

Dershin Govender
Project Manager

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REQUEST TO PURCHASE AND INSTALL TUBULAR ALUMINIUM CONDUCTORS, TUBULAR ALUMINIUM CLAMPS, STRANDED ALUMINIUM CONDUCTOR CLAMPS, STRINGING, CABLING, EARTHING AND ERECTION AT MOOKODI SUBSTATION AS PART OF THE FIRST 500MVA TRANSFORMER PROJECT

1. This letter serves as a request to purchase/supply tubular aluminium conductors in accordance with following specifications:
 - 1.1 Specification for Substation Tubular Conductors (240-171000067),
 - 1.2 Technical Evaluation Standard for Substation Tubular Conductors (240-171000066).

The quantities associated with the supply of the required tubular aluminum conductors can be found in Annexure A (attached).

2. This letter also serves as a request to appoint a contractor to install tubular aluminium conductors and associated equipment for the erection of 400kV and 132kV tubular bars in accordance with the following specifications:
 - 2.1 Specification for Installation of Tubular Aluminium Conductor (240-89926574),
 - 2.2 Technical Tender Evaluation Strategy for the Installation of Tubular Aluminium conductors (Moo21P05-SE-D90).

3. This letter also serves as a request to purchase/supply tubular aluminium clamps in accordance with the following specifications:
 - 3.1 Specification for Substation Clamps for Tube Aluminium Conductors (240-53113923)
 - 3.2 Technical Evaluation Standard for Substation Tubular Clamps (240-84237021)

The quantities associated with the supply of the required tubular aluminum clamps can be found in Moo21P05-SE-D75.

4. This letter also serves as a request to purchase/supply stranded aluminium conductor clamps in accordance with the following specifications:
 - 4.1 Specification for Substation Clamps for Stranded Aluminium Conductors (240-53113927)
 - 4.2 Technical Tender Evaluation Substation Stranded Conductor Clamps (240-84512873).

The quantities associated with the supply of the required stranded aluminium conductor clamps can be found in Moo21P05-SE-D76.

5. This letter also serves as a request to appoint contractor to erect 400kV and 132kV bay equipment and do associated stringing, earthing as well as stringing of overhead earthwire in accordance with the following specifications:

5.1 Stringing, Cabling, Earthing and Erection Specification for Transmission Substations (240-82736997)

5.2 Technical Tender Evaluation Strategy for Stringing, earthing and Erection (Moo21P05-SE-D89).

Additionally, the following drawings should accompany these requests when going out on enquiry:

Moo21P05-SE-D9	Earthmat layout
Moo21P05-SE-D11	Overhead Earthwire Layout
Moo21P05-SE-D12 sheet 1	132kV Tubular Busbar Layout
Moo21P05-SE-D12 sheet 2	400kV Tubular Busbar Layout
Moo21P05-SE-D16 sheet 3	400kV Bus Coupler A
Moo21P05-SE-D16 sheet 3A	400kV Bus Coupler A - Earthing
Moo21P05-SE-D16 sheet 4	400kV Feeder 1 (spare)
Moo21P05-SE-D16 sheet 7	400kV Feeder 4 (spare)
Moo21P05-SE-D16 sheet 8	400kV BB1 BS1 with CVTs
Moo21P05-SE-D16 sheet 8A	400kV BB1 BS1 with CVTs - Earthing
Moo21P05-SE-D16 sheet 10	400kV BB1 BS2 with CVT and BB ES
Moo21P05-SE-D16 sheet 10A	400kV BB1BS2 with CVT & BB ES - Earthing
Moo21P05-SE-D16 sheet 13	400kV Transformer 11 (Spare)
Moo21P05-SE-D16 sheet 16	400kV Transformer 14 bay
Moo21P05-SE-D16 sheet 16A	400kV Transformer 14 bay - Earthing
Moo21P05-SE-D16 sheet 18	400kV Busbar Intertie (Decommission)
Moo21P05-SE-D16 sheet 18A	400kV Busbar Intertie - Earthing (Decomm)
Moo21P05-SE-D16 sheet 19	400kV Transfer Bus Coupler A
Moo21P05-SE-D16 sheet 19A	400kV Transfer Bus Coupler A - Earthing
Moo21P05-SE-D16 sheet 47	400kV Feeder 5 (spare)
Moo21P05-SE-D16 sheet 48	400kV Feeder 6 (spare)
Moo21P05-SE-D16 sheet 20	132kV Bus Coupler A
Moo21P05-SE-D16 sheet 20A	132kV Bus Coupler A - Earthing
Moo21P05-SE-D16 sheet 21	132kV Feeder 1 bay (Spare)
Moo21P05-SE-D16 sheet 22	132kV Feeder 2 bay (Spare)
Moo21P05-SE-D16 sheet 23	132kV Feeder 3 bay (Spare)
Moo21P05-SE-D16 sheet 27	132kV Feeder 7 bay (Spare)
Moo21P05-SE-D16 sheet 28	132kV Feeder 8 bay (Spare)
Moo21P05-SE-D16 sheet 29	132kV Feeder 9 bay (Spare)
Moo21P05-SE-D16 sheet 31	132kV BB1 BS2 with BB VTs
Moo21P05-SE-D16 sheet 31A	132kV BB1 BS2 with BB VTs - Earthing
Moo21P05-SE-D16 sheet 37	132kV Trfr 11 (Spare)
Moo21P05-SE-D16 sheet 40	132kV Trfr 14 bay
Moo21P05-SE-D16 sheet 40A	132kV Trfr 14 bay - Earthing

Moo21P05-SE-D16 sheet 40B	132kV Trfr 14 Tertiary Bay
Moo21P05-SE-D16 sheet 40C	132kV Trfr 14 Plinth drawing
Moo21P05-SE-D16 sheet 41	132kV Feeder 10 bay (Spare)
Moo21P05-SE-D16 sheet 42	132kV Feeder 11 bay (Spare)
Moo21P05-SE-D16 sheet 43	132kV Feeder 12 bay (Spare)
Moo21P05-SE-D16 sheet 44	132kV Feeder 13 bay (Spare)
Moo21P05-SE-D16 sheet 45	132kV Feeder 14 bay (Spare)
Moo21P05-SE-D16 sheet 46	132kV Capbank 13 (Spare)

The decision to appoint one contractor to do the entire scope of work or two or more contractors, one contractor supplying the tubular / stranded aluminium conductor clamps and conductors, the other contractor installing the tubular/stranded aluminium clamps and conductors, the other contractor doing stringing or any other combination of the above, is at the sole discretion of the responsible project manager, taking into consideration the requirements of the responsible procurement and Tender Committee.

Trust that the attached documents and drawings will give the tenderer/s sufficient information to supply and install as per the list in annexure A to Eskom's requirements.

Yours sincerely



03/05/2023

Christy Thomas

Date

DESIGN ENGINEER: SUBSTATION ENGINEERING

Supported by



12/05/2023

Rukesh Ramnarain

Date

CHIEF ENGINEER: SUBSTATION ENGINEERING NORTHERN REGION

Annexure A

1. Project

Mookodi first 500MVA Transformer: The existing 400kV and 132kV tubular bay layout for the extension.

2. Site Location

Mookodi substation is located in the Northwest province near Vryburg town and connects with the regional road N18. The station consists of 2 x 250MVA 400/132/22kV and 2 x 315kVA 22/0,4kV Transformers.

3. Dimensions of tubes to be supplied for the Mookodi **132kV Tubular busbar** extension:

Item No.	Qty. [a]	Tube Dimensions					Total Length (m) [a].[c]	Total Mass (kg) [a].[b].[c]
		D.D. (mm)	Wall (mm)	Mass (kg/m) [b]	Length (m) [c]	Mass (kg/unit) [b].[c]		
1	72	200	6	9.87	13.2	886.494	950.4	9380.448
2	36	200	6	9.87	0.3	2.961	0.9 ^{1.8}	8.883 ^{17.766}
Total 200 mm diameter Tubes							951.3 ^{952.2}	9389.331 ^{9398.214}

- Item number corresponds to those indicated in the tubular conductor schedule of the Mookodi 132kV yard Tubular Busbar Layout drawing: Moo21P05-SE-D12 sheet 1.
- Tube lengths are to be between 100 and 200mm longer than finished length to allow for dimensional variations on site. Each tube must be trimmed to suit individual spans.
- 12 x 300mm length of $\Phi 200$ x 6WT existing tubes will be reused at new Busbar ends

4. Insertion of damping conductors with sleeves into tubes

Item No.	Qty.	Tube Dimensions		Conductor size			Total Length (m)	Total Mass (kg)
		D.D. (mm)	Wall (mm)	Diameter (mm)	Mass (kg/m)	Length		
1	72	200	6	26.5	1.15	72 x 2/3 x 2 x 13.2	1267.2	1457.28
Total Centipede conductor for 200 mm diameter Tubes							1267.2	1457.28

NOTE: 1

- Item number corresponds to that in point 3 above.
- Quantity of Ferrules:

Voltage	Quantity	Damping conductor type	Ferrule length
132kV	144	Centipede	50mm

- Rate price/m for installing conductors is to provide for the following:
 - The tubes is to be fitted with two damping conductors clamped to both end caps as specified in the drawing and extending to 2/3 x tube length from both ends. Detail of this is specified in drawing Moo21P05-SE-D12 sheet 1.

2. The fusion or crimping in a sleeve of the conductor strands at the free end to prevent unveiling.
 3. Tack welding of the end cap to the tubes in three places
5. Dimensions of tubes to be supplied for the Mookodi **400kV Tubular busbar** extension:

Item No.	Qty. [a]	Tube Dimensions					Total Length (m) [a].[c]	Total Mass (kg) [a].[b].[c]
		D.D. (mm)	Wall (mm)	Mass (kg/m) [b]	Length (m) [c]	Mass (kg/unit) [b].[c]		
1	6 3	250	6	12.4	12.0	148.8	72.0 36.0	892.8 446.4
2	6	250	6	12.4	13.3	164,92	79,8	989.52
3	75	250	6	12.4	20.0	248.0	1500.0	18600.0
4	12	250	6	12.4	22.5	279,0	270.0	3348.0
5	12	250	6	12.4	23.2	287,68	278.4	3452.16
Total 250 mm diameter Tubes							2200.2 2164.2	27262.48 26836.28

- a. Item number corresponds to those indicated in the tubular conductor schedule of the Mookodi 400kV yard Tubular Busbar Layout drawing: Moo21P05-SE-D12 sheet 2.
- b. Tube lengths are to be between 100 and 200mm longer than finished length to allow for dimensional variations on site. Each tube must be trimmed to suit individual spans.
- c. The following quantity of existing $\Phi 250 \times 6$ WT long tubes with the already fit damping conductor on ferrules will be reused.:
 - c1. 18 x 300 mm long
 - c2. 6 x 20000 mm long
 - c3. 6 x 13300 mm long
 - c4. 3 x 12000 mm long

6. Insertion of damping conductors with sleeves into tubes

Item No.	Qty.	Tube Dimensions		Conductor size			Total Length (m)	Total Mass (kg)
		D.D. (mm)	Wall (mm)	Diameter (mm)	Mass (kg/m)	Length		
1	6 3	250	6	26.5	1.15	6 x 2/3 x 2 x 12	96.0 48	110.4 55.2
2	6	250	6	26.5	1.15	6 x 2/3 x 2 x 13.3	106.4	122.36
3	75	250	6	26.5	1.15	75 x 2/3 x 2 x 20	2000.0	2300.0
4	12	250	6	26.5	1.15	12 x 2/3 x 2 x 22.5	360.0	414.0
5	12	250	6	26.5	1.15	12 x 2/3 x 2 x 23.2	371.2	426.88
Total Centipede conductor for 250 mm diameter Tubes							2999.6 2885.6	3379.64 3318.44

NOTE: 2

- a. Item number corresponds to that in point 5 above.
- b. Quantity of Ferrules:

Voltage	Quantity	Damping conductor type	Ferrule length
400kV	216	Centipede	50mm

- c. Rate price/m for installing conductors is to provide for the following:
- d. The tubes is to be fitted with two damping conductors clamped to both end caps as specified in the drawing and extending to 2/3 x tube length from both ends. Detail of this is specified in drawing Moo21P05-SE-D12 sheet 2.
- e. The fusion or crimping in a sleeve of the conductor strands at the free end to prevent unweiling.
- f. Tack welding of the end cap to the tubes in three places

7. Tubular Aluminium clamps

1. Tubular Aluminium clamps required for 132kV Tubular busbar is as per schedule E on drawing Moo21P05-SE-D12 sheet 1.
2. Tubular Aluminium clamps required for 400kV Tubular busbar is as per schedule E on drawing Moo21P05-SE-D12 sheet 2.
3. The total tubular clamps required for the entire project is as per the type and quantity on the tubular clamp proforma Moo21P05-SE-D75.

8. Stranded Aluminium Conductor clamps

1. The total stranded aluminium conductor clamps required for the entire project is as per the type and quantity on the conventional clamp proforma Moo21P05-SE-D76.