



The Kenya Power & Lighting
Co. Ltd

TITLE:

**SPECIFICATION FOR
STEEL BRACINGS FOR
TRANSMISSION LINE
TOWERS**

Doc. No.

KPLC1/3CB/TSP03/015

Issue No.

1

Revision No.

1

Date of Issue

2010-01-15

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Issued by: Head of Section, Tech Stds & Specs

Authorized by: Head of Department, R&D

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2010-01-19

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0.1 Circulation List

COPY NO.	COPY HOLDER
1	Research & Development Manager
2	Procurement Manager
3	Stores & Stock Control Manager
4	Transmission Manager
5	Deputy Manager, Technical Audit

0.2 Amendment Record

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
1	2010-01-15	1) Revised sizes (length) 2) Revised reference standards to include cold rolled steel	S. Kimitei <i>[Signature]</i>	C. K. Gathige <i>[Signature]</i>

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FOREWORD

This specification has been prepared by the Research and Development Department in collaboration with Transmission Department both of The Kenya Power and Lighting Company Limited (KPLC) and it lays down requirements for steel bracings for transmission line towers. It is intended for use by KPLC in purchasing the steel bracings.

It shall be the responsibility of the manufacturer to ensure adequacy of the design and good engineering practice in the manufacture of the steel bracings for KPLC. The manufacturer shall also submit information which confirms satisfactory service experience with products which fall within the scope of this specification.

1. SCOPE

This specification is for Galvanized Steel Bracings for Transmission Line Towers.

2. REFERENCES

The following standards contain provisions which, through reference in this text constitute provisions of this specification. Unless otherwise stated, the latest editions (including amendments) apply.

ISO 1461: Hot dip galvanized coatings on fabricated iron and steel articles – specifications and test methods

KS 02 – 572: Kenya Standard for Hot Rolled Steel Sections

KS 104: Kenya Standard for Cold Rolled Steel Sections

BS 4: Specification for hot rolled sections

BS 2994: Specifications for Cold Rolled Steel Sections

ISO 4019: Finished Structural Steel Sections, Dimensions and Sectional Properties

3. TERMS AND DEFINITIONS

For the purpose of this specification, the definitions given in the reference standard shall apply.

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4. REQUIREMENTS

4.1 DESIGN AND CONSTRUCTION

- 4.1.1 All steel shall comply with KS 104, KS 02 – 572 or any other approved international standards, unless otherwise specified and shall be suitable for all the usual fabrication processes, including hot and cold working within the specified ranges.
- 4.1.2 All similar steel members bundle shall have clearly identifiable part numbers which enable quick identification. The letters '**KPLC**' shall also be inscribed on each bracing- by punching or any other approved method, at a spacing of 0.5m. Punching shall be done before galvanization.
- 4.1.3 All burs shall be removed completely by reaming and smoothing before hot-dip galvanizing.
- 4.1.4 All galvanizing shall be done by the hot dip process (molten Zinc), not less than 98% of which must be pure Zinc. The process shall be in accordance with ISO 1461.

The Zinc coating shall be uniform, clean, smooth and as free from spangle as possible. Galvanization weight shall be 460g/m² for steel sections of thickness of 3 & 4 mm, and 610g/m² for sections of 5mm thickness or more.

All steel tower materials shall be treated with a sodium dichromate solution immediately after galvanizing.

- 4.1.5 The quality of finished steel shall be in accordance with the reference standards. All steel shall be free from blisters, scale, laminations, segregations and other defects. There shall be no rolling laps at toes of angles or rolled-in mill scale.

4.1.6 Measurement of Galvanizing Thickness

The Bidder shall also supply an instrument/gauge (approved by KPLC) suitable for accurate checking of galvanizing thickness. The cost of the gauge shall be deemed to be included in the tender sum and the gauge shall remain the property of KPLC.

4.2. DIMENSIONS AND TOLERANCES

Sizes shall be in accordance with Table 1.

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Table 1: Sizes of angle sections

Designation		Length
Size	Thickness	
mm	mm	mm
30x30	3	6000
40x40	4	6000
50x50	5	6000
75x100	12	6000
90x110	6	6000
130x130	12	6000

Tolerance shall be as per reference standards.

5. TESTS AND INSPECTION

- 5.1 The steel bracings shall be tested and inspected in accordance with the requirements of the tender. It shall be the responsibility of the manufacturer/supplier to perform or have performed all relevant tests- physical, mechanical, chemical analysis and galvanization tests.
- 5.2 Copies of previous test reports by the relevant National Testing/Standards Authority of the country of manufacture (or ISO/IEC 17025 accredited laboratory) shall be submitted with the offer for evaluation (all in English Language).
- 5.3 Routine and sample test reports for the steel bracings to be supplied shall be submitted to KPLC for approval before delivery of the goods.

6. MARKING, LABELLING AND PACKING

- 6.1 The steel bracings shall be supplied in wrapped in bundles.
- 6.2 The following information shall be marked indelibly and legibly on each bundle:
- Manufacturer's name or trademark;
 - Designation of section;
 - Number of pieces in the bundle
 - Length of the sections.

Each steel bracing shall have been marked as per clause 4.1.2.

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ANNEX A: Guaranteed Technical Particulars *(to be filled and signed by the Manufacturer and submitted together with copies of manufacturer's catalogues, brochures, drawings, technical data, sales records and copies of complete test certificates and test reports for tender evaluation)*

	Description	Bidders offer
1	Manufacturer & country of manufacture	
2	Reference standards	
3	Design & Construction	
4	Materials	
5	Galvanizing	
6	Sizes	
7	Tests & Inspection	
8	List of copies of manufacturer's catalogues, brochures, drawings, technical data, sales records and copies of complete test certificates and test reports submitted with offer	
9	Guarantee/Warranty	
10	Statement of compliance to specifications and or deviations	

.....
Manufacturer's Name, Signature, Stamp and Date

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