RFQ / TENDER

Tender No: ESS-22047

Vendor No: 11001386

BOARD LIST
BOARD LIST
TRANSNET FREIGHT RAIL
PROCUREMENT DEPARTMENT
2000

Purchaser : T. Mohambi
Telephone : 0115841175
Fax Number:

Please quote reference:
DO2/6000621416

Deliver to:
TFR Head Office
Supply Chain Services
2000 Johannesburg

Closing Date :11.08.2016
Validity Date :30.11.2016
RFQ No :6000621416

SUPPLY AND DELIVERY OF 3kV DC and 25kV AC SECTION INSULATOR AND PHASE BREAKER BALANCING TABLES

DELIVERY ADDRESS: ESSELENPARK SCHOOL OF RAIL
MODDERFONTEIN ROAD, ESSELEN PARK, 1626.

SCOPE OF WORK ATTACHED – ANNEXURE A

NB: PLEASE PAY ATTENTION TO EVALUATION CRITERIA OF THE RFQ FAILURE TO SUBMIT THE REQUIRED DOCUMENTAION WILL RESULT IN COMPANIES BEING DISQUALIFIED.

1. RETURN OF QUOTATION/S:

PLEASE SEND TO FAX NUMBER:011 774-9129, 011 774 9186
EMAIL:thuli.mathebula@transnet.net,lolo.sokhela@transnet.net

FOR ANY TECHNICAL ENQUIRIES WITH REGARD TO THIS RFQ YOU CAN CONTACT:
PHEHELLO SELLO AT 071 853 9986 OR 011 929 1281

1.1 QUOTATION/S MUST BE SUBMITTED PUNCTUALLY AT 10:00 ON THE CLOSING DATE AND LATE QUOTATIONS WILL NOT BE CONSIDERED.

1.2 IF POSTED:

EXECUTIVE MANAGER (TRANSNET FREIGHT RAIL, SUPPLY CHAIN SERVICES)
PO BOX 8617
JOHANNESBURG
2000

1.3 ,IF DELIVERED BY HAND:

TRANSNET FREIGHT RAIL
INYANDA HOUSE 1

DATE: ..... SIGNATURE OF TENDERER(S): ....

CONTACT PERSON: ..... TEL No: .....

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PROCUREMENT DEPARTMENT

21 WELLINGTON ROAD
PARKTOWN
JOHANNESBURG
2001

2. CONDITIONS:

2.2 ANY PURCHASE ORDER PLACED AS A RESULT OF YOUR QUOTATION WILL BE SUBJECT TO THE STANDARD TERMS AND CONDITIONS OF CONTRACT, FORM US7, (LATEST), GENERAL TENDER CONDITIONS, FORM CS55 (LATEST) AND CONDITIONS MENTIONED HEREIN.

2.3 TENDERERS MAY OFFER AN EARLIER VALIDITY DATE, BUT THEIR QUOTATION MAY, IN THAT EVENT, BE DISREGARDED FOR THIS REASON.

2.4 TENDERERS ARE REQUIRED TO OFFER ONLY FIRM PRICES. PRICES SUBJECT TO REVIEW IN TERMS OF CLAUSE 32 OF FORM US7 WILL ONLY BE CONSIDERED SHOULD THE DELIVERY PERIOD REQUIRED EXCEED 6 MONTHS.

2.5 BEST DELIVERY TIME MUST BE OFFERED.

2.6 DISCOUNT (TRADE DISCOUNT) CASH DISCOUNT (CONDITONAL DISCOUNT) VALUE ADDED TAX (VAT) MUST BE SHOWN SEPARATELY.

2.7 TRANSNET RESERVES THE RIGHT TO NEGOTIATE PRICES AND COMMERCIAL ASPECTS AFTER THE CLOSING DATE OF THE QUOTATION.

DATE: ..... SIGNATURE OF TENDERER(S): ....

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2.8 DIRECT DELIVERY INTIMATES DELIVERY BEING EFFECTED INTO THE WAREHOUSE OR THE ACTUAL POINT OF SUPPLY AND SHOULD THEREFORE INCLUDE ANY TRANSPORTATION MODE DEEMED NECESSARY IN EXECUTING THIS METHOD OF DELIVERY BASIS IN ORDER TO MEET THE REQUIRED DELIVERY DATE.

TAX CLEARANCE CERTIFICATES:
The Regulations in terms of the Public Finance Management Act, 1999: Framework for Supply Chain Management as published in Government Gazette No. 25767 dated 5 December 2003, Clause 9 (1) (d), stipulates that the accounting officer or accounting authority of an institution to which these regulations apply must reject any bid from a supplier who fails to provide written proof from the South African Revenue that the supplier either has no outstanding tax obligations or has made arrangements to meet outstanding tax obligations.
Tenderers will be disqualified if a valid tax clearance certificate or written proof from the South African Revenue Service that supplier has made arrangements to meet outstanding tax obligations is not submitted with the tender.

COMPANY DETAILS:
NAME OF COMPANY: _____
CONTACT PERSON: _____
TEL. NO. _____ **FAX NO:** _____
REG. NO. _____

BROAD BASED BLACK ECONOMIC EMPOWERMENT (BBBEE)

Transnet fully endorses and supports the Government's Broad-based Black Economic Empowerment Programme and it is strongly of the opinion that all South African Business Enterprises have an equal obligation to redress the imbalances of the past.
Transnet will therefore prefer to do business with local business enterprises who share these same values. Transnet will endeavour to do business with local business enterprises that possess a BBBEE "recognition level" of at least a level 5. Transnet urges Tenderers (large enterprises and QSE's - see below) to have themselves accredited by any one of the various Accreditation Agencies available, who do their BBBEE ratings in accordance with the latest Codes (i.e. those promulgated on 9 February 2007) and whose names appear on the present ABVA (Association of BEE Verification Agencies) - "List of Full Members" as displayed on the ABVA website (www.abva.co.za).
Although no agencies have, as yet, been accredited by SANAS (SA National Accreditation System), Transnet will, in the interim, accept rating certificates of tenderers who have been verified by any of the listed agencies.

Enterprises will be rated by such agency based on the following:
1. Large Enterprises (i.e. annual turnover >R35million:
" Rating level based on all seven elements of the BBBEE scorecard.

2. Qualifying Small Enterprises - (QSE) (i.e. annual turnover >R5million but <R35million:
" Rating based on any four elements of the BBBEE scorecard.

NB:
3. Emerging Micro Enterprises - (EME) (i.e. annual turnover <R5m) are exempted from being rated/verified:
" Automatic rating of Level 4 BBBEE irrespective of race of ownership, i.e. 100% BBBEE recognition
" Black ownership >50% or Black Women ownership >30% automatically qualifies as Level 3 BBBEE, i.e. 110% BBBEE recognition
" EME's should provide certified documentary proof of annual turnover (i.e. audited financials) plus proof of Black ownership if Black ownership >50% or Black Women ownership >30% from the EME's Auditor/Accounting Officer.

4. In addition to the above, Tenderers who wish to enter into a Joint Venture or subcontract portions of the contract to BBBEE companies, must state in their tenders the percentage of the total contract value that will be allocated to such BBBEE companies, should they be successful in being awarded any business. A rating certificate in respect of such BBBEE JV-partners and / or sub-contractor/s, as well as a breakdown of

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the distribution of the aforementioned percentage must also be furnished

In view of the high emphasis which Transnet places on Broad-based Black Economic Empowerment, Transnet will allow certain preference points for BBBEE in the evaluation of all responses. Depending upon the value of the ensuing business award (i.e. below or in excess of R2m), the 80/20 or 90/10 point preference systems will be utilized where BBBEE will count out of 20 or 10 respectively in the evaluation process.

EACH RESPONDENT IS REQUIRED TO FURNISH PROOF OF THE ABOVE TO TRANSNET. FAILURE TO DO SO WILL RESULT IN A SCORE OF ZERO BEING ALLOCATED FOR BBBEE.

Turnover: Kindly indicate your company's annual turnover for the past year R_____

" If annual turnover <R5m, please attach certified confirmation from your Auditor/Accounting Officer
" If annual turnover >R5m please attach original or certified copy of accreditation certificate and detailed scorecard by an ABVA accreditation agency (registered as a "Full Member")

PAYMENT TERMS

The following payment terms will apply as from 1 October 2008.
" **All suppliers will be paid 30 days from receipt of month end statement, i.e. payment term F055.**

EVALUATION CRITERIA
ADMINISTRATIVE RESPONSIVENESS TEST (ESSENTIAL)
All returnable documents to be submitted

SUBSTANTIVE RESPONSIVENESS TEST (MANDATORY)
Compliance to specification (Clause by Clause Declaration)-Annexure B

CATEGORY: COMMERCIAL(SCORING MATRIX)
PRICING ONLY 80%

CATEGORY: B-BBBEE (SCORING MATRIX)
VALID B-BBEE CERTIFICATE AND SCORECARD 20%

CONDITIONS:
This quotation is subject to the provisions of the Standard Terms and Conditions of Contract, Form US7, (Latest) and the General Tender Conditions, Form CSS5 (Latest) and any other standard or special conditions mentioned and/or embodied in the quotation request.

SCHEDULE OF REQUIREMENTS
PRICES TENDERED ARE TO BE "DIRECT" AND EXCLUDE VAT.

IN THIS REGARD THE TENDERER'S ATTENTION IS DIRECTED TO PARAGRAPH 16 OF FORM CSS5 (LATEST).

DATE: ..... SIGNATURE OF TENDERER(S): ....

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TRANSNET INSISTS ON HONESTY AND INTEGRITY BEYOND REPROACH AT ALL TIMES AND WILL NOT TOLERATE ANY FORM OF IMPROPER INFLUENCING, BRIBERY, CORRUPTION, FRAUD, OR ANY OTHER UNETHICAL CONDUCT ON THE PART OF BIDDERS/ TRANSNET EMPLOYEES. IF, IN THE OPINION OF TRANSNET'S CHIEF OPERATING OFFICER, A TENDERER / CONTRACTOR / SUPPLIER HAS OR HAS CAUSED TO BE PROMISED, OFFERED OR GIVEN TO ANY TRANSNET EMPLOYEE, ANY BRIBE, COMMISSION, GIFT, LOAN, ADVANTAGE OR OTHER COSIDERATION, TRANSNET SHALL BE ENTITLED TO REVOKE THE TENDER / CONTRACT BY FOLLOWING ITS INTERNAL POLICIES THAT GOVERN THE ECLUSION PROCESS. IN SUCH AN EVENT TRANSNET WILL BE ENTITLED TO PLACE ANY TENDERER / CONTRACTOR / SUPPLIER WHO HAS CONTRAVENED THE PROVISIONS OF TRANSNET'S BUSINESS ETHICS ON ITS LIST OF EXCLUDED TENDERERS. THIS LIST WILL ALSO BE DISTRIBUTED TO ALL OTHER STATE OWNED ENTERPRISES AND GOVERNMENT DEPARTMENTS.

TRANSNET INVITES ITS VALUED SUPPLIERS TO REPORT ANY ALLEGATIONS OF FRAUD/CORRUPTION OR OTHER UNETHICAL ACTIVITIES TO TRANSNET TIP-OFFS ANONYMOUS,AT ANY OF THE FOLLOWING ADDRESSES/ CONTACT NUMBERS:-

TOLL-FREE ANONYMOUS HOTLINE - 0800 003 056
EMAIL - Transnet@tip-offs.com
FAX NUMBER - 0800 007 788
FREEPOST DN 298, UMHLANGA ROCKS, 4320

CONFIDENTIALITY IS QUARANTEED REFER TO ATTACHED PRICE SCHEDULE :
REFER TO ATTACHED PRICING SCHEDULE- ANNEXURE C

Item	Qty	Material	Description
00010	1		3kV DC & 25kV AC Section Insulator

R.....
Each

Delivery Date: 31.08.2016

FULL DETAILS OF DESCRIPTION

DATE: ..... SIGNATURE OF TENDERER(S): ....

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3. ADDITIONAL INFORMATION REQUIRED: (WHERE APPLICABLE)

3.1 THE FOLLOWING ADDITIONAL INFORMATION IS REQUIRED:

(A) DISCOUNT: .....

(B) SETTLEMENT DISCOUNT:.....

(C) PRICE/S FIRM: .....

(D) PRICE/S FIRM UNTIL ..... THEREAFTER SUBJECT TO REVIEW.

(E) PRICE/S NOT FIRM: .....

(F) SABS MARK: .....

(G) SABS PERMIT NO: .....

(H) BRAND/MAKE/TYPE: .....

(I) FULL NAME AND ADDRESS OF MANUFACTURER.:

.....

.....

.....

(J) FULL NAME AND ADDRESS OF INSPECTION POINT:

.....

.....

.....

(K) COUNTRY OF ORIGIN: .....

Comply :_____ Does not Comply :_____Not applicable :_____

Justification : .....

(L) SURPLUS MATERIAL:

TENDERERS MUST INDICATE IF THEY WILL BE PREPARED TO PURCHASE BACK FROM TRANSNET ANY SURPLUS MATERIAL WHICH MAY BECOME AVAILABLE FROM ANY RESULTING PURCHASE ORDER/CONTRACT ORIGINATED FROM THE QUOTATION SUBMITTED:

.....

(M) PAYMENT OVERSEAS:

ONLY IF TRANSNET LIMITED IS REQUESTED BY THE TENDERER TO EFFECT PAYMENT OVERSEAS DIRECT TO THE TENDERER'S PRINCIPAL/SUPPLIER THE FOLLOWING INFORMATION IS REQUIRED:

* EXCHANGE RATE ON WHICH THE QUOTATION PRICE IS BASED: R1,00 (S.A. CURRENCY) BEING EQUAL TO ..... (FOREIGN CURRENCY)
* PERCENTAGE IN RELATION TO THE QUOTATION PRICE TO BE REMITTED OVERSEAS:

.....

* NAME OF COUNTRY TO WHICH PAYMENT IS TO BE MADE:

.....

.....

* APPLICABLE DATE OF EXCHANGE RATE:

.....

* BENEFICIARY'S NAME AND FULL ADDRESS:

.....

.....

DATE: ..... SIGNATURE OF TENDERER(S): ....

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PROCUREMENT DEPARTMENT

.....

* BENEFICIARY'S BANKERS AND FULL ADDRESS:

.....

.....

.....

* APPLICABLE ACCOUNT NUMBER:

.....

(N) DELIVERY DATE:

TENDERERS MUST FURNISH THEIR ACTUAL DELIVERY AND MANUFACTURNG PERIODS HEREUNDER NOTWITHSTANDING THE DELIVERY DATES SPECIFIED BY TRANSNET.

THE FOLLOWING MUST ALSO BE FURNISHED IN REGARD TO THE ABOVE:

1. PERIOD REQUIRED TO OBTAIN RAW MATERIAL. ....**(DAYS)**
2. MANUFACTURING PERIOD. ....**(DAYS)**
3. PERIOD TO TRANSPORT MATERIAL TO DESTINATION. ....**(DAYS)**

MATERIAL NO.	**1.(PERIOD)**	**2.(PERIOD)**	**3.(PERIOD)**

INDICATE THE PERCENTAGE (%)OF THE PRICE THAT IS SUBJECT TO THE VARIABLE COPPER FEE: ----------%.

DATE: ..... SIGNATURE OF TENDERER(S): ....

ANNEXURE A

Specification/Scope of Work

1.0	**SCOPE**
1.1	This specification covers the South African Transport Services' requirements for bi-directional 25kV , AC section Insulators, excluding catenary insulation
2.0	**REFERENCE**
2.1	The following specifications (latest edition) are referred to herein:-
2.1.1	American Standards and Test Methods ASTM
2.1.2	South African Transport Services CEE-0012.83/1
2.1.3	I.E.C Standard publication 383
2.2	The following drawings are referred to herein:
2.2.1	Siemens drawing No. VE 4 2-703 405 (pantograph for AC locomotive)
3.0	**METHOD OF TENDERING**
3.1	Tendering shall be in accordance with South African Transport Services' Specification CEE.0012.83/3
3.1.1	The tender price shall include all accessories such as support fittings, (where required) i.e droppers and insulators, clamps etc. but shall exclude catenary insulation which shall be supplied by others
3.1.2	Tools shall be quoted separately as per clause 9.
4.0	**SERVICE CONDITIONS**
4.1	The section insulators shall be suitable for use under the following service conditions;
4.1.1	***Environmental Conditions:*** Altitude: **0-1 800 m above sea level** Relative humidity : **Up to 86%** Ambient temperature : **Minus 5 degrees Celsius plus 40 degrees Celsius** Wind pressure on equivalent projected area normal to direction of wind : **750 Pa**

	Lightning conditions : **Severe, 7,75 flashes / km² / year** Pollution: **Normal. However steam and diesel-electric locomotives will operate under the equipment**
4.1.2	***Mechanical Conditions:***
4.1.2.1	Contact Wire tension (new wire) : **11 kN(min) to 17kN(max)**
4.1.2.2	Required safety factor (overall) : **2 for 107 mm²** **2,7 for 161 mm² contact wire**
4.1.2.3	Contact wire size **107mm² or 161mm² as specified**
4.1.3	***Electrical Conditions:***
4.1.3.1	Highest voltage of system: **27,5 kV AC** Lowest voltage of system: **19,9 kV AC**
4.1.3.2	Maximum commuted current : 600 amps Maximum short circuit current : 8 000 amps The circuit breakers opening time on the occurrence of a fault is 60-150 milli-seconds for 25 kV AC systems
5.0	**DRAWINGS AND INSTRUCTIONS**
5.1	Tenderers shall provide the following information at the time of tendering to enable a proper adjudication to be made. **Failure to do so shall be indicated in the statement of compliance and may lead to rejection of the tender.** Where feasible the information may be provided on drawing:
5.1.1	A detailed drawing showing insulation inserts, runners, arcing horns and suspension arrangements with all relevant dimensions and in particular deviation, if any, from a plane surface after installation. (See clause 6 for design requirements)
5.1.2	Details of insulating materials used
5.1.3	Resistance shall be Ultra –violet radiation shall be stated
5.1.4	Detail and composition of metallic components used
5.1.5	Minimum distance to be allowed between section insulator and catenary
5.1.6	Details of adjusting height and level at right angles, as well as longitudinal, to the track

	overall mass
5.1.7	Detail of adjustment of arcing horns
5.1.8	Comprehensive instruction for installation and details of any special tools or equipment required
5.1.9	List if railways and service conditions where the section insulator offered is in successful use
5.1.10	Test certificates for test called for in clause 7.2
5.2	Photocopies of original documentation shall be clearly legible
6.0	**DESIGN REQUIREMENTS**
6.1	The section insulators shall be of durable design and shall be capable of carrying out their functions reliably under the service conditions stated. They shall be suitable for bi-directional traffic at speeds of up to 160 km/h
6.2	The overall suspended mass of the section insulator shall not exceed 21 kg. (the mass of support droppers and fittings excluded)
6.3	The overall width of that part of the section insulator in contact with the pantograph shall not exceed 330mm
6.4	The section insulator shall be provided with suitable runners of either metal or insulating material such that a smooth continuous running surface is created for the passage of the pantograph
6.5	They shall be so designed that electrical contact between pantograph and the overhead system will under no circumstances be completely broken whilst being traversed by the pantograph. Designs incorporating a gap longitudinally across the section insulator (i.e. With in-line runners) the gap width shall not exceed 300mm such that the gap can be bridged out by the pantograph. Drawing VE 4 2-703 405 shows the detail of the pantograph.
6.6	Allowance shall be made in the design to ensure that no obstruction shall be formed to the passing pantograph should be section insulator not be set perfectly level cross-wise to the track
6.7	The section insulator shall preferably present a perfectly plane running surface to the pantograph when installed at the normal tension of 11, 5 kN. If not perfectly plane, or if from a perfect plane, the maximum allowable deviation shall be 6 mm at any point on the running surface within the range of operating tensions quoted in clause 4.1.2.1
6.8	All runners or parts in contact with the pantograph shall be rigid design such that no part shall deflect by more than that specified in clause 6.7 whilst being subjected to the upward thrust to the pantograph of 70 Newtons

6.9	Arcing horns shall be provided and designed such to assist in extinguishing any arc. They shall also be placed such that the insulation used will not be damaged by the arcs drawn during operation and shall be of rigid design The air-gap between arcing horns at different potential shall not be less than 150 mm. each horn shall have a straight length above this air gap less than 120 mm and not more than 350 mm
6.10	The main insulating material forming the insulation between the two circuits shall have a creepage length of not less than 750mm. It shall also be able to withstand abrasion resulting from the passage of pantographs (if applicable0 as well as electric arcing and ultra-violet radiation P.T.F.E (Teflon) shall not be used if in direct contact with the pantograph
6.11	Where composite insulators are used as main insulation the protective coating on the outside shall be bonded to the core such that no cavities are formed between the coating and the core and shall be sealed at the ends to prevent the possibility of tracking along the insulator underneath the protective coating Each insulator of this type shall be subjected to the water immersion test described in clause 7.3
6.12	Clause 6.11 also applies to any other protection material provided to protect the insulation against arcing
6.13	Supporting droppers shall (if provided) be insulated to prevent any arcs from jumping onto the catenary wire via the droppers. They shall also be adjustable either by means of turnbuckles or some other means of providing fine adjustments to its length
6.14	Supporting droppers must be provided if the mass of the section insulator exceeds 5 kg or if its overall width is in excess of 75 mm
6.15	Only non-corrosive materials shall be used in the construction of the section insulator. Brass may not be used
6.16	Means of locking all bolts and screws shall be provided. All screw threads shall be of metal
7.0	**TESTS**
7.1	***General:***
7.1.1	The first section insulator shall be subjected to type tests as specified in clause 7.2
7.1.2	All main insulators of the composite type shall be subjected to the type test as specified in clause 7.3
7.1.3	At least five samples of the main insulator material shall be subjected to the type test as specified in clause 7.2.1

7.1.4	The responsibility for arranging these tests shall rest with the tenderer although the South African Transport Services reserves the right to perform such tests independently
7.1.5	The South African Transport Services reserves the right to call for further type tests if considered necessary
7.1.6	The South African Transport Services reserves the right to present at all tests
7.2	***Type Tests:***
7.2.1	The insulating material (if of synthetic type) shall be tested for resistance to tracking in accordance with the test method described in ASTM D 2303. The average time to track 13mm for five samples shall not be less than 24 hours at a constant test voltage of 2 kV with a constant contaminating flow rate as prescribed in ASTM D 2303. The cabinet in which the tracking test is performed shall be open at the top in order to create sufficient ventilation, thus limiting the relative humidity inside the chamber to a value that will not give false results. The flow rate of the contaminant should be accompanied by a gravity feed from a large reservoir mounted at a sufficient height to obtain the desired flow rate
7.2.2	Impulse and power frequency tests shall be carried out on a complete section insulator in accordance with IEC Standard, Publication 383
7.2.3	Mechanical load tests shall be carried out to establish whether the section insulator can withstand the maximum tension called for in clause 4.1.2.1 at a safety factor as specified
7.3	***Water immersion test shall be carried out as follows:- (Routine test)***
7.3.1	Immerse the sample in hot tap water (50 degrees Celsius) and allow water to cool over 8 hours to approximately 20 degrees Celsius
7.3.2	Repeat 7.3.1 nine times
7.3.3	After the 10th cycle, remove the sample from the water, wipe the surface dry with a paper towel and apply a DC test voltage of 25kV/m length of insulator within 10 minutes. Measure the current after one minute on a DC ammeter capable of reading 10^{-9} A.
7.3.4	Insulators passing more than 10^{-7} Amperes have failed the test and must be rejected
8.0	**TOOLS**
8.1	Special tools for installation of the section insulators shall be quoted for separately
9.0	**PACKAGING**
9.1	Each section insulator shall be packed individually complete with arcing horns, suspension fitting etc.

ANNEXURE B

CLAUSE BY CLAUSE COMPLIANCE SCHEDULE.

RFQ NUMBER CRAC-ESS-22047

The compliance response is to contain ONLY the following statements, Comply", or "Do not comply".

BIDDERS ARE TO REFER TO SPECIFICATIONS FOR 3KV DC & 25KV AC SECTION INSULATOR AND PHASE BREAKER BALANCING TABLES FOR FULL DETAILED DESCRIPTION OF ITEMS.

FAILURE TO COMPLETE ANNEXURE A WILL BE REGARDED AS NON-COMPLIANCE.

ITEM	DESCRIPTION	COMPLY	DO NOT COMPLY
1.0	**SCOPE**		
1.1	This specification covers the South African Transport Services' requirements for bi-directional 25kV, AC section Insulators, excluding catenary insulation		
2.0	**REFERENCE**		
2.1	The following specifications (latest edition) are referred to herein:-		
2.1.1	American Standards and Test Methods ASTM		
2.1.2	South African Transport Services CEE-0012.83/1		
2.1.3	I.E.C Standard publication 383		
2.2	The following drawings are referred to herein:-		
2.2.1	Siemens drawing No. VE 4 2-703 405 (pantograph for AC locomotive)		
3.0	**METHOD OF TENDERING**		
3.1	Tendering shall be in accordance with South African Transport Services' Specification CEE.0012.83/3		
3.1.1	The tender price shall include all accessories such as support fittings, (where required) i.e droppers and insulators, clamps etc. but shall exclude catenary insulation which shall be supplied by others		
3.1.2	Tools shall be quoted separately as per clause 9.		

4.0	**SERVICE CONDITIONS**		
4.1	The section insulators shall be suitable for use under the following service conditions;		
4.1.1	Environmental Conditions:		
	Altitude: **0-1 800 m above sea level**		
	Relative humidity : **Up to 86%**		
	Ambient temperature : **Minus 5 degrees Celsius plus 40 degrees Celsius**		
	Wind pressure on equivalent projected area normal to direction of wind : **750 Pa**		
	Lightning conditions : **Severe, 7,75 flashes / km² / year**		
	Pollution: **Normal. However steam and diesel-electric locomotives will operate under the equipment**		
4.1.2	Mechanical Conditions		
4.1.2.1	Contact Wire tension (new wire) : **11 kN(min) to 13 kN(max)**		
4.1.2.2	Required safety factor (overall) : **2 for 107 mm²** **2,7 for 161 mm² contact wire**		
4.1.2.3	Contact wire size **107mm² or 161mm² as specified**		
4.1.3	Electrical Conditions		
4.1.3.1	Highest voltage of system: **27,5 kV AC** Lowest voltage of system: **19,9 kV AC**		
4.1.3.2	Maximum commuted current : 600 amps Maximum short circuit current: 8 000 amps		
	The circuit breakers opening time on the occurrence of a fault is 60-150 milli-seconds for 25 kV AC systems		
5.0	**DRAWINGS AND INSTRUCTIONS**		
5.1	Tenderers shall provide the following information at the time of tendering to enable a proper adjudication to be made. Failure to so shall be indicated in the statement of compliance and may lead to rejection of the tender. Where feasible the information may be provided on drawing: **BY TICKING "COMPLY" THE BIDDER SHOULD ATTACH THE DRAWING INDICATED ON 5.1.1**		
5.1.1	A detailed drawing showing insulation inserts, runners, arcing horns and suspension arrangements with all relevant dimensions and in particular deviation, if any, from a plane surface after installation. (See clause 6 for design requirements)		
5.1.2	Details of insulating materials used		
	Resistance shall be Ultra –violet radiation shall be stated		
5.1.3	Detail and composition of metallic components used		
5.1.4	Minimum distance to be allowed between section insulator and catenary		

5.1.5	Details of adjusting height and level at right angles, as well as longitudinal, to the track		
5.1.6	Overall mass		
5.1.7	Detail of adjustment of arcing horns		
5.1.8	Comprehensive instruction for installation and details of any special tools or equipment required		
5.1.9	List if railways and service conditions where the section insulator offered is in successful use		
5.1.10	Test certificates for test called for in clause 7.2		
5.2	Photocopies of original documentation shall be clearly legible		
6.0	**DESIGN REQUIREMENTS**		
6.1	The section insulators shall be of durable design and shall be capable of carrying out their functions reliably under the service conditions stated. They shall be suitable for bi-directional traffic at speeds of up to 160 km/h		
6.2	The overall suspended mass of the section insulator shall not exceed 21 kg. (the mass of support droppers and fittings excluded)		
6.3	The overall width of that part of the section insulator in contact with the pantograph shall not exceed 330mm		
6.4	The section insulator shall be provided with suitable runners of either metal or insulating material such that a smooth continuous running surface is created for the passage of the pantograph		
6.5	They shall be so designed that electrical contact between pantograph and the overhead system will under no circumstances be completely broken whilst being traversed by the pantograph. Designs incorporating a gap longitudinally across the section insulator (i.e. With in-line runners) the gap width shall not exceed 300mm such that the gap can be bridged out by the pantograph. Drawing VE 4 2-703 405 shows the detail of the pantograph.		
6.6	Allowance shall be made in the design to ensure that no obstruction shall be formed to the passing pantograph should be section insulator not be set perfectly level cross-wise to the track		
6.7	The section insulator shall preferably present a perfectly plane running surface to the pantograph when installed at the normal tension of 14.5 kN. If not perfectly plane, or if from a perfect plane, the maximum allowable deviation shall be 6 mm at any point on the running surface within the range of operating tensions quoted in clause 4.1.2.1		
6.8	All runners or parts in contact with the pantograph shall be rigid design such that no part shall deflect by more than that specified in clause 6.7 whilst being subjected to the upward thrust to the pantograph of 70 Newtons		
6.9	Arcing horns shall be provided and designed such to assist in extinguishing any arc. They shall also be placed such that the insulation used will not be damaged by the arcs drawn during operation and shall be of rigid design		
	The air-gap between arcing horns at different potential shall not be less than 150 mm. each horn shall have a straight length above this air gap less than 120 mm and not more than 350 mm		

6.10	The main insulating material forming the insulation between the two circuits shall have a creepage length of not less than 750mm. It shall also be able to withstand abrasion resulting from the passage of pantographs (if applicable0 as well as electric arcing and ultra-violet radiation		
	P.T.F.E (Teflon) shall not be used if in direct contact with the pantograph		
6.11	Where composite insulators are used as main insulation the protective coating on the outside shall be bonded to the core such that no cavities are formed between the coating and the core and shall be sealed at the ends to prevent the possibility of tracking along the insulator underneath the protective coating		
	Each insulator of this type shall be subjected to the water immersion test described in clause 7.3		
6.12	Clause 6.11 also applies to any other protection material provided to protect the insulation against arcing		
6.13	Supporting droppers shall (if provided) be insulated to prevent any arcs from jumping onto the catenary wire via the droppers. They shall also be adjustable either by means of turnbuckles or some other means of providing fine adjustments to its length		
6.14	Supporting droppers must be provided if the mass of the section insulator exceeds 5 kg or if its overall width is in excess of 75 mm		
6.15	Only non-corrosive materials shall be used in the construction of the section insulator. Brass may not be used		
7.0	**TESTS**		
7.1	General		
7.1.1	The first section insulator shall be subjected to type tests as specified in clause 7.2		
7.1.2	All main insulators of the composite type shall be subjected to the type test as specified in clause 7.3		
7.1.3	At least five samples of the main insulator material shall be subjected to the type test as specified in clause 7.2.1		
7.1.4	The responsibility for arranging these tests shall rest with the tenderer although the South African Transport Services reserves the right to perform such tests independently		
7.1.5	The South African Transport Services reserves the right to present at all tests		
7.2	Type Tests		
7.2.1	The insulating material (if of synthetic type) shall be tested for resistance to tracking in accordance with the test method described in ASTM D 2303. The average time to track 13mm for five samples shall not be less than 24 hours at a constant test voltage of 2 kV with a constant contaminating flow rate as prescribed in ASTM D 2303. The cabinet in which the tracking test is performed shall be open at the top in order to create sufficient ventilation, thus limiting the relative humidity inside the chamber to a value that will not give false results. The flow rate of the contaminant should be accompanied by a gravity feed from a large reservoir mounted at a sufficient height to obtain the desired flow rate		

7.2.2	Impulse and power frequency tests shall be carried out on a complete section insulator in accordance with IEC Standard, Publication 383		
7.2.3	Mechanical load tests shall be carried out to establish whether the section insulator can withstand the maximum tension called for in clause 4.1.2.1 at a safety factor as specified		
7.3	Water immersion test shall be carried out as follows:- (Routine test)		
7.3.1	Immerse the sample in hot tap water (50 degrees Celsius) and allow water to cool over 8 hours to approximately 20 degrees Celsius		
7.3.2	Repeat 7.3.1 nine times		
7.3.3	After the 10^{th} cycle, remove the sample from the water, wipe the surface dry with a paper towel and apply a DC test voltage of 25kV/m length of insulator within 10 minutes. Measure the current after one minute on a DC ammeter capable of reading 10^{-9} A.		
7.3.4	Insulators passing more than 10^{-7} Amperes have failed the test and must be rejected		
8.0	**TOOLS**		
8.1	Special tools for installation of the section insulators shall be quoted for separately		
9.0	**PACKAGING**		
9.1	Each section insulator shall be packed individually complete with arcing horns, suspension fitting etc.		

ANNEXURE C

Price Schedule

I/We quote as follows for the goods required, on a "delivered nominated destination" basis, excluding VAT: For 3kV DC & 25kV AC Section Insulator and Phase Breaker Balancing Tables at Esselenpark School of Rail

ITEM	DESCRIPTION	QUANTITY	TOTAL PRICE EXCLUDING VAT	TOTAL PRICE INCLUDING VAT
1	**3 kV DC & 25kV AC Section Insulator and Phase Breaker Balancing Tables** • Refer to the provided scope of work – Annexure A	1	R_____	R_____