



PASSENGER RAIL AGENCY OF SOUTH AFRICA

Supply and installation of earth wires for 44kV transmission line

CIDB (Construction Industry Development Board) = 2EP and above

*(NOTE: project will be executed on alternative and direct current high voltage environment)*

## Table of content

### Contents

<b>1. Specifications and standards.....</b>	<b>3</b>
<b>2. General.....</b>	<b>3</b>
<b>3. Scope of work .....</b>	<b>3</b>
<b>4. 50mm<sup>2</sup> ACSR earth wire .....</b>	<b>4</b>
<b>5. Occupations .....</b>	<b>4</b>
<b>6. Supervision and protection (To BE PROVIDED BY THE CONTRACTOR).....</b>	<b>4</b>
<b>7. Subcontracting.....</b>	<b>5</b>
<b>8. Finance .....</b>	<b>5</b>
<b>9. Health and safety.....</b>	<b>5</b>
<b>10. Guarantee and defects.....</b>	<b>6</b>
<b>15. Breach of contract .....</b>	<b>6</b>
<b>16. Duration of the project .....</b>	<b>6</b>
<b>16. Site and site inspections.....</b>	<b>7</b>
<b>17. Site-book.....</b>	<b>7</b>
<b>18. Penalties .....</b>	<b>7</b>
<b>20. Security.....</b>	<b>7</b>
<b>21. SHE file checklist.....</b>	<b>7</b>
<b>22. Evaluation criteria .....</b>	<b>8</b>

## 1. Specifications and standards

The following publications (latest editions) are referred to herein and shall apply:

- 1.1 Metrorail rail: project specification
- 1.2 South African National Standards, International Electro-technical commission:
- 1.3 Should conflicting requirements exist between this specification and referenced specification, the requirements of this specification shall apply.
  - SANS 10166 – Quality management
  - ISO 9004 – Quality management
  - CEE 0242 – Erection of Electrification Structures
- 1.4 All specifications and standards referred to in the specifications mentioned above are applicable.

## 2. General

- 2.1 Metrorail reserves the right to inspect and / or test any material or equipment during the installation process.
- 2.2 Completion of work shall be subject to the approval of the Regional Electrical Engineer or the Regional Technical Officer.
- 2.3 All fittings, accessories or apparatus which may not have been specially mentioned in the scope of work/ specification, but which are otherwise necessary for the satisfactory construction and operation of 44kV transmission shall be deemed to have been included in the scope supply.
- 2.4 All work undertaken by the contractor shall have a minimum twelve months guarantee after the acceptance of completion by Metrorail Technical Officer or Electrical Engineer.
- 2.5 Existing material to be dismantled and removed remain the property of Metrorail.

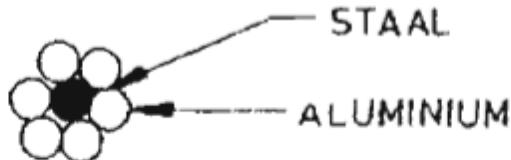
## 3. Scope of work

The Nature of work involves the following:

- 3.1 Dismantling and removal of existing equipment, e.g. damaged earth wires etc.
- 3.2 Supply and installation of 50mm<sup>2</sup> ACSR earth wires 44kV transmission line.
- 3.3 All the accessories that are needed to suspend or string all the earth wires shall be supplied and installed by the contractor.
- 3.4 All materials required for the work to be completed shall be supplied and installed by the contractor.
- 3.5 The contractor shall be responsible for the transport to site, off-loading, handling and storage of all materials required for the execution of the works.
- 3.6 The contractor shall, on completion of the work, clear the site of all leftovers or remaining materials such as empty wire drums, wire cut-offs, empty tins, etc. to the satisfaction of Metrorail contractor supervisor.

## 4. 50mm<sup>2</sup> ACSR earth wire

- 4.1 The wire consists of 6 aluminum conductors and 1 steel wire.
- 4.2 The area of the steel wire and that of aluminum conductors is 3.337mm<sup>2</sup>.
- 4.3 Technical data of the earth wire to be installed.



6/1/3,35 ACSR (50mm<sup>2</sup>) EARTH WIRE  
DIAM: 10,05 mm  
MASS: 214 kg/km  
ULT. STRENGTH: 18,4 kN

Technical data of the earth wire

## 5. Occupations

- 5.1 The contractor shall apply in writing for occupations at least 30 days before commencing with the work on site.
- 5.2 Work done by all disciplines shall be completed during these occupations in order for Metrorail to open the track for normal rail traffic.
- 5.3 The contractor shall conform to the duration of occupations as laid down by the Technical Officer. Occupation time used by the contractor in excess of the maximum specified occupation time, will not be paid against overtime rates unless, the Technical Officers aggress upon it in writing before the start of occupation and it can be proved by the contractor that the delays caused by PRASA resulted in an overtime claim. In case the contractor wants to claim standing time.
- 5.4 Before the end of each occupation, the contractor will be advised in writing of the commencement time and duration of the following occupation.
- 5.5 There is a possibility of the occupation being granted during the night and during the weekend from 21h00 PM until late.

## 6. Supervision and protection (To BE PROVIDED BY THE CONTRACTOR)

- 6.1.1 All work shall be performed under supervision by the contractor's suitable qualified personnel.
- 6.1.2 Protection should be by means of at least three flagmen in possession of valid flagmen certificate.

- 6.1.3 The flagmen will be tested (not trained) by Metrorail to ensure their efficiency.
- 6.1.4 The electrical work must be done by a qualified electrical technician from the appointed contractor.

## 7. Subcontracting

- 7.1.1 The contractor shall not make use of any sub-contractors to perform the work or parts thereof without prior permission from PRASA.

## 8. Finance

- 8.1.1 Payments shall be made for full functional equipment only, that is, all work completed.
- 8.1.2 All prices quoted shall be fixed and firm for the duration of the contract.
- 8.1.3 Penalties shall be applicable for late completion of work, and the rate shall be 0.5% of the contract value for each day the work remains uncompleted.

## 9. Health and safety

- 9.1.1 The contractor shall comply with requirements of safety legislation and regulation in all respects.
- 9.1.2 The contractor shall prepare and submit to PRASA at the start of the contract, a comprehensive safety file.
- 9.1.3 The safety file to be submitted shall include valid certificates of First Aiders, lifting equipment (cranes and slings) and medicals of staff assigned to the work. Notification to the Department of Labour (if required) should also be included.
- 9.1.4 The site access certificate shall only be issued (to the success bidder) after the evaluation and approval of the safety file.
- 9.1.5 The contractor shall comply with all applicable legislation and Metrorail's safety requirement adopted from time to time and instructed by the Project Manager/Technical Officer. Such compliances shall be entirely at the contractor's cost and shall be deemed to have been allowed for in the rates and prices in the contract.
- 9.1.6 The contractor shall be required to work under direct supervision of Metrorail's personnel on site and shall be required to work only in areas which shall be demarcated by barriers.
- 9.1.7 No work shall commence on site, especially off-loading by gantries or other equipment from trucks, unless the contractor's responsible person has noted the conditions contained in the electrical work permit by signing the work permit form.
- 9.1.8 The contractor shall not proceed with work before having properly informed and warned all his staff of potential dangers of adjacent live equipment pointed out to him by Metrorail Electrical Officer who issues and control the work permit.
- 9.1.9 The contractor shall ensure that a safety representative is at site all the times.
- 9.1.10 The contractor shall make necessary arrangement for sanitation, water and electricity at the site during the installation of the equipment.

9.1.11 The contractor shall report all incidents in writing to the Project Manager/Technical Officer. Any incident resulting in death of or injury to any person on the works shall be reported within 48 hours of its occurrence.

## 10. Guarantee and defects

- 10.1.1 All work undertaken by the contractor shall be subjected to a guarantee period of twelve months against faulty or inferior workmanship by the contractor.
- 10.1.2 The guarantee period shall commence the day the installation is formally handed over to and accepted by PRASA.
- 10.1.3 The contractor shall undertake to repair all faults or defects due to bad workmanship or faulty materials.
- 10.1.4 Any defects that may become apparent during the guarantee period shall be rectified to the satisfactory of and free of cost to PRASA.
- 10.1.5 The contractor shall undertake work on the rectification of any defects that may arise during the guarantee period within 7 days of being notified by PRASA of such defects.
- 10.1.6 Should the contractor fail to comply with the requirements stipulated above, PRASA shall be entitled to undertake the necessary repair work or effect replacement of defective apparatus or material, and the contractor shall reimburse PRASA the total cost of such repair or replacement, including the labour costs incurred in replacing defective material.

## 15. Breach of contract

- 15.1.1 In the event that the contractor does not commence on the agreed date with the work or does not work at reasonable pace or deliver work of unacceptable nature or otherwise contravenes any of the clauses of these conditions, Metrorail may give the contractor 7 days' notice to rectify or remedy it. Should the contract not comply with this instruction then Metrorail shall be entitled to cancel the contract and claim damages from the contractor.
- 15.1.2 Should the contractor fail to carry out the work, the Technical Manager shall be entitled to suspend operation and if the contractor fails to remedy any breach within 24 hours after written notice has been given to him. Metrorail shall be entitled to cancel the agreement in which all amounts used by the contractor shall be forfeited as liquidated and ascertain damages and Metrorail shall be free to make such arrangement in regard to the carrying out the work as it may deem fit.

## 16. Duration of the project

- 16.1.1 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.

## 16. Site and site inspections

- 16.1.1 Bidders shall visit the site before submitting their quotations to thoroughly inspect the site in order to make themselves (bidders) aware of the nature of work involved.

## 17. Site-book

- 17.1.1 A site diary to record all incidents as well as the progress of work done during the occupation shall be kept on site for the duration of the contract.
- 17.1.2 This book (site diary) shall be used to record any unusual events during the period of the work.
- 17.1.3 Any delays to the work shall also be recorded such as delays caused by poor weather conditions, delays caused by permits being cancelled etc.
- 17.1.4 Other delays such as non-availability of equipment from third party suppliers must be communicated to the Metrorail Technical Officer/Project Manager.

## 18. Penalties

- 18.1.1 In the event of the work being completed after the contractual completion date, the contractor shall be obliged to pay a penalty to PRASA of 10% of the contract value for each day that the work remains uncompleted.
- 18.1.2 Such penalties are not payable for late completion of work where the delays are attributed to circumstances beyond the contractor's control, like citizen unrest or strikes, exceptional inclement weather conditions and inaccessibility to work site etc.

## 20. Security

- 20.1.1 The contractor shall be responsible for providing security on site until the site is handed over to Metrorail.
- 20.1.2 Any stolen material shall be replaced by the contractor at his own cost.

## 21. SHE file checklist

- 21.1.1 The SHE file check list is attached and shall be used to compile the safety file by the successful bidder.
- 21.1.2 Employee list. Only employees who will be working in the Metrorail's premises under this project.
- 21.1.3 Valid proof of medical fitness for all the employees as per the list of employees, in the form of annexure 3.
- 21.1.4 Training records: all training records applicable to the scope of work, e.g. working at heights certificate/s, first aid certificate etc.

## 22. Evaluation criteria

### Technical or functional requirements

Minimum Qualifications of the technical staff are outlined below. All educational qualifications should be SAQA accredited.

#### 22.1 ELECTRICAL INSTALLATION SUPERVISOR (Erector or traction Linesman)

- a) C Green certificate or A red certificate
- b) Minimum of 5 years' experience in maintaining or construction of 3kV OHTE

#### 22.1 ERECTOR or TRACTION LINESMAN

- a) C Green certificate or A red certificate
- b) Minimum of 5 years' experience in maintaining or construction of 3kV OHTE

#### 22.2 Technical or functional requirements

<b>Organizational Experience</b> 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 name, Client 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. <b>N.B:</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.	40	Score will be based on successfully executed and completed similar projects in the installation/ repair of 3kV DC overhead track equipment (OHTE) and structures in the last fifteen (15) years. Zero (0) Similar Projects/non-submission/incomplete submission = <b>0</b> 1: 1 Similar project = <b>8 points</b> 2: 2 Similar projects = <b>16 points</b> 3: 3 Similar projects= <b>24 points</b> 4: 4 Similar projects = <b>32 points</b> 5: 5 similar projects = <b>40 points</b>
<b>Key Personnel Experience (Based on Submitted CVs) of Key Staff</b> a) Electrical Installation Supervisor (Erector / Traction Linesman) b) Erector or traction lineman  Provide copies of original qualifications and certificates of professional bodies. The copies must be certified by the commissioner of oath. The date on the stamp shall be three months or less old, before the closing date of the tender.	60	Detailed CVs of the team members who will be used in completing the works must be submitted. Scores would be based on experience in the installation / repairs of 3kV DC Overhead track equipment. The points will be based on the <b>Two</b> key personnel listed here. No information provided/incomplete submission = <b>0 points</b> 1: Average: 5 years of experience of Key Staff = <b>12 points</b> 2: Average: 6 years of experience of Key Staff = <b>24 points</b> 3: Average: 7 years of experience of Key Staff = <b>36 points</b>

<p>If the qualification has been awarded in other language than English, please provide translation in English. Evaluation will be done on all 2 key personnel and maximum points shall be obtained on 2 personnel. Each must have a minimum of 5 years of experience. All educational qualifications should be SAQA accredited.</p>		<p>4: Average: 8 years of experience of Key Staff = 48 points  5: Average: 9 years and above of experience of Key Staff = 60 points</p>
<p><b>Project program (Work plan)</b></p> <p>Provide project schedule in MS projects or any acceptable formats that meet the client's timeline requirements and the schedule to cover the following key Milestones:</p> <ul style="list-style-type: none"> <li>• Project duration within the targeted duration of 6 weeks.</li> <li>• Resource allocation</li> <li>• Critical Path clearly highlighted</li> <li>• Activities showing safety measures to be taken included.</li> </ul> <p>The overall schedule should clearly indicate sequencing of activities with clear understanding of scope.</p>	10	<p>Score will be allocated for MS Project or any acceptable format project Schedule provided. No information provided = 0 points.</p> <p>1: Project schedule provided with relevant activities and 1 of the indicated elements addressed = 2.</p> <p>2: Project schedule provided with relevant activities and 2 of the indicated elements addressed = 4.</p> <p>3. Project schedule provided relevant activities and 3 of the indicated elements addressed = 6.</p> <p>4: Project schedule provided with relevant activities and 4 of the indicated elements addressed = 8.</p> <p>5. Project schedule provided with relevant activities and all the indicated elements addressed = 10.</p>

**NB: A minimum of 66% is to be attained on the evaluation criteria stated above for a bidder to be evaluated further.**