



SCOPE OF WORK AND SPECIFICATIONS

Repair of 3MVA power transformer at Rhino substation

1. COMPULSORY REQUIREMENTS:

The following schedules shall be returned with the tender document which shall be evaluated:

- *CIDB grading of 2 EP or higher*
- *Requirements as per the technical functionality*

2. SAFETY REQUIREMENTS:

All work in this contract shall comply with the Occupational Safety Act, 1993 (Act No: 85 of 1993). These items shall all be included in the tendered rates. A copy of the act as well as an approved safety file shall be kept on site for the duration of the project.

3. General

- The contractor is required to repair a 3MVA power transformer

4. Subcontracting

- 4.1** The Contractor shall not make use of any sub-Contractor to perform the works or parts thereof without prior permission from the Project Manager.

5. Health and Safety

- 5.1** The contractor shall be responsible for the safety of personnel on site; a detailed safety plan shall therefore be submitted by the appointed contractor upon award. The safety file requirements are provided to assist the tenderers to cater for the safety aspects.

- 5.2** The site access certificate shall only be issued (to the successful bidder) after the evaluation and approval of the safety file.
- 5.3** The Contractor shall comply with all applicable legislation and Metrorail's safety requirements adopted from time to time and instructed by the Project Manager / Technical Officer. Such compliance shall be entirely at his own cost, and shall be deemed to have been allowed for in the rates and prices in the contract.
- 5.4** The Contractor shall ensure that a safety representative is always at site .
- 5.5** The Contractor shall report all incidents in writing to the Project Manager / Technical Officer. Any incident resulting in the death of or injury to any person on the works shall be reported within 24 hours of its occurrence and any other incident shall be reported within 48 hours of its occurrence.

6. Financial

- 6.1** Payments shall be made for fully functional equipment only, i.e, all work completed.
- 6.2** All prices quoted shall be fixed and firm for the duration of the contract
- 6.3** If the Contractor fails to complete the Services within the time stipulated in this Contract for completion of Services or a part or portion of Services, the Contractor shall be liable to the Employer for an amount calculated at 0.3% of the Contract Price per delayed Day per order, which shall be paid for every Day which shall elapse between the time for due completion and completion of the relevant Services. However, the total amount due under this sub-clause shall not exceed the maximum of 10% of the Contract Price.
- 6.4** The imposition of such penalty shall not relieve the Contractor from its obligation to complete Services or from any of its obligations and liabilities under the Contract.
- 6.5** Rates supplied in the BOQ shall be used to calculate the final payment for equipment.

7. Scope of Work

- 7.1** The contractor shall repair a 44/11/6.6KV 3MVA transformer.
- 7.2** The contractor shall repair the transformer as per the below:
- 7.2.1** Transportation of transformer from the current location to the contractor's site / factory
 - 7.2.2** Dismantle HV coils and tap changer coils
 - 7.2.3** Rewinding of HV coils

- 7.2.4 Rewinding tap changer coils
- 7.2.5 Clean the LV windings, core and tank
- 7.2.6 Unwinding of current coils, repair of hv stacking (core)
- 7.2.7 Supply and installation of tap switch
- 7.2.8 Supply and installation of transformer virgin oil of 3600lt
- 7.2.9 Supply and install silica gel breather
- 7.2.10 Do factory tests and invite PRASA personnel to do the factory acceptance tests
- 7.2.11 Transportation of transformer from the contractor's site / factory to Germiston Rhino substation.
- 7.2.12 Test the transformer at Germiston Rhino substation (corner institute and Tintikie Street, Germiston)
- 7.2.13 Connect the transformer to the existing cables at Germiston Rhino (both LV and HV)
- 7.2.14 Full commissioning of the transformer and energise.

7.3 Below is the transformer nameplate

Jiangshan Scotech Electrical Co., Ltd

POWER TRANSFORMER

TYPE SS-3000/44

NUMBER OF PHASES 3

RATED FREQUENCY 50 Hz

RATED POWER 3000 kVA

VOLTAGE COMBINATION 44/20.25/11(6.6) kV

COOLING TYPE ONAN

SERVICE LOCATION OUTDOOR

ALTITUDE 1000m

CONNECTION SYMBOL Dyn11

INSULATION LEVEL-H.V LI250 AC95

L.V.TER. LI75AC35/LI60AC25

IMPEDANCE VOLTAGE 6.53 %

NO-LOAD CURRENT 0.46 %

NO-LOAD LOSS 4.575 kW

LOAD LOSS 19.930 kW

TANK & ACCESSORIES 2600 Kg

TRANSFORMER ACTIVE PART 5650 Kg

TOTAL OIL VOLUME 3600 L

TRANSPORTATION WEIGHT 9850 Kg

TOTAL WEIGHT 11750 Kg

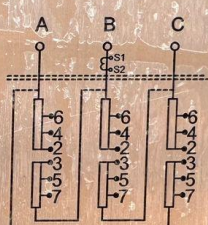
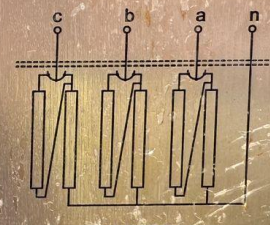
EX-WORKS SERIAL NO. 300011130

DATE OF MANUFACTURE 2022-12-8

STANDARD No. IEC 60076

TAP	H.V SIDE		L.V SIDE I (3000KVA)		L.V SIDE II (3000KVA)	
	VOLTAGE (V)	CURRENT (A)	VOLTAGE (V)	CURRENT (A)	VOLTAGE (V)	CURRENT (A)
1	46200	37.5	11000	157.5	6600	262.4
2	45100	38.4				
3	44000	39.4				
4	42900	40.4				
5	41800	41.4				

SITE	TYPE	NO.S	CURRENT RATIO	ACCURACY CLASS	BURDEN (VA)	CONNECTION OF TERMINALS
B (WTI)	LR45	1	50/5	1.0	10	S1,S2

The People's Republic of China TEL +86 138 5702 7511 Date: 2022 12 8

8. Care of the Site

8.1 From the date on which the Site is handed over to the Contractor to the date of the issue of a Certificate of Completion, the Contractor shall take full responsibility for the care of the Works and the Employer's Assets on the Site and of all Plant intended for incorporation into the Works and materials on the Site intended for incorporation into the Works.

9. Site Overall Staffing and Key Professional Staff

9.1 The contractor shall provide qualified and experienced professional staff for the following positions.

- Team Leader/Project Director
- Site Supervisor
- Construction Health and Safety Officer

9.1.1 TEAM Leader/Project Engineer

- Heavy Current Electrical qualification (Degree or National Diploma)

9.1.2 Site Supervisor

- All work shall be supervised by a Site Supervisor in possession of a trade test certificate

9.1.3 Construction Health and Safety Officer

- Industry experience as a health and safety officer.

10. To be provided by the contractor

10.1 Site books (each in triplicate) to record:

10.2 All incidents as well as the progress of work during the occupation.

10.3 All instructions pertaining to the technical details of the work being performed at that time.

10.4 Upon appointment, the contractor shall supply machinery, equipment, material, labour and consumables, etc. necessary for the undertaking and completion of the works to satisfaction of the client.

10.5 The client will require conformance documentation for each item of material procured by the contractor for installation used in this contract.

10.6 Any damage caused to the property of PRASA will be for the contractor's account.

10.7 Before commencing construction in any particular area, the contractor shall verify the positions of services. Where any underground services are shown on the drawings, the contractor shall have the equipment available on site for as long as is necessary to detect and locate such services and, if so ordered, he or she shall excavate by hand to expose such services in areas and in a manner and at a time agreed upon with the technical officer.

10.8 Protection of cables- Before any excavations take place near identified service cables, the contractor shall contact the technical officer. The contractor shall advise the Prasa technical officer at least 7 days in advance of the actual date on which to excavate near any cable. The contractor shall not use mechanical equipment to excavate within 3m of the estimated position of identified cable and shall, if necessary, expose the cable by means of hand excavation carried out under proper supervision.

11. Measurement of Quality of Construction

11.1 The works shall be quantified by the contractor with the assistance of PRASA personnel, the payment will be subject to the rates submitted in the tender.

11.2 Where the condition of the site is such that the specified performance standards cannot be achieved, the contractor should record all relevant information in conjunction with the Prasa Technical Officer before and after working. Correctness and final approval shall be the responsibility of PRASA.

12. Rectification of sub-standard work

12.1 Where the specified standards of workmanship and accuracy are not attained, the Contractor shall rectify at own cost within 7 working days. should the contractor fail to honor the stipulated notified days he can be reported to the National Treasury for non-performance and may be blacklisted (prevented from doing any business with the state).

13. General

13.1 Should any claim arise due to damage caused by any action of work by the Contractor to property of PRASA and his employees or any other person/s, the Contractor shall be held liable to settle such claims at his own cost.

13.2 The contractor shall provide transport, equipment, tools, consumables, supervision, protection, and labour necessary to successfully complete the contract.

14. Safety

14.1 The Contractor shall comply with requirements of safety legislations and regulations in all respects.

14.2 All drivers shall be in possession of valid driver's licenses and Public Drivers Permits (PDP) where applicable. Crane operators will be required to have a valid Crane Operator's certificate. All vehicles shall be roadworthy.

14.3 The Contractor shall be responsible for all protective clothing and –equipment for his employees. All employees required to climb structures shall be issued with suitable harnesses.

14.4 The contractor shall be responsible for security of personnel and material onsite as well as during transit.

14.5 All work shall always comply with the E7/1 Specification attached hereto.

14.6 Normal protection measures in accordance with the Protection Manual shall apply.

14.7 An effective safety procedure to be followed by all personnel on any work site in the case of approaching rail traffic shall be compiled by the Contractor and implemented before any work commences. This procedure shall be updated whenever the need arises, and any changes shall be communicated to all employees on a works site before work proceeds.

14.8 It is the requirement of this contract that the contractor should provide PRASA with a detailed safety plan prior to being issued with a site access certificate, in accordance with the latest version of the OHS Act and the SPK7 and the E4E.

15. Measurements and payments

15.1 Claims for payment will be made monthly.

15.2 Any rejected and incomplete work will not be paid.

15.3 All rates in the schedule of quantities must be made per unit as requested and should be an all-inclusive rate.

15.4 The rate quoted by the Tenderer(s) and accepted by PRASA must hold well till the completion of the work and shall not be subject to any escalation due to increase in the local market rates for materials & labour. No claim on this account whatsoever shall be entertained at any stage including the extended period.

15.5 The client shall retain 10% of all invoices claimed under this contract, this shall be payable at the end of the guarantee period of 52 weeks after the date of handover.

15.6 The amount of the Preliminaries to be included in each monthly payment certificate shall be assessed as an amount prorated to the value of the work duly executed in the same ratio as the preliminaries bears to the total of prices excluding any contingency sum, the amount of the Preliminaries and any amount in respect of contract price adjustment if provided for in the contract.

16. Payment Certificate

16.1 On or after the assessment date, the Supervisor and the Contractor will together assess the quantities of the progress on each item in the Bill of Quantities and complete the Progress Assessment Detail form, where after the Progress Assessment Certificate will be issued.

16.2 The Contractor shall then submit a VAT invoice and attach the above Progress Certificate for payment by the Employer.

16.3 Contractor to provide the Employer with the necessary details regarding banking details to enable the Employer to make electronic payments.

17. PRICING AND THE WORKS.

17.1 The contractor is required to provide firm prices/ rates for material and labour for the duration of the contract.

17.2 The contract period shall be inclusive of the delivery and installation period as well as an additional period of at least one year starting from the date of acceptance by the client of the last unit.

17.3 The costs for normal servicing shall be reflected separately and shall be paid quarterly for the duration of the service period.

17.4 The contractor shall make provision for the costs (direct or otherwise) associated with works on, over or adjacent to railway lines. The Contractor is advised to study the requirements of the SPK 7/1 and ensure that all works can be completed in accordance with these requirements.

17.5 The contract offer shall be based on the rates as indicated in the bill of quantities. The quantities shall be agreed during construction per section.

18. PENALTIES

18.1 If the Contractor fails to complete the Services within the time stipulated in this Contract for completion of Services or a part or portion of Services, the Contractor shall be liable to the Employer for an amount calculated at 0.05% of the Contract Price per delayed Day per order, which shall be paid for every Day which shall elapse between the time for due completion and completion of the relevant Services. However, the total amount due under this sub-clause shall not exceed the maximum of 10% of the Contract Price.

18.2 The imposition of such penalty shall not relieve the Contractor from its obligation to complete Services or from any of its obligations and liabilities under the Contract,

18.3 PRASA may set off or deduct from the fees due to the Contractor any penalty amounts due and owing by the Contractor in terms of clause 6.3

19. Commissioning tests and completion

19.1 Designated PRASA personnel, in conjunction with the Contractor, shall carry out the final commissioning test. The Contractor shall carry out any remedial work, if necessary.

20. Handing over

20.1 The handovers shall be for each portion of the work when the Electrical System is tested and commissioned to the satisfaction of the Technical Manager, in accordance with the details as set out in the handing over documentation of PRASA.

