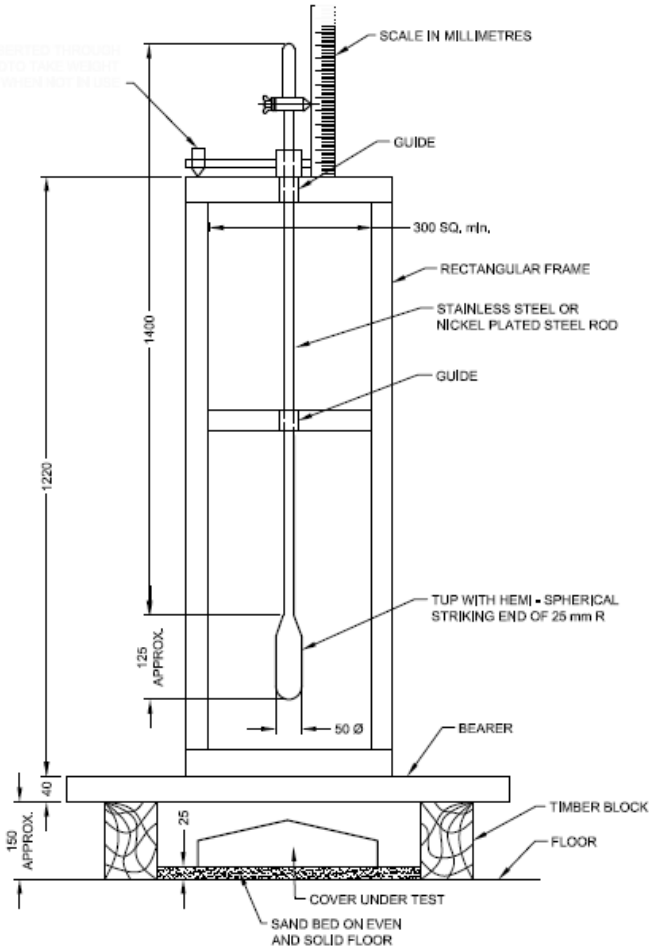
## IMPACT STRENGTH TEST FOR PRECAST CONCRETE CABLE COVERS

### B-1 PROCEDURE

**B-1.1** Figure 4 gives the set up for the test which consists of a box frame with a minimum internal opening of 300 mm × 300 mm and 1 220 mm in height and stands centrally over the cover. The cable cover to be tested shall be laid on a sand bed (*see* Fig. 4). The bed is prepared on a solid floor and screeded to thickness of about 25 mm. The sand shall not be re-screeded between the test drops on any one cable cover, but shall be stirred and re-screeded before testing each cable cover.

**B-1.2** A mild steel tup having a ball end 25 mm in radius with guide rod weighing 4.50 kg ± 0.3 kg for unreinforced cable cover and 6.50 kg ± 0.30 kg for re-reinforced cable cover respectively, dropped freely from a height of 460 mm on to the centre of the top face of the cover.

**B-1.3** The cable cover shall be subjected to two blows from the top, both delivered from a height of 460 mm measured vertically between the centre of the top surface of the cable cover being tested and the striking end of the tup, the point of impact being the centre of the cable cover for both blows.




NOTE — Zero position on scale should be high enough to allow clearance between pointer ferrule and frame with tup resting on cover.

All dimensions in millimetres.

FIG. 4 DIAGRAM OF TYPICAL IMPACT TESTING APPARATUS FOR TESTING PRECAST CONCRETE CABLE COVERS

## ANNEX C

(*Foreword*)

## COMMITTEE COMPOSITION

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## Amendments Issued Since Publication

| Amend No. | Date of Issue | Text Affected |
|---|---|---|
| | | |
| | | |
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