Eskom	Standard	Technology

Title: **TECHNICAL EVALUATION CRITERIA FOR HV XLPE CABLE SYSTEM AND HV OIL-FILLED CABLE SYSTEM CONTRACTORS**

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Content

1. Introduction

This document has been developed to set the standard technical evaluation criteria to be used when evaluating tender submissions by civil and electrical contractors for the maintenance of HV XLPE-insulated cable system and HV oil-filled cable system in the Gauteng Cluster formerly known as GOU. It consists of the Civil and Electrical scope of work. The civil scope of work includes but is not limited to: River crossing, road crossing, HV cable joint bays, HV cable installation; and the electrical scope of work includes but is not limited to: HV cable fault locating and tracing, river crossings, road crossings, HV cable jointing (joint bays and bonding leads), HV cable termination, link box and bonding leads installation, pilot cable installation, oil works and sheath repair. This document provides technical evaluation criteria developed in line with the Eskom HV cable system standards.

2. Supporting clauses

2.1 Scope

These technical evaluation criteria covers the minimum requirements for civil scope of work and electrical scope of work conducted on the HV XLPE cable system and HV oil-filled HV cable system with nominal voltages from 44 kV up to and including 132 kV for maintenance purposes.

2.1.1 Purpose

This document was compiled to provide technical evaluation criteria for civil and electrical scope of work for HV XLPE cable system and HV oil-filled HV cables system to ensure contractor compliance to standard within Eskom Holdings SOC (Ltd). It is applicable only for the purpose of performing contractor tender evaluations for the maintenance of HV cable systems in the Gauteng Cluster.

2.1.2 Applicability

This document shall apply for Eskom Holdings Limited (Dx Gauteng Cluster).

2.2 Normative/informative references

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

[1] ISO 9001, Quality Management Systems

[2] 240-56030640, General Information and Requirements for High Voltage Cable Systems

[3] 240-56030625, Specification for XLPE-insulated Power Cables and Accessories for Systems with Nominal Voltages of 44kV to 132kV

[4] 240-56030399, Specification for Oil-filled Power Cables and Accessories for Systems With Nominal Voltages of 44kV to 132kV

[5] 240-45683927, Compaction Testing on Cable System Installations

2.2.2 Informative

[6] 32-9: Definition of Eskom documents.

[7] 32-644: Eskom documentation management standard.

[8] 474-65: Operating manual of the Steering Committee of Technologies (SCOT).

2.3 Definitions

2.3.1 General

None

2.3.2 Disclosure classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.4 Abbreviations

Abbreviation	Description
Dx	Distribution
GOU	Gauteng Operating Unit
HV	High voltage
ID	Indoor
JRA	Johannesburg Road Agency
OD	Outdoor
OEM	Original Equipment Manufacturer
OFC	Optical fibre cable
ORHVS	Operating regulations for high voltage system
PDE	Power Delivery Engineering
PPE	Personal protective equipment
PVC	Polyvinyl chloride
SI	Standards Implementation
XLPE	Cross-linked poly ethylene

2.5 Roles and responsibilities

All Eskom employees and/or appointed bodies involved in the qualification process of contractors to perform the maintenance of HV cable systems shall ensure that the contractors being evaluated meet the requirements of this standard. Any deviation from these requirements shall constitute non-conformance, unless it was in advance agreed to by a delegated cable specialist and is based on sound engineering judgement.

All HV cable systems maintenance contractors shall ensure that they obtain clarity where required and obtain all supporting information or documents necessary to comply with this document.

2.6 Process for monitoring

Acceptance of bidding contractors for the maintenance of HV cable systems shall be based on fully compliant submissions of documents and proving capability of providing the required service during equipment/tools and premises evaluations.

2.7 Related/supporting documents

Refer to clause 2.2.

3. Requirements

This document contains the technical evaluation criteria for the HV oil-filled- and XLPE-insulated cable systems maintenance contractors in the Eskom Gauteng Cluster. The evaluation methodology consists of two stages namely 1) the submitted documentation evaluation and 2) premises evaluation where verification of all submitted documentation is done.

The technical evaluation exercise is performed by the Eskom evaluating representatives. The submitted documents will be evaluated against the mandatory and scoring technical evaluation criteria as stated in clauses 3.2.1 and 3.2.2 respectively. The documentation evaluation is meant to establish if all the key tender deliverables are met with regards to the maintenance of HV oil-filled and XLPE-insulated cable systems. Should a tenderer fail to meet any one of the mandatory requirements, they will automatically be disqualified.

The second part of the evaluation is the verification of tender documentation submissions that takes place at the tenderer's premises as per clause 3.1. Each contractor must pass the mandatory evaluation, and then achieve a minimum score of 85% in the scoring phase of documentation evaluation on 3.2.2 in order to qualify for premises evaluation in clause 3.1. Any score below 85% will result in immediate disqualification.

At the end of the premises evaluation, the Eskom evaluating representative(s) will list all the deviations and identified risks, if any. The representatives will conduct a formal discussion of the deviations and risks in line with Eskom's requirements of clause 3.2.2. The tenderer that fails to demonstrate the 85% compliance to tables 1 and 2 at the premises evaluation will be disqualified.

3.1 Premises evaluation

The following will be checked at the contractor's premises:

- Owned vehicles and their documents, or signed hiring letters
- Owned tools and equipment
- List of hired tools and equipment and their hiring letters
- Original training certificates, matching the submitted certified copies
- Proof of employment for personnel with submitted certificates (e.g. employment contracts etc.)
- General housekeeping (e.g. how tools and equipment are kept)

3.2 Evaluation criteria

The technical evaluation criteria comprise mandatory and scoring phases.

3.2.1 Table 1: Technical Evaluation Criteria for HV cable systems Contractors: Mandatory Requirements

TASK / MEASURE	
Criteria	**Acceptance: Yes/No**
Submit all technical requirements on a separate Technical file.	
Provide proof of company's registration for Eskom PDE website access.	
Submit a signed copy of the provided tools and equipment list in annexure A used for maintenance of HV cable systems, indicating if the tools and equipment are owned or hired.	
Provide a copy of a signed procedure on how you do the following: a) Excavations and b) Installation of cables and c) Backfilling and reinstatement	

TASK / MEASURE	
Criteria	**Acceptance: Yes/No**
Provide a copy of a signed procedure on how you measure soil compaction.	
Provide valid and certified copies of your training records for your cable jointers, i.e. a minimum of two certificates with the following training: • HV Oil-filled cable jointing and termination certificates • HV XLPE-insulated cable jointing and (ID & OD) termination certificate • Indoor switchgear termination (SF6 insulated) **NB**: Training to have been conducted by the cable joint and termination OEM or company approved by the OEM	
Provide valid and certified copy of NHBRC certificate for civil works	
Provide valid and certified copies of ORHVS 02, 03a, 3b and 3c OR HVO 04 certificates or GOU HV authorisation for responsible person.	
Provide valid and certified copies of construction regulation training certificates.	
Provide an affidavit per employee, completed by the resources named on the certificates and certified by a Commissioner of Oaths. This affidavit will be used as confirmation of employment by the tendered company.	

3.2.2 Table 2: Technical Evaluation Criteria for HV Contractors: Scoring

TASK / MEASURE		
Criteria	**Source of evidence**	**Weighting**
Complete the template on annexure D, which is confirmation and proof of the history of at least **4** maintenance/breakdown projects that were performed by your company's qualified personnel, related to the following scope of work: The **Civil scope** includes but is not limited to: River crossings, road crossings, HV cable joint bays, HV cable installation; and the E**lectrical scope** includes but is not limited to: HV cable fault locating and tracing, River crossings, road crossings, HV cable jointing (joint bays and bonding leads), HV cable termination, link box and bonding leads installation, pilot cable installation, oil works and sheath repair The above required project references shall indicate and provide the project name, customer name, customer contact details, the operating voltage, conductor size, year of execution, quantity (total length of cable and number of accessories). Contact details of the utility/customer representatives, their titles, addresses, emails and telephone numbers. **NB:** Experience should cover both oil-filled- and XLPE-insulated cable system projects.	Project appointment letter/task orders and completion certificates	20

TASK / MEASURE		
Criteria	**Source of evidence**	**Weighting**
Copy of a signed procedure on how you do the following. a) Excavations and b) Installation of cables and c) Backfilling and reinstatement		4
Method statement for soil compaction and testing.	Clearly written technique used when doing soil compaction and compaction results	4
HV oil-filled and XLPE-insulated cable jointing and terminating valid certified certificates and indoor switchgear (SF6) termination valid certified certificates.	Submitted certificates	20
ORHVS certificates and authorization (as per POE) • For currently authorised person, provide valid and certified Eskom GOU HV Authorisation certificates • For unauthorised persons ready to be authorised, provide a completed copy of POE checklist, and submit all valid certified copies of certificates as per POE table as per Annexure C.	Submitted certificates; Print and complete the provided POE checklist on annexure C and sign	5
Equipment and tools list **NB**: Suppliers will be awarded 70% of the score for hired tools, and 30% of the overall score if all tools and equipment are hired	Print and complete the provided tool/equipment list on annexure A and sign, or provide hiring letter from bona fide hiring company	25
Vehicles, proof of ownership (10 Ton crane truck, LDV, Transporter) **NB**:	Print and complete the vehicle list on annexure B **and** sign Vehicle documents or provide hiring letter from bona fide hiring company	16
Suitable PPE for all staff (registers signed by each employee) and PPE Matrix.	Signed PPE register	2
Company premises (office and storage).	Proof of physical address (e.g. municipality statements, etc.)	2
In what manner do you deal with external authority'/utility's services (e.g. JRA, Rand Water etc.)?	Internal written procedure	2
TOTAL		/100

4. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Stephen Nkwane	Manager: Standards Implementation (Gauteng Cluster)
Mphathutshedzeni Mudau	Manager: Technical Support (Gauteng Cluster)

5. Revisions

Date	Rev	Compiler	Remarks
December 2019	Draft 0.1	S. Mtshaulana & K. Senosi	New document.
August 2023	1	S. Mtshaulana	Edited the entire document

6. Development team

The following people were involved in the development of this document:

- Sandisiwe Mtshaulana: Engineer (SI)
- Kagiso Senosi: Snr Technologist (SI)
- Phenny Bopape: Principal Engineering Assistant (PPM)

7. Acknowledgements

Not applicable.

Annexure A – Tools and Equipment list

Tools/Equipment	QTY	Weight	Owned/Hired
Equipment and consumables to pump oil into oil-filled cable		0.5	
Equipment and consumables to perform gaseous vaporisation fluid tagging		0.5	
Steel Barricading, concrete barricading, and steel guard rails for trenches as per construction regulations. Minimum of 50 meters.		0.5	
Shoring equipment (timber, steel supports, struts) as per construction regulations. Minimum of 50 meters.		0.5	
Road crossing steel plates (with hoisting equipment) – Heavy vehicular traffic.		0.5	
Trench crossing walkways for pedestrians / light vehicular traffic (driveways etc.)		0.5	
Road traffic signage (road works/construction ahead, lane closed/road narrowing, detour, no through road, road closed, chevrons, stops signs, flag men, Stop/go, etc.)		0.5	
Cable winch, dynamometer (pulling strain), jack stands and steel rope.		0.5	
Cable bond pulling and nose pulling (pulling eye / pulling socks) equipment.		0.5	
Cable corner/guide rollers (5, sufficient for at least 5 corners).		0.5	
Cable rollers and skids (50, sufficient for every 2m of cable installed).		0.5	
Hand excavation tools (picks, beaded spades, etc.) 2 beaded minimum.		0.5	
Mechanical excavator (machine) (TLB).		1	
Rock drills (for boulder busting / chemical rock breaking).		1	
Pipe jacking equipment, rock blasting		1	
Directional drilling machines		1	
Compressors.		0.5	
Jackhammers.		0.5	
Tar (asphalt) / concrete road surface cutter (angle grinder).		0.5	
Bulleting machine (110mm and 160mm diameter).		0.5	

Hand compacting tools (stampers).		0.5	
Mechanical compacting machinery ('rammer'/'wacker').		0.5	
Mechanical compacting roller (e.g. 'Bomag').		0.5	
Soil compaction testing equipment (DCPs).		0.5	
Soil sieve of 12mm mesh size		0.5	
A.C. (230V) generators (for lighting, bentonite mixing equipment, portable test equipment, etc.), min of 2.		0.5	
Lighting equipment (for joint bays etc.), min 2 sets.		0.5	
Submersible water pump.		0.5	
Equipment for punching labels onto Al/Cu plates, Stencils.		0.5	
Equipment for cutting cables, electric saws, hacksaw etc.		1	
Tools for jointing/terminating HV cables (XLPE); (specify tools and electrical equipment)		1	
Tools for jointing/terminating HV cables (oil-filled); (specify tools and electrical equipment)		0.5	
Hexagonal die crimping tools and suitable dies for compression fittings.		0.5	
CAD and MIG welding equipment (HV cables only).		0.5	
Gas flame/torch equipment (e.g. for heat shrink application).		0.5	
Lead wiping/plumbing equipment (HV cables only).		0.5	
Cylindrical brushes / close fitting mandrels (110 mm and 160 mm) to clean pipes before pulling cable.		0.5	
Bellmouths for pulling cable into PVC pipes.		0.5	
Bentonite equipment (mixer and pump etc.) for pipes		0.5	
Cast-on-site concrete mixing equipment (mixer)		0.5	
Containers for hazardous / waste material - for disposal (HV OFC only)		0.5	
Oil degasifying plant (HV OFC only).		0.5	
Oil-filled cable freezing equipment (Liquid nitrogen, sleeve, manometer x2) (HV OFC only).		0.5	
Hand held radios, 3 sets min.		0.25	

HV joint bay protective weather cover (e.g. waterproof tent)		0.25	
Total			

Signature: _____ Date: _____

Annexure B – Vehicles list

Vehicles	QTY	Registration number	Weight	Owned/hired
10 ton crane truck			3	
			3	
LDVs			3	
			3	
Transport for personnel			2	
			2	

Signature: _____ Date: _____

Annexure C – POE Checklist

Mandatory Requirements: Portfolio of Evidence			
		Valid	
No	**Minimum Valid certificates required**	**Yes**	**No**
1	First Aid Level 2		
2	Basic Fire fighting		
3	Supervision		
4	Occupational Medical certificate		
5	Risk Assessment		
6	Equipotential Earthing		
7	ORHVS HVO2		
8	Understanding the fundamentals of Electricity or N2 in Electrical Engineering		
9	High Voltage environment and regulations awareness		
10	Working From Heights and rescue		
11	Environmental awareness		

Annexure D – Previous Related Experience

Project name							
Brief scope of work							
Customer name							
Customer contact details							
Rand value of project							
Start and end dates							

Signature: _____ Date: _____