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Stay blocks and cable concrete cover - Specification



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Foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 327, of the Laws of Uganda, as amended. UNBS is mandated to coordinate the elaboration of standards and is

- (a) a member of International Organisation for Standardisation (ISO) and
- (b) a contact point for the WHO/FAO Codex Alimentarius Commission on Food Standards, and
- (c) the National Enquiry Point on TBT Agreement of the World Trade Organisation (WTO).

The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of key stakeholders including government, academia, consumer groups, private sector and other interested parties.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

The committee responsible for this document is Technical Committee UNBS/TC ###, *[name of committee]*, Subcommittee SC ##, *[name of subcommittee]*.

This *second/third/...* edition cancels and replaces the *first/second/...* edition (US nnn-n:yyyy), which has been technically revised.

Stay blocks and cable concrete cover – Specification

1 Scope

1.1 This specification is for concrete products for use on power lines.

1.2 The specification covers the following concrete products:

- a) Slab, LV
- b) Slab, HV
- c) Stay block, 19mm (3/4")
- d) Stay block, 25mm (1").

2 Normative references

The following referenced documents referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ESI 43, Stay Strands and Stay Fittings for Overhead Lines

US EAS 412-3, *Steel for the reinforcement of concrete — Part 3: Welded fabric*

US ISO 19595, *Natural aggregates for concrete*

US EAS 18-1, *Cement — Part 1: Composition, specification and conformity criteria for common cements.*

3 Terms and definitions

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

4 Requirements

4.1 Operating Conditions

4.1.1 The concrete products shall be suitable for use in tropical conditions at altitudes of up to 2 200m above sea level, temperatures of -1 to 40 °c and humidity of 95%.

4.1.2 The stay block shall be buried at depths of up to 1.8m in soils of various types to act as an anchor for stay wire on overhead lines.

4.1.3 The cable covers shall be laid above power cables buried underground in soils of various types. High voltage cables are buried at depths of up to 1.6m while low voltage cables are buried at depths of 0.5m.

4.1.4 The concrete stay blocks designated 19mm (3/4") shall be used with stay rod size 2438.4mm x 19mm (8ft x 3/4") of 64kN minimum failing load while those designated 1" shall be used with stay rod size 2743.2mm x 25mm (9ft x 1") of 131.6kN minimum failing load.

4.1.5 The cable covers designated LV shall be used to cover cables operating at 240/415 V (low voltage) while those designated HV shall be used to cover cables operating at higher voltages up to 66kV.

4.2 Design and Construction

4.2.1 General

4.2.1.1 The products shall be made using Portland cement conforming to US EAS 18-1, coarse aggregates not exceeding 10mm nominal size and conforming to US ISO 19595, clean river sand and drinking quality water free from any visual contamination.

4.2.1.2 The products shall not contain additional admixtures and pigments. The composition of cement, sand and coarse aggregates shall be such as to satisfy the requirement for transverse strength and ultimate failing load.

4.2.1.3 The concrete stay blocks shall be reinforced while the cable covers shall contain no steel reinforcement.

4.2.1.4 Steel moulds shall be used in the manufacture of the products so as to ensure a smooth texture externally. The mould shall be accurately made to produce units of the dimensions, profiles and shapes designed.

4.2.1.5 The product shall be vibrated while on mould to ensure a dense mass free from honeycombs or segregation and fill the forms and spaces between reinforcement (for concrete stay blocks) compactly and without voids. The vibrator used shall have a frequency of not less than 5000 cycles/minute and shall not be attached to or allowed to touch reinforcement during compacting.

4.2.1.6 Lettering shown on the drawings (for cable covers) shall be formed using accurately placed formers securely fixed in position. Cutting either uncured or hardened concrete shall not be permitted.

4.2.1.7 Freshly placed concrete shall be suitably protected and shall be kept constantly damp for a period of at least four days after concreting. The concrete shall be allowed to dry slowly over a period of at least three days after wet curing is completed.

4.2.1.8 Steel reinforcement rods shall be welded at all points of crossing and all dimensions shall be as per US EAS 412-3. Alternatively, a welded reinforcing fabric of diameter 5.385 mm by 75 mm square (No 5 SWG x 75 mm square) with the wires symmetrically placed about the centre would be accepted

4.2.1.9 The underside of the cable cover and stay block shall be flat while the upper sides shall be peaked as shown on drawings.

4.2.1.10 The concrete cable cover shall have one end concave, the other convex (as shown in drawings) to provide a concave/convex joint resisting lateral displacement.

4.2.2 Dimensions

4.2.2.1 The cable covers are required in two sizes with dimensions as shown in table 1 and figures 1 and 2 attached. Tolerances on length (L), width (W) and thickness at outer edges (H) shall be ± 3 mm and ± 2 mm respectively.

4.2.2.2 When tested in accordance with clause 6.1.1.1 the concrete cable covers shall withstand, without breaking the loads given in table 1.

Table 1 Cable cover sizes and transverse strength

Category	Dimensions(L x W x H) mm	Average Breaking Load (kg)
HV	610 x 230 x 50	750
LV	305 x 150 x 40	300

4.2.2.3 The concrete stay blocks are required in two sizes with dimensions as shown in table 2 and figures 3 & 4 attached. Tolerances on length (L), width (W) and thickness at outer edges (H) shall be ± 3 mm and ± 2 mm respectively.

4.2.2.4 When tested in accordance with **ESI 43 - 91** the concrete stay blocks shall withstand, for a period of 1 minute, the ultimate failing loads given in table 2 below.

Table 2 Concrete stay blocks- sizes and ultimate failing load.

Cate 01	Dimensions(L x W x H) mm	Ultimate failing load (kN)
19mm (3/4")	500 x 380x50	65
(25mm)(1")	660 x 480 x 60	80

5 Marking

5.1 The upper side of each cable cover shall be marked longitudinally by means of impression

5.2 Each cable cover and stay block shall carry an Impression or embossment of the manufacturer's name or identifying mark.

5.3 The following information shall be marked on the manufacturer's certificate supplied with the cable covers and stay blocks.

- Name, trademark of manufacturer
- The reference number of standard to which the concrete product complies
- Type of binder constituent (s) used
- Dimensions of the product
- Instructions (all in English Language)
- Batch Number

6 Tests

6.1 Tests for the concrete stay blocks shall be in accordance with **ESI 43-91** while cable covers shall be tested in accordance with clause 6.1.1.1

6.1.1 Transverse strength test for unreinforced concrete cable cover

6.1.1.1 Procedure

The cover sample to be tested shall be soaked in water at approximately 15 to 20°C for 24 hours immediately before testing and shall be tested wet. Each cover to be tested shall be evenly supported upon two self-aligning steel bearers 50 mm in diameter, the distance between the centres of the bearers being 270 mm. The load shall then be applied centrally at a uniform rate of 9 000N/minute \pm 10 percent through a third steel bearer also 50 mm in diameter placed midway between the) supports upon the upper surface of the cover and parallel to the supports.

The length of all the bearers shall be more than the width of the cover to be tested.

6.2 Copies of previous type and routine test certificates certified by the relevant National Testing Authority of the country of manufacturer shall be submitted for Tender Evaluation.

6.3 In the case of tender award certified test reports for the concrete products to be supplied shall be sent for approval before shipment/delivery of the goods. The test reports shall be certified by the relevant National Testing Authority of the country of manufacture.

6.4 The Tenderer shall submit a clause by clause statement of compliance with these specifications. Relevant technical details including the transverse strength, and ultimate failing load shall be submitted in support and shall be clearly marked to indicate the item and type reference numbers of the product offered.

6.5 The manufacturer's declaration of conformity to reference standards, quality assurance certification and list of previous customers (utilities) shall also be submitted

Annex A (Informative)

Information (in case of tender award)

Drawings and technical details shall be submitted for approval before manufacture of the concrete products commences. Undertakes to submit their comments or approval for the drawings within three weeks of receiving the daft copies.

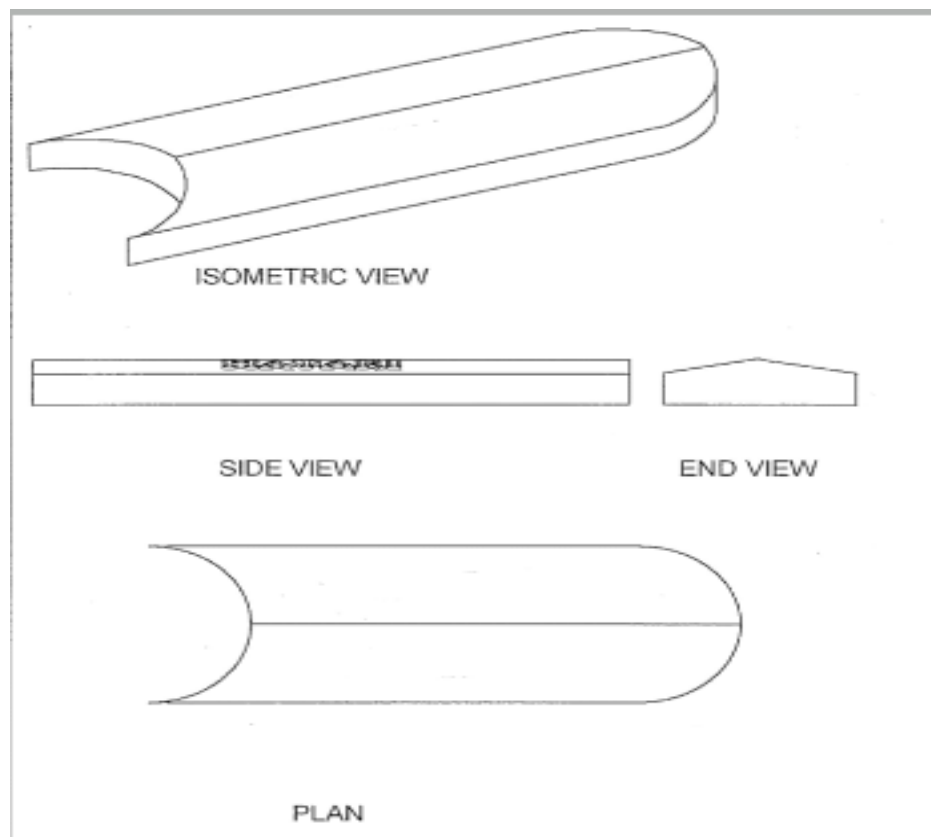


Fig:1 Concrete slab to cover cables

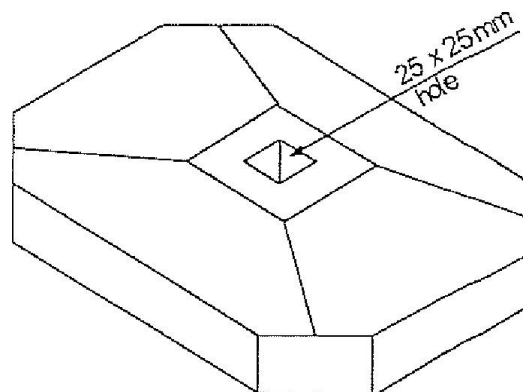


Fig:2 Concrete stay blocks.

Bibliography

- [1] TSP-07-001, Specification for Concrete Products (Stay Blocks & Hatari Slabs)

Certification marking

Products that conform to Uganda standards may be marked with Uganda National Bureau of Standards (UNBS) Certification Mark shown in the figure below.

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