

SECTION VI

SCOPE OF WORK

Overhead Lines and Underground cables

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5.2 SCOPE OF WORKS

5.2.1 General

The Bidder shall examine the scope of works in this section in close connection with the other documents and particulars forming these Bidding Documents.

Special attention shall be paid to Technical Specifications, in which the general technical requirements are specified. The drawings enclosed in are for bidding purposes only.

If the Specifications and/or Drawings do not contain particulars of materials or goods that are necessary for the proper and safe completion, operation and maintenance of the equipment in question, all such materials shall be deemed to be included in the supply.

In the event of any conflict between the Drawings and the Specifications, the latter shall prevail.

In the event of any conflict between scaled dimensions and figures on the Drawings, the figures shall prevail.

Should the Bidder find discrepancies in or omissions from these Specifications or from the other Documents, or should he be in doubt as to their meaning, he should immediately contact the Project Manager for interpretation, clarification or correction thereof before submitting his Bid. Such action shall, however, in no case be considered as a cause for altering the closing date of the Bid.

The scope of work covers supply of equipment, engineering and design, manufacture, testing before shipment and packing sea worthy or otherwise as required, delivery of all equipment CIP site, construction and installation and commissioning.

Where the new line share the route with existing lines, the scope of work shall include all the necessary works/modifications that will be required to accommodate the lines along the same route. The conductors of the existing lines shall be re-used while new hardware/fittings of correct type and size shall be used.

The term "transfer" in this scope of works shall mean supply of new hardware/fittings, new concrete poles, stays, insulators as well as installation of these in the existing line routes. It also includes moving all equipment, such as distribution transformers, autoreclosers, switches and links, capacitor banks etc, mounted on the present poles over to the new poles. Also, all existing poles, conductors and hardware/fittings shall be recovered and handed over to the KPLC stores at locations most near to the installation sites.

Cross arms:

Steel cross-arms shall be used in all cases including re-conductoring. All steel cross arms shall be grounded.

Conductor Joints and Termination's

All joints and terminations shall be of **compression type** for conductors of 150mm² and above.

Shield Wires:

OPGW (Optical Ground Wire) shall be used in all the 33Kv Lines. The standard size used by KPLC is 48 core fibres, where the 33KV line is done in underground cable, a Fibre Optic cable will be laid together in the trace of the cable.

5.2.2 Factory Acceptance Test

The contractor shall meet the cost of travel for FAT for two (2) participants and the project manager. Accommodation and per diem cost shall be met by the employer. The following major equipment shall be offered for inspection

- 33kV Post Insulators
- OPGW and Optical distribution frames
- 33KV cables
- Line hardware

FAT shall be carried out as prescribed in the particular technical specification.

5.2.3 33KV Lines and Cables

The scope of works includes:

33KV Feedouts from Kabarnet 132/33kV Substation

Construction of a total 51km of 33kV overhead Lines in 150mm² ACSR Conductor. All sections, joints and terminations shall be of compression type. All the above will have OPGW. For undergrounded sections of the line, underground FOC shall be installed.

The insulators to be used for line construction shall be post insulator type with intermediate poles all being delta formation with earth stalk.

All the lines shall be constructed in Concrete Poles **apart** from the following line sections that **shall** be done in **wooden poles**.

1. Sheets 11, 12, and 13 (having poles numbers P₁ to P₈₀) starting from the line supplying Changach Shops –S/S 28144) to s/s 23997 along-Kabarnet-Iten Road.
2. Sheet No.3 and 4(Having Poles **No.33**,2x14M to Pole **No 89**, 2x14M)

The wooden poles must meet the following specification.

- i. All the poles must meet the height as in the drawings provided
- ii. All poles must be Stout Pole type
- iii. They must be treated as per specification provided
- iv. Physical And Mechanical Properties

The wood poles used shall have the following properties:-

Nominal length	11	12	14
Category	Stout	Stout	Stout
H(mm)	1.8	1.8	2.0
D _c (mm)	295	305	310
D _m (mm)	200	200	200
D _g (mm)	295	305	335
D _e (mm)	234.8	238.1	248.4
F(kN)	13.05	10.37	8.23
Ultimate load (kN)	18.42	18.24	20.02
Crippling load (kN)	149.8	128.9	110.3

- H Ground position from butt
d_c Critical diameter
d_g Minimum ground line diameter (mm)
d_m Minimum top diameter (mm)
d_e Effective diameter
f Load per mm of deflection at point of application of load

Note that the mechanical properties used in the mechanical calculations are those stated in the Kenya Standard KSO2-516.

All the above described works will also include mounting of Wall Mounted Optical Distribution Frames, design, and all other works described in the document.