

Contract Data

The Employer is

Name Transnet Limited Trading as Transnet Freight Rail
Address Nzasm Building, Room 210, Corner of Paul Kruger and Minnaar street, Pretoria
Telephone (012) 315 2137 Fax No. 012 315 2138
E-mail anneline.scholtz@transnet.net

The works is DESIGN, SUPPLY, INSTALL, TEST AND COMMISSION 3.3 MW RECTIFIER, POSITIVE ISOLATOR, AC/DC DISTRIBUTION PANEL WITH DC EARTHLEAKAGE RELAY, PCB CONTROL PANEL, AC EARTHLEAKAGE RELAY AND ALL ASSOCIATED CABLE UNDER THE CONTROL OF THE DEPOT ENGINEER, NELSPRUIT

The site is **WESTAFFIN 3KV DC TRACTION SUBSTATION**

The starting date is

The completion date is

The reply period is weeks

The defects date is **1 (one)**..... weeks after completion

The defect correction period is **immediately after defects date**

The assessment day is the **18th (eighteen)**..... of each month

The retention is **10 % (ten)** %

Does the United Kingdom Housing Grants, Construction and Regeneration Act (1996) apply? **No**

The Adjudicator is

Name To be advised if disputes arise.....

Address

Telephone **Fax No.**

E-mail

Contract Data

The interest rate on late payment is % per complete week of delay.

The *Contractor* is not liable to the *Employer* for loss of or damage to the *Employer's* property in excess of..... for any one event.

The *Employer* provides this

Insurance Transnet Principal Control Insurance

The minimum amount of cover for the third insurance stated in the

Insurance Table is **> R25,000.00 (Limited to R10,000,000.00. for any one event)**

The minimum amount of cover for the fourth insurance stated in the

Insurance Table is **Not applicable**.....

The adjudicator nominating

body is **The Chairman of the Association of Arbitrators (Southern Africa)**

The tribunal is **Arbitration**.....

If the tribunal is arbitration,

the arbitration procedure is **The rules for the Conduct of Arbitrators of the Association of Arbitrators (Southern Africa)**.....

The *conditions of contract* are the NEC3 Engineering and Construction Short Contract (June 2005) and the following additional conditions:

As mentioned in paragraph 1.0 (Contractual obligations)

1.1 CONTRACTUAL OBLIGATIONS

A:

- 1.1 This project specification covers Transnet freight rail's requirements for the design, Supply, Install, Test And Commission 3.3 MW rectifier, Positive Isolator AC/DC Distribution Panel With DC earthleakage Relay, PCB Control Panel, AC Earthleakage Relay And All Associated Cables Under The Control Of the Depot Engineer, Nelspruit.
- 1.2 Terms of delivery and offer validity should be well stated on your offer

B:

- 1.2 The Contractor shall not make use of any Sub-Contractor to perform the works or parts thereof without prior permission from the Project Manager.
- 1.3 The Contractor shall ensure that a safety representative is at site at all times.
- 1.4 The Contractor shall comply with all applicable legislation and Transnet safety requirements adopted from time to time and instructed by the Project Manager / Supervisor. 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
- 1.5 The Contractor shall, in particular, comply with the following Acts and Transnet Specifications:-
- 1.5.1 The Compensation for Occupational Injuries and Diseases Act, No. 130 of 1993. The Contractor shall produce proof of his registration and good standing with the Compensation Commissioner in terms of the Act.
- 1.5.2 The Occupational Health and Safety Act (Act 85 of 1993).
- 1.5.3 The explosive Act No. 26 of 1956 (as amended). The Contractor shall, when applicable, furnish the Project Manager / Supervisor with copies of the permits authorising him or his employees, to establish an explosives magazine on or near the site and to undertake blasting operations in compliance with the Act.
- 1.5.4 The Contractor shall comply with the current Transnet Specification E.4E, Safety Arrangements and Procedural Compliance with the Occupational Health and Safety Act, Act 85 of 1993 and Regulations and shall before commencement with the execution of the contract, which shall include site establishment and delivery of plant, equipment or materials, submit to the Project Manager / Supervisor.
- 1.5.5 The Contractor shall comply with the current Specification for Works On, Over, Under or Adjacent to Railway Lines and near High Voltage Equipment – E7/1, if applicable, and shall take particular care of the safety of his employees on or in close proximity to a railway line during track occupations as well as under normal operational conditions
- 1.6 The Contractor's Health and Safety Programme shall be subject to agreement by the Project Manager / Supervisor, who may, in consultation with the Contractor, order supplementary and/or additional safety arrangements and/or different safe working methods to ensure full compliance by the Contractor with his obligations as an employer in terms of the Act.

- 1.7 In addition to compliance with clause 1.4 hereof, the Contractor shall report all incidents in writing to the Project Manager / Supervisor. 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.
- 1.8 The Contractor shall make necessary arrangements for sanitation, water and electricity at these relevant sites during the installation of the equipments.
- 1.9 The Contractor shall supply a **site diary** (with triplicate pages). This book shall be used to record any unusual events during the period of the work. Any delays to the work shall also be recorded such as delays caused by poor weather conditions, delays caused by permits being cancelled etc. The appointed Project Manager or Technical Officer must countersign such delays. Other delays such as non-availability of equipment from 3rd party suppliers must be communicated to the Project Manager or Technical Officer in writing.
- 1.10 The Contractor shall supply a **site instruction book** (with triplicate pages). This book shall be used to record any instructions to the Contractor regarding problems encountered on site – for example the quality of work or the placement of equipment. This book shall be filled in by the Project Manager or Technical Officer and must be countersigned by the Contractor.
- 1.11 Both books mentioned in 1.8 and 1.9 shall be the property of Transnet Freight Rail and shall be handed over to the Supervisor on the day of energising or handing over.
- 1.12 A penalty charge of **R 10, 000.00** per day will be levied for late completion.
- 1.13 **10% retention** money will be retained and will be released 12 months after the completion date of the contract.
- 1.14 The successful Contractor shall provide a Gantt or a similar chart showing when the works will be done and energised. A final chart should be submitted to the Supervisor within 14 days after the award has been made to the successful Contractor.
- 1.15 All processes or the manufacture and assembly of the product components must be subjected to a quality assurance system.
- 1.16 The Contractor will assume full responsibility for assuring that the products purchased meet the requirements of Transnet Freight Rail for function, performance, and reliability, including purchased products from 3rd part suppliers.
- 1.17 The Contractor shall prove to Transnet Freight Rail that his equipment or those supplied from 3rd party suppliers/manufacturers confirms to Transnet freight rail specifications.
- 1.18 The Contractor will remain liable for contractual delivery dates irrespective of deficiencies discovered during workshop inspections.

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The Contractor's Offer

The Contractor is

Name

Address

Telephone **Fax No.**

E-mail

The percentage for overheads and profit added to the Defined Cost for people is.....%.

The percentage for overheads and profit added to other Defined Cost is..... %.

The *Contractor* offers to Provide the Works in accordance with the *conditions of contract* for an amount to be determined in accordance with the *conditions of contract*.

The offered total of the
Prices is

Signed on behalf of the Contractor

Name

Position

Signature Date

The *Employer's* Acceptance

The *Employer* accepts the *Contractor's* Offer to Provide the Works

Signed on behalf of the *Employer*

Name

Position

Signature Date

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PRICING INSTRUCTIONS

1. The agreement is based on the NEC Engineering and Construction Short Contract 3. The contract specific variables are as stated in the contract data. Only the headings and clause numbers for which allowance must be made in the Price list are recited.
2. Preliminary and General Requirements are based on part 1 of SANS 1921, 'Construction and Management Requirements for Works Contracts'. The additions, deletions and alterations to SANS 1921 as well as the contract specific variables are as stated in the contract data. Only the headings and clause numbers for which allowance must be made in the Price list are recited.
3. It will be assumed that prices included in the Price list are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders.
4. Reference to any particular trademark, name, patent, design, type, specific origin or producer is purely to establish a standard for requirements. Products or articles of an equivalent standard may be substituted.
5. The Price list is not intended for the ordering of materials. Any ordering of materials, based only on the Price list, is at the Contractor's risk.
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 provided for in the contract.
7. The amount or items of the Preliminaries shall be adjusted to take account of the theoretical financial effect which changes in time or value (or both) have on this section. Such adjustments shall be based on adjustments in the following categories as recorded in the Price list:
 - a) an amount which is not to be varied, namely Fixed (F).
 - b) an amount which is to be varied in proportion to the contract value, namely Value Related (V).
 - c) an amount which is to be varied in proportion to the contract period as compared to the initial construction period, excluding revisions to the construction period for which no adjustment the contractor is entitled to in terms of the contract, namely Time Related (T).
8. The following abbreviations are used in the Price list:

Hr	=	Hour
Ea	=	Each
OCB	=	Oil Circuit Breaker
GCB	=	Gas Circuit Breaker
PCB	=	Polychlorinated Biphenyl
Quant.	=	Quantity
9. The prices and rates in these Price list are fully inclusive prices for the work described under the items. Such prices and rates cover all costs and expenses that may be required in and for the execution of the work described in accordance with the provisions of the scope of work and shall cover liabilities and obligations set forth or implied in the Contract data, as well as profit.

- 10 Where the scope of work requires detailed drawings and designs or other information to be provided, all costs associated therewith are deemed to have been provided for and included in the unit rates and sum amount tendered for such items.
- 11 Where no quantity has been provided against an item in the Price list, the Contractor shall use their discretion and provide the quantity.
- 12 The quantities set out in these Price list are approximate and do not necessarily represent the actual amount of work to be done. The quantities of work accepted and certified for payment will be used for determining payments due and not the quantities given in these Price list.
- 13 The short descriptions of the items of payment given in these Price list are only for purposes of identifying the items. More details regarding the extent of the work entailed under each item appear in the Scope of Work.
- 14 Tenderers shall ensure that provision (financial as well as time) for excavations in a range of soil types is made for in their tenders.
- 15 For each item in the Price list, including Preliminaries, the Contractor shall provide in the appropriate column the portion of the tendered sum (inclusive of labour and material) which has been sourced locally (Republic of South Africa).
- 16 The Contractor shall also arrange forward cover within two weeks after contract award on all imported items.
- 17 The Contractor shall provide information related to imported content, i.e. equipment to be imported, value and applicable exchange rates. This information shall be provided as an Annexure to the Price list.
- 18 The total in the Price list shall be exclusive of VAT.

Contract Data
Price List

Item numb	Description	Unit	Qty	Rate	Price
A	WESTAFFIN 3 kV DC Substation				
1	Dismantle, remove and transport old equipment from site to Nelspruit Infra Depot.	sum	1		
2	Remove old copper busbars and its support structure between the main transformer and the wall plate bushings and install aluminium busbars complete with flexible conductors	sum			
3	Supply and install busbars from the wall bushings to the rectifiers	sum	14		
4	Supply and install 3.3 MW rectifier complete with diode monitoring and fan control	ea	2		
5	Supply and install busbars to and from Rectifier, Reactor coil, Positive isolator including negative bar	sum	1		
6	Supply and install Positive isolator with built-in 3kv undervoltage relay				
7	Supply and install AC current transformer (for AC earth leakage protection) in its polycarbonate box together with the associated cables.	ea	1		
8	Supply all cables connection to the negative bar	sum	1		
9	Supply and install 4000 A / 50 mV shunt	ea	2		
10	Supply and install cables from rectifier to negative bar	sum	1		
11	Dismantle and Redo indoor earthing using 95mm flexible copper wire and install new DC earth leakage system, all control and power cables	sum	1		
12	Supply and install DC earth leakage relay outside the panel and its polycarbonate box		1		

13	Supply checker plates where necessary	sum	1		
14	Supply and install AC/DC control panel. Supply with all protection relays and associated cables	ea	1		
15	Supply and install AC primary circuit breaker control panel with all protection relays.	ea	1		
16	Supply and install all control cables and power cables to and from all the equipment including the telecontrol	sum	1		
17	Supply mechanical inter-locking keys	sum	1		
18	Drawings, instruction manuals and catalogues	sum	1		
19	P's & G's	sum	1		
20	Installation, Testing and Commissioning	sum	1		
A	Total price for WESTAFFIN				
B	Sub-Total		R		
C	Contingency (10% of B)		R		
D	Total (B+C)		R		
E	VAT (14% of D)		R		
F	Gross Total (D+E) =		R		

Contract Data

Works Information

2.0 Description of work

2.1 SUPPLY AND INSTALLATION OF CABLES

2.1.1 Contractor shall supply and install all the control and power cables in accordance with the specifications BBC 0198 version 1 and CEE 0023 of 1990.

2.1.2 The Contractor shall supply and connect the 95 mm² PVC insulated welding cable to interconnect all new and existing equipment to the DC earth leakage relay system.

2.2 MECHANICAL INTERLOCKING DEVICES AND CHECKER PLATES

2.2.1 Supply and install an interlocking mechanism complete (similar to existing) of the key exchange type, which include the AC disconnects, positive isolator, auxiliary transformer short out links to the HT bay gate in the correct sequence in accordance with the specification BBB 5452 version 2.

2.3 DIRECT CURRENT EARTH RELAY CIRCUIT

3.7.1 Supply and install the DC earth leakage relay. The DC earth leakage relay shall be mounted outside the control panel at a position pointed out by Transnet Freight Rail. The relay shall be enclosed in a polycarbonate box.

2.3.1 The Contractor shall connect all existing checker plates as well as existing equipment (all indoor steelwork) to the DC earth leakage system. The Contractor shall also supply any missing checker plate.

2.3.2 The Contractor shall replace the DC earth leakage arrangement (system) as per drawing CEE TBD 0007 and enclosed in 25 mm² PVC conduits against the walls. The crimping lugs of the interconnection cables shall be correspondingly marked with the busbar as shown on drawing CEE TBD 0007.

2.3.3 Only hexagon crimps will be accepted on all crimping lugs.

2.3.4 Resistance between the DC earth leakage busbar and the substation earthmat shall not be less than 25 Ohm.

2.4 3KV DC RECTIFIER

- 2.4.1 Supply and mount the copper/alluminium busbar on the substation wall inside the rectifier bay. The installation shall include the supply of all the required insulators, bolts and fasteners.
- 2.4.2 The Contractor shall then supply and install copper/aluminium busbars from the wall bushing to the rectifier unit.
- 2.4.3 Supply and install 3.3 MW rectifier complete with the diode monitoring system and fan control in accordance with the specification BBB 0496 version 10.
- 2.4.4 Supply and install Aluminium/copper busbar between the rectifier and the negative bar. The negative busbar shall be painted black

2.5 AC PCB CONTROL PANEL AND AC/DC DISTRIBUTION PANEL

- 2.5.1 Remove the existing AC/DC distribution panels, AC PCB panels from site and transport them to Nelspruit Infrastructure depot.
- 2.5.2 Supply and install AC PCB control panel and AC/DC distribution panels in accordance with the specification BBB 2721 version 9.
- 2.5.3 The Contractor shall wire the tripping and lock out circuits in accordance with the drawings CEE TBK 0027 and CEE TBK 0028. The circuits shall be incorporated into the AC PCB control panel.
- 2.5.4 The Contractor shall rewire controls for the extractor fan and incorporate into the distribution panel.
- 2.5.5 Ensure room fan circuit is still working.
- 2.5.6 Transnet Freight Rail representative shall inspect all the panels on the Contractor's premises prior to delivery to site.
- 2.5.7 All direct current wiring shall be done in grey coloured wire.
- 2.5.8 Colour Red, White and Blue shall be used for AC circuits only. All alternating current wiring shall be colour coded using the standard colours red, white, blue and black for neutral.
- 2.5.9 Interior shall be done in gloss white and exterior shall be done in Eau- de- nil high gloss to SANS 1091 colour code no G22.
- 2.5.10 Panels shall be colour coated in accordance with SANS 1274.

- 2.5.11 Insulated lugs, of the crimp on type, shall be used to terminate wiring onto equipment, strip connectors and protection relays.
- 2.5.12 Screw on terminal lugs shall be used on all the protection relays.
- 2.5.13 All new and existing cables and wiring shall be clearly labelled by using an approved slide on wiring label system as described.
- 2.5.14 Where applicable, the Contractor will be responsible to connect and interconnect the control wiring and cabling of existing equipment to the new and old equipment.
- 2.5.15 The Contractor shall make provision for a connection strip in the AC/DC distribution panel and the primary circuit breaker control panel for remote tele-control operations.
- 2.5.16 The Contractor shall notify Transnet Freight Rail on completion of the panels in order to witness functional tests on the premises of the Contractor before delivery.
- 2.5.17 The Contractor shall incorporate all existing equipment functions into the schematic drawings as per specification CEE 0224 Of 2002.
- 2.5.18 A copper busbar system consisting of a busbar for each phase red, white and blue shall be used, in the AC/DC panel and concealed behind perspex with warning sign and voltage identification label.
- 2.5.19 A copper busbar system consisting of battery supply, holding coil volts and negative shall be used and covered with perspex with a warning sign and voltage labels.
- 2.5.20 The Contractor shall supply and install the auxiliary supply switch inside the AC/DC control panel.
- 2.5.21 Provision will be made in the primary circuit breaker control panel to install primary overload protection for the auxiliary supply.
- 2.5.22 All control panels shall be insulated from the substation floor.
- 2.5.23 The layout of the AC and DC equipment inside the control panels shall be done in such a way that the equipment is separated from each other.
- 2.5.24 Transnet Freight Rail shall inspect the layout of the equipment before wiring commences of the panels.
- 2.5.25 All equipment used in the primary circuit breaker control panel and the AC/DC distribution panel shall comply with the SANS 0142.
- 2.5.26 Supply paint, clean substation inside floor and paint red oxide.

3.0 INSTALLATION

- 3.1 The Contractor shall be responsible for the transport to site, off-loading, handling, storage and security of all material required for the construction/ execution of the works.
- 3.2 All fasteners on steelwork, components and electrical connections (nuts and bolts) shall be secured using flat as well as lock washers.
- 3.3 Contractor shall supply multi core cable and connect the tele-control. The substation shall not be switched on unless the tele-control is fully operational.

4.0 INTERCONNECTION OF EQUIPMENT

- 4.1 High conductive silicon grease shall be liberally applied to all the connections.
- 4.2 All dissimilar metal connections (Cu to Al) shall be made using bi-metallic clamps that are specifically designed and manufactured to make that particular connection (ad hoc fabricated clamps are not acceptable).

5.0 DRAWINGS, INSTRUCTION MANUALS AND SPARE PART CATALOGUES

- 5.1 All as built drawings shall be supplied in electronic format (Microstation/Acad).
- 5.2 The successful Contractor shall be required to submit all drawings (paper prints), within four weeks of award of tender, to the Project Manager or Supervisor for approval. No construction or manufacturing activity will be allowed prior to the associated drawings having been approved.
- 5.3 During the duration of the contract period, the successful Contractor will be required to inform the Project Manager or Supervisor of any changes to these drawings and will have to resubmit the affected drawings for approval prior to it being used on this contract.
- 5.4 All drawings, catalogues, instruction book and spares lists shall be in accordance with Transnet Freight Rail's specification CEE.0224.2002.
- 5.5 All final as built drawings shall be provided to Transnet Freight Rail within four weeks after commissioning.
- 5.6 Supply three sets of A3 schematic wiring diagrams in hard copy format and electronic format for approval.

6.0 SITE TESTS

- 6.1 The equipment shall be inspected/ tested and approved by Transnet Freight Rail Quality Assurance at the Contractor's workshop prior to it being taken to site. Only once the approval has been granted can the equipment be taken to site for installation.
- 6.1.1 The Contractor shall be responsible for carrying out of on-site tests and commissioning of all equipment supplied and installed in terms of this specification and the contractual agreement.

- 6.2 Functional on-site tests shall be conducted on all items of equipment and circuitry to prove the proper functioning and installation thereof.
- 6.3 The Contractor shall submit a detailed list of on-site tests for the approval of the Project Manager or Supervisor.
- 6.4 The Contractor shall arrange for the Supervisor or his representative to be present to witness the on-site tests.
- 6.5 The on-site tests and subsequent commissioning **will not commence until ALL CONSTRUCTION** work has been completed. Construction staff, material and equipment shall be removed from site prior to the commencement of testing. Testing and commissioning of the power plants equipment will not be allowed to take place in a construction site environment.
- 6.6 The on-site tests shall include the following:
- 6.6.1 Test for the functionality of all electrical circuitry.
 - 6.6.2 Trip tests on relays.
 - 6.6.3 Test on equipment as per manufacturer's instructions.
 - 6.6.4 Insulation tests.
- 6.7 At the completion of the on-site tests, the Project Manager or Supervisor or his representative shall either sign the tests sheets (supplied by the Contractor) as having witnessed the satisfactory completion thereof, or hand to the Contractor a list of defects requiring rectification.
- 6.8 Upon rectification of defects, the Contractor shall arrange for the Project Manager or Supervisor or his representative to certify satisfactory completion of on-site tests.
- 6.9 Acceptance by the Project Manager or Supervisor of satisfactory completion of on-site tests in no way relieves the Contractor of his obligation to rectify defects which may have been overlooked or become evident at a later stage.

7.0 COMMISSIONING OF EQUIPMENT

- 7.1 Commissioning will only take place after all defects have been rectified to the satisfaction of the Project Manager or Supervisor.
- 7.2 On completion of commissioning, the Contractor will hand the equipment over to the Project Manager or Supervisor in terms of the relevant instruction.
- 7.3 The commissioning of protection equipment by Transnet Freight Rail will in no way absolve the Contractor from any of his responsibilities during the guarantee period.
- 7.4 It is the Contractor's responsibility to satisfy himself or herself that the commissioning of the protection equipment has been carried out in a satisfactory manner, and in no way compromises the proper operation of the equipment supplied in terms of the contract.
- 7.5 The Contractor shall be present during the testing and setting of the protection to rectify any faults found.

8.0 GUARANTEE AND DEFECTS

- 8.1 The Contractor shall guarantee the satisfactory operation of the complete electrical installation supplied and erected by him and accept liability for maker's defects that may appear in design, materials and workmanship.
- 8.2 The Contractor shall be issued with a completion certificate with the list of all defects to be repaired immediately after commissioning.
- 8.3 The guarantee period for these indoor equipments shall expire after, a period of 12 months commencing on the date of completion of the contract.
- 8.4 Any defects that may become apparent during the guarantee period shall be rectified to the satisfaction of Transnet Freight Rail, and to the account of the Contractor.
- 8.5 The Contractor shall undertake work on the rectification of any defects that may arise during the guarantee period within 7-days of him being notified by Transnet Freight Rail of such defects.
- 8.6 Should the Contractor fail to comply with the requirements stipulated above, Transnet Freight Rail shall be entitled to undertake the necessary repair work or effect replacement of defective apparatus or materials, and the Contractor shall reimburse Transnet Freight Rail the total cost of such repair or replacements, including the labour costs incurred in replacing defective material.
- 8.7 Any specific type of fault occurring three times within the guarantee period and which cannot be proven to be due to other faulty equipment not forming part of this contract e.g., faulty locomotive or overhead track equipment, etc., shall automatically be deemed an inherent defect. Such inherent defect shall be fully rectified to the satisfaction of the Project Manager or Supervisor and at the cost of the Contractor.
- 8.8 If urgent repairs have to be carried out by Transnet Freight Rail staff to maintain supply during the guarantee period, the Contractor shall inspect such repairs to ensure that the guarantee period is not affected and should they be covered by the guarantee, reimburse Transnet Freight Rail the cost of material and labour.

9.0 QUALITY AND INSPECTION

- 9.1 Transnet Freight Rail shall inspect the equipment under contract on the premises of the Manufacturer or successful Contractor.
- 9.2 The Contractor shall notify Transnet Freight Rail 14 days in advance of such an inspection date.
- 9.3 The Contractor shall apply 14 days in advance for the date of energizing and ensure that all work is completed before any commissioning can take place.
- 9.4 The Contractor shall be responsible to issue a compliance certificate in terms of SANS 0142 for each site before energizing of the equipment shall take place.

10.0 Specifications

10.1 South African National Standards:

10.1.1	SANS 1091	National colour standard.
10.1.2	SANS 763	Hot dip galvanised zinc coating.
10.1.3	SANS 121	Hot Dip Galvanised Coating for Fabricated Iron or Steel Article.
10.1.4	SANS 8528	Reciprocating internal combustion engine driven alternating current generating set.
10.1.5	SANS 10142	Wiring Code.
10.1.6	Transnet Freight Rail:	
10.1.7	BBB 0496 version 13	3 kV rectifier for traction substations.
10.1.8	BBB 1267 version 10	Specification for outdoor high voltage alternating current circuit breaker in accordance with SANS 62271
10.1.9	BBB 5452 version 4	Transnet freight rail requirements for installation of electrical equipment for 3 kV DC substations.
10.1.10		
10.1.11	BBB 2721 version 10	AC Primary Circuit Breaker Control Panel and AC/DC Distribution Panel for 3kV DC Traction substation.
10.1.12		
10.1.13	CEE-TBD-0007	Earthing arrangement for traction substations.
10.1.14	CEE TBK 0027	Control circuit diagrams – NO volt operation.
10.1.15	CEE TBK 0028	Trip, lockout and indication circuit diagram.
10.1.16	BBB 4724 version 4	Positive Isolator switch for 3 kV DC Traction substations.
10.1.17		
10.1.18	BBB 3005 version 1	3 kV DC under voltage relay manufacturing specification.
10.1.19		
10.1.20	BBC 0198 version 1	Specifications for the supply of cables.
10.1.21	CEE.0023.90	Specifications for installation of cables.
10.1.22		
10.1.23	CEE.0045.2002/1	Painting of steel Components of Electrical Equipment.
10.1.24		
10.1.25	CEE.0183.2002	Hot dip galvanising and painting of electrical equipment.
10.1.26		
10.1.27	CEE.0224.2002	Drawings, catalogues, instruction manuals and spares list for electrical equipment supplied under contract.
10.1.28		
10.1.29		

NOTE: Any other specifications referenced in the above mentioned specification, will be for information purposes and may be provided on request.

10.3 Occupational Health and Safety Act No. 85 of 1993 (Available at depot for referral)

11.0 **Constraints on how the Contractor Provides the Works**

11.1 The constraints shall be as specified in the specifications of the particular equipment.

12.0 **Requirements for the programme**

12.1	Programme of work	: To be submitted by successful Contractor
12.2	CIDB rating	: 2 EPPE or 3 PE and above
12.3	Format	: Any
12.4	Information	: How work is going to be executed and commissioned
12.5	Submission	: 1 weeks after the award of contract
12.6	Site diary	: Successful Contractor to supply in triplicates carbon copies
12.7	Site instruction book	: Successful Contractor to supply in triplicates carbon copies

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Contract Data

Site Information

The works shall be performed at the **WESTAFFIN 3 KV DC TRACTION SUBSTATIONS.**

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