ANNEXURE A - TECHNICAL SPECIFICATIONS

RLM/DTIS/0118/2025/26 - APPOINTMENT OF ONE OR MORE SERVICE PROVIDERS (MAXIMUM OF 3 PER LINE ITEM) FOR SUPPLY AND DELIVERY OF STREETLIGHT POLES AND ELECTRICAL DISTRIBUTION POLES TO RUSTENBURG LOCAL MUNICIPALITY AS AND WHEN REQUIRED FOR A PERIOD OF 3 YEARS

DIRECTORATE: TECHNICAL AND INFRASTRUCTURAL SERVICES

UNIT: ELECTRICAL ENGINEERING SERVICES

STANDARD TECHNICAL SPECIFICATION: G-010/2013

LIGHTING AND DISTRIBUTION POLES/MASTS

INTRODUCTION

This specification is applicable to tubular steel poles and concrete poles for use to support electrical distribution lines and streetlight fittings.
Poles and masts are used in Rustenburg area of supply in public lighting and distribution applications. When used for lighting, the poles and masts are collectively referred to as masts. Quality of the poles is very important as failure could result in serious consequences. The implication to suppliers is that Rustenburg Local Municipality will only purchase poles that comply with the relevant SANS specifications.

1. GENERAL INFORMATION

This specification is applicable to tubular steel poles, concrete poles, glass-fibre poles and wooden poles for use to support electrical distribution lines and streetlight fittings.

1.1 System particulars:

Normal operating voltage	:	33000/11000 Volt & 400/230 Volt
Frequency	:	50 Hz
Number of phases	:	3
Neutral earthing	:	Solid

1.2 Service conditions:

Maximum temperature	:	40° C
Altitude	:	1200 m above sea level
Lightning conditions	:	Severe high lightning ground flash density (> 10 flashes/km^2/year)

1.3 Standards:

All material manufactured and supplied must comply to SABS standards.
Manufacturers of suppliers shall be ISO 9001 compliant. Certificate to be submitted with the tender complete with the Manufacturer's ISO 9001 Certificate and that it is confirmation that a qualified Design Engineer has approved the design.

This specification covers Rustenburg Local Municipality for steel masts for public lighting in accordance with SANS 10225.

2. NORMATIVE REFERENCES

RLM/DTIS/0118/2025/26 - APPOINTMENT OF ONE OR MORE SERVICE PROVIDERS (MAXIMUM OF 3 PER LINE ITEM) FOR SUPPLY AND DELIVERY OF STREETLIGHT POLES AND ELECTRICAL DISTRIBUTION POLES TO RUSTENBURG LOCAL MUNICIPALITY AS AND WHEN REQUIRED FOR A PERIOD OF 3 YEARS

The following document contains provisions that, through reference in the text, constitute requirements of this specification. At the time of publication, the editions indicated were valid. All standards and specifications are subject to revision, and parties to agreements based on this specification are encouraged to investigate the possibility of applying the most recent editions of the documents listed below.

SANS 044:1983 Welding – the fusion welding of steel

SANS 0198:1988 The selection, handling and installation of electric power cables of rating not exceeding 33kV

SANS 10225:1991 The design and construction of lighting masts.

SANS 657-1:1989 Steel tubes for scaffolding and for structural and general engineering purposes.

SANS 1063:1998 Earth rods, couplers and clamps

SANS 1088:2004 Luminaire entries and spigots

SANS 1418-1:2009 Aerial bundled conductor systems

SANS 182-1:2008 Conductors for overhead electrical transmission lines

SANS 121:2000 Hot-dip galvanised coatings on fabricated iron and steel articles – specifications and test methods

Applicable Standards

SABS 763 : Hot dipped galvanized
SABS 1431 : Grade _____ WA – steel
SABS 044 : Code of practice welding
SABS 0225 : Design and construction of lighting masts
SANS754_2019_Ed6 : Treated Distribution Wooden Poles

3. REQUIREMENTS

3.1 General

3.1.1 All masts shall comply fully with the requirements of SANS 10225 and this specification

3.1.2 The masts shall be suitable for use at a mean altitude of 1200m above sea level in an environment subject to heavy industrial pollution at ambient temperatures of -5ºC to 45ºC

3.1.3 The masts will be installed in locations subject to high wind loading and high lightning ground flash density (> 10 flashes/km^2/year)

3.1.4 The masts shall be designed, approved and certified by an individual who is professionally registered with the Engineering Council as a structural engineer is accordance with SANS 10225 and manufactured from new materials.

3.1.5 Poles shall be of an all-welded construction. Welding may only be carried out by coded welders. Proof of the welder's qualification shall be submitted upon request.

3.1.6 Based on a factor of 2,5 and assuming the load acts 300 mm from the top of the pole, the working load shall be as stated in the Price schedule.

3.2 Design - Streetlight poles

3.2.1 The steel tubes used shall comply fully with SANS 657-1

3.2.2 The poles/masts shall be manufactured of grade S355 steel, with a minimum yield stress of 355 MPa and a minimum tensile strength of 450 MPa, in accordance with SANS 657-1

3.2.3 The poles/masts shall be designed in accordance with SANS 10225 to support luminaires, the maximum number, mass and projected area as required.

3.2.4 In addition, the poles/masts shall be designed to support advertising signboards and the additional cantilever loading that will be imposed on these masts. The boards measure approximately 1225mm (H) x 900mm (W) and are mounted approximately 3.0m from ground level (measured to lower edge of the board) in most areas. In exceptional circumstances, mainly in CBD areas, they may be mounted at a height of up to 4.0m in order to avoid being damaged by buses, etc.

3.2.5 The steel poles/masts, when loaded as detailed above, shall be capable of withstanding a fluctuating wind load in accordance with the requirements of SANS 10225. The terrain category shall be Category 3, and the wind velocity shall be 40m/s.

3.2.6 Under the conditions detailed in SANS 10225 and those given above, the horizontal and vertical deflections shall not exceed the requirements of SANS 10225.

3.2.7 Masts/poles may be of any hollow cross section and vertical profile meeting the requirements of this specification and SANS 10225, but Rustenburg Local Municipality may, at its sole discretion, reject any tender which it considers unsuitable for any reason.

3.2.8 The design of each mast shall be accompanied by comprehensive strength calculations certified by a qualified professional structural engineer. As this structural engineer will take full responsibility for the design of the masts, he or she is free to deviate from the drawings for structural reasons. For instance, the structural engineer may feel that the strength of a particular mast is inadequate, and he or she is therefore at liberty to increase the mast thickness or diameter, etc.

3.3 Construction

3.3.1 All poles/masts shall be supplied as a unitary construction (i.e. in one piece)

3.3.2 All changes in diameter shall be by means of swaging, continuous tapering or stepped sections. In the case of swaging or stepped sections, adequate sleeving must be provided.

3.3.3 All joints (other than those designed for later assembly) shall be designed and manufactured to ensure that there is no ingress of water into the interior of the mast.

3.3.4 The overall length of the masts to be as indicated in drawing guidelines to meet the mounting height required.

3.3.5 The overall planting depth to be as indicated in drawing guidelines to meet the

mounting height required.

3.3.6 All steel masts/poles shall have an outside diameter of 76mm at the top of the mast.

3.3.7 All masts with a curved outreach shall have the outreach portion separate and use a joint design. Preference will be given to designs incorporating increased safety i.e. that ensure that the arm remains attached to the mast in the event of a vehicle colliding with the mast.

3.3.8 The spigot diameter of all outreaches shall be suitable for the installation of a side-entry type luminaire.

3.3.9 All masts shall be provided with a corrosion sleeve, welded to the mast. The sleeve shall be 600mm in length, of which 300mm below and 300mm above ground level.

3.3.10 All masts shall be manufactured with an access opening of at least 250 x 80mm. The access opening shall have a steel cover fastened by means of tamper proof fasteners. The steel cover shall be sealed by with 12 x 3mm Neoprene gasket. The opening to be 750mm above ground.

3.3.11 A mounting bracket (clip tray) shall be mounted in the mast opposite the access opening. The mounting bracket shall incorporate a CBI clip (for the mounting of 5A 5kA MCB), a M10 x 40mm earth stud, and provision for cable connectors (3 x 20mm holes for glands). The earth stud shall be bonded to the mast so that connecting an earth conductor from an external source to it will have the effect of earthing the entire mast.

3.3.12 The mast shall further be provided with a cable entry, 500mm below the specified ground level. The cable access opening shall be suitable for the termination of up to 4 x 25mm 4 core Al & Cu cables in each mast.

3.3.13 All earth mounted masts shall have a 300x300x4mm base plate accompanied with
2 x M12mm hook bolts, nuts & washers

3.3.14 All welding shall be continuous and in compliance with SANS 044, Parts 1 to 4. All welds shall be dressed where necessary.

3.3.15 All cutting done to the masts (i.e. access opening, cable entries, etc.) shall be done by means of plasma arch cutting.

3.3.16 After manufacturing is complete, but before galvanising may commence, masts shall have all weld slag, rough edges and burrs removed.

3.3.17 All masts shall be hot dip galvanised in accordance with SANS 121.

3.3.18 No material may be removed from the mast either mechanically or chemically after galvanising has been carried out.

3.3.19 All items shall be protected against corrosion by either hot dip galvanising as detailed above or by being manufactured of stainless steel. All possibility of galvanic action shall be avoided.

3.3.20 All threaded articles shall use standard metric threads. External threads may not be undercut.

3.4 Specific Requirements

3.4.1 Steel Distribution Poles

3.4.1.1 Based on a factor of 2,5 and assuming the load acts 300 mm from the top of the pole, the working load shall be as stated in the Price schedule.

Any deviation or higher working load (strength) to be stated in price schedule and/or covering letter.

9.25 M Galvanized: minimum 2.4 kN
9.75 M Galvanized: minimum 2.6 kN
10.6 M Galvanized: minimum 2.8 kN
13.6 M Galvanized: minimum 3.0 kN

3.4.1.2 The masts shall not have an access opening.

3.4.1.3 The masts shall have no cable entry as detailed above.

3.4.1.4 The masts shall have a base plate as detailed above.

3.4.1.5 All standards regarding design, steel, galvanising, finishing, etc. Applicable to distribution poles as detailed in clause 3.

4 DRAWINGS

Compulsory: Drawings of designed poles offered must be submitted with the tender. Drawings will be treated Confidentially due to Failure to do so will invalid the bid.

5 Wooden Distribution / Streetlight Poles

All poles offered shall comply to SANS 754:2019 Edition 6 or as amended - South African National Standard for Eucalyptus poles, cross-arms and spacers for power distribution and communications systems.

Species of timber
Botanical name Standard name

Eucalyptus cloeziana	Cloeziana
Eucalyptus dunnii	Dunnii
Eucalyptus grandis	Saligna
Eucalyptus grandis/saligna hybrids	Saligna
Corymbia maculata	Maculata
Eucalyptus maiden	Maideni
Eucalyptus microcorys	Microcorys
Eucalyptus paniculata	Paniculata
Eucalyptus saligna	Saligna

Strength values for poles and cross-arms

The mean bending strength of eucalyptus species specified in this standard is **63 MPa.**

Dimensions and corresponding volumes for poles and cross-arms

The pricing should be done on the maximum Minimum top diameter as per table F.1 of SANS 754:2019.

6 Concrete Distribution / Streetlight Poles

Earthing

Earthing Distribution poles must be manufactured with an earthing system which provides a continuous electrical path through the pole to allow the pole to be effectively earthed.

7 DELIVERY

All prices shall include delivery per truck in Rustenburg. **Minimum quantities per truck for ordered poles shall be stated** in the Pricing schedule and where applicable in the cover letter to enable suit orders from stores. Delivery times per load are requested.

8 TECHNICAL DATA AND DRAWINGS

It is compulsory that full technical data and dimensional drawings must be included in the tender documents of all products offered on memory stick or if required on e-mail by the technical evaluator. These drawings will be managed confidentially and will be utilized only to evaluate the products offered.

9 MAINTENANCE MANUAL

A maintenance manual or guideline <u>if applicable</u> must be submitted to ensure sound maintenance on products.

10 WARRANTY

The equipment offered shall be warranted free from defects in workmanship and materials for a period of at least twelve (12) months from date of final commissioning or delivery. Any failures shall be repaired or replaced at the bidder's expense during the warranty period.

11 CERTIFICATES

Bidders must submit Eskom SANS, BS and IEC certificates of the equipment/product offered.

12 GENERAL

Only new manufactured equipment will be accepted.

13 SUPPLIERS

If the bidder is not the manufacturer, it is the responsibility of the bidder to ensure that he has a credit agreement as well as a after sales agreement with his supplier (Company) from which he will be sourcing

the product. The Bidder must submit a letter from the manufacturer complete with the Manufacturer's ISO 9001 Certificate and confirmation that a Design Engineer will sign of product supplied.

14 AFTER SALE SERVICE

The bidder shall supply all details regarding their after-sale service on the equipment offered.

15 SAMPLES

No Samples are required. Delivery of substandard material or equipment will result in no approval of payment and the return of the product offered.

16 ALTERNATIVE OFFERS

No Alternative offers will be considered.
No Polyethylene and Fibre Glass Products.

17 LOCAL CONTENT

Local Content on material or products will be in accordance with the Department Trade and Industry where applicable.

No imported product will be excepted unless no manufacturing company exists in South Africa.

18 PRICE ESCALATION CLAUSE

The tender appointment prices shall be the ordering prices after adjudication and Contract Price Adjustment shall be clearly defined such as SEIFSA indices, CPI, ROE, Foreign Currency Components such as rates on which tender is based, Custom duties percentage, forward cover and the relevant clauses must find expression in the tender submitted.

SEIFSA indices, CPI, ROE, Foreign Currency Components such as rates on which tender is based, Custom duties percentage, forward cover and the relevant clauses shall be included then in the Service Level Agreement when adjudication is successful, and Contract appointment is accepted.

All quantities will be verified after adjudication, Quantities may differ after adjudication on purchase orders.

19 CANCELATION CLAUSE

The delivery of substandard material or equipment or refrain from supplying it within the required timeframe will result in cancelation of the contract and the second highest scorer will be appointed.

END OF SPECIFICATION G010