Transnet SOC Limited
Transnet RME

TFR Official Tender Board.
TFR Tender Board.
Johannesburg.
2000

Attention:
TFR Official Tender Board.
Telephone Number :
Fax Number :
Vendor Number :500000

REQUEST FOR QUOTATION

TRANSNET

Registration Number: 1990/000900/06
Vat Number : 4720103177

REQUEST for QUOTATION
Transnet RME
RFQ Number / Date
6000176778 / 03.10.2013
Contact Person / Telephone
Eddie Quinn / 035 905 3664
Return to VAX Number/EMAIL
0865159978 / TCPtendersRichardsBay@Transnet.net

Quotation Deadline Date : 11.10.2013
Quotation Deadline Time : 12:00

"PREVIEW COPY ONLY"

Item	Material	Description	RFQ Qty	UoM	Required Del date	Confirm Del date	Unit Price Excl	Total Price Excl
00010		Pre-stressed Concrete m	170	ea	01.11.2013			

Supply, Deliver and Safely Offload, 170 x Pre-Stressed Concrete High Masts, 3 K.V. DC Poles, 84kN-M x 13m Length with Galvanised Reinforcing, as per the attached Specification No: CEE.0159.98 and the Drawing No: CEE-TMB-115 (GP-4269).
Delivered to: 1 Morris Road, Empangeni Rail, OHTE Store.
Contact: Mr Pierre Crocker Tel: 083 279 0437 / 035-905 3638.

Transnet Limited t/a Transnet Freight Rail (R.M.E.) # Richards Bay, hereby invite your company to submit a detailed quotation for:

The Supply, Deliver and Safely Offload, 170 x Pre-Stressed Concrete High Masts, 3 K.V. DC Poles, 84kN-M x 13m Length with Galvanised Reinforcing, as per the attached Specification No: CEE.0159.98 and the Drawing No: CEE-TMB-115 (GP-4269).
Delivered to: 1 Morris Road, Empangeni Rail, OHTE Store.

All technical queries relating to this invitation may be addressed to;
Mr. Pierre Crocker Tel: 083 279 0437 / 035-905 3638.

All tender related queries pertaining to this invitation may be addressed to;
Mr. Eddie Quinn, Tel: 035 # 905 3664.

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"PREVIEW COPY ONLY"

The closing time for receipt of your official quotations is 12:00 hours on Friday, 11 October 2013.

Telephonic and late quotes will not be accepted.
All quotations should be clearly marked, and may be dropped in our tender box, or alternatively forwarded to:
Me Yogeshnie Gengan, Tender & Fax Assistant,
Fax No: 086 515 9978 and / or
e-mailed to: TCPtendersRichardsBay@transnet.net

Physical address for delivering quotations, if required, is:

Transnet Capital Projects Richards Bay
Tender Box in Main Foyer
Old Naval Base,
Commodores Close,
Meerensee,

The contractor's address and identification details have to be shown on each quotation submitted.

NOTE:

Please supply the following documents with your quotation submitted;

- Valid Tax Clearance certificate.
- Copy of your latest B.B.B.E.E. Certificate.

TRANSNET

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Johannesburg.
2000

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Item	Material	Description	RFQ Qty	UoM	Required Del date	Confirm Del date	Unit Price Excl	Total Price Excl

N.B. Failing to submit any of the documents mentioned above, could result in your quotation to be disqualified / not accepted.

Note: #Transnet may not necessarily accept the lowest or any other offer and reserves the right to select in its favour any or, a portion of any offer made"

If you are unable to quote for this RFQ, please submit a NO QUOTE, for not being able to quote.

Otherwise we look forward to receive your detailed quote by the date and time stated.

Yours faithfully,

"PREVIEW COPY ONLY"

Transnet SOC Limited
Transnet RME
Company
TFR Official Tender Board.
TFR Tender Board.
Johannesburg.
2000

REQUEST FOR QUOTATION

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Return to VAX Number/EMAIL
0865159978 / TCPtendersRichardsBay@Transnet.net

"PREVIEW COPY ONLY"

Delivery Address
TFR RME Richards Bay
Old Naval Base, Commodores Clo
Meerensee, Richards Bay
3900

This RFQ is subject to the following conditions:
1. Price/s : The price/s quoted in SA currency and is excluding of V.A.T
2. Delivery : The price/s quoted should include delivery cost to the delivery address stated on the RFQ
3. Returnables : A valid tax clearance certificate and BBBEE certificate from a SANAS accredited verification agency attached to quotation for all quotes above R30 000. Please note that only the official Transnet RFQ will be accepted and all other correspondence to be attached to the original
4. Safety : To confirm to Transnet Capital Projects Health & Safety plan and specification: HAS std-1001, copy available on request.
5. Confirmation: To confirm your participation in this tender process please sign and return this document as immediate effect prior to the quotation deadline.
6. Negotiations: The Employer may elect to negotiate the final terms of the contract/order with the preferred tenderer in accordance with Clauses F.2.17 and F.3.13 of the CIDB Standard Conditions of Tender. A copy of which is available upon request.

Signature

Date

SPOORNET

(INFRASTRUCTURE)(ELECTRICAL)

THIS ISSUE CANCELS
SPECIFICATION NO.
CEE.0159.93

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PRESTRESSED CONCRETE MASTS FOR ELECTRIFICATION PROJECTS

This specification covers Spoornet's requirements for the design, manufacture and supply of prestressed concrete masts for use as support structures for electrification systems.

INDEX

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1.0 SCOPE

This specification covers Spoornet's requirements for the design, manufacture and supply of prestressed concrete masts for use as support structures for electrification systems. Two types of masts can be specified :- Type A to be used with core type foundations; Type B to be used with bolt group foundations.

2.0 GENERAL INFORMATION

This specification covers inter alia the design, manufacture and supply of equipment which only firms with special knowledge and experience can perform to Spoornet's satisfaction. Tenders of firms who have designed, manufactured and supplied similar equipment to Spoornet or other railways will receive preference. Any other designs depicting improvements to the Spoornet specification will be considered at the discretion of Spoornet and shall be submitted as a fully alternative offer. The design thereof shall be supported by fully detailed and completed calculations (not computer printouts) and these calculations shall be made available to Spoornet at the time of tender.

3.0 REFERENCES

The following publications (latest edition) are referred to herein:

3.1 South African Bureau of Standards :

SABS 0100 Part 1 : The Structural Use of Concrete.

SABS 0157 : Quality Assurance.

SABS 0111 : Engineering Drawing.

3.2 British Standards Institute :

BS 607 Part II : Concrete Poles for Electrical Transmission and Traction Systems.

BS 308 : Geometrical Tolerancing.

3.3 Spoornet:

CEE.0045 : Painting of Steel Components of Electrical Equipment.

CEE.0183 : Hot Dip Galvanising and Painting of Electrification Steelwork.

4.0 APPENDICES

The following appendices form an integral part of this specification :

Appendix 1 - Schedule of requirements

Appendix 2 - Technical data sheet

Appendix 3 - Mast loading detail

Appendix 4 - Foundation design requirements

5.0 DEFINITIONS

For the purpose of this standard the following definitions shall apply :

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5.1 WORKING LOAD. The load applied in a transverse direction at a point 7 500mm plus the specified depth in the foundation from the butt of the mast (if type A) which equates to the rated bending moment. (See Appendix 1 clause 3).

5.2 DESIGN LOAD. The working load multiplied by a factor of safety of 2. The ultimate strength of the mast shall equal or exceed this value.

5.3 ULTIMATE LOAD. The load at which failure occurs when tested as described in section 12.

5.4 PROOF LOAD (Tp). The load applied to the mast to determine the maximum deflection.

NOTE : For the purpose of this specification the proof load will be equal to the working load.

5.5 STATIC LOAD (Tst). The load applied to the mast over an 8 hour period to determine the creep deflection.

NOTE : For the purpose of this specification the static load will be equal to $^{2}/_{3}$ of the proof load.

5.6 LONGITUDINAL DIRECTION. The horizontal direction in the same line as the run of the overhead track conductors.

5.7 TRANSVERSE DIRECTION. The horizontal direction at right angles to the run of the overhead conductors.

5.8 FAILURE. The inability of a mast under test to support any further additional load.

6.0 METHOD OF TENDERING

The "Technical Data Sheet" - Appendix 2 to this specification shall be fully completed by tenderers in respect of each design/size of mast offered. Failure to submit fully completed data sheet(s) may preclude a tender from further consideration.

7.0 QUALITY ASSURANCE

7.1 The manufacturer must indicate at the tendering stage what steps have been taken to implement a Quality System in terms of SABS 0157. Preference shall be given to tenderers implementing a Quality System to SABS 0157.
Complies/Does not comply

7.2 A system of Statistical Process Control must be part of the manufacturing procedure.
Complies/Does not comply

7.3 A Quality Plan in terms of SABS 0157 must be forwarded to this office for approval prior to any work being started on this project, so that approval may be obtained before production commences.
Complies/Does not comply

8.0 COMPLIANCE

Prestressed concrete masts offered by the tenderer and accepted by Spoornet on the basis of the tender documents shall be supplied strictly in accordance with the requirements of the contract entered into between the successful tenderer and Spoornet. No changes or substitutes will be allowed without the written consent of Spoornet to such changes or substitutes.
Complies/Does not comply

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9.0 SERVICE CONDITIONS

The masts offered shall be designed for use and operate satisfactorily under the following environmental conditions :

Altitude	:	0 - 1 800m above sea level.
Ambient Temperature	:	Minus 5 ºC to plus 40 ºC.
Relative Humidity	:	10% to 90%.
Air Pollution	:	Normal unless specified in particular locations. However steam and diesel electric locomotives will operate under the traction equipment.
Lightning conditions	:	Severe, flash density 11/km²/year.
Vibration	:	Severe, train traffic in the immediate vicinity.
Fire Hazard	:	Grass verges surrounding Spoornet's track formations are burnt annually. Otherwise fire hazard normal.

Complies/Does not comply

10.0 TECHNICAL REQUIREMENTS

10.1 The prestressed concrete masts shall be designed for use as electrification structures to support an electrical overhead traction wire system strictly in accordance with the load and deflection requirements laid down in Appendix 3. Two types of prestressed masts may be ordered. The first type (A) is a mast suitable for core type foundations, and the second type (B) of mast shall be fitted with a base plate for use with bolt group foundations.
Complies/Does not comply

10.2 Tenderers shall submit detailed design calculations and drawings of the mast design offered with their tender documents. Full details of similar practical applications, if any, and actual in-service test results should be provided in support of the above.
Complies/Does not comply

10.3 The design of the prestressed concrete mast(s), together with all reinforcing, prestressing and destressing shall be based on BS 607: Part 2, unless otherwise stated within this specification.
Complies/Does not comply

10.4 The design safety factor, based on the destruction tests laid down herein, shall be at least 2. See also SABS 0100 : Part 1 clause 2.4.6.
Complies/Does not comply

10.5 The corners of all masts shall be rounded to an approximate 10mm radius, and the surface smoothed all around either during manufacture or by grinding after hardening so that they do not present a dangerously sharp edge which could, for example, cause tearing or excessive wear of safety belts. No blow holes in excess of Ø5mm shall be evident, and the density of blow holes shall not exceed 10 holes per dm².
Complies/Does not comply

10.6 Exposed ends of prestressing tendons shall be recessed at the top of the mast and completely sealed with a durable compound. All exposed metal components shall be of stainless steel or recessed and suitably sealed. Tenderers are invited to comment on the need to protect the mast top against lightning.
Complies/Does not comply

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10.7 The concrete cover to all steel reinforcement including stirrups and prestressing tendons shall be not less than 25mm. This depth is to be verified with a device designed to measure re-bar position.
Complies/Does not comply

10.8 Masts are not to be designed to withstand impact stresses such as might occur when a mast is hit by a moving vehicle.
Complies/Does not comply

10.9 The method to transport and handle the masts during construction must be clearly described.
Complies/Does not comply

10.10 The tenderer shall state in his tender whether any additives are used with the concrete during any stage of the manufacturing process of the prestressed masts.
Complies/Does not comply

10.11 Masts shall be designed to withstand a longitudinal bending moment of at least 0,25 - times the transverse working bending moment and tenderers shall comment on the ability of the mast to withstand a sudden application of such a load.
Complies/Does not comply

10.12 Tenderer's shall ensure that the dimension of the mast in the plane facing towards the track/s shall be 198 plus/minus 2mm wide from 200mm below the contact wire height specified in Appendix 1 to the top of the mast supplied, whatever the designed width of the mast below this height. The 198 plus/minus 2mm mast dimension is required to suit standardised clamp-on type electrification fittings.
Complies/Does not comply

10.13 The tenderer shall incorporate in his design and manufacturing process Ø6mm x 30mm deep round holes spaced at 1m intervals on the centre of the mast face normal to the run of the track on one side of the mast only. The holes shall start 1 200mm from the base of the mast. This is required to attach additional bonding wire to the mast.
Complies/Does not comply

10.14 The tenderer shall incorporate in his design and manufacturing process Ø30mm round holes spaced at 1,5m intervals, starting with the bottom hole at a position on the mast 4m above the butt end of the mast, at right angles to the track. These holes are required to attach the attachment bracket channel to the mast.

10.15 Two types of base plates could be specified when ordering type B masts:

Type(B_1) : This is used where the bolt group of the existing foundation is so corroded that they cannot be re-used.

Type(B_2) : This is used where the bolt groups of the existing foundations can be re-used.

10.15.1 The base plate must be strong and rigid and tightly secured to the mast with an epoxy interface, to ensure full contact and to avoid penetration of water.

10.15.2 The assembly shall be able to withstand a maximum rated bending moment as specified in Appendix 1 clause 4.0 and an ultimate load of the maximum rated bending moment x 2.

10.15.3 No separation between the base plate and mast shall occur at the working load (maximum rated bending moment). A separation not exceeding 0,1mm shall be permitted at 60% of ultimate (design) load.

10.15.4 Prior to design load being attained, no reinforcing or prestressing wires shall snap and no crushing effect in the concrete shall be evident in the compression zone.

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10.16 The ability of the assembly to meet the criteria from clause 10.15.1 through to clause 10.15.4 shall be demonstrated in order for a supplier to qualify as a tenderer.

10.17 The base plate is to be hot-dip galvanized after manufacture and/or drilling of holes. See Specification CEE.0183: Hot Dip Galvanising and Painting of Electrification Steelwork.

10.17.1 For further corrosion protection see specification CEE.0045.

10.18 The components which secure the baseplate to the mast must be so designed and treated so as to prevent corrosion setting in.

10.19 The system used to connect the base plate to the foundation must likewise have adequate corrosion protection.

10.20 Adequate corrosion protection implies that the structural and aesthetic appearance of the system is not affected for a period of at least 20 years.

10.21 Provision shall be made for an integral earth wire arrangement. The bottom connection shall be at a distance of 300mm above foundation level, and the top connection shall be at specified contact wire height.

11.0 FINISHING AND MARKING

11.1 Prestressed concrete masts supplied shall be marked with the following information in cast-in letters and figures of at least 25mm in height and 20mm in width and shall be completely legible :-

- Spoornet (or any other name as advised on approval of quality plan)
- Contract No. :
- Manufacturer's Name/Symbol or Logo :
- Date of manufacture and mast No. :
- Rated bending moment :

Complies/Does not comply

11.2 This information shall be depicted on the mast 4,5m from the butt end.
Complies/Does not comply

12.0 INSPECTION AND TESTING

12.1 Spoornet reserves the right to be represented at all tests required. The responsibility for arranging these tests and the supply of test equipment shall rest with the successful tenderer and be for his account.

12.2 All test equipment required for the testing of the prestressed concrete masts shall be covered by calibration certificates issued by a laboratory registered by the National Calibration Service of the CSIR and the certificates shall be available at all tests.
Complies/Does not comply

12.3 Type Testing.

12.3.1 Before the successful tenderer commences with the production of the masts, five (5) test masts of each design to be supplied shall be manufactured in terms of this specification for type testing purposes.
Complies/Does not comply

12.3.2 Each mast shall be subjected to the deflection and creep tests detailed below, the deflection measured shall be monitored constantly and the results recorded.
Complies/Does not comply

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12.3.3 After the completion of the creep test, the transverse load shall be increased until the mast fails. The failing load shall be recorded, as well as the location of the failure.
Complies/Does not comply

12.3.4 Each mast design will be approved provided that :

12.3.4.1 The average deflections of the five type tested masts do not exceed those specified in Appendix 3 and none of the deflections of any individual mast exceeds the average of the five masts by more than 15mm.

12.3.4.2 None of the type tested masts fails at a load less than the design load, and no visible hair cracks occur at loads below 60% of the design load.

12.4 Routine Tests.

12.4.1 A compression test shall be performed on a 7 day test cube of every mix and the results shall indicate that the 28 day strength specified in Appendix 2 will undoubtedly be obtained.
Complies/Does not comply

12.4.2 One out of each batch of fifty masts manufactured shall be selected at random after the batch has been completed and be tested as follows :

12.4.2.1 The mast shall be securely clamped at formation level at a distance from the butt end equal to the specified depth in the foundation (see Appendix 1 clause 3).
Complies/Does not comply

12.4.2.2 The proof load as laid down in Appendix 3 shall be applied in the transverse direction 7,5m above the clamping point specified in clause 12.4.2.1 - and the deflection measured at the load point.
Complies/Does not comply

12.4.2.3 The deflection of the mast at the load point shall not exceed the average type test deflections by more than 25% of the maximum transverse proof load deflection submitted in Appendix 2. No hair cracks shall occur.
Complies/Does not comply

12.4.2.4 The live load deflection at contact wire height shall never exceed 40mm at a live load determined by subtracting Tst from Tp (Appendix 3). This deflection will be measured during the proof load test.
Complies/Does not comply

12.4.2.5 The static load, as laid down in Appendix 3 shall be applied in the transverse direction 7,5m above the clamping point specified in clause 12.4.2.1 and the deflection measured at this height.
Complies/Does not comply

12.4.2.6 The deflection shall again be measured after 8 hours.
Complies/Does not comply

12.4.2.7 The additional deflection due to creep shall not exceed the initial deflection by more than 15mm. All masts that successfully pass the test shall be marked “tested ok” and be returned to the batch.
Complies/Does not comply

12.4.2.8 The depth of the prestressing tendons shall be determined to ensure compliance with clause 10.7.
Complies/Does not comply

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12.4.3 Should the mast fail to comply with the requirement of clauses 12.4.2.3 or 12.4.2.7 another two masts shall be similarly tested. Should one of these masts fail to meet the requirements then all the remaining masts shall be tested individually and only the masts that comply with the requirements will be accepted.
Complies/Does not comply

12.5 The successful tenderer shall keep a detailed record of all tests performed.
Complies/Does not comply

12.6 This record shall be kept available for inspection by the representative of Spoornet.
Complies/Does not comply

12.7 On completion of the contract the test records shall be submitted to Engineering Infrastructure in terms of clause 14.0.

NOTE : The record shall also include details of masts which failed the tests.
Complies/Does not comply

12.8 The costs of all tests shall be included in the tender price(s).
Complies/Does not comply

13.0 DRAWINGS FOR APPROVAL

The successful tenderer shall submit two sets of prints of his final design drawings for approval, before fabrication of the masts is commenced. These drawings shall be prepared in accordance with clause 14.3.
Complies/Does not comply

14.0 DOCUMENTATION AND DRAWINGS

14.1 The successful tenderer shall supply to Spoornet a manual containing the following documents :

14.1.1 Type test certificates for each design of mast supplied with the actual test data in respect of each mast type tested.
Complies/Does not comply

14.1.2 A complete schedule of the results of all routine tests fully referenced to a particular batch of masts supplied.
Complies/Does not comply

14.2 The manuals shall be bound in loose leaf form and three copies shall be supplied to Engineering Infrastructure. The cost shall be included in the tender price.
Complies/Does not comply

14.3 The successful tenderer shall also supply Engineering Infrastructure with one set of fully dimensioned drawings of each design of mast supplied.
Complies/Does not comply

14.3.1 These drawings shall comply fully with the requirements of SABS 0111 and/or BS 308. Where necessary these drawings shall be cross-referenced by means of an item number to the manual referred to in clause 14.1.
Complies/Does not comply

14.3.2 All drawings to be supplied shall be in suitable black ink on white paper or on polyester draughting film of 0,04mm minimum thickness.
Complies/Does not comply

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14.3.3 All interrelated drawings shall be clearly and adequately cross-referenced to each other.
Complies/Does not comply

14.3.4 Engineering Infrastructure shall be approached for drawing numbers before the drawings are forwarded for approval.

14.3.5 The cost of these drawings shall be included in the tender price.
Complies/Does not comply

14.4- Documentation shall be supplied within one month of the completion of delivery of the masts.

15.0 COPYRIGHT.

The tenderer's attention is drawn to the copyright requirements detailed below :

The Contractor hereby grants to Spoornet a non-exclusive licence, in accordance with the provisions of sections 22 of the Copyright Act, 1978, (a) to copy any plan, diagram, drawing, specification, bill of quantities, design calculation or other similar document made, other than under the direction or control of Spoornet, by the Contractor in connection with the CONTRACT, (b) to make free and unrestricted use thereof for its own purposes, (c) to provide copies thereof to consultants of Spoornet to be used by them for the purposes of the consultancy and (d) to provide other parties with copies thereof for the purpose of tenders invited by it. The Contractor furthermore, if any plan, diagram, drawing, specification, bill of quantities, design calculation or other similar document made, other than under the direction or control of Spoornet, by any principal or subcontractor of the Contractor, is used in connection with the CONTRACT, shall cause such principal or subcontractor to grant to Spoornet a similar non-exclusive licence for the purpose set out herein. The provisions of this clause shall not apply to documents made, in the case of equipment to be supplied, in connection with the manufacturing process of the equipment supplied itself. No separate or extra payment shall be due by Spoornet in respect of any non-exclusive licence granted in terms of this clause.
Complies/Does not comply

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TENDERER'S SIGNATURE.....

DATE.....

PRINCIPAL ENGINEER
INFRASTRUCTURE (ENGINEERING)
ELECTRICAL TECHNOLOGY

APPENDIX 1

SCHEDULE OF REQUIREMENTS

ITEM	DESCRIPTION	QUANTITY / REQUIREMENTS	
		COASTAL	INLAND
1.0	Quantity of masts		
2.0	Length of mast (m)		
3.0	Depth of mast in foundation (m)		
4.0	Maximum rated bending moment of mast required (kNm)		
5.0	Contact wire height above rail (m)		
6.0	Air pollution for mast location		

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PRINCIPAL ENGINEER
INFRASTRUCTURE (ENGINEERING)
ELECTRICAL TECHNOLOGY

REFERENCE:

APPENDIX 2

TECHNICAL DATA SHEET

(To be completed by tenderers and submitted as part of their tender)

ITEM NO.	DESCRIPTION	QUANTITY
1.0	Length of mast (m)	.....
2.0	Quantity of masts	.....
3.0	Maximum rated bending moment of the mast (kNm)	.....
4.0	Overall mast dimensions	
	(a) Formation level (mm)	.....
	(b) Contact wire height and above (mm)	.....
5.0	Types and grades of concrete used	.....
6.0	Minimum 28 day compression strength (MPa)	.....
7.0	Types and sizes of reinforcing used	.....
8.0	Transverse proof load (kN)	.....
9.0	Maximum transverse proof load deflection (mm)	.....
10.0	Transverse static load (kN)	.....
11.0	(a) Maximum deflection at 7,5m above clamping point(mm)	.....
	(b) Maximum creep after 12 hours (mm)	.....
12.0	Minimum failure load (kN)	.....
13.0	Design factor of safety	.....
14.0	Maximum slenderness ratio	.....
	$\frac{\text{(equivalent length x 2)}}{r_{y\text{-}y}}$	

"PREVIEW COPY ONLY"

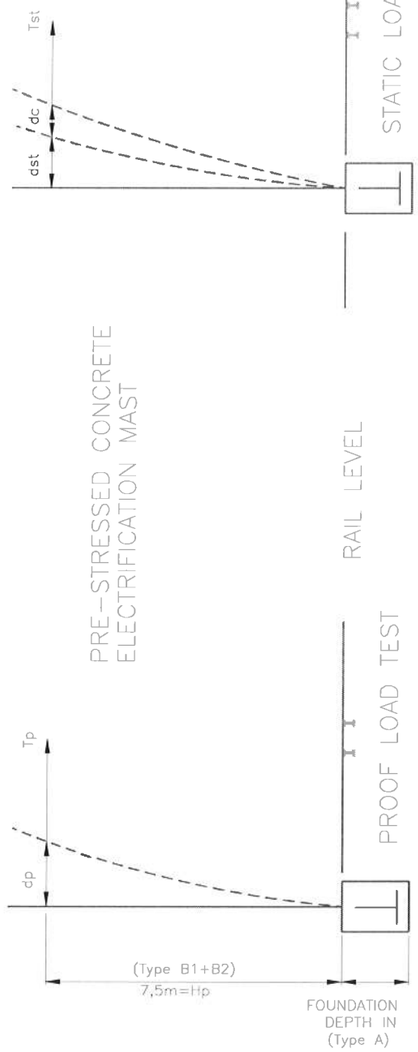
TENDERER'S SIGNATURE .....

DATE .....

PRINCIPAL ENGINEER
INFRASTRUCTURE (ENGINEERING)
ELECTRICAL TECHNOLOGY

APPENDIX 3

MAST LOADING DETAIL



MAST TYPE	RATED BENDING MOMENT OF MAST IN kNm	MEAN HEIGHT OF LOAD IN METRES Hp	PROOF LOAD TEST		STATIC LOAD TEST		
			PROOF LOAD IN kN Tp	MAX DEFLECTION IN mm AT Hp dp	STATIC LOAD IN kN Tst	STATIC DEFLECTION IN mm AT Hp dst	MAX ADDITIONAL DEFLECTION IN mm DUE TO CREEP dc
I	30	7.5	4.00	150	2.67	100	15
II	40	7.5	5.33	150	3.55	100	15
III	50	7.5	6.67	150	4.45	100	15
IV	60	7.5	8.00	150	5.33	100	15
V	70	7.5	9.33	150	6.22	100	15
VI	80	7.5	10.67	150	7.11	100	15
VII	90	7.5	12.00	150	8.00	100	15
VIII	100	7.5	13.33	150	8.89	100	15

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APPENDIX 4

FOUNDATION DESIGN REQUIREMENTS

1. 0 SCOPE

This appendix calls for the design of a suitable foundation for each mast type specified in the Schedule of Requirements (Appendix 1) of the accompanying specification.

To optimise, a foundation design is required for each of the following soil bearing pressures:

a) 60 kPa

b) 120 kPa

c) 160 kPa

2.0 GENERAL

2.1 The following shall be borne in mind when designing a suitable foundation:-

2.2 The design shall be suitable for use in the various types of formations detailed above and be capable of withstanding the maximum design and erection loads with the appropiate factor of safety without failure or deflection. These designs shall be supported by fully detailed and completed calculations, (not computer printouts).
Complies/Does not comply

2.3 Fully detailed final design drawings of the foundations for the various soil types and loading conditions shall be submitted for approval. Acceptance and approval of the design shall not absolve the Tenderer of any responsibility for the safe design of the foundations.
Complies/Does not comply

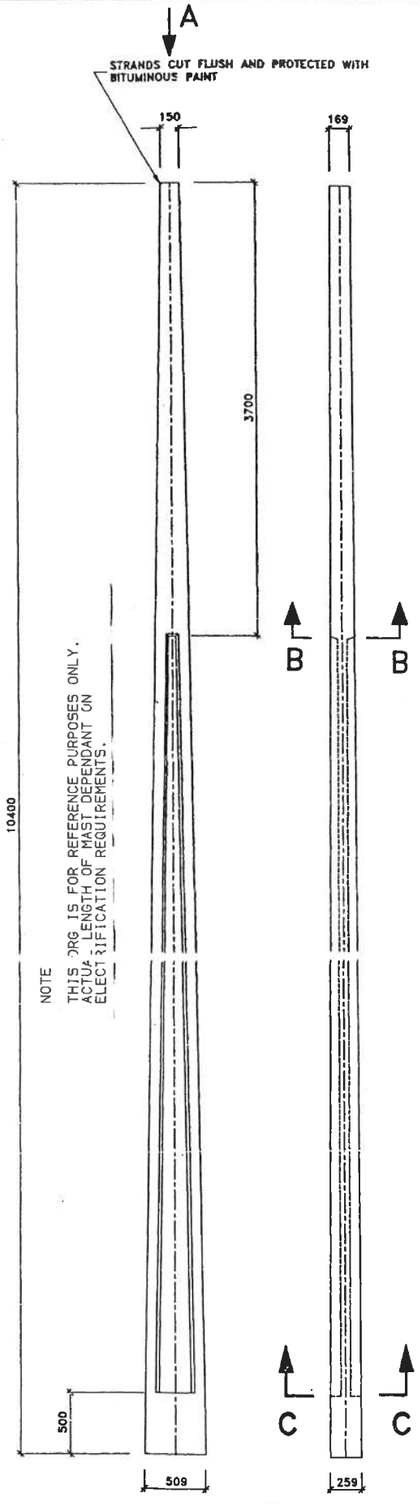
2.4 The effective depth of the foundation for overturning moment calculation shall commence below the top layer of organic material, loose material etc.

2.5 The dimensions of the core opening taking the back-rake of the mast into account shall be sufficient to allow for a minimum of 25mm of grout to be placed all round the mast.
Complies/Does not comply

2.6 The top of the core type foundations shall not be higher than 100mm above ground level.
Complies/Does not comply

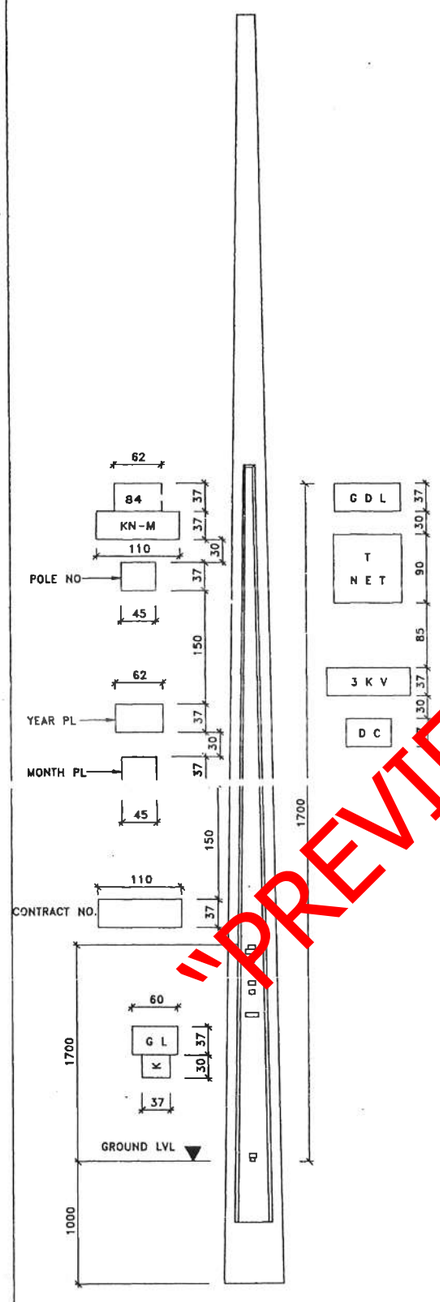
"PREVIEW COPY ONLY"

PRINCIPAL ENGINEER
INFRASTRUCTURE (ENGINEERING)
ELECTRICAL TECHNOLOGY

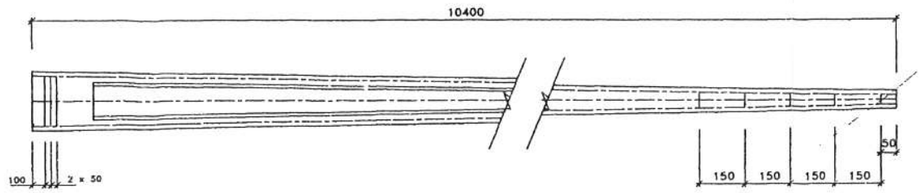


NOTE
THIS DRG IS FOR REFERENCE PURPOSES ONLY.
ACTUAL LENGTH OF MAST DEPENDANT ON
ELECTRIFICATION REQUIREMENTS.

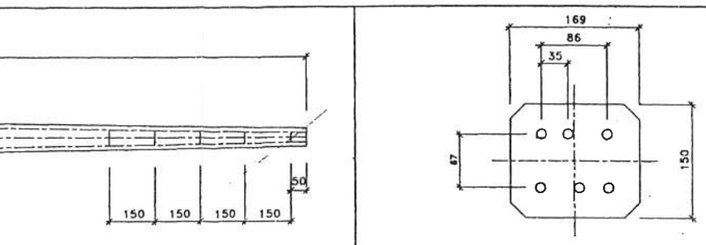
3 KV – DC POLE
84 kN-M



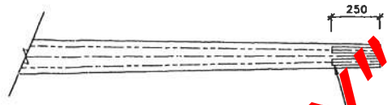
IDENTIFICATION PLATE POSITIONS ON POLE



TYPE 1 TYPE 2

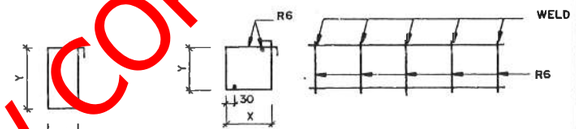


TIP VIEW A

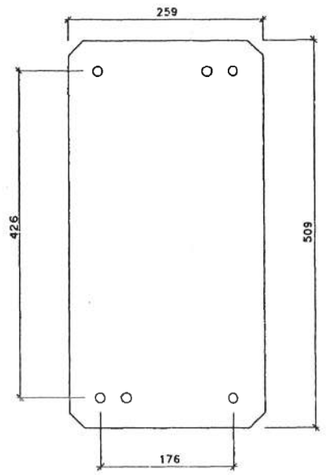


NOTE : [illegible] BOND ROUND MAIN

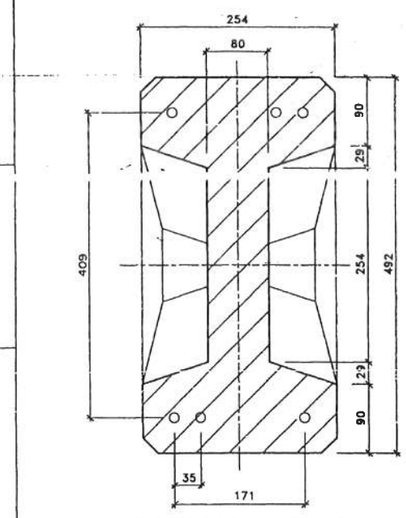
TYPE	NO	X	Y
1	1	199	444
	2	198	438
	3	196	432
2	4	116	113
	5	114	108
	6	113	103
	7	112	98
	8	110	93



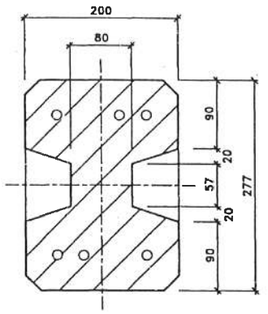
TYPE 1 TYPE 2



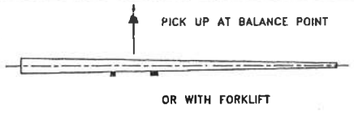
B U T T



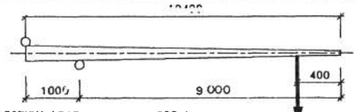
SECTION C–C



SECTION B – B

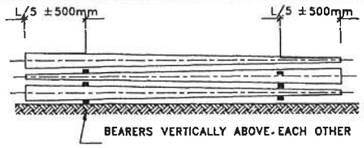


HANDLING

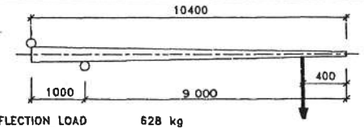


DEFLECTION LOAD 628 kg
CRACKING LOAD 951 kg
ULTIMATE DESIGN LOAD 1902 kg

TYPE TEST



STORAGE



DEFLECTION LOAD 628 kg
PROOF LOAD 951 kg

ACCEPTANCE TEST

NOTE : REINFORCEMENT
6–12,7mmDIA. LOW RELAXATION STRAND U.T.S. 1800 MPa.
4–OUTER STRANDS TENSIONED TO 128,5 kN PER STRAND
& 2–INNER STRANDS NOT TENSIONED.
TOTAL INITIAL PRESTRESSING FORCE = 515 kN
MINIMUM CONCRETE COVER TO STRAND = 35mm
MINIMUM CONCRETE COVER TO STIRRUPS = 25 mm

TOLERANCES :
LENGTHS . . . . . ±20mm
DIMENSIONS . . . . . +5mm
−3mm
POSITION OF TENDONS . . . . . ±3mm
STRAIGHTNESS . . . . . 4mm/METRE LENGTH
LOCATION OF HOLES . . . . . ±5mm

NOTE :
THIS DRAWING IS FOR INTERNAL DISTRIBUTION ONLY

NOTE :
MINIMUM CONCRETE STRENGTHS
TRANSFER . . . . . 35 MPa
28 DAYS . . . . . 60 MPa

MASS OF POLE – 1375 kg

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NO.	TITLE	NO.	TITEL	YOORL. INIT.	DATUM DATE	NR. NO.
	REFERENCE DRGS.		VERWYSINGSTEKENING			REVISION – HERSIENING

GRINAKER DURASET (PTY) LTD
ENGINEERS IN PRECAST CONCRETE VOORAFGEGIETE BETON INGENIEURS
BRAKPAN DE AAR PINETOWN VIRGINIA

DRG NO CEE-TMB-115

CLIENT / KLIENT

TITLE / TITEL: 3 K.V. DC POLE (84kN-M)

DESIGNED	ONTWERP	AK		DRAWING NO. TEKENING NR.
DRAWN	GETEKEN	F.J.V.	91-9-10	GP-4269
CHECKED	NAGESIEN	F.W.G	91-9-10	
SCALE	SKAAL			REVISION HERSIENING