SCOPE OF WORK

Supply and delivery of 3kV substation and 11kV substation material

Contents

Project Specification

SCOPE OF WORK

1.1 Nature of work

1.1 The work covers the supply and delivery of 3kV DC traction substation and 11kV distribution substation materials.

1.1 General

1.1.1 Metrorail reserves the right to inspect and/or test any tool or equipment during delivery.

1.1.2 Acceptance of the tools or equipment to be delivered shall be subject to the approval of the Regional Electrical Engineer or the Technical Manager.

1.1.3 All material to be supplied by the contractor shall have a minimum of twelve months guarantee after the acceptance of delivery by Metrorail Technical Manager or Electrical Engineer.

1.1.4 All work shall comply with SANS standards and Metrorail engineering instructions/specification.

1.3 The following activities form part of this contract:

1.3.1 The Contractor shall be responsible for the supply, and delivery of all material as indicated in the attached BOQ.

1.4 Specification

1.4.1 Drill bits

1.4.1.1 Drill bit material: HSS-CO (High speed steel with 5-8% Cobalt) or Tungsten Carbide Tipped) (TCT)
1.4.1.2 Drill type: Twist drill or annular cutter depending on the hole size
1.4.1.3 Hardness: ≥ HRC 65 for HSS-CO; ≥ HRA 89 for TCT
1.4.1.4 Torsional strength: Withstand torque during high-feed drilling
1.4.1.5 Edge Retention: Maintain sharpness over ≥ 50 holes in R260 rail steel
1.4.1.6 Wear resistance: High wear resistance for repeated drilling

1.4.2 Bolts and Nuts (For rail bonding)

1.4.2.1 Bolts: M12 X 40mm, stainless steel A4-80
1.4.2.2 Nut: Hex nut, stainless steel
1.4.2.3 Washers: Spring washer and flat washer
1.4.2.4 Lug: copper compression lug with hole size Ø13mm
1.4.2.5 Contact paste: Copper-based conductive paste (non-insulating)
1.4.2.6 Continuous current: suitable for ≥ 2000A DC return current
1.4.2.7 Contact resistance: ≤ 10μΩ across bolt joint

1.4.2.8 Voltage environment: System voltage: 3000V DC with bonding potential up to rail potential
1.4.2.9 Insulation: Non; bonding connections are conductive and metallic, but joints must ensure tight and corrosion-resistant metal-to-metal contact.

1.4.3 Bolts and Nuts (For mast bonding)

1.4.3.1 Bolt: M10 X 30mm, galvanized or stainless steel
1.4.3.2 Nut: Hex nut with vibration resistance
1.4.3.3 Use thread-locking compound or lock nuts if necessary

1.4.4 95mm^2 single core flexible copper cable

1.4.4.1 Conductor: Annealed plain copper, class 5 flexible (per IEC 60228)
1.4.4.2 Cross-sectional area: 95mm^2
1.4.4.3 Stranding: Fine wire strands (Flexible)
1.4.4.4 Insulation material: Halogen-free Thermoset Compound
1.4.4.5 Insulation color: Yellow

1.4.5 Maintenance free batteries

1.4.5.1 Nominal voltage: 12V DC
1.4.5.2 Nominal capacity: 400ah 25^o C (20-hour rate)
1.4.5.3 Maintenance: Maintenance-free
1.4.5.4

1.4.6 11kV surge arresters

- The surge arresters shall be gapless metal-oxide varistor (MOV) type, suitable for installation on an 11kV (medium-voltage) transmission line
- Arresters shall provide protection against lightning surges, switching surges and temporary over-voltages without flashover or failure.
- Arresters shall be outdoor type, pole mounted and self-extinguishing.
- Nominal system voltage: 11kV
- Maximum system voltage: 12kV

1.4.7 Electrical Control Fault Logging Books

- The fault logging books should come with page numbers starting from 1600 and the column where notes are supposed to be written should be slightly bigger compared to others.
- The total number of pages per book should be 400.

1.5 Guarantee and Defects

1.5.1 All equipment or material supplied by the contractor shall be subjected to a guarantee for a minimum of twelve months against faulty or inferior workmanship and material.

1.5.2 Any defects that may become apparent during the guarantee period shall be rectified to the satisfaction of and free costs to Metrorail (PRASA).

1.5.3 The contractor shall undertake work on the rectification of any defects that may arise during the

guarantee period within 7 days after being notified by Metrorail Technical Staff.

1.5.4 Should the Contractor fail to comply with the requirements stipulated above, Metrorail shall be entitled to undertake the necessary repair of work or effect replacement of defects apparatus or material, and the contractor shall reimburse the client the total cost of such repair or replacement, including labour costs incurred in replacing defective apparatus or materials.

1.5.5 If urgent repairs must be carried out by Metrorail staff during the guarantee period, the Contractor shall reimburse Metrorail the cost of material and labour.

2. Site Briefing

2.1. Bidders shall attend the site briefing so that they get more clarity before submitting their quotations.

3. Financial

3.1. Payments shall be made after the delivery of all materials.
3.2. All prices quoted shall be fixed and firm for the duration of the contract.

4. Duration of the contract

4.1. Together with his/her quotation, the bidder shall submit a work program detailing the time frames of each task in the form of a Gantt chart or any acceptable formats.

5. Place of delivery

5.1. All materials shall be delivered to the Electrical Department, Capital Park Depot in Pretoria by the contractor.

6. Evaluation Criteria

Technical or functional requirements

Functionality and capabilities	**Weight**
1. Organizational Experience Provide for each successfully completed project/s in the following sequence: Copy of an appointment letter/s on a company letterhead, description of the project, Client's name, Client's contact (i.e., email and office number), Project start date, project end date, extension of time where applicable, contract value inclusive of VAT. Furthermore, attach completion certificate signed by client or letter from the client confirming successful completion of the project. Score will be based on successfully executed and completed similar projects in the supply and delivery of similar material or any material or supply and installation of substation equipment in the last fifteen (15) years.	**100**

N.B: Both the appointment letter and the completion certificate/letter from the client should be submitted per completed project for the points to be allocated. Zero (0) Similar Projects/non-submission/incomplete submission = 0 1: 1 Similar project = 20 points 2: 2 Similar projects = 40 points 3: 3 Similar projects= 60 points 4: 4 Similar projects = 80 points 5: 5 similar projects = 100 points	
TOTAL	**100**

NB: A minimum of 80% is to be attained on the evaluation criterion stated above for a bidder to be evaluated further.