



LANGEBERG MUNICIPALITY

TENDER NO. 26/2023

**CONSTRUCTION: ELECTRIFICATION OF BOEKENHOUTSKLOOF, BONNIEVALE:
SPECIFICATION NO. G/10600/E**

PROCUREMENT DOCUMENT

August 2023

Issued by:

Langeberg Municipality
28 Main Road
ASHTON
6715

Prepared by:

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Contact:

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Tenderer's Information:

Name: Contact Person:

Tender Price:

B-BBEE Status Level of Contribution:

Postal Address:

Tel No: Cell No:

E-Mail Address: Facsimile No:



cmb

CLINKSCALES MAUGHAN-BROWN

**CONSULTING MECHANICAL
& ELECTRICAL ENGINEERS**

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THE TENDER

PART T1 – TENDERING PROCEDURES

T1.1 TENDER NOTICE AND INVITATION TO TENDER



CONSTRUCTION: ELECTRIFICATION OF BOEKENHOUTSKLOOF, BONNIEVALE: TENDER NO. 26/2023

Tenders are hereby requested for the electrification of 565 houses at Boekenhoutskloof, Bonnievale, as specified in the bid document. Completed Bids, in sealed envelopes, clearly marked **“TENDER NO. 26/2023: CONSTRUCTION: ELECTRIFICATION OF BOEKENHOUTSKLOOF, BONNIEVALE”** should be placed in the tender box, at the Langeberg Municipal Office, 28 Main Road, Ashton, not later than **12:00 on 15 September 2023** when the Bids will be opened in public. Late, faxed or e-mailed tenders will not be considered.

Tenderers must be registered with the CIDB in a class of construction works and have a grading designation equal to or higher than that determined in accordance with the sum tendered or a value determined in accordance with regulation 25 (7A) of the Construction Industry Development Regulations, 2004. It is estimated that tenderers will need a grading designation of 6 EP or higher.

A minimum functional assessment score of 60 points will apply to this contract.

A Compulsory Clarification meeting will be held on 29 August 2023 at 10:00 in the Municipal Offices, Bonnievale.

PLEASE NOTE:

The official Bid document must be fully completed in black ink in writing and bound.

Supporting documents must be submitted separately and must be stapled or bound.

The lowest, or any tender, will not necessarily be accepted and council reserves the right to accept any tender. Tenders will be evaluated according to the Council's Supply Chain Management Policy and the 80/20 Preference Point system. The Supply Chain Management Policy can be viewed at Municipal Offices or www.langeberg.gov.za

Tender documents are available from 11 August 2023 , on the Langeberg Municipal website: www.langeberg.gov.za

Please refer written enquiries to Mr. G Lotter (glotter@langeberg.gov.za).

DP Lubbe
MUNICIPAL MANAGER
Private Bag X2
Ashton, 6715

THE TENDER**PART T1****TENDERING PROCEDURES****T1.2 TENDER DATA**

The conditions of tender are the Standard Conditions of Tender as contained in Annex C of the Construction Industry Development Board (CIDB) Standard for Uniformity in Engineering and Construction Works Contracts as published in Department of Public Works Notice 423 of 2019 No. 42622 Government Gazette 8 August 2019. (See www.cidb.org.za).

The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the standard conditions of tender. Each item of data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.

The following variations, amendments and additions to the Standard Conditions of Tender as set out in the Tender Data below shall apply to this tender:

Clause number	Tender Data
C.1.1	The Employer is Langeberg Municipality.
C.1.2	The Tender Documents issued by the Employer comprise the following documents: THE TENDER Part T1: Tendering procedures. Part T2: Returnable documents. THE CONTRACT Part C1: Agreements and Contract data Part C2: Pricing data. Part C3: Scope of work. Part C4: Site information Annexures
C.1.4	The Employer's Agent is : Name: Clinkscales Maughan-Brown (South) (Pty) Ltd Address: 39 Victoria Street, P.O. Box 2551, George, 6530 Tel: 044-8741511 Fax: 044-8741510 E-mail: jdevilliers@cmbgeorge.co.za Any inquiries relating to this tender must be submitted in writing via e-mail to sngcongolo@langeberg.gov.za and copied to glotter@langeberg.gov.za.
C.1.6.2	The Competitive Negotiation Procedure will not be followed.
C.1.6.3	The proposal procedure using the two-stage system will not be followed.

C.2.1.1	<i>Only those Tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for a EP class of construction work, are eligible to have their tenders evaluated.</i> Joint ventures are eligible to submit tenders provided that: 1. every member of the joint venture is registered with the CIDB; 2. the lead partner has a contractor grading designation in the EP class of construction work; and 3. the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a EP class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.
C.2.1.1	<i>Only Tenderers that meet the following pre-qualification conditions are eligible to have their tenders further evaluated.</i> The qualifying criteria and the score in respect of each criteria is as follows. A minimum of 60 points out of a maximum total of 100 points is required for the tender to be evaluated further. Should the Tenderer not complete the following column, no points will be awarded. The Tenderer must provide sufficient proof, i.e. documentation, contact persons and contact numbers, etc. under Parts T2.2.3, T2.2.6 and T2.2.12 in this document for each of the following items stipulated. Unclear or incomplete information provided will result in no points being awarded. <u>Note:</u> <u>In terms of Item 2 of Clause 3.2 of CIDB's Inform Practice Note #5, Tenderers may not provide additional information subsequent to the closing of the tender that may affect their competitive position. It is therefore very important that the Tenderer submit sufficient proof as requested above together with his/her tender.</u>

	Item	Description	Column to be completed by Tenderer: Points claimed by Tenderer	Points awarded by Employer
	a)	Tenderer's relevant experience (track record) on previously completed projects of a similar nature and scope on electrification projects, i.e. Supply and installation of material and equipment to a minimum of 100 low cost houses per project, over the past five (5) years: 1 to 2 projects = 8 points 3 to 4 projects = 16 points 5 to 6 projects = 24 points More than 6 projects = 30 points (Maximum points = 30) <u>Completion certificates of previously completed projects to be included with the tender. This requirement is compulsory in order to claim for points.</u>	.....	.....
	b)	Feedback received from Referees – Returnable Schedule T2.2.12: <u>Referee No.1:</u> 1. Completion of project according to initial program submitted by the Tenderer? Yes = 1 point No = 0 points 2. Completion of assignments within budget? Yes = 1 point No = 0 points 3. Quality of End Product? Exceed initial expectations = 3 points Met expectations = 2 points Slightly below = 0 points Did not meet expectations = 0	.....	.....

		<u>Referee No.2:</u> 1. Completion of project according to initial program submitted by the Tenderer? Yes = 1 point No = 0 points 2. Completion of assignments within budget? Yes = 1 point No = 0 points 3. Quality of End Product? Exceed initial expectations = 3 points Met expectations = 2 points Slightly below = 0 points Did not meet expectations = 0 <u>Referee No.3:</u> 1. Completion of project according to initial program submitted by the Tenderer? Yes = 1 points No = 0 points 2. Completion of assignments within budget? Yes = 1 points No = 0 points 3. Quality of End Product? Exceed initial expectations = 3 points Met expectations = 2 points Slightly below = 0 points Did not meet expectations = 0 (Maximum points = 15) <u>Completion certificates of previously completed projects to be included with the tender. This requirement is compulsory in order to claim for points.</u>		
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	c) <u>Compulsory</u> minimum qualification/s, plus experience in number of years, of Tenderer's proposed <u>Project Manager</u>: Compulsory Qualification/s: - Electrician Trade Certificate Experience: 1 to 5 years = 5 points 6 to 10 years = 8 points 11 to 15 years = 12 points 16 years or more = 15 points (Maximum points = 15) <u>A CV of the proposed Project Manager, indicating experience in years, including copies of his/her relevant compulsory qualifications to be included with the tender. This requirement is compulsory in order to claim for points.</u>		
	d) <u>Compulsory</u> minimum qualification/s, plus experience in number of years, of Tenderer's proposed <u>Site Supervisor</u>: Compulsory Qualification/s: - Electrician Trade Certificate Experience: 1 to 5 years = 5 points 6 to 10 years = 8 points 11 to 15 years = 12 points 16 years or more = 15 points (Maximum points = 15) <u>A CV of the proposed Site Supervisor, indicating experience in years, including copies of his/her relevant compulsory qualifications to be included with the tender. This requirement is compulsory in order to claim for points.</u>		

	e)	Locality. Location of a local office in relation to the Langeberg Municipal Area: - Within the Langeberg Municipal Area = 25 points - Within Western Cape Province = 15 points - Outside Western Cape Province = 5 points (Maximum points = 25) <u>Proof of physical address by means of a municipal rates and taxes account and/or lease agreement if premises are rented to be included with the tender in order to claim points for a local office.</u>	.....	.....
		Total points awarded out of 100	.....	.....
C.2.7	See tender notice.			
C.2.12	No alternative tender offers will be considered.			
C.2.13.3	The complete Tender Document shall be returned with the tender, including all Parts as listed in C.1.2 above (not to be separated). Parts of each tender offer communicated on paper shall be submitted as an original, plus Nil copies.			
C.2.13.5 C.2.15.1	The employer's details and address for delivery of tender offers and identification details that are to be shown on each tender offer package are: Location of tender box: Ashton Office Physical address: Municipal Offices, 28 Main Road, Ashton Identification details: Bid reference number, Title and the closing date and time of tender			
C.2.13.9	Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.			
C.2.15	The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.			
C.2.16	The tender offer validity period is 120 days.			
C.2.20	The Tenderer is required to submit with his tender a letter of intent from an approved insurer undertaking to provide the Performance Bond to the format included in Part C1.3 of this procurement document. The form as per Part T2.2.9 can be used for this purpose.			
C.2.23	The tenderer is required to submit with his tender the following: 1) Tax Compliance Status Pin issued by the South African Revenue Services; 2) CIDB grading certificate; 3) Documents as listed in the List of Returnable Documents in Part T2.1.			
C.3.4	Tenders will be opened immediately after the closing time for tenders at 12h05.			
C.3.5	A two-envelope system will not be followed.			

C.3.11.1	Points will be awarded to Tenderers according to the 80/20 preference point system for acquisition of goods or services for Rand value equal to or above R 30 000 and up to R 50 million as indicated under Clause 6.1 of the Preferential Procurement Regulations, 2017, which is included in Part T2.2.11. The terms and conditions of the Preference Points Claim Form shall apply in all respects to the tender evaluation process and any subsequent contract.
C.3.13	The appointment of a Contractor will be subject to the availability of funding. The Employer reserves the right to accept a tender in whole or in parts with certain items being added, or in whole with the provision that certain items of work may be omitted at a later date.
C.3.17	The number of paper copies of the signed contract to be provided by the employer is one (1).
	Special Tender Conditions: This tender is subject to the Supply Chain Management Policy of the Langeberg Municipality. The aim of the policy is to improve job opportunities and to stimulate prosperity in the municipal area. Broad Based Black Economic Empowerment (BBBEE) will receive preferential adjudication. Tenderers must take note that a tender will be granted on the ground of their performance capacity as well as a preference formula. For tenderers to qualify for the advantages of the policy, they must thoroughly complete the document. <u>If the schedules are not thoroughly completed the tender will not be considered.</u> Tenderers must take note that in the case of a false statement or submission of false information the tender will be disqualified with immediate effect and a possibility of criminal prosecution. Only those tenderer/bidders that are registered on the Central Supplier Database as service providers, or are capable of being so prior to the evaluation of submissions, are eligible to submit tenders/bids. The Langeberg Municipality will only enter into a formal contract with a tenderer/bidder that is registered on this Database as service provider. A local office of a tenderer/bidder shall be deemed to be a physical address inside the demarcated boundaries of the Langeberg Municipality area.

Langeberg Municipality's additional conditions of tender are:

1. GENERAL CONDITIONS OF CONTRACT

1.1. Definitions:

The following terms shall be interpreted as indicated

- 1.1.1. **"Closing time"** means the date and hour specified in the bidding advertisement for the receipt of bids.

- 1.1.2. **“Contract”** means the written agreement entered into between the purchaser and the supplier, as recorded in the contract form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
- 1.1.3. **“Contract price”** means the price payable to the supplier under the contract for the full and proper performance of his contractual obligations.
- 1.1.4. **“Corrupt practice”** means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.
- 1.1.5. **“Countervailing duties”** are imposed in cases where an enterprise abroad is subsidized by its government and encouraged to market its products internationally.
- 1.1.6. **“Country of origin”** means the place where the goods were mined, grown or produced or from which the services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembly of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.
- 1.1.7. **“Day”** means calendar day.
- 1.1.8. **“Delivery”** means delivery in compliance of the conditions of the contract or order.
- 1.1.9. **“Delivery ex stock”** means immediate delivery directly from stock actually on hand.
- 1.1.10. **“Delivery into consignees store or to his site”** means delivered and unloaded in the specified store or depot or on the specified site in compliance with the conditions of the contract or order, the supplier bearing all risks and charges involved until the goods are so delivered and a valid receipt is obtained.
- 1.1.11. **“Dumping”** occurs when a private enterprise abroad market its goods on own initiative in the RSA at lower prices than that of the country of origin and which have the potential to harm the local industries in the RSA.
- 1.1.12. **“Force majeure”** means an event beyond the control of the supplier and not involving the supplier’s fault or negligence and not foreseeable. Such events may include, but is not restricted to, acts of the purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
- 1.1.13. **“Fraudulent practice”** means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any bidder, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the bidder of the benefits of free and open competition.
- 1.1.14. **“GCC”** means the General Conditions of Contract.
- 1.1.15. **“Goods”** means all of the equipment, machinery, and/or other materials that the supplier is required to supply to the purchaser under the contract.
- 1.1.16. **“Imported content”** means that portion of the bidding price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or his subcontractors) and which costs are inclusive of the costs abroad, plus freight and other direct importation costs such as landing costs, dock dues, import duty, sales duty or other similar tax or duty at the South African place of entry as well as transportation and handling charges to the factory in the Republic where the goods covered by the bid will be manufactured.

- 1.1.17. **“Manufacture”** means the production of products in a factory using labour, materials, components and machinery and includes other related value-adding activities.
- 1.1.18. **“Order”** means an official written order issued for the supply of goods or works or the rendering of a service.
- 1.1.19. **“Project site,”** where applicable, means the place indicated in bidding documents.
- 1.1.20. **“Purchaser”** means the organization purchasing the goods.
- 1.1.21. **“Republic”** means the Republic of South Africa.
- 1.1.22. **“SCC”** means the Special Conditions of Contract.
- 1.1.23. **“Services”** means those functional services ancillary to the supply of the goods, such as transportation and any other incidental services, such as installation, commissioning, provision of technical assistance, training, catering, gardening, security, maintenance and other such obligations of the supplier covered under the contract.
- 1.1.24. **“Supplier”** means the successful bidder who is awarded the contract to maintain and administer the required and specified service(s) to the State.
- 1.1.25. **“Tort”** means in breach of contract.
- 1.1.26. **“Turnkey”** means a procurement process where one service provider assumes total responsibility for all aspects of the project and delivers the full end product / service required by the contract.
- 1.1.27. **“Written”** or **“in writing”** means hand-written in ink or any form of electronic or mechanical writing.

1.2. Application

- 1.2.1. These general conditions are applicable to all bids, contracts and orders including bids for functional and professional services (excluding professional services related to the building and construction industry), sales, hiring, letting and the granting or acquiring of rights, but excluding immovable property, unless otherwise indicated in the bidding documents.
- 1.2.2. Where applicable, special conditions of contract are also laid down to cover specific goods, services or works.
- 1.2.3. Where such special conditions of contract are in conflict with these general conditions, the special conditions shall apply.

1.3. General

- 1.3.1. Unless otherwise indicated in the bidding documents, the purchaser shall not be liable for any expense incurred in the preparation and submission of a bid. Where applicable a nonrefundable fee for documents may be charged
- 1.3.2. Invitations to bid are usually published in locally distributed news media and on the municipality/municipal entity website.

1.4. Standards

- 1.4.1. The goods supplied shall conform to the standards mentioned in the bidding documents and specifications.

1.5. Use of contract documents and information inspection

- 1.5.1. The supplier shall not, without the purchaser's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the purchaser in connection therewith, to any person other than a person employed by the supplier in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only as far as may be necessary for purposes of such performance.
- 1.5.2. The supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC clause 1.5.1 except for purposes of performing the contract.
- 1.5.3. Any document, other than the contract itself mentioned in GCC clause 1.5.1 shall remain the property of the purchaser and shall be returned (all copies) to the purchaser on completion of the supplier's performance under the contract if so required by the purchaser.
- 1.5.4. The supplier shall permit the purchaser to inspect the supplier's records relating to the performance of the supplier and to have them audited by auditors appointed by the purchaser, if so required by the purchaser.

1.6. Patent Rights

- 1.6.1. The supplier shall indemnify the purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the goods or any part thereof by the purchaser.
- 1.6.2. When a supplier developed documentation / projects for the municipality / municipal entity, the intellectual, copy and patent rights or ownership of such documents or projects will vest in the municipality / municipal entity.

1.7. Performance security

- 1.7.1. Within thirty (30) days of receipt of the notification of contract award, the successful bidder shall furnish to the purchaser the performance security of the amount specified in SCC.
- 1.7.2. The proceeds of the performance security shall be payable to the purchaser as compensation for any loss resulting from the supplier's failure to complete his obligations under the contract.
- 1.7.3. The performance security shall be denominated in the currency of the contract or in a freely convertible currency acceptable to the purchaser and shall be in one of the following forms:
- 1.7.4. a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the purchaser's country or abroad, acceptable to the purchaser, in the form provided in the bidding documents or another form acceptable to the purchaser; or a cashier's or certified cheque
- 1.7.5. The performance security will be discharged by the purchaser and returned to the supplier not later than thirty (30) days following the date of completion of the supplier's performance obligations under the contract, including any warranty obligations, unless otherwise specified.

1.8. Inspections, tests and analyses

- 1.8.1. All pre-bidding testing will be for the account of the bidder.
- 1.8.2. If it is a bid condition that goods to be produced or services to be rendered should at any stage be subject to inspections, tests and analyses, the bidder or contractor's premises shall be open, at all reasonable hours, for inspection by a representative of the purchaser or organization acting on behalf of the purchaser.

- 1.8.3. If there are no inspection requirements indicated in the bidding documents and no mention is made in the contract, but during the contract period it is decided that inspections shall be carried out, the purchaser shall itself make the necessary arrangements, including payment arrangements with the testing authority concerned.
- 1.8.4. If the inspections, tests and analyses referred to in clauses 1.8.2 and 1.8.3 show the goods to be in accordance with the contract requirements, the cost of the inspections, tests and analyses shall be defrayed by the purchaser.
- 1.8.5. Where the goods or services referred to in clauses 1.8.2 and 1.8.3 do not comply with the contract requirements, irrespective of whether such goods or services are accepted or not, the cost in connection with these inspections, tests or analyses shall be defrayed by the supplier.
- 1.8.6. Goods and services which are referred to in clauses 1.8.2 and 1.8.3 and which do not comply with the contract requirements may be rejected.
- 1.8.7. Any contract goods may on or after delivery be inspected, tested or analyzed and may be rejected if found not to comply with the requirements of the contract. Such rejected goods shall be held at the cost and risk of the supplier who shall, when called upon, remove them immediately at his own cost and forthwith substitute them with goods, which do comply with the requirements of the contract. Failing such removal the rejected goods shall be returned at the suppliers cost and risk. Should the supplier fail to provide the substitute goods forthwith, the purchaser may, without giving the supplier further opportunity to substitute the rejected goods, purchase such goods as may be necessary at the expense of the supplier.
- 1.8.8. The provisions of clauses 1.8.4 to 1.8.7 shall not prejudice the right of the purchaser to cancel the contract on account of a breach of the conditions thereof, or to act in terms of Clause 1.22 of GCC.

1.9. Packing

- 1.9.1. The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing, case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.
- 1.9.2. The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract, including additional requirements, if any, and in any subsequent instructions ordered by the purchaser.

1.10. Delivery and documents

- 1.10.1. Delivery of the goods and arrangements for shipping and clearance obligations shall be made by the supplier in accordance with the terms specified in the contract.

1.11. Insurance

- 1.11.1. The goods supplied under the contract shall be fully insured in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified.

1.12. Transportation

- 1.12.1. Should a price other than an all-inclusive delivered price be required, this shall be specified.

1.13. Incidental Services

- 1.13.1. The supplier may be required to provide any or all of the following services, including additional services, if any:
 - 1.13.1.1. performance or supervision of on-site assembly and/or commissioning of the supplied goods;
 - 1.13.1.2. furnishing of tools required for assembly and/or maintenance of the supplied goods;
 - 1.13.1.3. furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods;
 - 1.13.1.4. performance or supervision or maintenance and/or repair of the supplied goods, for a period of time agreed by the parties, provided that this service shall not relieve the supplier of any warranty obligations under this contract; and
 - 1.13.1.5. training of the purchaser's personnel, at the supplier's plant and/or on site, in assembly, start-up, operation, maintenance, and/or repair of the supplied goods.
- 1.13.2. Prices charged by the supplier for incidental services, if not included in the contract price for the goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the supplier for similar services.

1.14. Spare parts

- 1.14.1. As specified, the supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the supplier:
- 1.14.2. such spare parts as the purchaser may elect to purchase from the supplier, provided that this election shall not relieve the supplier of any warranty obligations under the contract; and in the event of termination of production of the spare parts:
- 1.14.3. advance notification to the purchaser of the pending termination, in sufficient time to permit the purchaser to procure needed requirements; and following such termination, furnishing at no cost to the purchaser, the blueprints, drawings, and specifications of the spare parts, if requested.

1.15. Warranty

- 1.15.1. The supplier warrants that the goods supplied under the contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that all goods supplied under this contract shall have no defect, arising from design, materials, or workmanship (except when the design and/or material is required by the purchaser's specifications) or from any act or omission of the supplier, that may develop under normal use of the supplied goods in the conditions prevailing in the country of final destination.
- 1.15.2. This warranty shall remain valid for twelve (12) months after the goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the contract, or for eighteen (18) months after the date of shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise.
- 1.15.3. The purchaser shall promptly notify the supplier in writing of any claims arising under this warranty.

- 1.15.4. Upon receipt of such notice, the supplier shall, within the period specified and with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the purchaser.
- 1.15.5. If the supplier, having been notified, fails to remedy the defect(s) within the period specified, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expense and without prejudice to any other rights which the purchaser may have against the supplier under the contract.

1.16. Payment

- 1.16.1. The method and conditions of payment to be made to the supplier under this contract shall be specified.
- 1.16.2. The supplier shall furnish the purchaser with an invoice accompanied by a copy of the delivery note and upon fulfillment of other obligations stipulated in the contract.
- 1.16.3. Payments shall be made promptly by the purchaser, but in no case later than thirty (30) days after submission of an invoice or claim by the supplier.
- 1.16.4. Payment will be made in Rand unless otherwise stipulated.

1.17. Prices

- 1.17.1. Prices charged by the supplier for goods delivered and services performed under the contract shall not vary from the prices quoted by the supplier in his bid, with the exception of any price adjustments authorized or in the purchaser's request for bid validity extension, as the case may be.

1.18. Variation orders

- 1.18.1. In cases where the estimated value of the envisaged changes in purchase does not vary more than 15% of the total value of the original contract, the contractor may be instructed to deliver the goods or render the services as such. In cases of measurable quantities, the contractor may be approached to reduce the unit price, and such offers may be accepted provided that there is no escalation in price.

1.19. Assignment

- 1.19.1. The supplier shall not assign, in whole or in part, its obligations to perform under the contract, except with the purchaser's prior written consent.

1.20. Subcontracts

- 1.20.1. The supplier shall notify the purchaser in writing of all subcontracts awarded under this contracts if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the supplier from any liability or obligation under the contract.

1.21. Delays in the supplier's performance

- 1.21.1. Delivery of the goods and performance of services shall be made by the supplier in accordance with the time schedule prescribed by the purchaser in the contract.
- 1.21.2. If at any time during performance of the contract, the supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services, the supplier shall promptly notify the purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after

receipt of the supplier's notice, the purchaser shall evaluate the situation and may at his discretion extend the supplier's time for performance, with or without the imposition of penalties, in which case the extension shall be ratified by the parties by amendment of contract.

- 1.21.3. The right is reserved to procure outside of the contract small quantities or to have minor essential services executed if an emergency arises, the supplier's point of supply is not situated at or near the place where the goods are required, or the supplier's services are not readily available.
- 1.21.4. Except as provided under GCC Clause 1.25, a delay by the supplier in the performance of its delivery obligations shall render the supplier liable to the imposition of penalties, pursuant to GCC Clause 1.22.1, unless an extension of time is agreed upon pursuant to GCC Clause 1.22.2 without the application of penalties.
- 1.21.5. Upon any delay beyond the delivery period in the case of a goods contract, the purchaser shall, without canceling the contract, be entitled to purchase goods of a similar quality and up to the same quantity in substitution of the goods not supplied in conformity with the contract and to return any goods delivered later at the supplier's expense and risk, or to cancel the contract and buy such goods as may be required to complete the contract and without prejudice to his other rights, be entitled to claim damages from the supplier.

1.22. Penalties

- 1.22.1. Subject to GCC Clause 1.25, if the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services using the current prime interest rate calculated for each day of the delay until actual delivery or performance. The purchaser may also consider termination of the contract pursuant to GCC Clause 1.23.

1.23. Termination for default

- 1.23.1. The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part:
 - 1.23.1.1. if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract, or within any extension thereof granted by the purchaser pursuant to GCC Clause 1.21.2;
 - 1.23.1.2. if the supplier fails to perform any other obligation(s) under the contract; or if the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract.
- 1.23.2. In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms and in such manner, as it deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar goods, works or services. However, the supplier shall continue performance of the contract to the extent not terminated.
- 1.23.3. Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years.
- 1.23.4. If a purchaser intends imposing a restriction on a supplier or any person associated with the supplier, the supplier will be allowed a time period of not more than fourteen (14) days to provide reasons why the envisaged

restriction should not be imposed. Should the supplier fail to respond within the stipulated fourteen (14) days the purchaser may regard the supplier as having no objection and proceed with the restriction.

- 1.23.5. Any restriction imposed on any person by the purchaser will, at the discretion of the purchaser, also be applicable to any other enterprises or any partner, manager, director or other person who wholly or partly exercises or exercised or may exercise control over the enterprise of the first – mentioned person, and with which enterprise or person the first – mentioned person, is or was in the opinion of the purchaser actively associate
- 1.23.6. If a restriction is imposed, the purchaser must, within five (5) working days of such imposition, furnish the National Treasury, with the following information:
 - 1.23.6.1. the name and address of the supplier and / or person restricted by the purchaser;
 - 1.23.6.2. the date of commencement of the restriction
 - 1.23.6.3. the period of restriction; and
 - 1.23.6.4. the reasons for the restriction.
- 1.23.7. These details will be loaded in the National Treasury's central database of suppliers or persons prohibited from doing business with the public sector.
- 1.23.8. If a court of law convicts a person of an offence as contemplated in section 12 or 13 of the Prevention and Combating of Corrupt Activities Act, No. 12 of 2004, the court may also rule that such person's name be endorsed on the Register for Tender Defaulters. When a person's name has been endorsed on the Register, the person will be prohibited from doing business with the public sector for a period not less than five years and not more than 10 years. The National Treasury is empowered to determine the period of restriction and each case will be dealt with on its own merits. According to section 32 of the Act the Register must be open to the public. The Register can be perused on the National Treasury website.

1.24. Antidumping and countervailing duties and rights

- 1.24.1. When, after the date of bid, provisional payments are required, or anti-dumping or countervailing duties are imposed, or the amount of a provisional payment or anti- dumping or countervailing right is increased in respect of any dumped or subsidized import, the State is not liable for any amount so required or imposed, or for the amount of any such increase. When, after the said date, such a provisional payment is no longer required or any such anti-dumping or countervailing right is abolished, or where the amount of such provisional payment or any such right is reduced, any such favorable difference shall on demand be paid forthwith by the supplier to the purchaser or the purchaser may deduct such amounts from moneys (if any) which may otherwise be due to the supplier in regard to goods or services which he delivered or rendered, or is to deliver or render in terms of the contract or any other contract or any other amount which may be due to him.

1.25. Force Majeure

- 1.25.1. Notwithstanding the provisions of GCC Clauses 1.22 and 1.23, the supplier shall not be liable for forfeiture of its performance supplier shall not be liable for forfeiture of its performance security, damages, or termination for default if and to the extent that his delay in performance or other failure to perform his obligations under the contract is the result of an event of force majeure.

- 1.25.2. If a force majeure situation arises, the supplier shall promptly notify the purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event.

1.26. Termination for solvency

- 1.26.1. The purchaser may at any time terminate the contract by giving written notice to the supplier if the supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the supplier, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the purchaser.

1.27. Settlement of Disputes

- 1.27.1. If any dispute or difference of any kind whatsoever arises between the purchaser and the supplier in connection with or between the purchaser and the supplier in connection with or arising out of the contract, the parties shall make every effort to resolve amicably such dispute or difference by mutual consultation.
- 1.27.2. If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the purchaser or the supplier may give notice to the other party of his intention to commence with mediation. No mediation in respect of this matter may be commenced unless such notice is given to the other party.
- 1.27.3. Should it not be possible to settle a dispute by means of mediation, it may be settled in a South African court of law.
- 1.27.4. Notwithstanding any reference to mediation and/or court proceedings herein,
- 1.27.4.1. the parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and
- 1.27.4.2. the purchaser shall pay the supplier any monies due the supplier for goods delivered and / or services rendered according to the prescripts of the contract.

1.28. Limitation of Liability

- 1.28.1. Except in cases of criminal negligence or willful misconduct, and in the case of Infringement pursuant to Clause 1.6;
- 1.28.1.1. The supplier shall not be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser; and
- 1.28.1.2. The aggregate liability of the supplier to the purchaser, whether under the contract, in tort or otherwise, shall not exceed the total contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

1.29. Governing language

- 1.29.1. The contract shall be written in English. All correspondence and other documents pertaining to the contract that is exchanged by the parties shall also be written in English.

1.30. Applicable law

- 1.30.1. The contract shall be interpreted in accordance with South African laws, unless otherwise specified

1.31. Notices

- 1.31.1. Every written acceptance of a bid shall be posted to the supplier concerned by registered or certified mail and any other notice to him shall be posted by ordinary mail to the address furnished in his bid or to the address notified later by him in writing and such posting shall be deemed to be proper service of such notice.
- 1.31.2. The time mentioned in the contract documents for performing any act after such aforesaid notice has been given, shall be reckoned from the date of posting of such notice.

1.32. Taxes and duties

- 1.32.1. A foreign supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the purchaser's country.
- 1.32.2. A local supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted goods to the purchaser.
- 1.32.3. No contract shall be concluded with any bidder whose tax matters are not in order. Prior to the award of a bid SARS must have certified that the tax matters of the preferred bidder are in order.
- 1.32.4. No contract shall be concluded with any bidder whose municipal rates and taxes and municipal services charges are in arrears.

1.33. Transfer of contracts

- 1.33.1. The contractor shall not abandon, transfer, cede assign or sublet a contract or part thereof without the written permission of the purchaser

1.34. Amendment of contract

- 1.34.1. No agreement to amend or vary a contract or order or the conditions, stipulations or provisions thereof shall be valid and of any force unless such agreement to amend or vary is entered into in writing and signed by the contracting parties. Any waiver of the requirement that the agreement to amend or vary shall be in writing, shall also be in writing.

1.35. Prohibition of restrictive practices

- 1.35.1. In terms of section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, an agreement between, or concerted practice by, firms, or a decision by an association of firms, is prohibited if it is between parties in a horizontal relationship and if a bidder(s) is / are or a contractor(s) was / were involved in collusive bidding.
- 1.35.2. If a bidder(s) or contractor(s) based on reasonable grounds or evidence obtained by the purchaser has / have engaged in the restrictive practice referred to above, the purchaser may refer the matter to the Competition

Commission for investigating and possible impossible of administrative penalties as contemplated in section 59 of the Competition Act No 89 of 1998.

- 1.35.3. If a bidder(s) or contractor(s) has / have been found guilty by the Competition Commission of the restrictive practice referred to above, the purchaser may, in addition and without prejudice to any other remedy provided for, invalidate the bid(s) for such item(s) offered, and / or terminate the contract in whole or part , and / or restrict the bidder(s) or contractor(s) from conducting business with the public sector for a period not exceeding ten (10) years and / or claim damages from the bidder(s) or contractor(s) concerned.

2.1 TENDER DOCUMENTS

Tender documents are obtainable and must be returned as described in the tender notice. The completed documents of the tender fully priced, extended and totalled, completed in all respects, signed and sealed in an envelope which is to be endorsed **TENDER 26/2023 CONSTRUCTION: ELECTRIFICATION OF BOEKENHOUTSKLOOF BONNIEVALE** must be placed in the tender box at the Municipal Offices, 28 Main Street, Ashton

- 2.1.1. Tenders submitted by fax, e-mail, telex or telegraphically will not be accepted. Postal Tenders will be accepted for consideration only if they are received in sufficient time to be lodged in the appropriate tender box by the closing time for such tenders. The Langeberg Municipality disclaims any responsibility for seeing that such tenders/ are lodged in the tender box.
- 2.1.2. Any tender delivered to an address other than the one stipulated in the tender notice will not be accepted. Tenders may not be handed in at other offices of the Langeberg Municipality.
- 2.1.3. Tenders will be opened in public, shortly after closing time of tenders. The name of the tenderer/bidder and the total tender/bid price will be announced to all tenderers/bidders present at the opening.
- 2.1.4. Tenders received after the closing date and time shall be declared invalid and will not be considered.

2.2 SOUTH AFRICAN CURRENCY

- 2.2.1 All payments from the Langeberg Municipality will be made in the currency of the Republic of South Africa (Rand). The tenderer/bidder shall specify clearly all matters and conditions regarding payments in the tender/bidder specifications.
- 2.2.2 Tenders shall indicate separately prices excluding value added tax and included value added tax (VAT) in the tender/bid rates and amounts.

2.3 INCOMPLETE TENDERS/BIDS

- 2.3.1 Tenders will be rejected in the event of incomplete offers and irregularities of any nature contained in the tender or in any of the completed tender schedules.

2.4 WITHDRAWAL OF TENDERS/BIDS

- 2.4.1 A tenderer/bidder may, without incurring any liability, withdraw his tender provided written advice to that effect reaches the Langeberg Municipality before the expiry of the time fixed in the tender/bid notice for receiving tenders.

2.5 CHECKING OF TENDER DOCUMENTS

- 2.5.1 Before submitting a tender the tenderer/bidder shall check the numbering of the pages in the tender/bid documents and if any pages part of the tender/bid document is found to be missing or if any part of the documents is illegible or indistinct, he shall immediately notify the Langeberg Municipality.
- 2.5.2 The Langeberg Municipality will not be liable in any way for any claims arising through neglect of the Tenderer/bidder to comply with these requirements.

2.6 EXPENSES DUE TO PREPARATION AND SUBMISSION OF TENDER DOCUMENTS

- 2.6.1 The Langeberg Municipality shall not be liable for any expenses or losses incurred by the Tenderer/bidder due to visiting the site or municipal area and the preparation and/or submission of the tender/bid documents.

2.7 PERIOD OF VALIDITY

- 2.7.1 Tenders, whether for a part of or for the whole of the project, shall remain valid for a period as specified by the tenderer/bidder, which period shall be that period between the date upon which tenders/bids close up to the date upon which notice is given that the tender/bid has been awarded, but at least a period of **120 days**.

2.8 ACCEPTANCE OR REJECTION OF TENDERS/BIDS

- 2.8.1 The Langeberg Municipality is not compelled to accept the lowest or any tender/bid and reserves the right to accept any tender/bid.

2.9 PREFERENTIAL PROCUREMENT

- 2.9.1 Tenders/bids will be considered in terms of the Preferential Procurement Policy of the Langeberg Municipality.

2.10 REGISTRATION AS SERVICE PROVIDER

- 2.10.1 Only those tenderer/bidders that are registered on the Central Supplier Database as service providers, or are capable of being so prior to the evaluation of submissions, are eligible to submit tenders/bids. The Langeberg Municipality will only enter into a formal contract with a tenderer/bidder that is registered on this Database as service provider.

2.11 JOINT VENTURE AGREEMENTS (IF APPLICABLE)

- 2.11.1 Any Joint Venture Agreement must be submitted with the tender/bid document detailing the split of responsibilities in terms of the tender/bid specifications, i.e. percentage of work to be performed by each partner.
- 2.11.2 All parties to the Joint Venture Agreement must be registered and verified on the Western Cape Supplier Database. Only those that are registered and verified before the closing date of the tender/bid will qualify for preference points.
- 2.11.3 It must be noted that the order will be placed in the name of the BEE Partner as well as all financial administration that follows such an order/s. The Joint Venture Agreement must stipulate the BEE partner selected for this in the event of the Joint Venture been considered successful.

2.12 LOCAL BUSINESS/OFFICE:

- 2.12.1 A local office of a tenderer/bidder shall be deemed to be a physical address inside the demarcated boundaries of the Langeberg Municipality area.

2.13 TEST FOR RESPONSIVENESS

- 2.13.1 No Tender will be considered unless it meets the following responsiveness criteria:
- 2.13.2 The tender must be properly received in a sealed envelope clearly indicating the description of the service and the tender/bid number for which the tender/bid is submitted.
- 2.13.3 The tender must be deposited in the relevant tender box as indicated on the notice of the tender on or before the closing date and time of the bid
- 2.13.4 An Income Tax Number and a Tax verification pin (OTP) must be submitted with the tender/bid on or before the closing date and before the closing time.
- 2.13.5 A latest Municipal service account obtained from the local municipality must be submitted.
- 2.13.6 The official Bid document must be fully completed in black ink and all pages must be returned.
- 2.13.7 If the entity submitting a bid is a Joint Venture or a Consortium or Partnership, each party to that formation must submit all the above information
- 2.13.8 The tenderer/bidder must be in good standing to do business with the public sector in terms of Regulation 38 of the Supply Chain Management Regulations (Government Gazette 27636 of 30 May 2005).
- 2.13.9 The tenderer/bidder must adhere to pricing Instructions
- 2.13.10 The tenderer/bidder must complete and sign all tender forms. Where indicated, forms must be signed and stamped by a Commissioner of Oaths.
- 2.13.11 All mandatory returnable forms and prescribed attachments must be completed and where applicable signed by a Commissioner of Oaths.
- 2.13.12 All tenders' conditions/specifications must be complied with,

2.14 PAYMENT OF INVOICES

- 2.14.1 All payments from the Langeberg Municipality will be made within 30 days of receipt of valid tax invoice for goods and services rendered to the satisfaction of the Municipality,

T2.1 LIST OF RETURNABLE DOCUMENTS

Part No.	The tenderer must ensure that the following documents are completed and included with his tender. The tender may be regarded as non-responsive, should these documents be incomplete or not be submitted.	Tenderer to confirm in this column that document has been completed and returned.
T1.2	1. Returnable Schedules required for tender evaluation purposes: Completed Tender Data Schedules on Pages T1.2.3 to T1.2.6, including supportive documentation as indicated.	☐
T2.2.1	Record of Addenda to Tender Documents	☐
T2.2.2	Schedule of Amendments and Qualifications by Tenderer	☐
T2.2.3	Schedule of Particulars / Information	☐
T2.2.3	CV of proposed Project Manager	☐
T2.2.3	CV of proposed Site Supervisor	☐
T2.2.4	Compulsory Enterprise Questionnaire	☐
T2.2.5	Certificate of Authority for Joint Ventures	☐
T2.2.6	Schedule of Tenderer's Experience	☐
T2.2.7	Schedule of Subcontractors	☐
T2.2.7	CV's of proposed Subcontractors	☐
T2.2.8	Schedule of Plant and Equipment	☐
T2.2.9	Undertaking to provide Performance Bond	☐
T2.2.10	Authority for Signatory	☐
T2.2.11	Municipal Bidding Documents (MBD):	☐
	Declaration of "In the Service of the State".	☐
	Municipal Service Account	☐
	MBD 2 – Tax Clearance Certificate	☐
	MBD 4 - Declaration of Interest.	☐
	MBD 6.1 – Preference Points Claim Form in Terms of the Preferential Procurement Regulations 2022.	☐
	MBD 8 – Declaration of Bidder's Past Supply Chain Management Practices.	☐
	MBD 9 – Certificate of Independent Bid Determination.	☐
	Code of Conduct for Suppliers	☐
	Part A – Invitation to Bid.	☐
	Part B – Terms and Conditions for Bidding.	☐
T2.2.12	Schedule of Reference for Tenderer.	☐
	2. Other documents required for tender evaluation purposes:	
-	Valid Original Tax Clearance Certificate.	☐
-	Certificate of Contractor Registration issued by the Construction Industry Development Board.	☐
-	Certified copies of identities of the Directors and owners of tendering entity.	☐
-	Proof that the Tenderer is in good standing and registered for workmen compensation purposes.	☐
-	Tenderer's original and valid B-BBEE status level verification certificate or a certified copy thereof.	☐

Part No.	The tenderer must ensure that the following documents are completed and included with his tender. The tender may be regarded as non-responsive, should these documents be incomplete or not be submitted.	Tenderer to confirm in this column that document has been completed and returned.
- - - - -	- Proposed Sub-Contractors' original and valid B-BBEE status level verification certificate or a certified copy thereof. - Certified copies of the Directors' Municipal accounts for the month preceding the tender closing date. - Certified copy of Tenderer's Municipal account for the month preceding the tender closing date or a municipal accounts clearance certificate. - If the Tenderer rents premises, proof that the rental includes Municipal rates and taxes and municipal charges, and that rent is not in arrears. - Proof of indemnity for liability insurance, i.e. R 10 mil	☐ ☐ ☐ ☐ ☐
	3. Returnable Schedules that will be incorporated into the Contract: All schedules as per Item 1 above.	☐
C1.1 C1.2 C1.3 C1.4 C1.5 C2.1 C2.2 C3 C4 -	4. Other documents that will be incorporated into the Contract: Form of Offer and Acceptance Contract Data Performance Guarantee Occupational Health and Safety Agreement Certificate of Ownership of Plant / Materials Pricing Instructions Bill of quantities Scope of Work Site information Annexures	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

RETURNABLE SCHEDULES**T2.2.1 RECORD OF ADDENDA TO TENDER DOCUMENTS**

We confirm that the following communications received from the Employer before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer:

	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Attach additional pages if more space is required.

Signed _____ Date _____

Name _____ Position _____

Tenderer _____

T2.2.2 SCHEDULE OF AMENDMENTS AND QUALIFICATIONS BY TENDERER

The Tenderer is required to give full details of any departure from the Specification and shall then sign this page officially. If there are no departures, the Tenderer must state NIL on this page and sign it. The Tender shall then be held to comply in all respect with the Specification. If the Tenderer does not indicate anything on this page, the Tenderer will also be held to comply in all respects with the Specification.

Should there be insufficient space, the Tenderer may include separate sheets arranged in the same manner as above. Mere reference to a covering letter will not be regarded as compliance with this requirement. Any amendments and / or qualifications stated in a covering letter will be regarded as null and void.

The Tenderer's attention is drawn to clause C.3.8 of the Standard Conditions of Tender referenced in the Tender Data regarding the employer's handling of material deviations and qualifications.

Page	Clause or item	Proposal

Signed Date

Name Position

Tenderer

T2.2.3 SCHEDULE OF PARTICULARS / INFORMATION

- Note:
1. This schedule must be completed for all items offered, stating where appropriate, the size or capacity of equipment, type or catalogue no, country of origin and any other detail he considers necessary. Failure to comply with this requirement may render the tender invalid.
 2. Information in amplification of that given below may be submitted in the form of a covering letter, published literature, etc.
 3. Acceptance of a Tender, with this Schedule complete, does not relieve the Tenderer of the responsibility of complying with the Specification for the items listed.

1.0 TECHNICAL

Refer to pages C3.3.2 to C3.3.17 of Part C3.3 of this Specification where Schedule B must be completed by the Tenderer.

Is the above schedules completed? YES/NO

2.0 GENERAL

- (a) Location of nearest permanent office: **(Proof of physical address by means of a municipal rates and taxes account and/or lease agreement if premises are rented to be included with the tender in order to claim points under Tender Data, Part T1.2, Clauses C.2.1.1 (e) Page T1.2.6 for local or office in Western Cape.)**

.....

.....

.....

.....

- (b) Name and experience of the Project Manager the Tenderer intends using on this project: **(Provide CV to claim points under Tender Data, Part T1.2, Clauses C.2.1.1 (c) Page T1.2.5)**

.....

.....

.....

.....

- (c) Name and experience of Site Supervisor the Tenderer intends using on this project: **Provide CV to claim points under Tender Data, Part T1.2, Clauses C.2.1.1 (d) Page T1.2.5)**

.....
.....
.....
.....

- (d) Are brochures of all equipment offered attached to this document?.....YES / NO

SIGNATURE:

DATE:.....
(For the Tenderer)

PRINT NAME:
(For the Tenderer)

T.2.2.4 COMPULSORY ENTERPRISE QUESTIONNAIRE

The following particulars must be furnished. In the case of a joint venture, separate enterprise questionnaires in respect of each partner must be completed and submitted.

Section 1: Name of enterprise:

Section 2: VAT registration number, if any:

Section 3: CIDB registration number, if any:

Section 4: CSD number:

Section 5: Particulars of sole proprietors and partners in partnerships

Name*	Identity number*	Personal income tax number*

* Complete only if sole proprietor or partnership and attach separate page if more than 3 partners

Section 6: Particulars of companies and close corporations

Company registration number:

Close corporation number:

Tax reference number:

Section 7: SBD4 issued by National Treasury must be completed for each tender and be attached as a tender requirement.

Section 8: SBD6 issued by National Treasury must be completed for each tender and be attached as a tender requirement.

Section 9: SBD8 issued by National Treasury must be completed for reach tender and be attached as a tender requirement.

Section 10: SBD9 issued by National Treasury must be completed for reach tender and be attached as a tender requirement.

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise.

- i) authorises the employer to verify the tenderers tax clearance status from the South African Revenue Services that it is in order;
- ii) confirms that neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004;
- iii) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption;
- iv) confirms that I / we are not associated, linked or involved with any other tendering entities submitting tender, offers and have no other relationship with any of the tenders or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest; and
- v) confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

Signed		Date	
Name		Position	
Enterprise Name			

T2.2.5 CERTIFICATE OF AUTHORITY FOR JOINT VENTURES

This Returnable Schedule is to be completed by joint ventures.

We, the undersigned, are submitting this tender offer in Joint Venture and hereby authorise Mr/Ms
 , authorised signatory of the company
 , acting in the capacity
 of lead partner, to sign all documents in connection with the tender offer and any contract
 resulting from it on our behalf.

NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
Lead partner		
CIDB registration no		Signature:..... Name:..... Designation:.....
CIDB registration no		Signature:..... Name:..... Designation:.....
CIDB registration no		Signature:..... Name:..... Designation:.....
CIDB registration no		Signature:..... Name:..... Designation:.....

T2.2.6 SCHEDULE OF TENDERER'S EXPERIENCE

The following is a statement of similar work successfully executed by myself / ourselves over the past 5 years, i.e. Supply and installation of material and equipment to a minimum of 100 low cost houses per project:

Refer to Tender Data, Part T1.2, Clause C.2.1.1 (a) on Page T1.2.2 regarding Tenderer's experience to be provided to claim points.

Completion certificates of previously completed projects to be included with the tender to claim points under Tender Data, Part T1.2, Clause C.2.1.1 (a), Page T1.2.2.

Employer, contact person and telephone number.	Description of contract	Value of work inclusive of VAT (Rand)	Date completed

Signed Date

Name Position

Tenderer

T2.2.7 SCHEDULE OF SUB-CONTRACTORS

We notify you that it is our intention to employ the following Sub-contractors for work in this contract.

If we are awarded a contract we agree that this notification does not change the requirement for us to submit the names of Sub-contractors in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us.

A CV of each of the proposed Sub-contractors must be submitted with the Tender.

	Name and address of Sub-contractor	B-BBEE / EME Status	Nature and extent of work	Previous experience with Sub-contractor.
1.				
2.				
3.				
4.				

Signed

Date

Name

Position

Tenderer

T2.2.8 SCHEDULE OF PLANT AND EQUIPMENT

The following are lists of major items of relevant equipment that I / we presently own or lease and will have available for this contract or will acquire or hire for this contract if my / our tender is accepted.

(a) Details of major equipment that is owned by and immediately available for this contract.

Quantity	Description, size, capacity, etc.
	Attach additional pages to this page if more space is required.

(b) Details of major equipment that will be hired or acquired for this contract if my / our tender is accepted.

Quantity	Description, size, capacity, etc.
	Attach additional pages to this page if more space is required.

Signed Date

Name Position

Tenderer

T2.2.9 UNDERTAKING TO PROVIDE PERFORMANCE BOND

Having examined the Contract Data, the Scope of Work and the Bill of Quantities and having reviewed our financial commitments, we have approached the Insurance company / bank named below for a Guarantee in the exact terms of the Pro Forma Guarantee provided in Part C1.3 hereof.

We hereby declare that the insurance company / bank named below is aware of our financial position and commitments in terms of this tender and any other tender offers made and is prepared to issue the Guarantee unconditionally, within the period called for in these tender documents, and until the issue of the Certificate of Completion.

Name of proposed Guarantee provider:
(Insurance Company/Bank)

Date: Signed on behalf
Of the Tenderer:

Date: Signed on behalf
Of the insurance
company/bank:

In their capacity as

T2.2.10 AUTHORITY FOR SIGNATORY

Details of person responsible for Tender process

Name

Contact number ()

Address of office submitting the Tender

Telephone no ()

Fax no ()

E-mail address

Signatories for close corporations and companies shall confirm their authority by attaching to this form a **duly signed and dated original or certified copy** of the relevant resolution of their members or their board of directors, as the case may be.

"By resolution of the board of directors passed on (date)

Mr.

has been duly authorized to sign all documents in connection with the Tender for Contract Numberand any Contract which may arise there from on behalf of

(BLOCK CAPITALS)

SIGNED ON BEHALF OF THE COMPANY

IN HIS CAPACITY AS

DATE

FULL NAMES OF SIGNATORY

AS WITNESSES 1.

2.

T2.2.11 MUNICIPAL BIDDING DOCUMENTS (MBD's)**DECLARATION OF "IN THE SERVICE OF THE STATE"**

If a spouse, child or parent of the owner, director, manager, shareholder or stakeholder of the entity is in the service of the state, or has been in the service of the state in the previous twelve months, the following information must be completed: (Please indicate if not applicable)

The name of the person in the employment of the state:

.....

The capacity in which that person is in service of the state:

.....

Is that person an owner, director, manager, shareholder or connected to the business:
Yes or No? (If yes please specify)

.....

The relationship to the owner, director, manager, shareholder or stakeholder of the entity:

	Spouse	Child	Parent
Owner	☐	☐	☐
Director	☐	☐	☐
Manager	☐	☐	☐
Shareholder	☐	☐	☐

"in the service of the state" means to be –

- (a) a member of –
 - (i) any municipal council;
 - (ii) any provincial legislature; or
 - (iii) the National Assembly or the National Council of Provinces;
- (b) a member of the board of directors of any municipal entity;
- (c) an official of any municipality or municipal entity;
- (d) an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);
- (e) a member of the accounting authority of any national or provincial public entity; or
- (f) an employee of Parliament or a provincial legislature.

CERTIFICATION

I, THE UNDERSIGNED (FULL NAME)
 CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS
 TRUE AND CORRECT.

I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION MAY BE
 TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....
 Signature

.....
 Date

.....
 Position

.....
 Name of Bidder

MUNICIPAL SERVICE ACCOUNT

An original latest municipal account must be attached to this page.

It should be noted that the tender cannot be considered/evaluated if any municipal rates and taxes or municipal services charges owed by the bidder or any of its directors to the municipality or municipal entity, or to any other municipality or entity, are in arrears for more than three months,

If the bidder or any of its directors are not responsible for the payment of municipal rates of service charges to the municipality or municipal entity, or to any other municipality or entity, a sworn affidavit to this effect must be attached to this page.

TAX CLEARANCE CERTIFICATE REQUIREMENTS	
It is a condition of tender that the taxes of the successful bidder must be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the bidder's tax obligations, before an award may be considered.	
1.	Bidders must ensure compliance with their Tax Obligations.
2.	Bidders are required to submit their unique personal identification number (PIN) issued by SARS to enable the Organ of State to view the taxpayer's profile and tax status.
3.	SARS will then furnish the bidder with a Tax Compliance Status PIN that will be valid for a period of 1 (one) year from the date of approval.
4.	In bids where Consortia / Joint Ventures / Sub-contractors are involved, each party must submit a separate TCS Certificate / PIN / CSD number.
5.	Application for the Tax Compliance Status (TCS) PIN may also be made via e-Filing. In order to use this provision, taxpayers will need to register with SARS as e-Filers through the website www.sars.gov.za .

DECLARATION OF INTEREST

- 1.0 Any legal person, including persons employed by the state¹, or persons having a kinship with persons employed by the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid (includes an advertised competitive bid, a limited bid, a proposal or written price quotation). In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons employed by the state, or to persons connected with or related to them, it is required that the bidder or his/her authorised representative declare his/her position in relation to the evaluating/adjudicating authority where-
- 1.1 The bidder is employed by the state; and/or the legal person on whose behalf the bidding document is signed, has a relationship with persons/a person who are/is involved in the evaluation and or adjudication of the bid(s), or where it is known that such a relationship exists between the person or persons for or on whose behalf the declarant acts and persons who are involved with the evaluation and or adjudication of the bid.
- 2.0 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.
- 2.1 Full Name of bidder or his or her representative:
- 2.2 Identity Number:
- 2.3 Position occupied in the Company (director, trustee, shareholder², member):
.....
- 2.4 Registration number of company, enterprise, close corporation, partnership agreement or trust:
.....
- 2.5 Tax Reference Number:
- 2.6 VAT Registration Number:
- 3.0 The names of all directors / trustees / shareholders / members, their individual identity numbers, tax reference numbers and, if applicable, employee / PERSAL numbers must be indicated in paragraph 6.5 below.

¹"State" means –

- a) any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No. 1 of 1999);

- b) any municipality or municipal entity;
- c) provincial legislature
- d) national Assembly or the national Council of provinces; or
- e) Parliament.

²"Shareholder" means a person who owns shares in the company and is actively involved in the management of the enterprise or business and exercises control over the enterprise.

4.0 Are you or any person connected with the bidder presently employed by the state?
.....YES / NO

4.1 If so, furnish the following particulars:

Name of person / director / trustee / shareholder/ member:

.....

Name of state institution at which you or the person connected to the bidder is
employed:

Position occupied in the state institution:

Any other particulars:

.....

.....

4.2 If you are presently employed by the state, did you obtain the appropriate authority to
undertake remunerative

4.3 work outside employment in the public sector? YES / NO

4.4 If yes, did you attach proof of such authority to the bid document? YES / NO

4.5 (Note: Failure to submit proof of such authority, where applicable, may result in the
disqualification of the bid.

4.6 If no, furnish reasons for non-submission of such proof:

.....

.....

.....

4.7 Did you or your spouse, or any of the company's directors / trustees / shareholders /
members or their spouses conduct business with the state in the previous twelve
months? YES / NO

4.8 If so, furnish particulars:

.....

.....
.....

4.9 Do you, or any person connected with the bidder, have any relationship (family, friend, other) with a person employed by the state and who may be involved with the evaluation and or adjudication of this bid? YES/NO

4.10 If so, furnish particulars.

.....
.....

4.11 Are you, or any person connected with the bidder, aware of any relationship (family, friend, other) between any other bidder and any person employed by the state who may be involved with the evaluation and or adjudication of this bid? YES/NO

4.11.1 If so, furnish particulars.

.....
.....
.....

4.12 Do you or any of the directors / trustees / shareholders / members of the company have any interest in any other related companies whether or not they are bidding for this contract? YES/NO

4.12.1 If so, furnish particulars:

.....
.....
.....

5.0 Full details of directors / trustees / members / shareholders.

Full Name	Identity Number	Personal Tax Number	Income Reference	State Number / Personal Number	Employee Number

5.0 DECLARATION

I, THE UNDERSIGNED (NAME):
 CERTIFY THAT THE INFORMATION FURNISHED IN THE ABOVE PARAGRAPHS IS CORRECT.

I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME SHOULD THIS
 DECLARATION PROVE TO BE FALSE.

.....
Signature

.....
Date

.....
Position

.....
Name of bidder

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2017

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND PREFERENTIAL PROCUREMENT REGULATIONS, 2022

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 To be completed by the organ of state

(delete whichever is not applicable for this tender).

- a) The applicable preference point system for this tender is the 90/10 preference point system.
- b) The applicable preference point system for this tender is the 80/20 preference point system.
- c) Either the 90/10 or 80/20 preference point system will be applicable in this tender. The lowest/ highest acceptable tender will be used to determine the accurate system once tenders are received.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

- (a) Price; and
- (b) Specific Goals.

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80
SPECIFIC GOALS	20
Total points for Price and SPECIFIC GOALS	100

1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

- 1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

- (a) **“tender”** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;
- (b) **“price”** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) **“rand value”** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;
- (d) **“tender for income-generating contracts”** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) **“the Act”** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1 Application of preference point system

3.1.1.1 The Municipality will, in the tender documents, stipulate —

- (a) the preference point system applicable; and
- (b) any specific goal as envisaged in section 2(1)(d) and (e) of the Preferential Procurement Act.

3.1.1.2 If it is unclear whether the 80/20 or 90/10 preference point system applies—

- (a) in the case of a tender to generate income or to dispose of or lease assets, the highest acceptable tender; or
- (b) in the case of any other tender, the lowest acceptable tender, must be used to determine the applicable preference point system.

3.1.2 Points for Price: 80/20 preference point system for acquisition of goods or services with Rand value equal to or above R30 000 and up to R50 million

3.1.2.1 The following formula must be used to calculate the points out of 80 for price in respect of a tender with a Rand value equal to or above R30 000 and up to a Rand value of R50 million, inclusive of all applicable taxes:

$$P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where-

P_s = Points scored for price of tender under consideration;

P_t = Price of tender under consideration; and

P_{min} = Price of lowest acceptable tender.

3.1.2.2 A maximum of 20 points may be awarded to a tenderer for the specified goals envisaged in section 2(1)(d) and (e) of the Act.

3.1.2.3 The points scored must be rounded off to the nearest two decimal places.

3.1.2.4 The contract must be awarded to the tenderer scoring the highest points.

3.1.3. Points for price: 90/10 preference point system for acquisition of goods or services with Rand value above R50 million

3.1.3.1 The following formula must be used to calculate the points out 90 for price in respect of a tender with a Rand value above R50 million, inclusive of all applicable taxes:

$$P_s = 90 \left(1 - \frac{P_t - P_{min}}{P_{min}} \right)$$

Where-

P_s = Points scored for price of tender under consideration;

P_t = Price of tender under consideration; and

P_{min} = Price of lowest acceptable tender.

3.1.3.2 A maximum of 10 points may be awarded to a tenderer for the specified goals envisaged in section 2(1)(d) and (e) of the Act.

3.1.3.3 The points scored must be rounded off to the nearest 2 decimal places.

3.1.3.4 The contract must be awarded to the tenderer scoring the highest points.

3.2. FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

The following formula must be used to calculate the points for price in respect of a tender to generate income or to dispose of or lease assets, with a Rand value equal to, or above R 30 000 and up to a Rand value of R50 million, inclusive of all applicable taxes:

$$Ps = 80 \left(1 + \frac{Pt - Pmax}{Pmax} \right)$$

Where-

Ps = Points scored for price of tender under consideration;

Pt = Price of tender under consideration; and

Pmax = Price of highest acceptable tender.

3.2.1 A maximum of 20 points may be awarded to a tenderer for the specified goals envisaged in section 2(1)(d) and (e) of the Act.

3.2.2 The points scored must be rounded off to the nearest 2 decimal places.

3.2.3 The contract must be awarded to the tenderer scoring the highest points.

3.3.4 Points for price:90/10 preference point system for tenders to generate income or to dispose of or lease assets with Rand value equal to or above R50 million

3.3.5 The following formula must be used to calculate the points for price in respect of a tender to generate income or to dispose of or lease assets, with a Rand value above R50 million, inclusive of all applicable taxes:

$$Ps = 90 \left(1 + \frac{Pt - Pmax}{Pmax} \right)$$

Where-

Ps = Points scored for price of tender under consideration;

Pt = Price of tender under consideration; and

Pmax = Price of highest acceptable tender.

3.3.6 A maximum of 10 points may be awarded to a tenderer for the specified goals envisaged in section 2(1)(d) and (e) of the Act.

3.3.7 The points scored must be rounded off to the nearest 2 decimal places.

3.3.8 The contract must be awarded to the tenderer scoring the highest points.

4. POINTS AWARDED FOR SPECIFIC GOALS

4.1 The tendering conditions will stipulate the specific goals, as contemplated in section 2(1)(d)(ii) of the Preferential Procurement Act, be attained.

4.2 A maximum of 20 points (80/20 preference points system) or 10 (90/10) preference points system), will be allocated for specific goals. These goals are:

- (a) contracting with persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of race, gender or disability (BBBEE);
- (b) Promotion of enterprises located in the municipal area

4.3 Regarding par 4.2 (a) 50% of the 20/10 points will be allocated to promote this goal and points will be allocated in terms of the BBBEE scorecard as follows:

B-BBEE Status Level of Contributor	Number of Points for Preference (80/20)	Number of Points for Preference (90/10)
1	20	10
2	18	9
3	16	8
4	12	5
5	8	4
6	6	3
7	4	2
8	2	1
Non-compliant contributor	0	0

4.4 A tenderer must submit proof of its BBBEE status level contributor [scorecard].

4.5 A tenderer failing to submit proof of BBBEE status level of contributor –

4.5.1 may only score in terms of the 80/90-point formula for price; and

4.5.2 scores 0 points out of 10/5 BBBEE status level of contributor, which is in line with section 2 (1) (d) (i) of the Act, where the supplier or service provider did not provide proof thereof.

- 4.6 Regarding par 4.2 (b) 50% of the **20/10 points** will be allocated to promote this goal. Points will be allocated as follows.

Locality of supplier	Points
Within the boundaries of the municipality	10/5
Outside of the boundaries of the municipality	0

- 4.7 The policy should not include Pre-qualification goals.
- 4.8 Any specific goal for which a point may be awarded, must be clearly specified in the invitation to submit a tender.
- 4.9 A tenderer failing to submit proof of required evidence to claim preferences for other specified goals, which is in line with section 2 (1) (d) (ii) of the Act.
- 4.9.1 may only score in terms of the 80/90-point formula for price; and
- 4.9.2 scores 0 points out of 10/5 of the relevant specific goals where the supplier or service provider did not stipulate.
- 4.10 The preference points scored by a tenderer must be added to the points scored for price.
- 4.11 The points scored must be rounded off to the nearest two decimal places.
- 4.12 The contract must be awarded to the tenderer scoring the highest procurement points.

Table 1: Specific goals for the tender and points claimed are indicated per the table below.

(Note to organs of state: Where either the 90/10 or 80/20 preference point system is applicable, corresponding points must also be indicated as such.)

Note to tenderers: The tenderer must indicate how they claim points for each preference point system.)

The specific goals allocated points in terms of this tender	Number of points allocated (90/10 system) (To be completed by the organ of state)	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)
BBBEE preference points system	05	10		
Promotion of enterprises located in the municipal area	05	10		

5. DECLARATION WITH REGARD TO COMPANY/FIRM

Name of company/firm.....

5.1. Company registration number:

5.2. TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One-person business/sole propriety
- ☐ Close corporation
- ☐ Public Company
- ☐ Personal Liability Company
- ☐ (Pty) Limited
- ☐ Non-Profit Company
- ☐ State Owned Company

[TICK APPLICABLE BOX]

5.3. I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I acknowledge that:

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –

- (a) disqualify the person from the tendering process;

- (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
- (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
- (d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
- (e) forward the matter for criminal prosecution, if deemed necessary.

Witness:

Signature of Bidder

1

2 **Date:**

Adress:

.....

DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

- 1 This Municipal Bidding Document must form part of all bids invited.
- 2 It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
- 3 The bid of any bidder may be rejected if that bidder, or any of its directors have:
 - a. abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
 - b. been convicted for fraud or corruption during the past five years;
 - c. willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
 - d. been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).
- 4 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

Item	Question	Yes	No
4.1	Is the bidder or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector? (Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the <i>audi alteram partem</i> rule was applied). The Database of Restricted Suppliers now resides on the National Treasury's website (www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.	Yes ☐	No ☐
4.1.1	If so, furnish particulars:		
4.2	Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)? The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.	Yes ☐	No ☐
4.2.1	If so, furnish particulars:		
4.3	Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes ☐	No ☐

4.3.1	If so, furnish particulars:		
4.4	Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes ☐	No ☐
4.4.1	If so, furnish particulars:		
4.5	Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes ☐	No ☐
4.7.1	If so, furnish particulars:		

CERTIFICATION

I, THE UNDERSIGNED (FULL NAME)

CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM TRUE AND CORRECT.

I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....

Signature

.....

Date

.....

Position

.....

Name of Bidder

CERTIFICATE OF INDEPENDANT BID DETERMINATION

1. This Municipal Bidding document (MBD) must form part of all bids¹ invited.
2. Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).² Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.
3. Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:
 - a. Take all reasonable steps to prevent such abuse;
 - b. Reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and
 - c. Cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.
4. This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.
5. In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid:

¹ includes price quotations, advertised competitive bids, limited bids and proposals.

² Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to complete, secretly

conspire to raise prices or lower the quality of goods and / or services for purchases who wish to acquire goods and

/ or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I , the undersigned, in submitting the accompanying bid:

.....that:
(Bid Number and Description)

In response to the invitation for the bid made by **Langeberg Municipality** do hereby make the following statement that I certify to be true and complete in every respect:

I certify, on behalf of:

.....that:
(Name of Bidder)

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect.
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
 - (a) Has been requested to submit a bid in response to this bid invitation;
 - (b) Could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
 - (c) Provides the same goods and services as the bidder and/or is in the same line of business as the bidder.
6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium³ will not be construed as collusive bidding.
7. In particular, without limiting the generality off paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - a. Prices;
 - b. Geographical area where product or service will be rendered (market allocation)
 - c. Methods, factors or formulas used to calculate prices;
 - d. The intention or decision to submit or not to submit, a bid;
 - e. The submission of a bid which does not meet the specifications and conditions of the bid; or
 - f. Bidding with the intention not to win the bid.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

³ Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No. 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No. 12 of 2004 or any other applicable legislation.

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder

CODE OF CONDUCT FOR SUPPLIERS

Langeberg Municipality is strongly committed in observing the highest ethical standards in all its procurement activities. As such, this Code of Conduct for Suppliers has been prepared to provide clear summary of Langeberg Municipality expectation from the suppliers in all procurement dealings, ensuring that internationally recognized procurement ethics are followed. Transparency and accountability should be strictly adhered to in all procurement activities.

Langeberg Municipality procurement ethics focuses on **zero tolerance on corruption, avoiding any form of interest and honest representation of supplier's capabilities.**

Suppliers are strongly urged to familiarize themselves with this Code of Conduct to ensure successful working relations with Langeberg Municipality.

Policy on Corruption and Position on Conflict of Interest

Langeberg Municipality expects all contracted suppliers and companies seeking to sell goods and services to conduct their business in accordance with the highest ethical standards. Suppliers or potential suppliers must strictly comply with all rules and regulations on bribery, corruption and avoid unacceptable business practices. Hence suppliers are expected to observe the following:

- Shall not, directly or indirectly, offer, give or agree or promise to give to any Langeberg Municipality staff any gratuity for the benefit of/or at the direction or request of any Staff or Langeberg Municipality;
- To immediately inform the Langeberg Municipality in the event that any Staff or Langeberg Municipality solicits or obtained or has made an attempt to obtain gratification for himself/herself or for any other persons.
- To immediately declare if any of the Company's staff and/or officers had or have any relative employed with Langeberg Municipality. Failure to make such declaration shall be construed as a conflict of interest and might result in the exclusion of the supplier from present and future procurement activities and/or other legal action as deemed fit by the Organization.

Representation from Suppliers

Langeberg Municipality expects all its suppliers to honestly declare and warrant that:

- It will comply with all rules, regulations and statutory requirements relating to the provision of the products/services to Langeberg Municipality;
- It will not act in concert with other suppliers or agents when participating in a bid;
- It is a duly authorized/certified provider of the supplied products/services and shall not, expressly or impliedly hold itself out to be an agent/representative of a third party provider of the same products/services;
- It will only supply products that are certified to be of merchantable and satisfactory quality;
- The supplier possesses the necessary capabilities, equipment and suitable place of business to perform its obligations;

- It shall not contract out of subcontract or outsource any portion of the products/services unless prior written consent from Langeberg Municipality has been obtained; and
- It shall maintain the highest standards of integrity and quality of work at all times.

Applicability of the Code of Conduct

This Code of Conduct shall apply to all Suppliers, sub-contractors and to other entities acting behalf of them (approval of Langeberg Municipality).

Monitoring compliance to the Code of Conduct

To facilitate the monitoring of suppliers' compliance with this Code of Conduct, Langeberg Municipality expects suppliers to:

- Develop and maintain all necessary documentation to support compliance with the described standards; such documentation must be accurate and complete;
- Provide Langeberg Municipality representatives with access to relevant records, upon Langeberg Municipality request;
- Allow Langeberg Municipality representatives to conduct interviews with the supplier's employees and with management separately;
- Allow Langeberg Municipality representatives to conduct announced and unannounced site visits of supplier locations; and
- Respond promptly to reasonable inquiries from Langeberg Municipality representatives in relation to the implementation of the Code of Conduct.

Secure Communication Channels

Langeberg Municipality has established a secure communication channel to enable the suppliers to raise their concerns confidentially and responsibly. If the supplier has questions about the Code of Conduct or wishes to report a questionable behaviour or possible violation of the Code of Conduct, the Supplier is encouraged and should contact Langeberg Municipality at:

Municipal Manager
28 Main Road
Ashton
6715

or contact at mm@langeberg.gov.za;

Langeberg Municipality will not tolerate any retribution or retaliation by anyone against a concerned Supplier who has, in good faith, sought out advice or has reported questionable behaviour and/or a possible violation. Langeberg Municipality will take disciplinary action up to and including termination of contract for anyone who threatens or engages in retaliation, retribution or harassment of the concerned individual. Identities and contents of all information or complaints will be rated strictly confidential.

SANCTIONS

Breach of the Code may result in actions being taken against that service providers, in addition to any contractual or legal remedies. The actions applied will depend on the nature and seriousness of the breach and on the degree of commitment shown by the service provider to resolve any issues stemming from the breach. The range of actions to be imposed include but are not restricted to the following:

- Formal written warnings;
- Required disclosure of nature of breach in terms of the Policy;
- Immediate termination of contract;
- Criminal and/or civil action.

ACKNOWLEDGEMENT AND ACCEPTANCE

This is to certify that I have fully read the Supplier's Code of Conduct attached. Having fully read and understood the completed requirement of this Supplier's Code of Conduct, I hereby commit myself and my company to serve this Code of Conduct and to fully comply with all of its principles. I also certify that I am authorized by my company to sign and accept this document in its behalf.

Supplier: _____

Address: _____

Representative: _____

Signature: _____

Date: _____

BID FOR THE REQUIREMENTS OF THE LANGEBERG MUNICIPALITY

PART A
INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE LANGEBERG MUNICIPALITY					
BID NUMBER:	T26/2023	CLOSING DATE:	15 September 2023	CLOSING TIME:	12:00
DESCRIPTION	CONSTRUCTION: ELECTRIFICATION OF BOEKENHOUTSKLOOF: BONNIEVALE				
THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (MBD7).					
BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS)					
LANGEBERG MUNICIPAL OFFICES					
28 MAIN ROAD					
ASHTON					
6715					
SUPPLIER INFORMATION					
NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELLPHONE NUMBER					
FACSIMILE NUMBER	CODE		NUMBER		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
TAX COMPLIANCE STATUS	TCS PIN:		OR	CSD No:	
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE [TICK APPLICABLE BOX]	☐ Yes ☐ No		B-BBEE STATUS LEVEL SWORN AFFIDAVIT ☐ Yes ☐ No		
[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]					

ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	☐ Yes ☐ No [IF YES ENCLOSE PROOF]	ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED?	☐ Yes ☐ No [IF YES, ANSWER PART B:3]
TOTAL NUMBER OF ITEMS OFFERED		TOTAL BID PRICE	R
SIGNATURE OF BIDDER	.....	DATE	.....
CAPACITY UNDER WHICH THIS BID IS SIGNED			
BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:		TECHNICAL INFORMATION MAY BE DIRECTED TO:	
DEPARTMENT	SCM	CONTACT PERSON	Mr. G. Lotter
CONTACT PERSON	Sabelo NGCONGOLO	TELEPHONE NUMBER	023 626 8200
TELEPHONE NUMBER	023 615 8000	FACSIMILE NUMBER	023 615 1563
FACSIMILE NUMBER	023 615 1563	E-MAIL ADDRESS	glotter@langeberg.gov.za
E-MAIL ADDRESS	sngcongolo@langeberg.gov.za		

PART B

TERMS AND CONDITIONS FOR BIDDING

1. BID SUBMISSION:										
1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION. 1.2. ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR ONLINE 1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.										
2. TAX COMPLIANCE REQUIREMENTS										
2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS. 2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VIEW THE TAXPAYER'S PROFILE AND TAX STATUS. 2.3 APPLICATION FOR THE TAX COMPLIANCE STATUS (TCS) CERTIFICATE OR PIN MAY ALSO BE MADE VIA E-FILING. IN ORDER TO USE THIS PROVISION, TAXPAYERS WILL NEED TO REGISTER WITH SARS AS E-FILERS THROUGH THE WEBSITE WWW.SARS.GOV.ZA. 2.4 FOREIGN SUPPLIERS MUST COMPLETE THE PRE-AWARD QUESTIONNAIRE IN PART B:3. 2.5 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID. 2.6 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER. 2.7 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.										
3. QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS										
<table style="width: 100%; border: none;"> <tr> <td style="width: 70%;">3.1. IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?</td> <td style="width: 30%; text-align: right;">☐ YES ☐ NO</td> </tr> <tr> <td>3.2. DOES THE ENTITY HAVE A BRANCH IN THE RSA?</td> <td style="text-align: right;">☐ YES ☐ NO</td> </tr> <tr> <td>3.3. DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?</td> <td style="text-align: right;">☐ YES ☐ NO</td> </tr> <tr> <td>3.4. DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?</td> <td style="text-align: right;">☐ YES ☐ NO</td> </tr> <tr> <td>3.5. IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?</td> <td style="text-align: right;">☐ YES ☐ NO</td> </tr> </table> IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 ABOVE.	3.1. IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?	☐ YES ☐ NO	3.2. DOES THE ENTITY HAVE A BRANCH IN THE RSA?	☐ YES ☐ NO	3.3. DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?	☐ YES ☐ NO	3.4. DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?	☐ YES ☐ NO	3.5. IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?	☐ YES ☐ NO
3.1. IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?	☐ YES ☐ NO									
3.2. DOES THE ENTITY HAVE A BRANCH IN THE RSA?	☐ YES ☐ NO									
3.3. DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?	☐ YES ☐ NO									
3.4. DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?	☐ YES ☐ NO									
3.5. IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?	☐ YES ☐ NO									

**NB: FAILURE TO PROVIDE ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.
NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE.**

SIGNATURE OF BIDDER:

CAPACITY UNDER WHICH THIS BID IS SIGNED:

DATE:

T2.2.12 SCHEDULE OF REFERENCE FOR TENDERER

Refer to Tender Data, Part T1.2, Clause C.2.1.1 (b) on Pages T1.2.3 and T1.2.4 regarding Tenderer's feedback from Referees to be provided to claim points.

Referee No. 1 and Project Information

- The Tenderer must provide three (3) separate and unrelated contactable Referees.
- The Referees must relate to three (3) separate successfully completed projects in the last 5 years.
- The reference projects must be for the electrification of at least 100 low-cost houses where the Tenderer was responsible for the supply and installation of the material / equipment.
- The Tenderer must arrange for the Referee to complete this form and the completed form (scanned copy acceptable) must be submitted with the tender document.
- **A Certificate of Practical Completion, Certificate of Completion, or Taking Over Certificate signed by the Employer's Agent must be attached for the project referenced herein. (Note that no additional reference letters from Clients / Engineers will be accepted.)**

Employer name:	
Referee name:	
Referee physical address:	
Referee contact number:	
Referee e-mail address:	
Name of Tenderer evaluated:	
Project Name:	
Project Description:	
Project Completion date:	
Project duration:	
Final Project Cost, incl. VAT:	

COMPLETION OF PROJECT ON TIME	
Completion of project according to initial program submitted by Tenderer?	
Yes	
No	

COMPLETION OF ASSIGNMENTS WITHIN BUDGET	
Did the Tenderer complete the project / work within the allocated Budget?	
Yes	
No	

QUALITY OF END PRODUCT	
Was work executed in accordance with the Specification and did the final product match the expectations that were created during the Project Initiation Stage?	
Exceed initial expectations	
Met expectations	
Slightly below	
Did not meet expectations	

Additional Remarks/Comments:

I, the undersigned, hereby certify that the above information is, to the best of my knowledge, correct and a true reflection.

Signature of Referee

Date

DECLARATION,

I, THE UNDERSIGNED(NAME)
 CERTIFY THAT THE INFORMATION FURNISHED ABOVE IS CORRECT. I ACCEPT
 THAT THE MUNICIPALITY MAY EXERCISE DUE CONSEQUENCE MANAGEMENT
 AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

AUTHORISED SIGNATURE ON BEHALF OF TENDERER:

NAME OF TENDERER:

CAPACITY:

DATE:

Referee No. 2 and Project Information

Refer to Tender Data, Part T1.2, Clause C.2.1.1 (b) on Pages T1.2.3 and T1.2.4 regarding Tenderer's feedback from Referees to be provided to claim points.

- The Tenderer must provide three (3) separate and unrelated contactable Referees.
- The Referees must relate to three (3) separate successfully completed projects in the last 5 years.
- The reference projects must be for the electrification of at least 100 low cost houses where the Tenderer was responsible for the supply and installation of the material / equipment.
- The Tenderer must arrange for the Referee to complete this form and the completed form (scanned copy acceptable) must be submitted with the tender document.
- **A Certificate of Practical Completion, Certificate of Completion, or Taking Over Certificate signed by the Employer's Agent must be attached for the project referenced herein. (Note that no additional reference letters from Clients / Engineers will be accepted.)**

Employer name:	
Referee name:	
Referee physical address:	
Referee contact number:	
Referee e-mail address:	
Name of Tenderer evaluated:	
Project Name:	
Project Description:	
Project Completion date:	
Project duration:	
Final Project Cost, incl. VAT:	

COMPLETION OF PROJECT ON TIME	
Completion of project according to initial program submitted by Tenderer?	
Yes	
No	

COMPLETION OF ASSIGNMENTS WITHIN BUDGET	
Did the Tenderer complete the project / work within the allocated Budget?	
Yes	
No	

QUALITY OF END PRODUCT	
Was work executed in accordance with the Specification and did the final product match the expectations that were created during the Project Initiation Stage?	
Exceed initial expectations	
Met expectations	
Slightly below	
Did not meet expectations	

Additional Remarks/Comments:

I, the undersigned, hereby certify that the above information is, to the best of my knowledge, correct and a true reflection.

Signature of Referee

 Date

DECLARATION,

I, THE UNDERSIGNED(NAME)
 CERTIFY THAT THE INFORMATION FURNISHED ABOVE IS CORRECT. I ACCEPT
 THAT THE MUNICIPALITY MAY EXERCISE DUE CONSEQUENCE MANAGEMENT
 AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

AUTHORISED SIGNATURE ON BEHALF OF TENDERER:

NAME OF TENDERER:

CAPACITY:

DATE:

Referee No. 3 and Project Information

Refer to Tender Data, Part T1.2, Clause C.2.1.1 (b) on Pages T1.2.3 and T1.2.4 regarding Tenderer's feedback from Referees to be provided to claim points.

- The Tenderer must provide three (3) separate and unrelated contactable Referees.
- The Referees must relate to three (3) separate successfully completed projects in the last 5 years.
- The reference projects must be for the electrification of at least 100 low cost houses where the Tenderer was responsible for the supply and installation of the material / equipment.
- The Tenderer must arrange for the Referee to complete this form and the completed form (scanned copy acceptable) must be submitted with the tender document.
- **A Certificate of Practical Completion, Certificate of Completion, or Taking Over Certificate signed by the Employer's Agent must be attached for the project referenced herein. (Note that no additional reference letters from Clients / Engineers will be accepted.)**

Employer name:	
Referee name:	
Referee physical address:	
Referee contact number:	
Referee e-mail address:	
Name of Tenderer evaluated:	
Project Name:	
Project Description:	
Project Completion date:	
Project duration:	
Final Project Cost, incl. VAT:	

COMPLETION OF PROJECT ON TIME	
Completion of project according to initial program submitted by Tenderer?	
Yes	
No	

COMPLETION OF ASSIGNMENTS WITHIN BUDGET	
Did the Tenderer complete the project / work within the allocated Budget?	
Yes	
No	

QUALITY OF END PRODUCT	
Was work executed in accordance with the Specification and did the final product match the expectations that were created during the Project Initiation Stage?	
Exceed initial expectations	
Met expectations	
Slightly below	
Did not meet expectations	

Additional Remarks/Comments:

I, the undersigned, hereby certify that the above information is, to the best of my knowledge, correct and a true reflection.

Signature of Referee

Date

DECLARATION,

I, THE UNDERSIGNED(NAME)
CERTIFY THAT THE INFORMATION FURNISHED ABOVE IS CORRECT. I ACCEPT
THAT THE MUNICIPALITY MAY EXERCISE DUE CONSEQUENCE MANAGEMENT
AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

AUTHORISED SIGNATURE ON BEHALF OF TENDERER:

NAME OF TENDERER:

CAPACITY:

DATE:

THE CONTRACT**AGREEMENTS AND CONTRACT DATA****C1.1 FORM OF OFFER AND ACCEPTANCE (Agreement)****OFFER**

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract in respect of the following works:

TENDER NO. 26/2023: CONSTRUCTION: ELECTRIFICATION OF BOEKENHOUTSKLOOF, BONNIEVALE.

The Tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the Tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance, the Tenderer offers to perform all of the obligations and liabilities of the Contractor under the Contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the Conditions of Contract identified in the Contract Data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VALUE ADDED TAX IS:

.....

.....Rand (in words) R.....(in figures).

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Tenderer before the end of the period of validity stated in the Tender Data whereupon the Tenderer becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

For the Tenderer:

Signature

Name

Capacity

Name and address of organisation:

.....

.....

Signature and name of witness:

Signature

Name

Date:

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Tenderer's Offer shall form an Agreement between the Employer and the Tenderer upon the terms and conditions contained in this Agreement and in the Contract that is the subject of this Agreement.

The terms of the contract, are contained in:

Part C1	Agreements and Contract Data, (which includes this Agreement)
Part C2	Pricing Data
Part C3	Scope of Work
Part C4	Site Information

and drawings and documents or parts thereof, which may be incorporated by reference into Parts C1 to C4 above.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the Tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this Schedule, which must be duly signed by the authorised representative(s) of both parties.

The Tenderer shall within two weeks of receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data at, or just after, the date this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Contractor) within five days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

For the Employer:

Signature

Name

Capacity

Name and address of organisation:

.....

.....

Signature and name of witness:

Signature

Name

Date:

SCHEDULE OF DEVIATIONS**Notes:**

1. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
2. A Tenderer's covering letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of Agreements reached during the process of offer and acceptance, the outcome of such Agreement shall be recorded here.
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract shall also be recorded here.
4. Any change or addition to the tender documents arising from the above Agreements and recorded here, shall also be incorporated into the final draft of the Contract.

(i)	Subject	
	Details	
(ii)	Subject	
	Details	
(iii)	Subject	
	Details	
(iv)	Subject	
	Details	
(v)	Subject	
	Details	
(vi)	Subject	
	Details	

C1.1.4

By the duly authorised representatives signing this Schedule of Deviations, the Employer and the Tenderer agree to and accept the foregoing Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Tenderer and the Employer during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the Tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

For the Tenderer:

..... Signature

..... Name

..... Capacity

Name and address of organisation:

.....

.....

.....

..... Witness Signature

..... Witness Name

..... Date

For the Employer:

.....

.....

.....

Name and address of organisation:

.....

.....

.....

.....

.....

.....

CONFIRMATION OF RECEIPT

The Tenderer, (now Contractor), identified in the Offer part of this Agreement hereby confirms receipt from the Employer, identified in the acceptance part of this Agreement, of one fully completed original copy of this agreement, including the Schedule of Deviations (if any) today:

the (day)

of (month)

20 (year)

at (place)

For the Contractor:

Signature

Name

Capacity

Signature and name of witness:

Signature

Name

C.1.2 CONTRACT DATA

The General Conditions of Contract for Construction Works, Third Edition (2015) published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685, is applicable to this Contract and is obtainable from www.saice.org.za

The following contract specific data, referring to the General Conditions of Contract for Construction Works, Third Edition, 2015, are applicable to this Contract. Tenderers must read the abovementioned General Conditions of Contract in order to understand the implications of the Data provided by the Employer, as well as the Data which has to be completed by the Tenderer.

PART 1: DATA PROVIDED BY THE EMPLOYER

Clause	Data
1.1.1.13	The Defects Liability Period is 12 months measured from the date of the Certificate of Completion.
1.1.1.14	The time for achieving Practical Completion is: The electrification of the 395 houses under Phases 1 to 4 = 30 Calendar weeks. The electrification of the 170 houses under Phases 5 and 6 = 19 Calendar weeks. The time for achieving Practical Completion includes the days referred to under Clause 5.3.2, the non-working days and special non-working days (Clauses 5.1.1 and 5.8.1).
1.1.1.15	The name of the Employer is Langeberg Municipality.
1.1.1.16	The name of the Employer's Agent is Clinkscales Maughan-Brown. Also referred to as the "Engineer" elsewhere in this document.
1.1.1.26	The Pricing Strategy is a re-measurement contract.
1.2.1.2	The address of the Employer is: Address (physical): <i>Municipal Offices, 28 Main Road, Ashton</i> Address (postal): <i>Private Bag X2, Ashton, 6715</i> Telephone: 023 615 8000 Facsimile: 023 615 1563 e-mail: admin@breeland.gov.za
1.2.1.2	The address of the Employer's Agent is: Address (physical): 39 Victoria Street, George, 6529 Address (postal) P O Box 2551, George, 6530 Telephone: 044-8741511 Facsimile: 044-8741510 e-mail: jdevilliers@cmbgeorge.co.za

C1.2.2

3.2.3	The Employer's Agent shall obtain the specific approval of the Employer before carrying out any of his functions or duties according to the following Clauses of the General Conditions of Contract: None.
5.1.1 and 5.8.1	The non-working days are Sundays, with the exception of work which must be undertaken during scheduled outages planned for Sundays. The special non-working days are: The public holidays. The year-end break commencing on about 16 December and ending on about the first Monday of the subsequent year, or the days on which the Contractor grants the majority of his permanent workforce leave.
5.3.1	The documentation required before commencing with the Works are: Health and Safety Plan (refer to Clause 4.3). Initial programme (refer to Clause 5.6). Security (refer to Clause 6.2). Insurance (refer to Clause 8.6). Occupational Health and Safety Agreement (refer to Part C1.4). Letter of Good Standing from the Compensation Commissioner. Proof of order for MV and LV equipment / material.
5.3.2	The time to submit the documentation required before commencement of the Works is 14 days .
5.12.2.2	A delay caused by inclement weather conditions will be regarded as a delay only if, in the opinion of the Employer's Agent, all progress on an item or items of work on the critical path of the working programme of the Contractor has been brought to a halt. Delays on working days only (based on a five-day working week) will be taken into account for the extension of time, but the Contractor shall make provision in his programme of work for an expected delay of 2 (Two) working days per month caused by normal rainy weather, for which he will not receive any extension of time. Extension of time during working days will be granted to the degree to which actual delays, as defined above, exceed the number of 2 (Two) working days. It shall be further noted that where the critical path is not affected, no extension of time for abnormal climatic conditions or for any other reason will be entertained. Abnormal climatic conditions are conditions that occur less frequently than once in ten years.
5.13.1	The percentage reduction of Contract Price (penalty) per completed week of delay, shall be ½ (half percent) per week or part thereof. The maximum percentage reduction shall be 10% (ten percent.)
5.14.1	The requirements for achieving Practical Completion are that the Works must be in a state of readiness, fit for the intended purpose and occupation without danger or undue inconvenience to the Employer.
5.16.3	The latent defects period is 5 years.
5.4.2	The access and possession of the Site shall not be exclusive to the Contractor but as set out in the Site Information.
6.5.1.2.3	The percentage allowance on the net cost of materials actually used in the completed Works is 10%. The percentage allowance on the gross remuneration of the workmen and foremen actually engaged is 10%.

C1.2.3

6.8.2	Contract Price Adjustment will not be allowed for the electrification of the houses that will be completed under Phases 1 to 4, i.e. 395 houses, which must be completed before the end of June 2024. Tenderers must take cognisance of the contract duration and make allowance for escalation in the tendered rates. It must be taken that the contract can be awarded anytime within the tender validity period. Contract Price Adjustment will, however, be allowed for the electrification of the houses that that will be electrified under Phases 5 to 6, i.e. 170 houses, which are planed to be electrified from July 2024 to June 2025. This work will be subject to the CPA formulas as set out below: Contract Price Adjustment = $(1 - x) * [a(Lt/Lo) + b(Pt/Po) + c(Mt/Mo) + d(Ft/Fo) - 1]$ The value of “x” is 0.1 (Fixed portion) The values of the coefficients are: (This will only applicable when the labour and material values are not known.) a = 0.2 (Labour) b = 0 (Contractor’s equipment) c = 0.8 (Material) d = 0 (Fuel) The indices for “L”, “P”, “M” and “F” are the following as published by the Steel and Engineering Industries Federation of South Africa (SEIFSA): “L” is the “Labour Index” and shall be Table C.3. “P” is the “Contractor’s Equipment Index” and shall be Nil. “M” is the “Material Index” and shall be Table G1. “F” is the “Fuel Index” and shall be Nil. The base month is the month prior to the closing of the tender.
6.8.3	Price adjustments for variations in the costs of special materials are not allowed.
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is 80%. The percentage advance on Plant not yet supplied to Site is 80%. Documentary evidence of ownership and an indemnity against claims in respect of the plant and or materials shall be provided, and items shall be clearly marked and identified as being the property of the Employer. A Certificate of Ownership of Plant / Materials as per Part C1.5 shall be submitted to the Employer’s Agent together with the claim for payment.
6.10.3	Retention of 10% will be withheld on progress payment, up to the limit of retention money which is 5% of the Contract Sum. A guarantee in lieu of retention is not permitted.
8.6.1.1.2	The value of Plant and material supplied by the Employer to be included in the insurance sum is R Nil.
8.6.1.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is 5% of the contract sum.
8.6.1.3	The limit of indemnity for liability insurance is R10 million.
10.3.2	Amicable settlement in terms of Clause 10.4 shall be contemplated for all disputes prior to referring any dispute to adjudication or arbitration.
10.5.3	The number of Adjudication Board Members to be appointed is one.
10.7.1	The determination of disputes which are unresolved in terms of Clause 10.4.2 shall be by arbitration.

C1.2.4

11.	Additional clauses to the General Conditions of Contract:
	The Contractor shall make use of 100% local unskilled labourers from the local area and in accordance with Langeberg Municipality's Expanded Public Works Programme (EPWP).

C.1.2 CONTRACT DATA**PART 2: DATA PROVIDED BY THE CONTRACTOR**

The Tenderer shall provide the following information

Clause	Data								
1.1.1.9	The name of the Contractor is								
1.2.1.2	The address of the Contractor is:								
	Address (physical): Address (postal): Telephone: Facsimile: E-mail:								
1.1.1.14	I / we hereby confirm that I / we will comply with the programme as stipulated under the Data provided by the Employer.....Yes / No.								
6.2.1	The security to be provided by the Contractor shall be one of the following:								
	<table border="1"> <thead> <tr> <th>Type of security (Value Added Tax is excluded from the Contract Sum and the value of the Works for calculating the percentages)</th><th>Contractor's Choice (Indicate "Yes" or "No")</th></tr> </thead> <tbody> <tr> <td>Cash deposit of 10% of the Contract Sum plus retention of 5% of the value of the Works</td><td>.....</td></tr> <tr> <td>Performance guarantee of 10% of the Contract Sum plus retention of 5% of the value of the Works.</td><td>.....</td></tr> <tr> <td>Variable Performance guarantee of 10% of the Contract Sum for the first period and 5% of the Contract Sum for the second period plus retention of 5% of the value of the Works.</td><td>No</td></tr> </tbody> </table>	Type of security (Value Added Tax is excluded from the Contract Sum and the value of the Works for calculating the percentages)	Contractor's Choice (Indicate "Yes" or "No")	Cash deposit of 10% of the Contract Sum plus retention of 5% of the value of the Works		Performance guarantee of 10% of the Contract Sum plus retention of 5% of the value of the Works.		Variable Performance guarantee of 10% of the Contract Sum for the first period and 5% of the Contract Sum for the second period plus retention of 5% of the value of the Works.	No
Type of security (Value Added Tax is excluded from the Contract Sum and the value of the Works for calculating the percentages)	Contractor's Choice (Indicate "Yes" or "No")								
Cash deposit of 10% of the Contract Sum plus retention of 5% of the value of the Works									
Performance guarantee of 10% of the Contract Sum plus retention of 5% of the value of the Works.									
Variable Performance guarantee of 10% of the Contract Sum for the first period and 5% of the Contract Sum for the second period plus retention of 5% of the value of the Works.	No								

C1.3 PRO FORMA PERFORMANCE GUARANTEE

For use with the General Conditions of Contract for Construction Works, Third Edition, 2015.

GUARANTOR DETAILS AND DEFINITIONS

“Guarantor” means:

Physical Address:

“Employer” means: **Langeberg Municipality**

“Contractor” means:

“Engineer” means: **Clinkscapes Maughan-Brown (South) (Pty) Ltd**

“Works” means: **Tender 26/2023: Construction: Electrification of Boekenhoutskloof, Bonnievale.**

“Site” means: **Boekenhoutskloof, Bonnievale**

“Contract” means: The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the parties.

“Contract Sum” means: The accepted amount inclusive of tax of **R**

Amount in words:

“Guaranteed Sum” means: The maximum aggregate amount of **R**

Amount in words:

“Expiry Date” means: The date of issue of the Certificate of Completion of the Works by the Engineer.

CONTRACT DETAILS

Engineer issues: Interim Payment Certificates, Final Payment Certificate and the Certificate of Completion of the Works as defined in the Contract.

PERFORMANCE GUARANTEE

1. The Guarantor’s liability shall be limited to the amount of the Guaranteed Sum.
2. The Guarantor’s period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the Expiry Date or the date of issue by the Engineer of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed Sum, whichever occurs first. The Engineer and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.

C1.3.2

3. The Guarantor hereby acknowledges that:
any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship; its obligation under this Performance Guarantee is restricted to the payment of money.
4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:
 - 4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Engineer in an Interim of Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;
 - 4.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;
 - 4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 4.
5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:
 - 5.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 5; or
 - 5.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; and
 - 5.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.
6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.
7. Where the Guarantor has made payment in terms of 5, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.
8. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.
9. Payment by the Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.

C1.3.3

10. The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.
11. The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.
12. This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.
13. This Performance Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.
14. Where the Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at

Date

Guarantor's signatory (1)

Capacity

Guarantor's signatory (2)

Capacity

Witness signatory (1)

Witness signatory (2)

C1.4 OCCUPATIONAL HEALTH AND SAFETY AGREEMENT

AGREEMENT MADE AND ENTERED INTO BETWEEN

..... (Employer)
and

.....(Contractor / Mandatory)

IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, ACT No. 85 OF 1993 AS AMENDED.

I, representing

the Contractor / Mandatory as an employer in its own right, do hereby undertake to ensure, as far as is reasonably practicable, that all work will be performed, and all equipment, machinery or plant used in such a manner as to comply with the provisions of the Occupational Health and Safety Act (OHSA) and the Regulations promulgated there under.

I furthermore confirm that we are registered with the Compensation Commissioner and that all registration and assessment monies due to the Compensation Commissioner have been fully paid or that we are insured with an approved licensed compensation insurer.

COID ACT Registration Number:

OR Compensation Insurer: Policy No.:

I undertake to appoint, where required, suitable competent persons, in writing, in terms of the requirements of OHSA and the Regulations and to charge him/them with the duty of ensuring that the provisions of OHSA and Regulations as well as the Employer's Special Conditions of Contract, Way Leave, Lock-Out and Work Permit Procedures are adhered to as far as reasonably practicable.

I further undertake to ensure that any subcontractors employed by me will enter into an occupational health and safety agreement separately, and that such subcontractors comply with the conditions set.

I hereby declare that I have read and understand the Occupational Health and Safety Conditions and undertake to comply therewith at all times.

I hereby also undertake to comply with the Occupational Health and Safety Specification and Plan.

Signed aton the.....day of.....20....

Witness

Contractor / Mandatory

Signed at on the.....day of.....20

Witness

Employer

C1.5 CERTIFICATE OF OWNERSHIP OF PLANT / MATERIALS

NAME OF CONTRACTOR:
ADDRESS:

.....

NAME OF EMPLOYER:
ADDRESS:

.....

CONTRACT DESCRIPTION:

CONTRACT NO:

The undersigned Contractor (duly authorised hereto by virtue of a resolution of the Board of Directors/Members on) hereby certifies the following in accordance with the terms of Clause 6.10.1.5 of the General Conditions of Contract:

- (i) The plant and or materials listed hereunder, which are the Contractor's sole and exclusive property and to which no third party has any rights will upon payment be lawfully acquired by the Employer.
- (ii) The Employer is indemnified against any claim to or in respect of the plant and or materials by reason of the Contractor's sequestration or liquidation, or of any defect in the Contractor's title to the plant and or materials.
- (iii) Upon payment, effective delivery of the plant and or materials to the Employer will take place.
- (iv) Ownership of the plant and or materials will then vest in the Employer.
- (v) The plant and or materials are insured in accordance with the requirements of the Conditions of Contract.
- (vi) The Contractor shall be responsible for the care of the plant and or materials and clearly mark and identify same as being the property of the Employer.
- (vii) The plant and or materials are held by the Contractor in storage for and on behalf of the Employer at address: (the premises).
- (viii) The premises is:
 - *a) the property of the Contractor; or
 - *b) the property of of (address)

..... and are let to the Contractor by

..... of (address)

.....
 * (delete whichever is not applicable)

SIGNATURE OF CONTRACTOR: **WITNESS:**

DATE:

LIST OF PLANT / MATERIALS IN STORAGE OF CONTRACTOR

[illegible]

SIGNATURE OF CONTRACTOR: WITNESS:

DATE:

C1.6 CONTRACT OF TEMPORARY EMPLOYMENT AS COMMUNITY LIAISON OFFICER (Pro-forma)

PROJECT in.....

AGREEMENT made between the CONTRACTOR.....

and the Community Liaison Officer, hereafter referred to as the CLO, for the appointment and employment of a Community Liaison Officer for the duration of the work in their designated area.

1. THE PARTIES HAVE AGREED THAT

The CLO will be employed by the CONTRACTOR
on a temporary basis for the duration of the work from the date of signing this agreement to the date of final project practical completion as defined in the Contract, subject to all the conditions set out below.

2. THE DUTIES OF THE COMMUNITY LIAISON OFFICER SHALL BE:

- 2.1 to keep the community informed on the progress of the project;
- 2.2 to keep the Contractor informed on relevant Community affairs and possible grievances;
- 2.3 to manage the recruitment of workers from the Municipal Council Job-Seekers Database;
- 2.4 to assist the Contractor's supervisory staff in the management of the workers.

3. THE FOLLOWING CONDITIONS OF EMPLOYMENT SHALL APPLY:

The Conditions of Temporary Employment as applicable on this Contract for the workers recruited from the Community shall apply equally to the CLO, except that the rate of remuneration shall be R..... per working day. These conditions that apply are listed below as they appear in the Contract of Temporary Employment:

- 3.1 If required to work on a statutory public holiday or Sunday the payment will be double the amount stated in the previous paragraph.
- 3.2 Maximum hours of work:
 - (i) 9¼ hours per day
 - (ii) 45 hours per week;
 - (iii) 5 days per week;
 - (iv) 5 hours without an interval, whereupon there shall be an interval of at least 30 minutes;
 - (v) A spread-over period of 12 hours.
- 3.3 The CLO shall be entitled to payment where he is prevented from working by reasons which are within the control of the Contractor.
- 3.4 On days when it is raining the Contractor may, before 9 a.m., decide not to open the site and there will be no pay.

If the Contractor closes the site between 9 a.m. and 1 p.m., the CLO will be paid half the daily wage.

If the site works later than 1 p.m., the CLO will be paid the full daily wage.
- 3.5 Workers and the CLO will not be permitted to work under conditions of:
 - (i) undisciplined or unruly behaviour;
 - (ii) insubordination to Team Leader, Supervisors or Management;
 - (iii) abuse of intoxicating substances;

C1.6.2

- (iv) criminal actions by the employee;
- (v) strike action or political stayaways.

3.6 Discipline. Workers, including the CLO, may be dismissed after two official written warnings for the following behaviour:

- (i) undisciplined or unruly behaviour;
- (ii) insubordination to Team Leader, Supervisors or Management;
- (iii) abuse of intoxicating substances;
- (iv) Wilful or negligent damage to or loss of machines or equipment.

The Contractor shall ensure that he has statements from at least two witnesses concerning any of the above situations.

The Contractor shall inform the CLO within 24 hours of any warning issued to workers employed from the Job-Seekers Database.

3.7 The CLO will be paid on a Friday afternoon every two weeks, one week in arrears.

3.8 The CLO shall be given a statement with each payment on which is recorded:

- (i) the name of the Contractor;
- (ii) the CLO's name;
- (iii) the number of days worked by the CLO;
- (iv) the rate per day;
- (v) the details of any deductions made;
- (vi) the actual amount paid to the CLO.

3.9 No deduction shall be made from the remuneration except where the CLO consents in writing or unless the Contractor is permitted or required to do so by law or the order of any competent court.

3.10 The CLO shall be supplied free of charge with all health and safety equipment required by the Occupation Health and Safety Act. The equipment shall remain the property of the Contractor.

3.11 The Contractor must give the CLO at least one week's notice of the termination of the Contract of Temporary Employment. If this is not done, the CLO must be paid earnings for five days. This condition does not apply if the CLO is dismissed.

3.12 At the end of the period of temporary employment, the Contractor shall provide a Certificate of Service recording the Contractor's name, the CLO's name and address, the period of service, the type of work on which the CLO was engaged and the rate of remuneration on termination.

4. TERMINATION OF AGREEMENT

4.1 If the CLO can no longer perform and execute his/her duties as detailed in this agreement, this agreement will be terminated without prejudice to any rights under this agreement.

5. THE CONDITIONS OF THIS AGREEMENT

5.1 The parties expressly declare that this agreement contains all the conditions negotiated between them, and no condition or stipulation not contained herein shall be binding upon the parties.

6. THUS AGREED AND SIGNED BY THE PARTIES:

Contractor:

Community Liaison officer:

Date:

PART C2 – PRICING DATA

C2.1 PRICING INSTRUCTIONS

- 1.0 The Bills of Quantities form part of and must be read in conjunction with the Specification. The Price Summary is to reflect the total price carried forward from the Bills of Quantities which need to be submitted with the tender documents.
- 2.0 The tender price must be based on the Bills of Quantities. The priced Bills of Quantities shall be submitted with the tender documents.
- 3.0 The completed Bills of Quantities shall detail the unit rate and total amount for material and labour respectively for each Item. Tenderers are advised to check their Item extensions and total additions since no claim for mathematical errors will be considered.

“Material Rate” shall include the supply and delivery of all items of material and equipment (plant) to the site including all incidentals necessary for the completion of each Item, plus the profit thereon. Rates shall be exclusive of VAT.

“Labour Rate” shall include the cost of all labour, both skilled and unskilled, including supervision and profit required to complete the installation of all material covered by each Item. Rates shall be exclusive of VAT.

- 4.0 No alteration, erasure or addition is to be made in the text of the Bills of Quantities. Should any erasure or addition be made it will not be recognised but the original wording of the Bills of Quantities will be adhered to.
- 5.0 The quantities in the Bills are not to be considered as limiting or extending the amount of work to be done and materials to be supplied.
- 6.0 The Engineer will check the completed Bills of Quantities for mathematical errors, omissions and discrepancies in accordance with the Standard Conditions of Tender.
- 7.0 Only major Items have been scheduled but the Tenderer shall nevertheless include for all things he considers necessary whether specified in detail or not to complete the work to specification and in a satisfactory and workmanlike manner, in order to provide a complete and working system. No extra price will be considered for the provision of materials which should have been allowed in order to provide the completed works unless detailed by the Contractor in the space provided elsewhere in the Specification.
- 8.0 Where alternative prices for equipment of different manufacture are offered, the lowest alternative price for equipment to specification must be included, against the relevant Item in the Bills of Quantities. The remaining alternative prices must be furnished separately.

Where such equipment is found not to comply with the Specification, the Contractor will be required to provide equipment which does comply, without adjustment to the price in the Bills of Quantities.

- 9.0 All items in the Bills of Quantities are deemed to include supply, delivery, installation and connection where appropriate, unless specifically stated otherwise. The unit rate must include for all things necessary, whether specified in detail or not, including all components, small installation materials, allowance for off-cuts, wastage etc., erection and fixings to complete the item to Specification in a satisfactory and workmanlike manner, in order to provide a complete and working system.

- 10.0 In certain instances prices are requested for Items which may be required during the progress of the work, but which are not included in the known quantities of material / labour required. These Items are indicated by the designation "R/O" (rate only) in the "Quantity" column and the price is to be noted in the "Rate" columns only and must not be carried forward.
- 11.0 Where no rates are filled-in by the Tenderer, or the rate is indicated as Nil, it will be assumed that there is no charge for the particular item and that the cost thereof has been included in the other rates provided.
- 12.0 The Bills of Quantities shall not be used for ordering purposes. The Contractor shall check and measure the lengths of cables / conductors on site before ordering any of these materials.
- 13.0 The quantities and rates included for Daywork shall form part of the tender price, but Tenderers shall note that this item must be regarded as provisional and will only be payable to the Contractor if and when a written instruction to this effect has been issued.
- 14.0 Expenditure in connection with Provisional and Prime Cost Sums and under the Contingency Allowance (if any) shall be solely at the discretion and on the written instruction of the Engineer.
- 15.0 An Excel spreadsheet version of the Bill can be made available to Tenderers on request. The Engineer or the Employer does, however, not take responsibility for any arithmetical or other errors that may occur due to the use of the spreadsheet. The original wording and quantities of the Bills included in the tender document will be adhered to.

BILL 1: PHASES 1 TO 4: PRELIMINARY AND GENERAL ITEMS

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
(i)	<u>Notes:</u> All rates must be exclusive of VAT.						
1.0	<u>Fixed Charge Items</u>						
1.1	Contractual requirements (Provision of 10% Performance Bond, Insurance of Works, etc.	Sum	1	R.....	R.....	R.....	R.....
1.2	Establish facilities on site:						
1.2.1	Office and storage sheds.	Sum	1	R.....	R.....	R.....	R.....
1.2.2	Workshops.	Sum	1	R.....	R.....	R.....	R.....
1.2.3	Ablutions and latrines.	Sum	1	R.....	R.....	R.....	R.....
1.2.4	Tools and equipment	Sum	1	R.....	R.....	R.....	R.....
1.2.5	Water supply, electrical power, telephone and access.	Sum	1	R.....	R.....	R.....	R.....
1.3	Remove site establishment upon completion of contract.	Sum	1	R.....	R.....	R.....	R.....
1.4	Allowances:						
1.4.1	For the preparation and submission of a construction programme to the Engineer as required in the documents.	Sum	1	R.....	R.....	R.....	R.....
1.4.2	For the submission of construction drawings to the Engineer for approval as required in the documents.	Sum	1	R.....	R.....	R.....	R.....
1.4.3	For three sets of electronic and hard copies of "As-built" drawings, test certificates to be submitted to Engineer on hand-over.	Sum	1	R.....	R.....	R.....	R.....
1.4.4	For testing, inspection and commissioning.	Sum	1	R.....	R.....	R.....	R.....
1.4.5	Project notice board.	Sum	1	R.....	R.....	R.....	R.....
1.4.6	For compliance with the requirements of the Occupational Health and Safety Act construction regulations.	Sum	1	R.....	R.....	R.....	R.....
1.4.7	Liaison and co-ordination with Langeberg Municipality.	Sum	1	R.....	R.....	R.....	R.....
2.0	<u>Time Related Items:</u>						
2.1	Contractual requirements, i.e. insurances, etc.	Sum	1	R.....	R.....	R.....	R.....
2.2	Accommodation and / or living out expenses for the duration of the contract.	Sum	1	R.....	R.....	R.....	R.....
2.3	Travelling charges for the duration of the contract.	Sum	1	R.....	R.....	R.....	R.....
2.4	Supervision and provision of facilities and attendance of site meetings.	Sum	1	R.....	R.....	R.....	R.....
2.5	Operate and maintain facilities on site:						
2.5.1	Office and storage sheds.	Sum	1	R.....	R.....	R.....	R.....
2.5.2	Workshops.	Sum	1	R.....	R.....	R.....	R.....
2.5.3	Ablutions and latrines.	Sum	1	R.....	R.....	R.....	R.....
2.5.4	Tools and equipment	Sum	1	R.....	R.....	R.....	R.....
2.5.5	Water supply, electrical power, telephone and access.	Sum	1	R.....	R.....	R.....	R.....
2.6	Allowances:						
2.6.1	Liaison and co-ordination with Langeberg Municipality.	Sum	1	R.....	R.....	R.....	R.....
2.6.2	For maintenance as required.	Sum	1	R.....	R.....	R.....	R.....

BILL 1: PHASES 1 TO 4: PRELIMINARY AND GENERAL ITEMS

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
3.0	Daywork The following rates are for variations to the contract, as directed by the Engineer, and are for work not covered by rates in the schedules. The total cost will be adjusted in the final account in accordance with the variation orders issued.						
3.1	Labour, Normal Time:						
3.1.1	Installation Electrician and Labourer	hour	1	R.....	R.....	R.....	R.....
3.1.2	Artisan Electrician and Labourer	hour	2	R.....	R.....	R.....	R.....
3.1.3	Labourer	hour	10	R.....	R.....	R.....	R.....
3.2	Labour, Normal Overtime:						
3.2.1	Installation Electrician and Labourer	hour	1	R.....	R.....	R.....	R.....
3.2.2	Artisan Electrician and Labourer	hour	2	R.....	R.....	R.....	R.....
3.2.3	Labourer	hour	10	R.....	R.....	R.....	R.....
3.3	Labour, Sundays and Public Holidays:						
3.3.1	Installation Electrician and Labourer	hour	1	R.....	R.....	R.....	R.....
3.3.2	Artisan Electrician and Labourer	hour	2	R.....	R.....	R.....	R.....
3.3.3	Labourer	hour	10	R.....	R.....	R.....	R.....
3.4	Materials:						
3.4.1	Percentage mark-up on nett cost of materials.	%	.....				
3.5	Transport:						
3.5.1	Private car or light delivery vehicle.	km	10	R.....	R.....	R.....	R.....
3.5.2	10 tonne truck	km	10	R.....	R.....	R.....	R.....
3.5.3	15 tonne truck with crane	km	10	R.....	R.....	R.....	R.....
3.5.4	5 tonne mobile crane	hour	2	R.....	R.....	R.....	R.....
4.0	Lump sum allowance for any items not included in this schedule necessary to complete the installation in accordance with the specification and drawings. Brief description of such items to be entered hereunder.	Sum	1	R.....	R.....	R.....	R.....
	TOTAL BILL 1 TO BE CARRIED FORWARD TO PRICE SUMMARY, ITEM 1				R.....		R.....

BILL 2: PHASES 1 TO 4: MV (11kV) RETICULATION

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
	<u>Notes:</u> (i) All rates must be exclusive of VAT. (ii) Refer to Drawing No.'s 10600/E/01 to 10. (iii) All items to include for the supply and delivery thereof, unless specified otherwise. (iv) All quantities are provisional. (v) HD-Hard Drawn, Cu-Copper, Al-Aluminium, R/O-rate only.						
1.0	Peg MV pole positions on site in conjunction with the Engineer.	Sum	1	R.....	R.....	R.....	R.....
2.0	Excavation, backfilling and compaction of hole (1800mm deep) for MV pole and stay in intermediate soil:						
2.1	Soft	No.	4	R.....	R.....	R.....	R.....
2.2	Intermediate	No.	12	R.....	R.....	R.....	R.....
2.3	Rock	No.	1	R.....	R.....	R.....	R.....
3.0	11m Tarred wooden pole as specified drilled for hardware, excluding hardware and pole hole measured elsewhere:						
3.1	(Pole top 200mm to 220mm)	No.	3	R.....	R.....	R.....	R.....
3.2	(Pole top 160mm to 180mm)	No.	8	R.....	R.....	R.....	R.....
4.0	Single stay for 11m pole complete with insulator (11kV), excluding stay hole and guard measured elsewhere.	No.	6	R.....	R.....	R.....	R.....
5.0	Stay guard fixed to stay wire.	No.	6	R.....	R.....	R.....	R.....
6.0	Right Angle Strain A-frame complete with fixing bolts, nuts, washers, etc., excluding insulators measured elsewhere.	No.	3	R.....	R.....	R.....	R.....
7.0	Intermediate A-frame complete with fixing bolts, nuts, washers, etc. excluding insulators measured elsewhere.	No.	8	R.....	R.....	R.....	R.....
8.0	Galvanised steel cross-arm for use with "A" frame at Tee-Offs and right angle turns, as detailed on Drawing No.'s 10600/E/01 and 10600/E/ 05 and 06, incl. 16mm ² Cu earth bonding to A-frame.	No.	2	R.....	R.....	R.....	R.....
9.0	<u>Set of three</u> strain insulators complete with thimble clevis, pins, etc.	Sets	5	R.....	R.....	R.....	R.....
10.0	<u>Set of three</u> linepost insulators complete with bolts, nuts, washers, etc.	No.	9	R.....	R.....	R.....	R.....
11.0	Hare (6/1/4,72) ACSR conductor suspended between poles.	m	1060	R.....	R.....	R.....	R.....
12.0	Hare (6/1/4,72) ACSR Jumpers , <u>set of three</u> , between overhead lines (1,5m long) , incl line taps and connections (See Drawing No. 10600/E/05).	No.	2	R.....	R.....	R.....	R.....
13.0	Terminate and connect Hare (6/1/4,72) ACSR conductor at strain insulators using "Preformed" dead ends (set of three).	No.	5	R.....	R.....	R.....	R.....
14.0	Bind in Hare (6/1/4,72) ACSR conductor at line post insulators using "Preformed" twin-ties (set of three).	Set	8	R.....	R.....	R.....	R.....

BILL 2: PHASES 1 TO 4: MV (11kV) RETICULATION

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
15.0	Recover the following material / equipment and return to Municipal Stores:						
15.1	Disconnect Hare (6/1/4,72) ACSR overhead conductor at:						
15.1.1	MV strain insulators (set of three).	No.	1	Nil	Nil	R.....	R.....
15.1.2	MV intermediate insulators (set of three).	No.	2	Nil	Nil	R.....	R.....
15.2	Hare (6/1/4,72) ACSR overhead conductor.	m	400	Nil	Nil	R.....	R.....
15.3	Strain insulators (set of three).	No.	1	Nil	Nil	R.....	R.....
15.4	Pin insulators (set of three).	No.	2	Nil	Nil	R.....	R.....
15.5	11m Pole, incl. hole.	No.	1	Nil	Nil	R.....	R.....
16.0	Extra over Item No. 2.0 for:						
16.1	Imported bedding/backfill material from off-site source.	m³	5	R.....	R.....	R.....	R.....
16.2	Disposal of surplus or unsuitable material including haulage up to 10km from site.	m³	5	Nil	Nil	R.....	R.....
TOTAL BILL 2 TO BE CARRIED FORWARD TO PRICE SUMMARY, ITEM 2					R.....		R.....

BILL 3: PHASES 1 TO 4: POLE MOUNTED TRANSFORMER SUBSTATIONS

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
	<u>Notes:</u> (i) All rates must be exclusive of VAT. (ii) Refer to Drawing No. 10600/E/01,11 to 14. (iii) All items to include for the supply and delivery thereof, unless specified otherwise. (iv) All quantities are provisional. (v) HD-Hard Drawn, Cu-Copper, Al-Aluminium, R/O-rate only.						
1.0	Mark out pole mounted transformer substations and assist Engineer to finalise this.	Item	3	R.....	R.....	R.....	R.....
2.0	Excavating, backfilling and compaction of hole for PMT structures:						
2.1	Soft	No.	3	R.....	R.....	R.....	R.....
2.2	Intermediate	No.	5	R.....	R.....	R.....	R.....
2.3	Rock	No.	1	R.....	R.....	R.....	R.....
3.0	10 metre tarred wooden (200mm dia. Top) pole as specified drilled for hardware, excluding hardware and pole hole measured elsewhere.	No.	9	R.....	R.....	R.....	R.....
4.0	Concrete foot 600mm x 600mm x 200mm deep in hole for pole measured elsewhere.	No.	9	R.....	R.....	R.....	R.....
5.0	Steelwork complete with bolts, nuts, washers, etc. to support expulsion fuses, Pin Insulators, Main LV Distribution Board and transformer complete as detailed on the drawings measured elsewhere.	No.	3	R.....	R.....	R.....	R.....
6.0	Set of three (3) lightning arrestors (11kV) mounted on transformer substation.	No.	3	R.....	R.....	R.....	R.....
7.0	Set of three (3) MV (11kV) expulsion fuses and fuse elements mounted on steelwork measured elsewhere.	No.	3	R.....	R.....	R.....	R.....
8.0	Hare (6/1/4,72) ACSR conductor jumpers between overhead line, expulsion fuses, transformer bushings and lightning arrestors, incl line taps and connections. (set of three):	No.	3	R.....	R.....	R.....	R.....
9.0	500kVA 11000/420V Pole Mounted Transformer Substation, supplied by the Municipality as a free-issue item, on steelwork support structure measured elsewhere. <u>Material rate to only include the handling fee on the transformer substation. Transformer to be collected at the municipal stores in Robertson.</u>	No.	3	R.....	R.....	R.....	R.....
10.0	LV Distribution Board complete as specified on steel support structure measured elsewhere:						
10.1	PMT Boekenhoutskloof No.1	No.	1	R.....	R.....	R.....	R.....
10.2	PMT Boekenhoutskloof No.2	No.	1	R.....	R.....	R.....	R.....
10.3	PMT Boekenhoutskloof No.3	No.	1	R.....	R.....	R.....	R.....
11.0	70mm ² Cu black PVC insulated conductor, clamps, 4m long kicker pipe, 1.8m long earth spike, cable markers, etc. to earth MV equipment and PMT as detailed on the drawings.	No.	3	R.....	R.....	R.....	R.....
12.0	70mm ² Cu black PVC insulated conductor, clamps, 4m long kicker pipe, 1.8m long earth spike, cable markers, etc. to earth LV equipment as detailed on the drawings.	No.	3	R.....	R.....	R.....	R.....

BILL 3: PHASES 1 TO 4: POLE MOUNTED TRANSFORMER SUBSTATIONS

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
13.0	70mm ² Cu bare conductor, clamps, etc. to earth steelwork as detailed on the drawings.	No.	3	R.....	R.....	R.....	R.....
14.0	Barbed wire anti-climb device and danger notice on pole supporting PMT.	No.	12	R.....	R.....	R.....	R.....
15.0	3 x 95mm ² Cu x 4 core LV PVCAS cables strapped to pole in PVC pipes as detailed on the drawings.	m	15	R.....	R.....	R.....	R.....
16.0	Terminate and connect 3 x 95mm ² Cu x 4 core LV PVCAS cables at LV bushings of PMT.	No.	3	R.....	R.....	R.....	R.....
17.0	Terminate and connect 3 x 95mm ² Cu x 4 core LV PVCAS cables at LV distribution board incl. gland and lugs.	No.	3	R.....	R.....	R.....	R.....
18.0	Padlocks	No.	6	R.....	R.....	R.....	R.....
19.0	Labelling of cables.	No.	1	R.....	R.....	R.....	R.....
20.0	Recover the following material / equipment and return to Municipal Stores:						
20.1	315kVA Pole Mounted Transformer	No.	1	Nil	Nil	R.....	R.....
20.2	LV distribution board complete.	No.	1	Nil	Nil	R.....	R.....
20.3	Set of three expulsion fuses, incl. set of three jumpers between the overhead line and transformer.	No.	1	Nil	Nil	R.....	R.....
20.4	Set of three pin insulators.	No.	1	Nil	Nil	R.....	R.....
20.5	LV cable / ABC conductor strap to pole (all sizes).	m	20	Nil	Nil	R.....	R.....
20.6	Steelwork which supported the PMT, strain insulators, pin insulators, expulsion fuses and LV distribution board.	Item	1	Nil	Nil	R.....	R.....
20.7	11m Poles, incl. holes.	No.	3	Nil	Nil	R.....	R.....
20.8	Stays, incl. holes	No.	3	Nil	Nil	R.....	R.....
21.0	Extra-over for item 2.0:						
21.1	Imported backfill	m ³	5	R.....	R.....	R.....	R.....
21.2	Disposal of unsuitable material.	m ³	5	Nil	Nil	R.....	R.....
TOTAL BILL 3 TO BE CARRIED FORWARD TO PRICE SUMMARY, ITEM 3					R.....		R.....

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
(i)	<u>Notes:</u> All rates must be exclusive of VAT.						
(ii)	Refer to Drawing No. 10600/E/01, 18 to 22.						
(iii)	All items to include for the supply and delivery thereof, unless specified otherwise.						
(iv)	All quantities are provisional.						
(v)	HD-Hard Drawn, Cu-Copper, Al-Aluminium, R/O-rate only.						
	<u>LV Reticulation:</u>						
1.0	Mark out LV overhead line / underground cable routes, pole positions and assist Engineer to finalise these.	Sum	1	R.....	R.....	R.....	R.....
2.0	Excavating, backfilling and compaction of hole for pole, single stay, flying stay or prop structure:						
2.1	Soft	No.	37	R.....	R.....	R.....	R.....
2.2	Intermediate	No.	88	R.....	R.....	R.....	R.....
2.3	Rock	No.	1	Nil	Nil	R.....	R.....
3.0	Trenching by hand in parallel with and crossing existing services for new LV cable 400mm wide x 700mm deep on the pavement / erf including backfilling (300mm imported sand) and compaction:						
3.1	Soft	m	5	R.....	R.....	R.....	R.....
3.2	Intermediate	m	5	R.....	R.....	R.....	R.....
3.3	Rock	m	1	R.....	R.....	R.....	R.....
4.0	9m Tarred wooden pole with pole cap and drilled for hardware, excluding hardware and pole hole measured elsewhere.	No.	89	R.....	R.....	R.....	R.....
5.0	Single stay complete with insulator, excluding stay hole and guard measured elsewhere.	No.	28	R.....	R.....	R.....	R.....
6.0	Short stay (20° instead of 45°) complete with insulator, excluding stay hole and guard measured elsewhere.	No.	R/O	R.....	Nil	R.....	Nil
7.0	Prop structure complete with danger notice and barbed wire, excluding hole measured elsewhere.	No.	8	R.....	R.....	R.....	R.....
8.0	Stay guard fixed to stay wire.	No.	28	R.....	R.....	R.....	R.....
9.0	LV bundled conductor suspended between poles. Pole and clamps measured						
9.1	54,6mm²	m	R/O	R.....	Nil	R.....	Nil
9.2	3 x 95mm² Al + 1 x 25mm² Al + 1 x 54,6mm²	m	2800	R.....	R.....	R.....	R.....
9.3	3 x 70mm² Al + 1 x 25mm² Al + 1 x 54,6mm²	m	R/O	R.....	Nil	R.....	Nil
9.4	3 x 50mm² Al + 1 x 25mm² Al + 1 x 54,6mm²	m	R/O	R.....	Nil	R.....	Nil
9.5	3 x 35mm² Al + 1 x 25mm² Al + 1 x 54,6mm²	m	R/O	R.....	Nil	R.....	Nil
10.0	4 Core LV PVCAS cable, unless shown otherwise, in trench measured elsewhere:						
10.1	95mm² Al	m	10	R.....	R.....	R.....	R.....
10.2	70mm² Al	m	10	R.....	R.....	R.....	R.....
10.3	50mm² Al	m	10	R.....	R.....	R.....	R.....
10.4	35mm² Al	m	10	R.....	R.....	R.....	R.....
10.5	25mm² Al	m	10	R.....	R.....	R.....	R.....
10.6	6mm² Cu x 3 core	m	10	R.....	R.....	R.....	R.....

BILL 4: PHASES 1 TO 4: LV RETICULATION

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
11.0	Strain clamp for LV bundled conductor including pigtail bolt, eye bolt, nuts, washers, etc.	No.	114	R.....	R.....	R.....	R.....
12.0	Suspension clamp for LV bundled conductor including pigtail bolt, nuts, washers, etc.	No.	41	R.....	R.....	R.....	R.....
13.0	Strap and seal end of 3 x (95mm ² to 35mm ²) Al + 1 x 25mm ² Al + 1 x 54,6mm ² LV bundled conductor at terminal pole.	No.	24	R.....	R.....	R.....	R.....
14.0	35mm ² Cu black PVC insulated earth down conductor, including clamps, lugs, straps, etc. connect to earth spike at LV bundled conductor neutral earth pole using 2 insulation piercing connectors (CNE system as per the Standard Technical Specification).	No.	19	R.....	R.....	R.....	R.....
15.0	4m Long 25mm diameter kickpipe to protect earth down conductor against pole.	No.	19	R.....	R.....	R.....	R.....
16.0	4,5meter long (3x 1,5m) earth spike, including cable marker at neutral earth pole.	No.	19	R.....	R.....	R.....	R.....
17.0	Connect one ABC LV bundled conductor to another using insulation piercing connectors. 2 Insulation piercing connectors shall be used on neutral connection:						
17.1	3 x 120mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
17.2	3 x 95mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	3	R.....	R.....	R.....	R.....
17.3	3 x 70mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
17.4	3 x 50mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
17.5	3 x 35mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
18.0	4m Galvanised steel kickpipe strapped to pole for 4 core LV PVCAS cable, unless shown otherwise, incl. stainless steel straps:						
18.1	95mm ² Al	No.	1	R.....	R.....	R.....	R.....
18.2	70mm ² Al	No.	1	R.....	R.....	R.....	R.....
18.3	50mm ² Al	No.	1	R.....	R.....	R.....	R.....
18.4	35mm ² Al	No.	1	R.....	R.....	R.....	R.....
18.5	25mm ² Al	No.	1	R.....	R.....	R.....	R.....
18.6	6mm ² Cu x 3 core	No.	1	R.....	R.....	R.....	R.....
19.0	4 Core LV PVCAS, unless shown otherwise, strapped to pole incl. stainless steel straps: (Pole measured elsewhere)						
19.1	95mm ² Al	m	10	R.....	R.....	R.....	R.....
19.2	70mm ² Al	m	10	R.....	R.....	R.....	R.....
19.3	50mm ² Al	m	10	R.....	R.....	R.....	R.....
19.4	35mm ² Al	m	10	R.....	R.....	R.....	R.....
19.5	25mm ² Al	m	10	R.....	R.....	R.....	R.....
19.6	6mm ² Cu x 3 core	m	10	R.....	R.....	R.....	R.....
20.0	Through-joint in 4 core LV PVCAS, unless shown otherwise, cable:						
20.1	95mm ² Al	No.	1	R.....	R.....	R.....	R.....
20.2	70mm ² Al	No.	1	R.....	R.....	R.....	R.....
20.3	50mm ² Al	No.	1	R.....	R.....	R.....	R.....
20.4	35mm ² Al	No.	1	R.....	R.....	R.....	R.....
20.5	25mm ² Al	No.	1	R.....	R.....	R.....	R.....
20.6	6mm ² Cu x 3 core	No.	1	R.....	R.....	R.....	R.....

BILL 4: PHASES 1 TO 4: LV RETICULATION

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
21.0	Terminate and connect 4 core LV PVCAS cable, unless shown otherwise, to LV ABC overhead conductor on pole, incl. piercing connectors. 2 Insulation piercing connectors shall be used on neutral connection:						
21.1	95mm ² Al	No.	1	R.....	R.....	R.....	R.....
21.2	70mm ² Al	No.	1	R.....	R.....	R.....	R.....
21.3	50mm ² Al	No.	1	R.....	R.....	R.....	R.....
21.4	35mm ² Al	No.	1	R.....	R.....	R.....	R.....
21.5	25mm ² Al	No.	1	R.....	R.....	R.....	R.....
21.6	6mm ² Cu x 3 core	No.	1	R.....	R.....	R.....	R.....
22.0	Terminate and connect 4 core LV PVCAS cable, unless shown otherwise, to LV ABC overhead conductor on pole, incl. crimping lugs:						
22.1	95mm ² Al	No.	1	R.....	R.....	R.....	R.....
22.2	70mm ² Al	No.	1	R.....	R.....	R.....	R.....
22.3	50mm ² Al	No.	1	R.....	R.....	R.....	R.....
22.4	35mm ² Al	No.	1	R.....	R.....	R.....	R.....
22.5	25mm ² Al	No.	1	R.....	R.....	R.....	R.....
22.6	6mm ² Cu x 3 core	No.	1	R.....	R.....	R.....	R.....
23.0	Terminate and connect ABC LV bundled conductor to LV distribution board on pole incl. compression glands and lugs:						
23.1	3 x 120mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
23.2	3 x 95mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	11	R.....	R.....	R.....	R.....
23.3	3 x 70mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
23.4	3 x 35mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
23.5	3 x 25mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
24.0	300mm Wide micron PVC marker tape over cable in trench measured elsewhere.	m	10	R.....	R.....	R.....	R.....
25.0	Recover the following material / equipment and return to Municipal Stores:						
25.1	ABC conductor (all sizes), incl the disconnection of the ABC conductor from the strain and intermediate insulators.	m	1050	Nil	Nil	R.....	R.....
25.2	Strain clamp	No.	30	Nil	Nil	R.....	R.....
25.3	Suspension clamp.	No.	15	Nil	Nil	R.....	R.....
25.4	LV four core cable from pole. (all sizes)	m	10	Nil	Nil	R.....	R.....
25.5	Earth down Conductor.	m	100	Nil	Nil	R.....	R.....
25.6	Stays, incl. hole.	No.	10	Nil	Nil	R.....	R.....
25.7	Flying stays, incl. holes for pole and stay.	No.	1	Nil	Nil	R.....	R.....
25.7	Strut Pole, incl. hole	No.	8	Nil	Nil	R.....	R.....
25.8	9m Pole, incl hole.	No.	25	Nil	Nil	R.....	R.....
25.9	LV pole mounted consumer box complete, incl the disconnection of the box from the ABC conductor.	No.	22	Nil	Nil	R.....	R.....
26.0	Extra over Item No.'s 2.0 and 3.0 for:						
26.1	Imported bedding/backfill material from off-site source.	m ³	1	R.....	R.....	R.....	R.....
26.2	Disposal of surplus or unsuitable material including haulage up to 10km from site	m ³	1	Nil	Nil	R.....	R.....
	TOTAL BILL 4 TO BE CARRIED FORWARD TO PRICE SUMMARY, ITEM 4				R.....		R.....

BILL 5: PHASES 1 TO 4: SERVICE CONNECTIONS

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
	<u>Notes:</u> (i) All rates must be exclusive of VAT. (ii) Refer to Drawing No's 10600/E/01, 20 to 23. (iii) All items to include for the supply and delivery thereof, unless specified otherwise. (iv) All quantities are provisional. (v) HD-Hard Drawn, Cu-copper, Al-Aluminium, R/O-rate only, CSCB-Consumer Service Connection Box.						
1.0	Mark out LV overhead line routes, pole positions and assist Engineer to finalise these.	Sum	1	R.....	R.....	R.....	R.....
2.0	Excavating, backfilling and compaction of hole for pole 1500mm deep:						
2.1	Soft	m	16	R.....	R.....	R.....	R.....
2.2	Intermediate	m	40	R.....	R.....	R.....	R.....
2.3	Rock	m	1	R.....	R.....	R.....	R.....
3.0	Excavating, backfilling and compaction of hole for pole 1000mm deep:						
3.1	Soft	m	5	R.....	R.....	R.....	R.....
3.2	Intermediate	m	14	R.....	R.....	R.....	R.....
3.3	Rock	m	1	R.....	R.....	R.....	R.....
4.0	Tarred wooden pole with pole cap and drilled for hardware, excluding hardware and pole hole measured elsewhere:						
4.1	9m Complete as specified.	No.	57	R.....	R.....	R.....	R.....
4.2	5m Complete as specified.	No.	20	R.....	R.....	R.....	R.....
5.0	CSCB strapped to pole complete with neutral & earth bars, 4 x surge arrestors, CB labels, 16mm ² Cu black PVC insulated bridge between bars, internal wiring and tails to be connected to the ABC / bare overhead line, but excl. MCB's and IPC connectors / PG Clamps: <i>Meters measured elsewhere:</i>						
5.1	12 way	No.	22	R.....	R.....	R.....	R.....
5.2	6 Way	No.	54	R.....	R.....	R.....	R.....
6.0	OD IPC connectors to connect tails from consumer service connection box to ABC Conductor:						
6.1	Single IPC connectors (Phases)	No.	216	R.....	R.....	R.....	R.....
6.2	Double IPC Connectors (Neutral & Earth)	No.	144	R.....	R.....	R.....	R.....
7.0	50A single pole, slow curve (orange handle) circuit breaker, incl. din rail, mounted inside CSCB including connections.	No.	395	R.....	R.....	R.....	R.....
8.0	Pigtail screw fixed to pole / wooden beam at house.	No.	729	R.....	R.....	R.....	R.....
9.0	Strain clamp for 10mm ² Cu Airdac conductor, incl. pigtail bolt, at pole/house.	No.	1128	R.....	R.....	R.....	R.....
10.0	10mm ² Cu Airdac cable suspended between poles.	m	7162	R.....	R.....	R.....	R.....
11.0	Terminate and connect 10mm ² Cu Airdac cable at CSCB measured elsewhere, including UV stable compression gland.	No.	395	R.....	R.....	R.....	R.....
12.0	Recover the following material / equipment and return to Municipal Stores:						
12.1	10mm ² Cu Airdac, incl the disconnection of the Airdac conductor from the strain clamps.	m	2400	R.....	R.....	R.....	R.....

[illegible]

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
	<u>Notes:</u> (i) All rates must be exclusive of VAT. (ii) Refer to Drawing No's 10600/E/1, 29 and 30. (iii) All items to include for the supply and delivery thereof, unless specified otherwise. (iv) All quantities are provisional. (v) HD-Hard Drawn, Cu-copper, Al-Aluminium, R/O-rate only.						
1.0	4mm² Airdac II cable (approx. 1,5 metres long) between streetlight luminaire and bundled conductor fixed to pole and incl. termination with piercing connectors, etc to bundled conductor.	No.	77	R.....	R.....	R.....	R.....
2.0	LED streetlight luminaire complete as specified excl. bracket measured elsewhere.	No.	77	R.....	R.....	R.....	R.....
3.0	Galvanised steel bracket for streetlight luminaire incl. fixing bolts.	No.	77	R.....	R.....	R.....	R.....
4.0	Terminate and connect 4mm² Airdac II cable to streetlight luminaire.	No.	77	R.....	R.....	R.....	R.....
5.0	Terminate and connect 4mm² Airdac II to bundled conductor incl. piercing connectors, etc.	No.	77	R.....	R.....	R.....	R.....
TOTAL BILL 7 TO BE CARRIED FORWARD TO PRICE SUMMARY, ITEM 7							
					R.....		R.....

PRICE SUMMARY - PHASES 1 TO 4

ITEM	DESCRIPTION	MATERIAL	LABOUR
1.0	BILL 1: PHASES 1 TO 4: PRELIMINARY AND GENERAL ITEMS	R	R
2.0	BILL 2: PHASES 1 TO 4: MV (11kV) RETICULATION	R	R
3.0	BILL 3: PHASES 1 TO 4: POLE MOUNTED TRANSFORMER SUBSTATIONS	R	R
4.0	BILL 4: PHASES 1 TO 4: LV RETICULATION	R	R
5.0	BILL 5: PHASES 1 TO 4: SERVICE CONNECTIONS	R	R
6.0	BILL 6: PHASES 1 TO 4: INSTALLATION INSIDE HOUSES	R	R
7.0	BILL 7: PHASES 1 TO 4: STREETLIGHTING INSTALLATION	R	R
8.0	SUB-TOTALS	R	R
9.0	TOTAL MATERIAL AND LABOUR		R
10.0	CONTINGENCY SUM:		R 300 000,00
10.1	Contractor's mark-up on Contingency Sum =%		R
11.0	PROVISIONAL SUM		
11.1	Extension of LV cables to existing high mast lights.		R 30 000,00
11.2	Contractor's mark-up on Item 11.1 =%		R
11.3	Allowance for temporary employment of CLO.		R 70 000,00
12.0	NETT TENDER AMOUNT, EXCLUDING VAT, TO BE CARRIED FORWARD TO PRICE SUMMARY PHASES 1 TO 4 ON PAGE C2.2.25.		R

BILL 8: PHASES 5 AND 6: PRELIMINARY AND GENERAL ITEMS

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
(i)	<u>Notes:</u> All rates must be exclusive of VAT.						
1.0	<u>Fixed Charge Items</u>						
1.1	Contractual requirements (Provision of 10% Performance Bond, Insurance of Works, etc.	Sum	1	R.....	R.....	R.....	R.....
1.2	Establish facilities on site:						
1.2.1	Office and storage sheds.	Sum	1	R.....	R.....	R.....	R.....
1.2.2	Workshops.	Sum	1	R.....	R.....	R.....	R.....
1.2.3	Ablutions and latrines.	Sum	1	R.....	R.....	R.....	R.....
1.2.4	Tools and equipment	Sum	1	R.....	R.....	R.....	R.....
1.2.5	Water supply, electrical power, telephone and access.	Sum	1	R.....	R.....	R.....	R.....
1.3	Remove site establishment upon completion of contract.	Sum	1	R.....	R.....	R.....	R.....
1.4	Allowances:						
1.4.1	For the preparation and submission of a construction programme to the Engineer as required in the documents.	Sum	1	R.....	R.....	R.....	R.....
1.4.2	For the submission of construction drawings to the Engineer for approval as required in the documents.	Sum	1	R.....	R.....	R.....	R.....
1.4.3	For three sets of electronic and hard copies of "As-built" drawings, test certificates to be submitted to Engineer on hand-over.	Sum	1	R.....	R.....	R.....	R.....
1.4.4	For testing, inspection and commissioning.	Sum	1	R.....	R.....	R.....	R.....
1.4.5	Project notice board.	Sum	1	R.....	R.....	R.....	R.....
1.4.6	For compliance with the requirements of the Occupational Health and Safety Act construction regulations.	Sum	1	R.....	R.....	R.....	R.....
1.4.7	Liaison and co-ordination with Langeberg Municipality.	Sum	1	R.....	R.....	R.....	R.....
2.0	<u>Time Related Items:</u>						
2.1	Contractual requirements, i.e. insurances, etc.	Sum	1	R.....	R.....	R.....	R.....
2.2	Accommodation and / or living out expenses for the duration of the contract.	Sum	1	R.....	R.....	R.....	R.....
2.3	Travelling charges for the duration of the contract.	Sum	1	R.....	R.....	R.....	R.....
2.4	Supervision and provision of facilities and attendance of site meetings.	Sum	1	R.....	R.....	R.....	R.....
2.5	Operate and maintain facilities on site:						
2.5.1	Office and storage sheds.	Sum	1	R.....	R.....	R.....	R.....
2.5.2	Workshops.	Sum	1	R.....	R.....	R.....	R.....
2.5.3	Ablutions and latrines.	Sum	1	R.....	R.....	R.....	R.....
2.5.4	Tools and equipment	Sum	1	R.....	R.....	R.....	R.....
2.5.5	Water supply, electrical power, telephone and access.	Sum	1	R.....	R.....	R.....	R.....
2.6	Allowances:						
2.6.1	Liaison and co-ordination with Langeberg Municipality.	Sum	1	R.....	R.....	R.....	R.....
2.6.2	For maintenance as required.	Sum	1	R.....	R.....	R.....	R.....

BILL 8: PHASES 5 AND 6: PRELIMINARY AND GENERAL ITEMS

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
3.0	Daywork The following rates are for variations to the contract, as directed by the Engineer, and are for work not covered by rates in the schedules. The total cost will be adjusted in the final account in accordance with the variation orders issued.						
3.1	Labour, Normal Time:						
3.1.1	Installation Electrician and Labourer	hour	1	R.....	R.....	R.....	R.....
3.1.2	Artisan Electrician and Labourer	hour	2	R.....	R.....	R.....	R.....
3.1.3	Labourer	hour	10	R.....	R.....	R.....	R.....
3.2	Labour, Normal Overtime:						
3.2.1	Installation Electrician and Labourer	hour	1	R.....	R.....	R.....	R.....
3.2.2	Artisan Electrician and Labourer	hour	2	R.....	R.....	R.....	R.....
3.2.3	Labourer	hour	10	R.....	R.....	R.....	R.....
3.3	Labour, Sundays and Public Holidays:						
3.3.1	Installation Electrician and Labourer	hour	1	R.....	R.....	R.....	R.....
3.3.2	Artisan Electrician and Labourer	hour	2	R.....	R.....	R.....	R.....
3.3.3	Labourer	hour	10	R.....	R.....	R.....	R.....
3.4	Materials:						
3.4.1	Percentage mark-up on nett cost of materials.	%	.....				
3.5	Transport:						
3.5.1	Private car or light delivery vehicle.	km	10	R.....	R.....	R.....	R.....
3.5.2	10 tonne truck	km	10	R.....	R.....	R.....	R.....
3.5.3	15 tonne truck with crane	km	10	R.....	R.....	R.....	R.....
3.5.4	5 tonne mobile crane	hour	2	R.....	R.....	R.....	R.....
4.0	Lump sum allowance for any items not included in this schedule necessary to complete the installation in accordance with the specification and drawings. Brief description of such items to be entered hereunder.	Sum	1	R.....	R.....	R.....	R.....
	TOTAL BILL 8 TO BE CARRIED FORWARD TO PRICE SUMMARY, ITEM 1				R.....		R.....

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
(i)	<u>Notes:</u>						
(ii)	All rates must be exclusive of VAT.						
(iii)	Refer to Drawing No. 10600/E/01, 18 to 23.						
(iv)	All items to include for the supply and delivery thereof, unless specified otherwise.						
(v)	All quantities are provisional.						
	HD-Hard Drawn, Cu-Copper, Al-Aluminium, R/O-rate only.						
	<u>LV Reticulation:</u>						
1.0	Mark out LV overhead line / underground cable routes, pole positions and assist Engineer to finalise these.	Sum	1	R.....	R.....	R.....	R.....
2.0	Excavating, backfilling and compaction of hole for pole, single stay, flying stay or prop structure:						
2.1	Soft	No.	10	R.....	R.....	R.....	R.....
2.2	Intermediate	No.	27	R.....	R.....	R.....	R.....
2.3	Rock	No.	1	R.....	R.....	R.....	R.....
3.0	Trenching by hand in parallel with and crossing existing services for new LV cable 400mm wide x 700mm deep on the pavement / erf including backfilling (300mm imported sand) and compaction.						
3.1	Soft	m	5	R.....	R.....	R.....	R.....
3.2	Intermediate	m	5	R.....	R.....	R.....	R.....
3.3	Rock	m	1	R.....	R.....	R.....	R.....
4.0	9m Tarred wooden pole with pole cap and drilled for hardware, excluding hardware and pole hole measured elsewhere.	No.	27	R.....	R.....	R.....	R.....
5.0	Single stay complete with insulator, excluding stay hole and guard measured elsewhere.	No.	9	R.....	R.....	R.....	R.....
6.0	Short stay (20° instead of 45°) complete with insulator, excluding stay hole and guard measured elsewhere.	No.	R/O	R.....	Nil	R.....	Nil
7.0	Prop structure complete with danger notice and barbed wire, excluding hole measured elsewhere.	No.	2	R.....	R.....	R.....	R.....
8.0	Stay guard fixed to stay wire.	No.	9	R.....	R.....	R.....	R.....
9.0	LV bundled conductor suspended between poles. Pole and clamps measured						
9.1	3 x 120mm² Al + 1 x 25mm² Al + 1 x	m	R/O	R.....	Nil	R.....	Nil
9.2	3 x 95mm² Al + 1 x 25mm² Al + 1 x 54,6mm²	m	895	R.....	R.....	R.....	R.....
9.3	3 x 70mm² Al + 1 x 25mm² Al + 1 x 54,6mm²	m	R/O	R.....	Nil	R.....	Nil
9.4	3 x 50mm² Al + 1 x 25mm² Al + 1 x 54,6mm²	m	R/O	R.....	Nil	R.....	Nil
9.5	3 x 35mm² Al + 1 x 25mm² Al + 1 x 54,6mm²	m	R/O	R.....	Nil	R.....	Nil
10.0	4 Core LV PVCAS cable, unless shown otherwise, in trench measured elsewhere:						
10.1	95mm² Al	m	10	R.....	R.....	R.....	R.....
10.2	70mm² Al	m	10	R.....	R.....	R.....	R.....
10.3	50mm² Al	m	10	R.....	R.....	R.....	R.....
10.4	35mm² Al	m	10	R.....	R.....	R.....	R.....
10.5	25mm² Al	m	10	R.....	R.....	R.....	R.....
10.6	6mm² Cu x 3 core	m	10	R.....	R.....	R.....	R.....

BILL 9: PHASES 5 AND 6: LV RETICULATION

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
11.0	Strain clamp for LV bundled conductor including pigtail bolt, eye bolt, nuts, washers, etc.	No.	32	R.....	R.....	R.....	R.....
12.0	Suspension clamp for LV bundled conductor including pigtail bolt, nuts, washers, etc.	No.	16	R.....	R.....	R.....	R.....
13.0	Strap and seal end of 3 x (95mm ² to 35mm ²) Al + 1 x 25mm ² Al + 1 x 54,6mm ² LV bundled conductor at terminal pole.	No.	6	R.....	R.....	R.....	R.....
14.0	35mm ² Cu black PVC insulated earth down conductor, including clamps, lugs, straps, etc. connect to earth spike at LV bundled conductor neutral earth pole using 2 insulation piercing connectors (CNE system as per the Standard Technical Specification).	No.	8	R.....	R.....	R.....	R.....
15.0	4m Long 25mm diameter kickerpipes to protect earth down conductor against pole.	No.	8	R.....	R.....	R.....	R.....
16.0	4,5meter long (3x 1,5m) earth spike, including cable marker at neutral earth pole.	No.	8	R.....	R.....	R.....	R.....
17.0	Connect one ABC LV bundled conductor to another using insulation piercing connectors. 2 Insulation piercing connectors shall be used on neutral connection:						
17.1	3 x 120mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
17.2	3 x 95mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
17.3	3 x 70mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
17.4	3 x 50mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
17.5	3 x 35mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
18.0	4m Galvanised steel kickerpipes strapped to pole for 4 core LV PVCAS cable, unless shown otherwise, incl. stainless steel straps:						
18.1	95mm ² Al	No.	1	R.....	R.....	R.....	R.....
18.2	70mm ² Al	No.	1	R.....	R.....	R.....	R.....
18.3	50mm ² Al	No.	1	R.....	R.....	R.....	R.....
18.4	35mm ² Al	No.	1	R.....	R.....	R.....	R.....
18.5	25mm ² Al	No.	1	R.....	R.....	R.....	R.....
18.6	6mm ² Cu x 3 core	No.	1	R.....	R.....	R.....	R.....
19.0	4 Core LV PVCAS, unless shown otherwise, strapped to pole incl. stainless steel straps. (Pole measured elsewhere)						
19.1	95mm ² Al	m	10	R.....	R.....	R.....	R.....
19.2	70mm ² Al	m	10	R.....	R.....	R.....	R.....
19.3	50mm ² Al	m	10	R.....	R.....	R.....	R.....
19.4	35mm ² Al	m	10	R.....	R.....	R.....	R.....
19.5	25mm ² Al	m	10	R.....	R.....	R.....	R.....
19.6	6mm ² Cu x 3 core	m	10	R.....	R.....	R.....	R.....
20.0	Through-joint in 4 core LV PVCAS, unless shown otherwise, cable:						
20.1	95mm ² Al	No.	1	R.....	R.....	R.....	R.....
20.2	70mm ² Al	No.	1	R.....	R.....	R.....	R.....
20.3	50mm ² Al	No.	1	R.....	R.....	R.....	R.....
20.4	35mm ² Al	No.	1	R.....	R.....	R.....	R.....
20.5	25mm ² Al	No.	1	R.....	R.....	R.....	R.....
20.6	6mm ² Cu x 3 core	No.	1	R.....	R.....	R.....	R.....

BILL 9: PHASES 5 AND 6: LV RETICULATION

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
21.0	Terminate and connect 4 core LV PVCAS cable, unless shown otherwise, to LV ABC overhead conductor on pole, incl. piercing connectors. 2 Insulation piercing connectors shall be used on neutral connection:						
21.1	95mm ² Al	No.	1	R.....	R.....	R.....	R.....
21.2	70mm ² Al	No.	1	R.....	R.....	R.....	R.....
21.3	50mm ² Al	No.	1	R.....	R.....	R.....	R.....
21.4	35mm ² Al	No.	1	R.....	R.....	R.....	R.....
21.5	25mm ² Al	No.	1	R.....	R.....	R.....	R.....
21.6	6mm ² Cu x 3 core	No.	1	R.....	R.....	R.....	R.....
22.0	Terminate and connect 4 core LV PVCAS cable, unless shown otherwise, to LV ABC overhead conductor on pole, incl. crimping lugs.						
22.1	95mm ² Al	No.	1	R.....	R.....	R.....	R.....
22.2	70mm ² Al	No.	1	R.....	R.....	R.....	R.....
22.3	50mm ² Al	No.	1	R.....	R.....	R.....	R.....
22.4	35mm ² Al	No.	1	R.....	R.....	R.....	R.....
22.5	25mm ² Al	No.	1	R.....	R.....	R.....	R.....
22.6	6mm ² Cu x 3 core	No.	1	R.....	R.....	R.....	R.....
23.0	Terminate and connect ABC LV bundled conductor to LV distribution board on pole incl. compression glands and lugs:						
23.1	3 x 120mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
23.2	3 x 95mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	5	R.....	R.....	R.....	R.....
23.3	3 x 70mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
23.4	3 x 35mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
23.5	3 x 25mm ² Al + 1 x 25mm ² Al + 1 x 54,6mm ² to another.	No.	R/O	R.....	Nil	R.....	Nil
24.0	300mm Wide micron PVC marker tape over cable in trench measured elsewhere.	m	10	R.....	R.....	R.....	R.....
25.0	Recover the following material / equipment and return to Municipal Stores:						
25.1	ABC conductor (all sizes), incl the disconnection of the ABC conductor from the strain and intermediate insulators.	m	280	Nil	Nil	R.....	R.....
25.2	Strain clamp	No.	10	Nil	Nil	R.....	R.....
25.3	Suspension clamp.	No.	5	Nil	Nil	R.....	R.....
25.4	LV four core cable from pole. (all sizes)	m	10	Nil	Nil	R.....	R.....
25.5	Earth down Conductor.	m	40	Nil	Nil	R.....	R.....
25.6	Stays, incl. hole.	No.	4	Nil	Nil	R.....	R.....
25.7	Strut Pole, incl. hole	No.	3	Nil	Nil	R.....	R.....
25.8	9m Pole, incl hole.	No.	9	Nil	Nil	R.....	R.....
25.9	LV pole mounted consumer box complete, incl the disconnection of the box from the ABC conductor.	No.	8	Nil	Nil	R.....	R.....
26.0	Extra over Item No.'s 2.0 and 3.0 for:						
26.1	Imported bedding/backfill material from off-site source.	m ³	5	R.....	R.....	R.....	R.....
26.2	Disposal of surplus or unsuitable material including haulage up to 10km from site	m ³	5	Nil	Nil	R.....	R.....
	TOTAL BILL 9 TO BE CARRIED FORWARD TO PRICE SUMMARY, ITEM 2				R.....		R.....

BILL 10: PHASES 5 AND 6: SERVICE CONNECTIONS

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
	<u>Notes:</u> (i) All rates must be exclusive of VAT. (ii) Refer to Drawing No's 10600/E/01, 20 to 23. (iii) All items to include for the supply and delivery thereof, unless specified otherwise. (iv) All quantities are provisional. (v) HD-Hard Drawn, Cu-copper, Al-Aluminium, R/O-rate only, CSCB-Consumer Service Connection Box.			R.....	R.....	R.....	R.....
1.0	Mark out LV overhead line routes, pole positions and assist Engineer to finalise these.	Sum	1	R.....	R.....	R.....	R.....
2.0	Excavating, backfilling and compaction of hole for pole 1500mm deep:						
2.1	Soft	m	5	R.....	R.....	R.....	R.....
2.2	Intermediate	m	13	R.....	R.....	R.....	R.....
2.3	Rock	m	1	R.....	R.....	R.....	R.....
3.0	Excavating, backfilling and compaction of hole for pole 1500mm deep:						
3.1	Soft	m	5	R.....	R.....	R.....	R.....
3.2	Intermediate	m	14	R.....	R.....	R.....	R.....
3.3	Rock	m	1	R.....	R.....	R.....	R.....
4.0	Tarred wooden pole with pole cap and drilled for hardware, excluding hardware and pole hole measured elsewhere.						
4.1	9m Complete as specified.	No.	19	R.....	R.....	R.....	R.....
4.2	5m Complete as specified.	No.	20	R.....	R.....	R.....	R.....
5.0	CSCB strapped to pole complete with neutral & earth bars, 4 x surge arrestors, CB labels, 16mm ² Cu black PVC insulated bridge between bars, internal wiring and tails to be connected to the ABC / bare overhead line, but excl. MCB's and IPC connectors / PG Clamps. <i>Meters measured elsewhere.</i>						
5.1	12 way	No.	10	R.....	R.....	R.....	R.....
5.2	6 Way	No.	19	R.....	R.....	R.....	R.....
6.0	OD IPC connectors to connect tails from consumer service connection box to ABC Conductor:						
6.1	Single IPC connectors (Phases)	No.	87	R.....	R.....	R.....	R.....
6.2	Double IPC Connectors (Neutral & Earth)	No.	58	R.....	R.....	R.....	R.....
7.0	50A single pole, slow curve (orange handle) circuit breaker, incl. din rail, mounted inside CSCB including connections.	No.	170	R.....	R.....	R.....	R.....
8.0	Pigtail screw fixed to pole / wooden beam at house.	No.	304	R.....	R.....	R.....	R.....
9.0	Strain clamp for 10mm ² Cu Airdac conductor, incl. pigtail bolt, at pole/house.	No.	474	R.....	R.....	R.....	R.....
10.0	10mm ² Cu Airdac cable suspended between poles.	m	3138	R.....	R.....	R.....	R.....
11.0	Terminate and connect 10mm ² Cu Airdac cable at CSCB measured elsewhere, including UV stable compression gland.	No.	170	R.....	R.....	R.....	R.....
12.0	Recover the following material / equipment and return to Municipal Stores:						
12.1	10mm ² Cu Airdac, incl the disconnection of the Airdac conductor from the strain clamps.	m	800	R.....	R.....	R.....	R.....

BILL 11: PHASES 5 AND 6: INSTALLATION INSIDE HOUSES

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
	<u>Notes:</u> (i) All rates must be exclusive of VAT. (ii) Refer to Drawing No's 10600/E/01, 25 to 28. (iii) All items to include for the supply and delivery thereof, unless specified otherwise. (iv) All quantities are provisional. (v) HD-Hard Drawn, Cu-copper, Al-Aluminium, R/O-rate only.						
1.0	Seal hole with silicon sealant after installation of cable.	No.	170	R.....	R.....	R.....	R.....
2.0	Split prepaid kWh meter, complete as specified. The Measurement and Control Unit (MCU) to be installed inside the CSCB measured elsewhere, and the User Interface Unit (UIU) to be installed adjacent to the Distribution Board inside the house.	No.	170	R.....	R.....	R.....	R.....
3.0	Wooden backing board for small power distribution unit (ready board) and UIU, including fixing bolts/screws etc., complete as specified.	No.	170	R.....	R.....	R.....	R.....
4.0	Small Power Distribution Unit (Ready Board), with bulkhead light fitting, mounted with galvanised self tapping fixing screws on backing board, complete as specified.	No.	170	R.....	R.....	R.....	R.....
5.0	10mm ² Cu Airdac service connection cable fixed to wall including saddles etc.	m	510	R.....	R.....	R.....	R.....
6.0	Terminate and connect 10mm ² Cu Airdac service connection cable to Small Power Distribution Unit.	No.	170	R.....	R.....	R.....	R.....
7.0	Complete municipal application form for pre-payment meter registration, including testing and sealing meter, etc.	No.	170	R.....	R.....	R.....	R.....
8.0	Test and provide certificate of compliance (COC) for house installation.	No.	170	R.....	R.....	R.....	R.....
9.0	Submit application form and copy of COC to Prepayment Service Provider's offices for activation on the vending system.	No.	170	R.....	R.....	R.....	R.....
10.0	Submit original COC to the Municipality with a copy to the Engineer and house owner.	No.	170	R.....	R.....	R.....	R.....
11.0	Recover the following material / equipment and return to Municipal Stores:						
11.1	Small Power Distribution Unit (Ready Board), incl. backing board and meter.	No.	40	Nil	Nil	R.....	R.....
11.2	Airdac cable.	m	200	Nil	Nil	R.....	R.....
TOTAL BILL 11 TO BE CARRIED FORWARD TO PRICE SUMMARY. ITEM 4					R.....		R.....

ITEM	DESCRIPTION	UNIT	QTY	MATERIAL		LABOUR	
				RATE	TOTAL	RATE	TOTAL
	<u>Notes:</u> (i) All rates must be exclusive of VAT. (ii) Refer to Drawing No's 10600/E/1, 29 and 30. (iii) All items to include for the supply and delivery thereof, unless specified otherwise. (iv) All quantities are provisional. (v) HD-Hard Drawn, Cu-copper, Al-Aluminium, R/O-rate only.						
1.0	4mm ² Airdac II cable (approx. 1,5 metres long) between streetlight luminaire and bundled conductor fixed to pole and incl. termination with piercing connectors, etc to bundled conductor.	No.	28	R.....	R.....	R.....	R.....
2.0	LED streetlight luminaire complete as specified excl. bracket measured elsewhere.	No.	28	R.....	R.....	R.....	R.....
3.0	Galvanised steel bracket for streetlight luminaire incl. fixing bolts.	No.	28	R.....	R.....	R.....	R.....
4.0	Terminate and connect 4mm ² Airdac II cable to streetlight luminaire.	No.	28	R.....	R.....	R.....	R.....
5.0	Terminate and connect 4mm ² Airdac II to bundled conductor incl. piercing connectors, etc.	No.	28	R.....	R.....	R.....	R.....
TOTAL BILL12 TO BE CARRIED FORWARD TO PRICE SUMMARY. ITEM 5					R.....		R.....

PRICE SUMMARY - PHASES 5 AND 6

ITEM	DESCRIPTION	MATERIAL	LABOUR
1.0	BILL 8: PHASES 5 AND 6: PRELIMINARY AND GENERAL ITEMS	R.....	R.....
2.0	BILL 9: PHASES 5 AND 6: LV RETICULATION	R.....	R.....
3.0	BILL 10: PHASES 5 AND 6: SERVICE CONNECTIONS	R.....	R.....
4.0	BILL 11: PHASES 5 AND 6: INSTALLATION INSIDE HOUSES	R.....	R.....
5.0	BILL 12: PHASES 5 AND 6: STREETLIGHTING INSTALLATION	R.....	R.....
6.0	SUB-TOTALS	R	R
7.0	TOTAL MATERIAL AND LABOUR		R.....
8.0	CONTINGENCY SUM:		R 140 000,00
8.1	Contractor's mark-up on Contingency Sum =%		R.....
9.0	PROVISIONAL SUM		
9.1	Extension of LV cables to existing high mast lights.		R 20 000,00
9.2	Contractor's mark-up on Item 11.1 =%		R.....
9.3	Escalation		R 330 000,00
9.4	Allowance for temporary employment of CLO.		R 40 000,00
10.0	NETT TENDER AMOUNT, EXCLUDING VAT, TO BE CARRIED FORWARD TO PRICE SUMMARY PHASES 5 AND 6 ON PAGE C2.2.25.		R

TOTAL PRICE SUMMARY - PHASES 1 TO 6

ITEM	DESCRIPTION	MATERIAL AND LABOUR
1.0	PRICE SUMMARY PHASES 1 TO 4	R
2.0	PRICE SUMMARY PHASES 5 AND 6	R
3.0	NETT TENDER AMOUNT, EXCLUDING VAT.	R
4.0	15% VAT	R
5.0	GROSS TENDER AMOUNT, TO BE CARRIED FORWARD TO FORM OF OFFER AND ACCEPTANCE IN PART C1.1 HEREOF.	R

Name of Tenderer:

Signature of Tenderer:

Date:.....

Address:

.....

.....

.....

Tel No:

E-mail No:

PART C3 - SCOPE OF WORK**C3.1 GENERAL PROJECT SPECIFICATION****1.0 GENERAL**

This contract includes the supply, delivery to site, off-loading, storage, installation, commissioning, testing and handing over in full working order of the material and equipment necessary for the electrification of 565 informal houses at Boekenhoutskloof, Bonnievale. The project will be completed over more than one financial year.

The Contractor must allow for all items, whether specified or not, required to complete the installation in a neat and workmanlike manner, according to the true intent of this Document, and the Drawings.

2.0 SITE INFORMATION

All upgrading works will take place in existing residential areas and special care must be taken to ensure the safety of all residents and existing underground services.

The site is located in Bonnievale as indicated on the layout drawing referred to under Annexure A of this document. Access to the site is available from a number of roads as depicted on the locality plan.

3.0 NATURE OF CONTRACT

The conditions of contract will be the General Conditions of Contract for Construction Works, Third Edition, 2015, as amended and described in Part C of this document.

The Contractor must carefully study and understand the entire contents of this document and all annexures, and particularly the Contract Data, Part C1.2 which contains vital information peculiar to this contract.

4.0 AWARD AND LETTING OF CONTRACT

The contract will be let as a Direct Contract with Langeberg Municipality in terms of the Conditions of Contract as set out in this document. On completion, the entire installation will be taken-over by and become the property of Langeberg Municipality.

The Employer reserves the right to accept the tender as set out in the document, thus accepting the "Tender Sum" as included in the Price Summary, or enter into a reduced / increased scope of works to be determined by the Client and Engineer at a later stage.

The Bills of Quantities for the Preliminary & General Items will be revised on a pro rata to the revised scope of works.

5.0 ENGINEER'S DRAWINGS

The Engineer's Drawings applicable to this installation are listed in Annexure A to this document.

These drawings are sufficiently accurate for tendering purposes but all dimensions must be verified on site prior to manufacture. No extras will be considered where work has been proceeded with, without such prior verification or approval.

6.0 **PROGRAMME AND COMPLETION**

The project will be completed over two financial years, i.e.:

Description	Financial Year
Electrification of 395 informal houses under Phases 1 to 4.	2023/24
Electrification of 170 informal houses under Phases 5 and 6.	2024/25

The following estimated dates are as follows for the electrification of the 395 houses under Phases 1 to 4:

(i)	Appointment of Contractor	3 November 2023
(ii)	Completion of Contract Documentation	17 November 2023
(iii)	Contractor on site	17 November 2023
(iv)	Completion of project	31 May 2024

The following estimated dates are as follows for the electrification of the 170 houses under Phases 5 and 6:

(i)	Appointment of Contractor	31 July 2024
(ii)	Completion of Contract Documentation	16 August 2024
(iii)	Contractor on site	16 August 2024
(iv)	Completion of project	13 December 2024

The Contractor will be responsible for drawing up his own programme in which he must take into account the delivery dates of the equipment. The programme shall be submitted to the Engineer two weeks after acceptance of tender in order that such programme may be available for discussion at the first official site meeting.

7.0 **ELECTRICAL SUPPLY**

The electrical supply to the MV underground network will be taken at nominally 11 000 Volts, three phase. The phase rotation on the existing installation is to be carefully checked and maintained through-out the network.

8.0 **PROJECT NOTICE BOARD**

A project notice board, constructed in accordance with the details provided in Annexure B, is to be provided by the Contractor as part of the contract and erected in the position indicated by the engineer. The wording shall be approved prior to sign writing. The board shall remain in place until the end of the defects liability period at which time it shall be removed by the contractor.

9.0 **SWITCHING OF SUPPLIES**

All switching of the MV supplies shall be arranged in advance with Langeberg Municipality.

The Contractor shall establish his requirements regarding advance notice, permits to work, etc., at the beginning of the contract and shall comply with these requirements. The contact person at Langeberg Municipality is Mr George Lotter at 023 626 8266.

10.0 **COST PRICE ADJUSTMENT**

Prices shall not be subject to escalation for the electrification of the houses that will be completed under Phase 1 to 4, i.e. 395 houses, which are planned to be electrified before the end of June 2024.

C3.1.3

Contract Price Adjustment will, however, be allowed for the electrification of the houses that that will be electrified under Phases 5 to 6, i.e. 170 houses, which are planned to be electrified from July 2024 to June 2025. This work will be subject to the CPA formulas as set out as set out in Part C1.2, Clauses 6.8.2 and 6.8.3 of this document.

Tenderers must take cognisance of the completion programme and make allowance or escalation in all tendered rates.

11.0 **RE-MEASUREMENT**

All quantities in the Bills of Quantities, are provisional and are subject to re-measurement on site.

12.0 **CLERK OF WORKS**

A Clerk of Works will not be appointed for this project.

13.0 **WEEKEND, PUBLIC HOLIDAYS**

No work shall be carried out on weekends or public holidays or outside of normal working hours during week-days, unless the Engineer's permission, in writing, is obtained.

14.0 **SITE STAFF**

The Contractor shall have a competent supervisor on site at all times to ensure that work is being carried out under this contract. Such supervisor shall be fully conversant with the equipment and materials being installed.

15.0 **SITE FACILITIES**

The Contractor shall be responsible for negotiating with the Employer to obtain a location for erection of his site office and storage yard. The Contractor shall also arrange for the supply of water, electricity and telephone services to this site at his own costs.

If the Contractor intends to provide storage accommodation on site in the form of a container or shed, the position of such accommodation, and the provision of power shall be arranged with the Municipality. Latrine facilities will be required and must be in accordance with the local Health Department's regulations.

16.0 **CLEARANCES WITH OTHER SERVICES**

It shall be the Contractor's responsibility to obtain all necessary drawings and information from the Municipality and Telkom regarding existing and new overhead/underground power and telephone lines, and underground sewer and water pipes, to ensure that there is no damage to this plant during the installation of electrical services and that all necessary clearances with existing and future plant are maintained. The Contractor shall first locate existing underground services before trenching for his cables.

17.0 **STANDARD SPECIFICATION**

This specification shall be read in conjunction with the Standard Specifications, which forms Parts C3.4 and C3.5 of this document. The Standard Specifications and the Codes referred to therein shall be regarded as the Operative Code of Practice.

Where specific reference is made in the Project Specifications to particular clauses in the Standard Specifications such reference shall in no way be construed as meaning that only those clauses specifically mentioned apply.

18.0 **PROOF OF ORDERS FOR MATERIALS/EQUIPMENT**

Proof of orders for items with delivery periods in excess of 4 weeks shall be provided to the Engineer within two weeks after the Contractor has been appointed.

19.0 **LOCAL LABOUR**

It is a requirement of the Contract that the maximum possible use of local labour be made. To this end the Contractor shall limit his own staff to key personnel only. All unskilled staff shall be employed from within the Municipal boundaries. Skilled staff may only complete "trade" related work activities, all other work will be regarded as "general work" and must be completed by unskilled staff. The Contractor shall make provision in the tendered Preliminary and General rates for all costs and additional superintendence to ensure a high standard of work when complying with this contractual requirements.

This is not an EPWP project, but the project needs to report to EPWP with regards to creation of job opportunities. The Langeberg Municipality will do induction training on EPWP, where after the Contractor will have to abide to the monthly reporting instructions related to it.

20.0 **CONSTRUCTION AND "AS-BUILT" DRAWINGS**

Before the date of the issue of the Certificate of Completion, the Contractor shall hand-over to the Engineer a complete set of "As-Built" of the installation. These drawings shall clearly show, with measurement relative to the various structures where applicable, all cable routes and positions of cable markers, final details of all circuits, and revised schedules of equipment etc. The Contract will not be considered complete until these drawings and manuals have been received.

21.0 **DAMAGE TO STRUCTURES**

The Contractor shall be responsible for the making good of damage caused by his staff to any part of the structures. In the event of the occurrence of damage he shall arrange the repair of such damage to be carried out at his own expense to the satisfaction of the Engineer and Employer.

22.0 **SITE MEETINGS**

The first official site meeting, to introduce the Contractor to the Town Electrical Engineer and/or his representative and the Consulting Engineer, and to establish lines of communication and requirements, will be convened within one (1) week of acceptance of tender at a time and place to be arranged.

Site meetings will be held at two-week intervals, or longer or shorter as may be necessary, at a time and day of the week to be mutually agreed, for the duration of the Contract.

23.0 **COMMUNITY LIAISON OFFICER**

It is a requirement of this Contract that a Community Liaison Officer (CLO) shall be appointed. The primary functions of the CLO shall be to assist the Contractor with the selection and recruitment of targeted labour, to represent the local community in matters concerning the use of targeted labour (and/or enterprises) on the works, and to assist with and facilitate communication between the Contractor, the Employer's Agent and the local communities.

The identification of suitable candidates (maximum 5; minimum 3) for the CLO position shall be in accordance with the Municipality's policies.

C3.1.5

The period of appointment of the CLO shall be as stated in the Contract for Temporary Employment as a Community Liaison Officer. The date of commencement of temporary employment of the CLO shall be as agreed with the Employer's Agent.

It is required, therefore, that the Contractor enter into a contract of temporary employment with the selected CLO, the contracting parties being the Contractor and the CLO. As said contract will be between the Contractor and the CLO, all costs involved shall be borne by the Contractor. A provisional allowance has been made for this.

The agreement, duties and conditions of employment shall be in accordance with the pro-forma contract of employment attached under Part C1.6.

C3.2 HEALTH AND SAFETY

Refer to Baseline Risk Assessment and Specification prepared by Messrs Devac (Pty) Ltd. which is attached as **Annexure C**.

C3.3: PROJECT TECHNICAL SPECIFICATION**1.0 GENERAL**

This part of the specification deals with the main items of material and equipment which will be the Contractor's responsibility to supply and install in accordance with this document and the drawings, unless advised otherwise.

Sufficient information is provided in this document and on the drawings to enable the Tenderer to accurately price the work. Tenderers must allow for all items, whether specified in detail or not, required to complete the installation in a neat and workmanlike manner.

2.0 STANDARD TECHNICAL SPECIFICATION

This section of the Specification shall be read in conjunction with the Standard Technical Specification, Part C3.5, hereof, and the installation shall comply with the relevant clauses thereof. The information in the Project Specification (Part C3.3) shall have preference in the interpretation of any ambiguity or inconsistency between it and the Standard Specification (Part C3.5).

All materials used under this Contract shall be of a quality and class most suitable for working under the conditions specified and shall withstand the variations of temperature and atmospheric conditions that may arise without distortion, deterioration or the setting up of undue stresses in any part such as to affect the efficiency and reliability of the plant, and also without affecting the strength and suitability of the various parts for functions which they have to perform.

3.0 SUPPLY AUTHORITY

The Supply Authority for the area is Langeberg Municipality and the installation shall fully comply with their requirements.

4.0 CONNECTION POINTS

It shall be the Contractor's responsibility to make all necessary arrangements with Langeberg Municipality's Electrical Department to de-energise the existing incoming 11kV and LV supplies, as well as other sections of the network in order that the necessary connections can be made, and to pay same for their attendance costs. The network downstream from these points shall be earthed at all times where work is being carried out thereon.

The longest permissible period for a continuous power shut-down shall be 8 hours, on a date to be agreed in advance with the Municipality. All work shall be planned in advance and as much as possible of the work shall be done beforehand.

5.0 PROJECT DESCRIPTION

The works will consist of the following:

- (i) The electrification of 565 informal houses at Boekenhoutskloof, Bonnievale, as depicted on Drawing No. 10600/E/01. It is estimated that these houses will be electrified over two financial years.
- (ii) The dismantling and recovering of the electrical reticulation to approximately 120 informal houses.
- (iii) The testing and commissioning of the complete installation.

The exact quantities of material and equipment to be supplied and installed are shown in the Bill of Quantities, Part C2.2 hereof.

6.0 **DETAILED SPECIFICATION OF EQUIPMENT AND MATERIALS**

The detailed specification of the equipment required is given in tabled form hereafter. It must be noted that Schedule A of each table gives information affecting and laying down the requirements for the equipment, whilst Schedule B is to be completed by the Tenderer in order to provide guarantees, technical and other particulars of the equipment offered and for acknowledgement of certain requirements. Failure to complete Schedule B could invalidate the tender.

7.0 **11kV OVERHEAD LINES:**

7.1 **11kV Overhead Line and Equipment for Bare Overhead Conductor:**

The MV overhead line material and equipment to be supplied and installed is depicted on Drawing No.'s 10600E/01 to 10600E/09.

ITEM	DESCRIPTION	SCHEDULE "A"	SCHEDULE "B"
1.0	Conductor:		
1.1	Bare conductor	Hare (6/1/4,72) ACSR conductor.	.....
2.0	Insulators:		
2.1	Strain	Pure silicone rubber, 22kV, 31mm/kV, long rod insulator, 70kN.	.....
2.2	Line post	Pure silicone rubber, 22kV, capless linepost insulator, 4kN.	.....
3.0	Steelwork	Steelwork to support insulators and conductors shall be A-frame unless detailed elsewhere on the relevant drawings. All steelwork shall be hot-dipped galvanised after manufacture. Cross-arms for use with 'A' Frame at right angles shall be hot dipped galvanised and as detailed further on Drawing No.'s 10600/E/06.	.....
4.0	Earthing	Immediately after the new line has been erected, it shall be effectively bonded to earth (to ensure safety of workers) near the supply points by way of a temporary 40mm ² copper conductor. The temporary earths shall remain in position until approval is obtained, in writing, from the Engineer to remove it.	.....
5.0	Expulsion fuses		
5.1	Insulators:	Suitable for 11kV operation and manufactured from silicone.	.....
5.2	Fuse elements rating:	50A	.....

ITEM	DESCRIPTION	SCHEDULE "A"		SCHEDULE "B"
6.0	Wooden Poles			
	Poles shall be <u>machine peeled and inspected by the Engineer at the Suppliers premises before delivery to site and no excessively bent or ragged looking poles will be accepted.</u> Poles must bear the SABS mark. All poles shall be 11m long, unless shown otherwise.			
6.1		Minimum top diam. and plant depth (unless otherwise specified), for the following pole lengths:		
		Top diam.	Plant depth	
6.1.1	10 metres	200mm	1800mm	.....
6.1.2	11 metres (Intermediate Pole)	160mm to 180mm	1800mm	.....
6.1.3	11 metres (Strain Pole)	200mm to 220mm	1800mm	.....
6.1.4	12 metres (Intermediate Pole)	160mm to 180mm	2000mm	.....
6.1.4	12 metres (Strain Pole)	200mm to 220mm	2000mm	.....
7.0	Excavations:			
7.1	Classification of excavated materials:	In terms of SANS 192-5.		
7.1.1	Soft	Material which can be excavated by means of a suitable shovel, with the aid of a pick or other hand-swung tool, or with difficulty with the aid of a hand-swung tool.		.....
7.1.2	Intermediate	Material which is difficult to excavate by hand even with the aid of a crowbar and requires the assistance of pneumatic tools for economic removal.		.....
7.1.3	Rock	Material which cannot be economically fragmented and loosened by hand implements and pneumatic tools except by drilling and blasting or the use of rock-breaking equipment.		.....

C3.3.4

ITEM	DESCRIPTION	SCHEDULE "A"	SCHEDULE "B"
8.0	Manufacturer:	Name and Address	
8.1	Bare Conductor		.....
8.2	Insulators (Strain and Line Post)		.....
8.3	Steelwork		.....
8.4	Earthing material		.....
8.5	Expulsion Fuses		.....
9.0	Delivery time:	To the site for installation, from the date of tender acceptance.	
9.1	Bare Conductor		weeks
9.2	Insulators (Strain and Line Post)		weeks
9.3	Steelwork		weeks
9.4	Earthing material		weeks
9.5	Expulsion Fuses		weeks

7.2 **General Requirements:**

Poles shall be selected on site in view of their ultimate duty so that heavier poles are used where stresses are highest, i.e. for angle-strain structures, and thereafter for suspension structures.

All connections to the overhead line conductors shall be covered with "Densal" paste and a double layer of "Denso" tape.

Poles and stays shall not obstruct roads or entrances into erven.

No mid span through joints will be accepted in overhead conductors.

8.0 **POLE MOUNTED TRANSFORMER SUBSTATIONS**

Three 500kVA, 11kV/420V, pole mounted transformer substations will be supplied by the Municipality as free-issue items to the project. Provision has been made in the Bill for the Contractor to claim a handling fee on the transformers. The transformers must be collected at the Municipal Stores in Robertson.

The transformer substation positions are depicted on Drawing No. 10600/E/01 and schematically on the same drawing. Constructional details are shown on Drawing No.'s 10600/E/11 to 10600/E/17.

The pole mounted transformer substation installations shall further comply with the relevant clauses of the Standard Technical Specification:

	DESCRIPTION	SCHEDULE A	SCHEDULE B
1.0	Expulsion fuses:		
1.1	Insulators:		
	PMT No.1	Suitable for 11kV operation and manufactured from silicone.	.....
	PMT No.2	Suitable for 11kV operation and manufactured from silicone.	.....
	PMT No.3	Suitable for 11kV operation	

	DESCRIPTION	SCHEDULE A	SCHEDULE B
		and manufactured from silicone.	
1.2	Fuse Element Rating	50A	.....
2.0	Lightning Arrestors	Suitable for 11kV operation.	.....
3.0	Jumpers	Jumpers between the expulsion fuses, lightning arrestors and MV bushings of the transformer shall be: Hare ACSR conductor. (same conductor as overhead line.)	.....
4.0	Pole Mounted Transformers:		
4.1	PMT Boekenhoutskloof No.'s 1, 2 and 3.	To be supplied by Langeberg Municipality as free-issue items. <u>Contractor to provide handling fee on transformers in Bill.</u>	.....
5.0	Pole mounted LV distribution boards for all three PMT's:		
5.1	Layout and equipment:		
5.1.1	General	Refer to the Standard Technical Specification, Drawing No. 10600/E/16. Boards shall be weatherproof and shall be constructed of 2mm 3CR12 sheet, epoxy powder coated to a thickness of 70 microns. The distribution boards shall be designed and manufactured for 420V and a fault level of 15kA – Cascading. The board shall be dust-proof. It shall be fully equipped and designed for the bottom entry of cabling of the quantity and sizes depicted on Drawing No. 10600/E/01.	.....
		The boards shall be sized to ensure that there is sufficient bending radius for the main incoming and outgoing feeders.	.....
5.1.2	CT's	800/5	.....
5.1.3	Ammeters	3 off 0-800A 96mm x 96mm.	

C3.3.6

	DESCRIPTION	SCHEDULE A	SCHEDULE B
5.1.4	Voltmeter	Combined maximum demand, instantaneous, dual calibration indication ammeters. 1 off, 96mm x 96mm. 0-500V voltmeter with selector switch.	..... .....
5.1.5	Contactor for Streetlight Circuit	No bare electrical connections. Contactor to be mounted in sealed junction box. 80A, 220V (±20%) AC-3 Type	.....
5.1.6	Industrial plug outlet and earth leakage unit.	15A Industrial Plug Outlet. Earth Leakage Unit 6kA, single phase without overload similar or equal to CBI type QF17C.	.....
5.1.7	Check Meter	Allowance shall be made for the supply and installation of a check meter, similar or equal to the 3 Phase CT operated, Mol Smart 3500, or Mol Smart 4000, incl. test block with cell phone modem. Refer to Schematic Diagram.	.....
5.1.8	Three Phase kWh meter (Streetlight Meter)	Similar or equal to the Landis & Gyr type ZMD310.	.....
6.0	Gland plates	2mm 316 stainless steel and sufficient for total number of cables, incl. future cables. Pre-drilled for cable sizes given on the diagrams.	.....
7.0	Busbars and earth bars	<u>Note:</u> All busbars shall be tin plated, including the earth bar.	.....
8.0	Labels	To comply with Standard Technical Specification and wording given on the diagrams.	.....
9.0	All bolts, nuts, washers, hinges, latches, door handles, etc.	Brass or stainless steel.	.....

	DESCRIPTION	SCHEDULE A	SCHEDULE B
10.0	Steelwork	Steelwork to support LV distribution board and streetlight control board, etc. shall be as detailed on the relevant drawings. All steelwork shall be hot-dipped galvanised after manufacture.	.....
11.0	Earthing	The earthing shall be in accordance with the Standard Technical Specification and as further detailed on Drawing No.'s 10600/E/14 and 15.	.....
12.0	Padlocks	Padlocks shall comply with the requirements of Langeberg Municipality.	.....
13.0	Wooden Poles (Both Pinus Radiata, or Eucalyptus be accepted). <u>Poles shall be machine peeled and inspected by the Engineer at the Suppliers premises before delivery to site and no excessively bent or ragged looking poles will be accepted.</u> Poles must bear the SABS mark.		
13.1	Minimum top diam. and diam. at theoretical ground level and depth:		
13.1.1	10 metres	200mm, 1800mm deep	.....
14.0	Manufacturer:	Name and address.	
14.1	LV Distribution Boards		.....
14.2	Expulsion Fuses		.....
14.3	Steelwork		.....
14.4	Type of Pole	Pinus Radiata or Eucalyptus?	.....
14.5	Lightning Arrestors		.....
14.6	Transformers		.....
15.0	Delivery period:	From the date of tender acceptance.	weeks
15.1	Manufacturer:	Name and address.	
15.2	LV Distribution Boards		weeks
15.3	Expulsion Fuses		weeks
15.4	Steelwork		weeks
15.5	Type of Pole		weeks
15.6	Lightning Arrestors		weeks
15.7	Transformers		weeks

	DESCRIPTION	SCHEDULE A	SCHEDULE B
16.0	Standard Technical Specification	The unit shall further comply with the requirements of the standard technical specification attached hereafter.	.....

General requirements:

All connections to the overhead line conductors shall be covered with “Densal” paste and a double layer of “Denso tape”.

9.0 **LV BUNDLED CONDUCTOR AND OVERHEAD SERVICE CONNECTIONS:**

The extent of the LV lines to be erected is shown on Drawing No.’s 10600/E/1 and constructional details are shown on Drawing No.’s 10600E/18 to 21.

The line routes and pole positions are provisional and for tender purposes only. The Contractor shall mark-out the line routes as shown on the drawing, and thereafter assist the Engineer in determining whether this is suitable or not, and make any adjustments deemed necessary.

The LV lines shall generally comply with the relevant clauses of the Standard Technical Specification and as further detailed in the table hereafter:

	DESCRIPTION	SCHEDULE A	SCHEDULE B
1.0	Conductor for main power distribution:		
1.1	Type	ABC – three phase cores of hard-drawn stranded compacted aluminium conductors, insulated with carbon loaded XLPE laid up around an aluminium alloy supporting core insulated with carbon loaded XLPE to ensure UV protection (French system) plus an auxiliary core for streetlighting.	.....
1.2	No. cores and sizes:		
1.2.1		3 x 95mm ² Al + 1 x 54,6mm ² + 1 x 25mm ² Al	
2.0	Conductor for overhead house service connections:		

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	DESCRIPTION	SCHEDULE A	SCHEDULE B
2.1	Type	Airdac – circular stranded hard-drawn copper phase conductor, XLPE insulated with identified neutral and bare earth conductors arranged concentrically around it, polyethylene sheathed 600/1000V, nylon ripcord laid under sheath.	
2.2	To comply with	NRS 017 Overhead Split - Concentric Service Cable	.....
2.3	No. cores and sizes	Phase - 10mm ² Earth – 7.5mm ² Neutral – 10mm ² Pilot cores – 2 x 1,13mm ²	.....
3.0	Poles	Poles shall be Pinus-Radiata or Eucalyptus, creosote treated, kiln dried and must bear the SABS mark. All poles shall be 9m long, unless site specific conditions require the use of different poles.	.....
4.0	Pole top diameter:		
4.1	9m long	160mm to 179mm	.....
4.2	5m long	80mm to 100mm	.....
5.0	Pole planting depth:		
5.1	9m long	1.5m	.....
5.2	5m long	1m	.....
6.0	Strain points	Strain assembly in accordance with Drawing No. 10600/E/21.	.....
7.0	Intermediate points	Suspension assembly in accordance with Drawing No. 10600/E/19.	.....
8.0	Terminal points	Terminal assembly in accordance with Drawing No. 10600E/18.	.....
9.0	Earthing	Combined Neutral Earth (CNE) System for LV reticulation and Separate Neutral Earth (SNE) System for the service connections as further detailed in the Standard Technical Specification and on the drawings.	.....
10.0	Standard Technical Specification	The LV overhead lines shall further comply with the relevant clauses of the Standard Technical Specification, Part C3.5 hereof and the	.....

	DESCRIPTION	SCHEDULE A	SCHEDULE B
		requirements of Langeberg Municipality.	
11.0	Manufacturer	Name and Address	
11.1	ABC Conductor		.....
11.2	Airdac Conductor		.....
11.3	Poles		.....
11.4	Clamps, etc.		.....
12.0	Delivery Time:	To site for installation from date of tender acceptance	
12.1	ABC Conductor		weeks
12.2	Airdac Conductor		weeks
12.3	Poles		weeks
12.4	Clamps, etc.		weeks

10.0 **CONSUMER SERVICE CONNECTION BOX (CSCB)**

The Contractor shall ensure that the CSCBs are of sufficient size to accommodate all the equipment specified on the drawing before ordering same.

ITEM	DESCRIPTION	SCHEDULE A	SCHEDULE B
1.0	Type	Manufactured from polyethelene, fitted with hinged door.	.....
2.0	Internal Equipment:		
2.1	Busbars	Fitted with earth and neutral busbars. 16mm ² Cu black PVC insulated conductor bridge between busbars.	.....
2.2	Circuit breakers	Single pole 50A, 6kA, slow curve (orange handle) main circuit breakers similar or equal to CBI.	.....
2.3	Interconnecting Cables	16mm ² Cu Interconnecting conductors.	.....
2.4	Conductor Tails	2,5 m long, 16mm ² copper UV stable conductor tails for connection to the bundled conductor overhead line as shown on the Drawing No.'s 10600E/21 and 22 shall be colour coded (Red, White and Blue stripe and Black for neutral)	.....

ITEM	DESCRIPTION	SCHEDULE A	SCHEDULE B
2.5	kWh Meter	Split prepaid kWh meter measurement and control units (MCU's) fixed to a din rail shall be fitted inside the box. The meter is further specified below under Schedule 13.0.	.....
2.6	Surge Arrestors	4 x Surge Arrestors similar or equal to CBI, type QFLN-4(13).	.....
3.0	Colour	The colour of the boxes shall be grey.	.....
4.0	Mounting	Stainless steel straps, 19mm wide, shall be used to strap the box to the pole.	.....
5.0	Protection	The ingress protection rating of the CSCB shall be IP54.	.....
6.0	Door Handle	Electro-galvanised padlockable bracket to be used to lock doors of CSCB's.	.....
7.0	Conductor Entries	<u>All conductor/cable entries into the box shall be by means of suitably sized UV stable PVC compression glands.</u>	.....
8.0	Labels	Labels to be provided to indicate erf no. served by circuit breaker / meter.	.....
9.0	Hinges, bolts, nuts etc.	All bolts, nuts, pop rivets, hinges etc. to be stainless steel.	.....
10.0	Standard Technical Specification	The consumer service connection boxes shall further comply with the relevant clauses of the Standard Technical Specification, Part C3.5 hereof, and the requirements of Langeberg Municipality.	.....

ITEM	DESCRIPTION	SCHEDULE A	SCHEDULE B
11.0	Manufacturer	Name and Address	.....
12.0	Delivery Time	To site for installation from date of tender acceptance	weeks

11.0 **PRE-PAYMENT METERS**

This contract covers the supply and installation of the meters. These meters are also known as “Single Phase Electricity Dispensers”.

The meters shall be of the smart prepaid electricity meter type with a User Interface Unit (UIU) installed inside the house and shall comply with the following requirements:

ITEM	DESCRIPTION	SCHEDULE A	SCHEDULE B
1.0	Type	The meters shall be the Landis & Gyr, Type 10-PR300 split pre-payment, incl. the Cashpower CIU 3 Interface Unit3 to match the meters that are currently utilised by Langeberg Municipality.	.....
2.0	Current limiting setting	The Contractor shall ensure that the meter is set at 25 Amp.	.....
3.0	Register of meter	The Contractor shall be responsible to provide all the information to the Municipality to enable the meter to be registered on their system.	.....
4.0	Delivery Time	To the site for installation, from the date of tender acceptance.	weeks

12.0 **SMALL POWER DISTRIBUTION UNIT**

The boards shall be supplied and installed by the Contractor and shall contain the following SABS approved equipment.

ITEM	DESCRIPTION	SCHEDULE A	SCHEDULE B
1.0	Standard requirements:		
1.1	Technical:	60 Amp single pole earth leakage unit without overload protection with a rated breaking capacity of 2,5kA and earth leakage sensitivity curve of 30mA.	..... .....

ITEM	DESCRIPTION	SCHEDULE A	SCHEDULE B
		Two 20 Amp single pole circuit breakers to protect plug sockets on the board with space for at least five additional circuit breakers. The rated breaking capacity of the circuit breaker shall be 2,5kA.	.....
		Three switched 15 amp plug sockets mounted flush in the board.	.....
		Light switch mounted flush in the board.	.....
		Bulkhead light fitting forming part of the board or mounted on top of the board. The luminaire shall have a standard bayonet lamp holder and be suitable for a LED lamp <u>and fitted with a 3 watt LED lamp.</u>	.....
4.0	Standard Technical Specification	The units shall further comply with the relevant clauses of the Standard Technical Specification, Part C3.5 hereof and the requirements of Hessequa Municipality.	.....
5.0	Mounting of Small Power Distribution Unit.	The Electrical Contractor will be responsible to mount the unit on a 16mm thick wooden board of approximate dimension 450mm x 400mm, which in turn is fixed to the internal wall of the house. The Electrical Contractor will be responsible to provide the necessary fixing bolts.	.....
6.0	Manufacturer	Name and Address.	..... ..... .....
7.0	Delivery Time	To the site for installation, from the date of tender acceptance.	weeks

13.0 **INSTALLATION INSIDE HOUSE**

The work includes the installation of a Prepayment Meter and a “Small Power Distribution Unit” at each of the houses and the connection of the service cable at the aforementioned meter and board.

C3.3.14

The typical installation at each house, together with the termination and connection of the overhead service connection cable, are depicted on Drawing No's 10510/E/24 to 22 and detailed hereafter.

ITEM	DESCRIPTION	SCHEDULE A	SCHEDULE B
1.0	Standard requirements:	The Prepayment Meter and "Small Power Distribution Unit" shall be mounted next to each other on a 16mm thick wooden board of approximate dimension 450mm x 400mm. Galvanised self tapping screws are to be used to mount the aforementioned equipment on the board. The exact position of the board must be determined in conjunction with the Engineer. No equipment shall be installed in a position, which contravenes the Occupational Health and Safety Act, local by laws or this specification. The top of the "Small Power Distribution Unit" shall be mounted 1800mm above finished floor level. The installation shall comply with the SANS 10142-1: 2003, Code of Practise for the Wiring of Premises. Fixing of the wooden board shall be by means of galvanised threaded rod through the walls and sealed with a silicon-based sealer.	..... ..... ..... .....
2.0	Standard Technical Specification	On completion of each house, a "Certificate of Compliance" shall be issued to the House Owner with a copy to the Municipality and the Engineer in compliance with the relevant Clauses of the Standard Technical Specification.	.....

14.0 EARTHING

ITEM	DESCRIPTION	SCHEDULE A	SCHEDULE B
1.0	LV Bundled Conductor	Neutral shall be earthed at the poles by means of a 1,5m long earth spike and 35mm² Cu black PVC insulated down conductor.	.....

ITEM	DESCRIPTION	SCHEDULE A	SCHEDULE B
		All earth down conductors against poles shall be fixed with a stainless steel straps and shall be protected with 25mm diameter galvanised steel kicker pipe from 500mm below to 3500mm above ground level. The pipe ends shall be sealed with "Denso" tape.	
		The straps shall be minimum width 19mm and spaced 1 metre intervals. Care shall be taken to ensure that the cable conductor is not damaged due to over tightening the straps.	
2.0	Termination at earth spikes.	Double clamps to connect conductor to earth spike.	
3.0	Test certificate	The Contractor shall issue an earth test certificate confirming the measured earth resistance values to be within acceptable limits.	
4.0	Standard Technical Specification	The earthing shall further comply with the relevant clauses of the Standard Technical Specification, Part C3.5 hereof and the requirements of Langeberg Municipality.	
6.0	Manufacturer:	Name and Address	
6.1	Earth conductors		weeks
6.2	Earth spikes		weeks
7.0	Delivery Time:	To site for installation from date of tender acceptance	
7.1	Earth conductors		weeks
7.2	Earth spikes		weeks

15.0 **STREETLIGHTS**

Streetlights shall be supplied and installed as detailed on Drawing No.'s 10600/E/01 with constructional details on Drawing No.'s 10600/E/29 and 30.

ITEM	DESCRIPTION	SCHEDULE A	SCHEDULE B
1.0	General	Shall be Class 1 of IEC 60598-1 and be of the totally enclosed type. Luminaires shall be delivered completely assembled with housing, driver, LED module, and protective lens.	.....
2.0	Defects	Any faulty power supply units or LED's shall be replaced at no additional cost during the twelve month defects liability period.	.....
3.0	Type	Side entry streetlight luminaire	.....
4.0	Construction	2-compartment design, i.e. optical compartment with LED engine, gear compartment and a spigot compartment. Both optical and gear compartments must be rated IP 66. The LED engine, consisting of the LED light source and the power supply must be easily replaceable or upgradeable (Future Proof).	.....
5.0	Surge protection	Integral 10kV/10kA surge protection device. Additional safety by means of electronic temperature monitoring preventing overheating of LEDs and power supply.	.....
6.0	Material	The luminaire housing to be manufactured of marine grade cast aluminium (EN 1706 AC-44300) with high impact polycarbonate protector.	.....
7.0	Luminaire Output	Nominal flux at Ta of 35 °C ≥ 5340 lumens.	.....
8.0	Lifetime residual flux @ 25 °C	70% @ 60 000h	.....
9.0	Colour temperature	Neutral White (4000k)	.....
10.0	Colour rendering index (CRI)	CRI ≥ 70	.....
11.0	Operating temperature	≤ 35 °C	.....
12.0	Power factor	≥ 0.95	.....

ITEM	DESCRIPTION	SCHEDULE A	SCHEDULE B
13.0	Luminaire	36W	.....
14.0	Spigot entry	Spigot entry shall be side entry 42mm diameter by 125mm, in accordance with SANS 1088. Provision must be made for a typical streetlight bracket as depicted on Drawing No. 10541/E/24.	.....
15.0	Finish	Unpainted aluminium	.....
16.0	Connection to ABC Conductor	Where a streetlight fitting is to be connected directly from the ABC conductor, it shall be done via a 4mm ² Airdac II cable terminated to the ABC conductor with piercing connectors.	.....
17.0	Standard Technical Specification	The streetlight luminaires shall further comply with the relevant clauses of the Standard Technical Specification, Part C3.5 hereof, and the requirements of Langeberg Municipality.	.....
18.0	Manufacturer	Name and Address	.....
19.0	Delivery Time	To site for installation from date of tender acceptance	weeks

The Municipality may decide at a later stage not to install streetlights, but rather install additional floodlights as part of another contract.

The existing high mast control boxes, which supply two high mast lights, will be re-covered and installed on the new LV overhead line poles. A provisional sum has been included in the tender document for the extension of the existing underground cables between the existing two high masts and the new LV Overhead lines.

16.0 **DISMANTLING AND RECOVERING OF MATERIAL AND EQUIPMENT**

The extent of the equipment and material to be recovered is depicted on Drawing No. 10600/E/01.

The existing network will be dismantled and recovered after the new installation has been installed. The complete existing network as indicated on Drawing No. 10600/E/01 will be recovered.

All recovered material not being utilized on the project shall be delivered to the municipal stores in Bonnievale.

A receipt shall be obtained from the Municipality, which must be included with any claims for payment in this regard.

17.0 INSPECTION, TESTING AND COMMISSIONING

The inspection, testing and commissioning procedures to be followed shall comply with the requirements of the Standard Technical Specification.

Provision shall be made for a Specialist Commissioning Engineer to test and commission the ring main unit including verifying all other control functions.

Three (3) sets of the Specialist Commissioning Engineer's test report, containing all test certificates, readings taken, relay settings, programming set-up, etc. and operating and maintenance manual of the ring main unit, etc. shall be issued to the Engineer before Practical Completion.

PART C4 - SITE INFORMATION

Existing electrical and civil services exists along the routes where the new MV & LV underground cable and overhead lines are to be supplied and installed. The drawings enclosed are not to be used by the contractor to determine the position of the existing underground electrical services. The routes of all existing electrical cables must be verified by means of a cable detector by the contractor and expose before trenching for new, or upgraded services, commence.

All Telkom and civil services must be verified before any trenching commence.

All work related to the project must therefore be discussed with the Client / Engineer before the works proceed to ensure that existing civil services are not damaged during construction.

All work is to be carried out in residential areas and in the vicinity of moving vehicles and due care must be taken to ensure that all the necessary precautions have been undertaken to ensure the safety off all workers and residents at all times.

Asla Construction will be the civil contractor on site and it will be expected that the Electrical Contractor must co-ordinate all his activities with Asla.

The site location is indicated on Layout Drawing No. 10600/E/01.

C3.5 STANDARD TECHNICAL SPECIFICATION

SECTION 1 – REGULATIONS

The following Regulations shall apply as applicable:

Electricity Act, 1987 (as amended)

Occupational Health & Safety Act, 1993 (as amended)

Post Office, Act 1958 (as amended)

SECTION 2 – STANDARDS

With the exception of Clause 1.0, all clauses hereafter will first contain a list of the SANS, NRS, BS, CKS, etc. Standards, and thereafter the Clinkscapes Maughan-Brown Standards, whilst the latter Standards shall take precedence over the afore-mentioned Standards.

The Project Technical Specification contained elsewhere in this document shall, however, take precedence over all Standards contained in this Section.

1.0 DEFINITION

In this Part, the term “Contractor” means the person, firm or company whose tender has been accepted for the work specified in the document of which it forms a part.

High Voltage (HV):	Voltage in excess of 33 000 Volt
Medium Voltage (MV):	Voltage of 6 600 to 33 000 Volt
Low Voltage (LV):	Voltage up to 1 000 Volt

2.0 ELECTRICAL SUPPLY AND PHASE ROTATION

SANS 1019	Standard voltages, currents and insulation levels for electricity supply
SANS 1816	Electricity supply - Quality of supply: Power quality instruments
NRS 048	Quality of supply

CMB Standards

- 2.1 Electrical power supply details relative to fault levels, voltage and phase rotation are given elsewhere in this Document.
- 2.2 Phase rotation specified shall be maintained on all overhead lines, cables, transformers, switchgear and distribution equipment.

- 2.3 Where existing connections are to be reconnected to a new system, phase rotation is to be checked before disconnection and reconnection made to maintain the same phase rotation.

3.0 **SWITCHING OF HV, MV AND LV POWER SUPPLIES**

- 3.1 Switching of existing power supplies shall be pre-arranged with the appropriate Authority.
- 3.2 All possible preparation shall be made in advance, to minimize the time required for re-energising the system.
- 3.3 All such switching shall be carried out by the “responsible person” unless such authority is given to the Contractor by that person in writing.

4.0 **EARTHING AND BONDING**

SANS 10142	The wiring of premises (Part 1) Low voltage installations
SANS 10200	Neutral earthing in medium voltage industrial power systems
SANS 10292	Earthing of low-voltage (LV) distribution systems
NRS 076	Earthing of distribution substations with nominal voltages up to and including 132 kV.

CMB Standards

- 4.1 **Resistance Values:**
- 4.1.1 Every effort should be made to obtain an earth resistance value of 1,0 ohm or less.
- 4.1.2 Maximum acceptable values of earth electrode resistance:
- Miniature substation = 10 Ohms
- Indoor, outdoor switchboard or gang links = 15 Ohms
- Cradle, lightning arrestors or other pole mounted equipment = 20 Ohm
- Combined resistance to earth of LV feeder and overhead line neutrals = 10 Ohms
- 4.2 **Main Indoor Substation Earth System:**
- 4.2.1 Main earth bar shall consist of an adequate length of minimum 50mm x 6,3mm tinned copper bar.
- 4.2.2 Main earth bar shall be supported by means of insulators in a suitable position on a wall or plinth.
- 4.2.3 Conductors connecting equipment to main earth bar shall be 70mm² copper terminated in compression type lugs.
- 4.2.4 Size of earth bar and number of earth conductors shall be specified elsewhere.
- 4.2.5 All connections shall be suitably labelled.
- 4.3 **Main Outdoor Substation Earth System:**
- 4.3.1 Shall comply with the above Standards.

4.4 General Earth Systems:

- 4.4.1 Earth systems for distribution transformers, minisubs shall comprise two earth electrodes with 1,5m long earth spikes located 6,0m apart, linked with 70mm² bare conductor. Spikes are to be located adjacent to pole structures or ends of plinths in case of minisubs and shall be located at least 1,0m therefrom.
- 4.4.2 In case of transformer earthing, if neutral earth system resistance is not 1,0 ohm or less, two systems as above are to be installed, one for the LV neutral and the other for the tank and associated equipment, in which case they are to be kept at least 6,0m apart and at opposite sides of the transformer position.
- 4.4.3 Earth system is to be connected with 70mm² insulated earth conductor to the earth bar or transformer tank earth stud as appropriate.
- 4.4.4 Common leg of secondaries of CT's, other than secondaries of summation transformers, shall be effectively earthed to main earth system.

4.5 Transformer Earthing:

- 4.5.1 Transformers, pole mounted, ground mounted or in minisubs, shall be provided with earth systems as described in the Sub-Clause "General Earth Systems" above. If earth system resistance is $\leq 1,0$ ohm minisub neutral and earth bars, or transformer neutral and tank earth stud, shall be bonded with an insulated earth conductor.
- 4.5.2 Where earth system resistance is in excess of 1,0 ohm, a second separate earth system shall be installed in accordance with the foregoing Sub-Clause and neutral and tank connections shall be taken to each of the independent earth systems with separate insulated earth conductors. In this case a neutral surge arrestor, complying with the Clause "Lightning Protection" elsewhere in this Part, is to be installed and connected between the transformer neutral and the tank earth point. For tendering purposes it shall be assumed that the second earth system and neutral arrestor will not be required.
- 4.5.3 Earthing shall further comply with the AMEU/SAIEE Code of Practice for the use of Combined Neutral and Earth (CNE) on Low Voltage Distribution Systems and Separate Neutral Earth (SNE) System for the service connections.

4.6 Reticulation Feeder Neutral Earthing:

- 4.6.1 At LV Meter and Distribution kiosks a 30m length of bare earth conductor of half the size of the phase conductors but not greater than 70mm² shall be laid from each kiosk earth bar towards the source of supply. Neutral bar shall be connected to the earth bar with green insulated / bare conductor of equivalent size.
- 4.6.2 At various points not exceeding 150m apart along length of overhead lines and at tee connections and ends thereof as indicated on the drawings, neutral conductor shall be bonded to an earthing point which shall comprise a 1,5m long earth spike. Insulated earth conductor shall be carried in a galvanised sleeve from 500mm below ground to 3,5m above, unless otherwise advised. Connection of earth conductor to line conductor shall be made with a connector suitable for the particular line conductor material.

4.7 Earthing of Pole-Mounted Equipment:

- 4.7.1 At cradle earthing points, reclosers, or sets of lightning arrestors, one 1,5m long earth spike shall be provided, insulated earth connection being enclosed in galvanised conduit as described above.

4.8 Earth Spikes:

- 4.8.1 Top of earth spikes and interconnecting conductors are to be 1,0m below finished ground level.

- 4.8.2 Connections to earth spikes shall be by means of at least two suitable mechanical clamps of an approved type for this duty. Clamps shall not be attached to the rod but must be installed so that the bolt face is in contact with the rod. Brazing will not be accepted. Connection must be wrapped with two layers of "Denzo" tape.
- 4.8.3 Cable marker as described elsewhere in this Part shall be installed above each spike and shall be labelled "Earth Spike".
- 4.9 Earth Continuity Conductors:
- 4.9.1 Earth conductors shall be hard drawn bare copper wire or bi-coloured green/yellow or black PVC covered as specified elsewhere in the Specification, the PVC being UV stabilised. Sizes of earth wire are depicted on the drawings.
- 4.9.2 Bare earth continuity conductors shall be run with all cables constituting a low voltage distribution system except in cases where an earth system as described in the Sub-Clause "Reticulation Feeder Neutral Earthing" above shall be installed.
- 4.9.3 Uninsulated earth conductors shall not be less than 500mm below ground level. Above this level all earth conductors shall be green insulated carried in a PVC conduit sleeve.
- 4.9.4 Terminal lug shall be crimped onto the end of the main earth conductor for bolting to the main earth bar of a substation or minisub or other outdoor equipment. Two mechanical clamps shall be used for connection onto cradles or other equipment, as appropriate.
- 4.9.5 Earth connections must not be carried through metal conduits or sleeves.
- 4.9.6 Earth connections shall be so made that in event of any connections being removed the earth connection to the rest of the equipment will not be affected.
- 4.10 Bonding Generally:
- 4.10.1 All metallic parts of an installation are to be bonded to the earth system as required by the appropriate Standards.
- 4.11 Bonding of Equipment:
- 4.11.1 All earth bars shall be run in one continuous length as far as possible, and shall not be bent or formed in any way that requires hammering or severe distortion.
- 4.11.2 Any joints shall be lapped with at least two bolts with nuts and washers of suitable size. Lapped ends shall be pre-tinned.
- 4.11.3 If multiple straps are used, they shall be bolted and fixed together at not more than 750mm intervals.
- 4.11.4 All connections shall be made using brass or stainless steel bolts, nuts and washers, together with a star lock washer, on all kiosks, fused feeder panels, miniature substations and outdoor equipment. Connections to indoor equipment may be made with cadmium plated steel bolts, nuts and washers, with a steel spring washer.
- 4.11.5 All steelwork on a pole is to be bonded using 20mm² solid copper conductor. Requirement applies to cross-arms, all insulator supports and any other hardware.
- 4.11.6 Where equipment is also mounted on the pole, bonded metal is to be earthed to an earth spike as elsewhere specified herein, using a 40mm² bare copper conductor.
- 4.12 Bonding of Steel Lighting Poles:
- 4.12.1 For three phase systems, steel streetlight and site lighting poles shall be bonded with a continuous earth continuity conductor of the size as specified elsewhere. For single phase systems three core cables, of the size specified, shall be installed where the third conductor will be utilised for the continues earth.

- 4.12.2 Continuous earth continuity conductor shall be connected to the pole earth stud.
- 4.12.3 At last pole in a run the neutral conductor shall be bonded to earth.
- 4.13 Supplementary Requirements for Building Services:
- 4.13.1 Main earth system is to comply with the Supply Authority's requirements.
- 4.13.2 Earth spikes, mats and conductors shall be installed as early as possible in building programme, and onus is on Contractor to arrange this with Building Contractor so as to avoid later disturbance of completed construction.
- 4.13.3 Ends of earth conductors shall be terminated in lugs securely bolted to switchboard frames or trays.
- 4.13.4 Earth conductors run outside flexible tubing, where this has been permitted, shall be run neatly along tubing and shall be held in place by approved cable ties. Such conductors shall not be wound around the tubing.

5.0 MV DISTRIBUTION TRANSFORMERS

SANS 780 Distribution transformers

SANS 60076 Part 11 : Dry-type transformers

CMB Standards:

5.1 General:

- 5.1.1 Transformers up to 1000kVA shall have hermetically sealed welded covers, phase, vector group, service voltage and cable termination details being given elsewhere in this Specification.

They shall be equipped as follows:-

Losses	Low
Impedance	Standard
Off-load tap switch	Provision for padlocking is to be provided
Fittings for units	As required by the applicable standards, including inter alia :- in excess of 1000kVA Dial thermometer with maximum pointer Oil level gauge Conservator Silica gel breather containing 1,5kg silica gel/3000 litres oil
Fittings for all units	Lifting Lugs Skid Underbase
Insulating Oil	First filling to be included

Pole mounted transformers shall be fitted with type of bushings as requested elsewhere in the Project Technical Specification.

- 5.1.2 All transformers shall be painted in accordance with requirements for coastal conditions.
- 5.1.3 Pole mounted transformers, if to be installed within 5,0 km of the coast, shall be zinc sprayed.
- 5.1.4 Paint colour shall be as specified in the Project Technical Specification.

- 5.1.5 Outdoor transformers shall be installed on plinths constructed as specified in the Clause "Plinths" elsewhere in this Part.
- 5.2 **Completely Self Protected (CSP) Transformers:**
- 5.2.1 Where a completely CSP transformer is called for, MV switchgear shall comprise two pairs of fault make, load break rotary switches housed within transformer tank, operating spindles being extended to front of unit within MV compartment.
- 5.2.2 Load side of switches shall feed transformer through specially designed expulsion fuses so rated that they will always discriminate with LV circuit breaker and only operate in case of an internal transformer fault.
- 5.2.3 Each pair of switches shall be interlocked with a stainless steel plate mounted on stainless steel posts such that switches cannot be in the "ON" and "EARTHED" positions together. Label in white on red, reading "DO NOT OPERATE EARTH SWITCH BEFORE ISOLATING POWER SUPPLY TO INCOMING CABLE" shall be fitted to each earth switch.
- 5.2.4 LV protection shall comprise an LV circuit breaker mounted in transformer tank, so selected that it will trip as a function of oil temperature by way of a thermal device, as well as instantaneously by means of a magnetic trip device. Circuit breaker must be fully compatible with MV expulsion fuses to ensure their absolute discrimination under all operating and fault conditions.
- 5.2.5 An auxiliary light operated by a separate thermal device in tank is to indicate when oil temperature reaches 75% of circuit breaker trip value.
- 5.3 **Dry Type Transformers:**
- 9.3.1 Dry type transformers shall be supplied in IP31 enclosures fitted with limit switches that can be linked to the switchgear to trip the relay when any of the doors are opened.

6.0 **LV MAIN DISTRIBUTION SWITCH BOARDS**

These are defined as boards controlling main supplies, either incoming and/or outgoing, by air break or moulded case circuit breakers, or outgoing supplies with fused-switch units.

SANS 10142	The wiring of premises (Part 1) Low voltage installations
SANS 1195	Busbars
SANS 1274	Coatings applied by the powder-coating process
SANS 60529/IEC 60529	Degrees of protection provided by enclosures (IP Code)

CMB Standards:

- 6.1 **Construction:**
- 6.1.1 Construction, material and colour as specified elsewhere in Project Technical Specification.
- 6.1.2 Type, i.e. flush mounted, wall mounted, extension or floor standing, as specified elsewhere in Project Technical Specification.
- 6.1.3 Suitable to accommodate all equipment specified elsewhere in Project Technical Specification.

- 6.1.4 Panels shall be either hinged or removable as specified elsewhere in Project Technical Specification.
- 6.1.5 Comprise of a welded or bolted framework of steel sections with a minimum 1,6mm thick steel panel cladding.
- 6.1.6 Securing of fixed panels shall be by means of square key latches with bottom locating pins.
- 6.1.7 Edges of all doors and removable panels shall be so constructed that they can readily accept a rubber gasket, should dust and damp proofing be required.
- 6.1.8 All equipment shall be mounted behind removable fascia plates, only switch toggles, etc., protruding.
- 6.1.9 Padlock able doors over toggles shall be provided. Switch toggles not covered by a padlock able door, shall be provided with means for padlocking in the "OFF" position.
- 6.1.10 Doors of fuse-switched units shall be hinged and interlocked with mechanism so that case cannot be opened with switch closed, or switch closed with case open. With case open, no live parts shall be exposed.
- 6.1.11 Metal surfaces of the boards shall be epoxy powder coated.
- 6.1.12 Cabling arrangements shall be such that outgoing feeder ends can be made off with board live at all times.
- 6.1.13 Gland plates shall be bonded to earth bar by means of a 70mm² bare copper conductor fixed with min. 10mm cadmium plated bolts and nuts.
- 6.1.14 Space shall be left to allow access to the rear of board.
- 6.1.15 Board must be designed to fit into space available and be of suitable dimensions to enter through door-ways provided.
- 6.2 Contents and Equipment:
- 6.2.1 Busbars shall be mounted at top of board, enclosed by removable full height panels at back, removable top panels and removable front panels covering busbar section only. Droppers from enclosed busbar chamber shall pass through insulating barriers located as necessary.

Where busbars are exposed in cubicles requiring access for operation or maintenance, they shall be shrouded with a suitable insulating material.
- 6.2.2 Busbars shall be of adequate section for current and short circuit rating. Current density shall not be more than 185A per square centimetre at current rating specified. Bars shall have a minimum spacing of 32mm between bars and 25mm to earth.
- 6.2.3 Where multiple bars are used, the air gap between bars shall be same as bar thickness.
- 6.2.4 Busbars shall be securely supported by insulators of a size and so spaced that they will prevent busbar distortion under maximum short circuit conditions.
- 6.2.5 Equipment shall be arranged to connect to busbars with solid copper connections of adequate section to resist short circuit stresses imposed by faults up to maximum breaking capacity of associated switchgear.
- 6.2.6 Joints between busbars and equipment shall be tinned and connected using phosphor bronze or stainless steel nuts and washers above a fault level of 20kA or cadmium plated steel below this rating. Flat washers shall be provided on both sides of connection and spring lock-washers beneath the nuts.

- 6.2.7 Busbars shall be pre-drilled and tinned at both ends for future extensions and removable plates shall be fitted at either end of busbar chamber to enable such extensions to be made.
- 6.2.8 Suitably drilled and tinned fishplates for later coupling of the bars shall be provided.
- 6.2.9 All air circuit breakers shall be of the withdrawable type.
- 6.2.10 Phase barriers are to be installed for all circuit breakers.
- 6.2.11 Equipment inside board shall be of type and manufacture as specified elsewhere in Project Technical Specification.
- 6.2.12 Moulded case circuit breakers shall be provided with lockout latches.
- 6.2.13 Circuit breakers shall be clearly labelled, where withdrawable type units are used, both carriage and the panel are to be labelled.
- 6.2.14 Cabling arrangements shall be such that outgoing feeder ends can be made off with board live at all times.
- 6.2.15 Continuous earth bar sized to match the specified fault rating of the board but of not less than 25mm x 6,3mm cross section shall be run along the entire length of board and shall be provided with a minimum 10mm cadmium plated bolt for connection of earth conductor.
- 6.2.16 Wiring of boards shall comply generally with Clause "Control Equipment and Wiring" elsewhere in this Part.
- 6.2.17 Main circuit breakers shall comply with Clause "LV Circuit Breakers" elsewhere in this Part.
- 6.2.18 Hot dipped galvanising shall comply with Clause "Hot Dip Galvanising" elsewhere in this Part.
- 6.2.19 Labelling shall comply with Clause "Labels and Notices" elsewhere in this Part.
- 6.2.20 Three maximum demand reading ammeters and a voltmeter and selector switch are to be provided for each incoming supply circuit breaker.
- 6.3 Installation:
- 6.3.1 No board shall exceed 2,4m in height nor shall any operating handle, button or switch be mounted higher than 1,8m or lower than 0,6m.
- 6.3.2 No part of any equipment shall be mounted closer than 300mm to the floor.
- 7.0 **LV MCB MAIN AND SUB-DISTRIBUTION BOARDS AND CONTROL PANELS**
- These are defined as boards controlling the main supplies, normally coming from a LV Main Distribution Switch Board, and outgoing supplies with moulded case circuit breakers.
- | | |
|-----------------------------|--|
| SANS 10142 | The wiring of premises |
| SANS 1195 | Busbars |
| SANS 1274 | Coatings applied by the powder-coating process |
| SANS 60529/IEC 60529 | Degrees of protection provided by enclosures (IP Code) |

CMB Standards:

- 7.1 **Construction:**
- 7.1.1 Construction material and colour specified elsewhere in Project Technical Specification.
- 7.1.2 Larger MCB panel distribution boards and motor control panels shall be floor standing.
- 7.1.3 Suitable to accommodate all equipment specified elsewhere in Project Technical Specification.
- 7.1.4 Where single phase breakers are used in three phase boards, these must be arranged in three vertical rows, one for breakers in each phase.
- 7.1.5 All structural elements of main and sub-distribution boards and complete construction of motor control panels shall be of minimum 2,0mm thick material.
- 7.1.6 Non-structural elements shall be of 1,6mm material. Minor bonding trays shall be of 1,2mm material and all bonding trays shall be galvanised.
- 7.1.7 All boards to be mounted outside or specified as being weatherproof shall be constructed of 2,0mm 3CR12 sheet, epoxy powder coated to a thickness of 70 microns.
- 7.1.8 Cognisance must be taken of the heat dissipated by equipment and adequate ventilation be provided.
- 7.1.9 Panels shall be either hinged or removable as specified elsewhere in Project Technical Specification.
- 7.1.10 Securing of fixed panels shall be by means of square key latches with vertical locating pins.
- 7.1.11 Boards shall be at least 115mm in depth unless otherwise approved.
- 7.1.12 A maximum of two rows of conduit shall enter horizontal edges of boards and width of board must be sufficient to accommodate all conduits entering.
- 7.1.13 All control panel doors shall be fitted with dust and damp proof seals
- 7.1.14 Flush boards in walls shall be provided with a separately attached metal frame and door which is adjustable so that it may be set plumb.
- 7.1.15 Boards with a width of 600mm or greater shall be fitted with double doors. Surface and flush boards shall be provided with doors.
- 7.1.16 Hinges shall be as specified elsewhere in Project Technical Specification.
- 7.1.17 Hot dipped galvanising shall comply with Clause "Hot Dip Galvanising" elsewhere in this Part.
- 7.1.18 All metal surfaces of boards shall be epoxy powder coated.
- 7.1.19 Cabling arrangements shall be such that outgoing feeder ends can be made off with board live at all times.
- 7.1.20 Gland plates shall be bonded to earth bar by means of a 70mm² bare copper conductor fixed with min. 10mm cadmium plated bolts and nuts.
- 7.1.21 Interior of boards shall be arranged for easy access to all wiring and components.
- 7.1.22 Where boards are installed in 115mm walls, they shall be provided with expanded metal fixed to entire back of board.
- 7.1.23 Underside of board shall be rendered vermin proof by means of similar plates to gland plates above.

7.2 Contents and Equipment:

- 7.2.1 Unless made specifically to clip in from front, blanking plates shall be fixed with short cadmium plated bolts and nuts
- 7.2.2 All openings for future equipment shall be covered with blanking plates fixed on inside of opening.
- 7.2.3 Copper busbars are to be provided for each phase and are to be mounted on suitable insulators or fixed to terminals of miniature circuit breakers, and be of sufficient length to accommodate future breakers as specified elsewhere in Project Technical Specification.
- 7.2.4 Busbar and other connections shall be made using cadmium plated steel (or brass in coastal areas) bolts, nuts, flat and spring washers.
- 7.2.5 Main neutral feed to busbar shall be connected by a lug bolted to bar, as described above.
- 7.2.6 Neutral busbars shall be solid brass with two per-way pinching screws and sufficient ways for feed and all circuits connected, including spare ways to same number as spare circuits.
- 7.2.7 All equipment shall be mounted behind removable fascia plates, only switch toggles, etc., protruding.
- 7.2.8 Isolating device for all motors situated remote from control panel shall be lockable in the "OFF" position.
- 7.2.9 Fascia panels shall have moulded knobs for ease of removal of the panel.
- 7.2.10 Transformers for low voltage supplies and all low voltage wiring shall be separated by metal barriers from medium voltage circuits.
- 7.2.11 Positions of transformers are to be indicated by labels attached to face of board.
- 7.2.12 All equipment on boards shall be back-connected and no wire or cable shall be visible from front.
- 7.2.13 PVC insulated wiring shall be used throughout, current rating being not less than rating of circuit breaker or aggregate rating of bank of circuit breakers which it connects.
- 7.2.14 In case of MCB Main Boards cabling arrangements shall be such that outgoing feeder ends can be made off with board live at all times.
- 7.2.15 In case of MCM Main Boards all gland plates shall be bonded to earth bar by means of a 70mm² bare copper conductor fixed with min. 10mm cadmium plated bolts and nuts.
- 7.2.16 Wiring of boards shall comply generally with Clause "Control Equipment and Wiring" elsewhere in this Part.
- 7.2.17 Main circuit breakers shall comply with Clause "LV Circuit Breakers" elsewhere in this Part.
- 7.2.18 Labelling shall comply with Clause "Labels and Notices" elsewhere in this Part.
- 7.2.19 Bridge conductors and tails to circuit breakers shall be suitably rated for the fault level at the board. The cross sectional area of these conductors (mm²) must at least be equal to the prospective short-circuit current (in kA).
- 7.2.20 All spares shall be handed to Employer's representative at time of handover inspection.
- 7.2.21 All instruments, meters, pilot lights, etc., and main isolator must be operable with the doors closed unless otherwise specified.
- 7.2.22 Heat anti-condensation heaters are to be so constructed and fitted that they cannot be inadvertently touched.

- 7.2.23 Transformers for low voltage supplies and all low voltage wiring shall be separated by metal barriers from medium voltage circuits.
- 7.2.24 Positions of transformers are to be indicated by labels attached to face of board.
- 7.2.25 Equipment on boards shall be back-connected and no wire or cable shall be visible from front.
- 7.2.26 PVC insulated wiring shall be used throughout, current rating being not less than rating of circuit breaker or aggregate rating of bank of circuit breakers which it connects.
- 7.3 **Installation:**
- 7.3.1 Floor standing boards shall be bolted in position.
- 7.3.2 No board shall exceed 2,4m in height nor shall any operating handle, button or switch be mounted higher than 1,8m or lower than 0,6m.
- 7.3.3 No part of any equipment shall be mounted closer than 300mm to floor.
- 7.3.4 Minor types of main and sub-distribution boards and control panels shall consist of sheet metal trays, suitably built in or secured on surface.
- 7.3.5 Where boards are installed in 115mm walls, they shall be provided with expanded metal fixed to entire back of board.
- 7.3.6 Trays of flush boards shall be built in or suitably secured to brickwork in specified places. Each shall be mounted with upper edge at a height of 2,0m above floor level, unless otherwise specified.
- 7.3.7 Unless otherwise specified elsewhere in this Specification, boards contained in cupboards shall be surface mounted and all conduit shall drop into them neatly, vertically and evenly spaced, in a single row, if possible.

8.0 **LV CONSUMER SERVICE CONNECTION BOXES (CSCB)**

These are defined as electrical distribution boxes, mounted on poles, controlling main supplies to normally residential units, by circuit breakers.

SANS 1195 Busbars

SANS 60529/IEC 60529 Degrees of protection provided by enclosures (IP Code)

CMB Standards

- 8.1 **Construction:**
- 8.1.1.1 Construction material and colour specified elsewhere in Project Technical Specification.
- 8.1.1.2 Suitable to accommodate all equipment specified elsewhere in Project Technical Specification.
- 8.1.2 The protection rating of CSCB shall be at least IP54.
- 8.1.3 All conductor/cable entries into the box shall be by means of suitably sized UV stable PVC compression glands.
- 8.1.4 Electro-galvanised padlock able lever locks shall be used to lock doors.

8.2 Contents and Equipment:

- 8.2.1 Equipped with number of and size of UV stable colour coded conductor tails for connection to overhead line specified elsewhere in Project Technical Specification.
- 8.2.2 Wiring of boards shall comply generally with Clause "Control Equipment and Wiring" elsewhere in this Part.
- 8.2.3 Main circuit breakers shall comply with Clause "LV Circuit Breakers" elsewhere in this Part.
- 8.2.4 Each main circuit breaker is to be labelled with erf number it will serve. Such labelling is to comply with appropriate requirements of Clause "Labels and Notices" elsewhere in this Part.

8.3 Installation:

- 8.3.1 Stainless steel straps, 19mm wide, shall be used to strap box to pole.
- 8.3.2 Conductors shall be installed at box as to create a "drip loop" to prevent water running down conductors into connectors.
- 8.3.3 Exact mounting height on poles specified elsewhere in Project Technical Specification.

9.0 LV CIRCUIT BREAKERS

SANS 156	Moulded-case circuit-breakers
SANS 767	Earth leakage protection units
SANS 1473	Low-voltage switchgear and control gear assemblies
SANS 1765	Low-voltage switchgear and control gear assemblies (distribution boards) with a rated short-circuit withstand strength up to and including 10 kA
SANS 60439	Low-voltage switchgear and control gear assemblies
SANS 60934	Circuit-breakers for equipment
SANS 61008	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs)
BS EN 60947	Specification for switchgear and control gear for voltages up to and including 1000 V A.C. and 1200 V d.c. Circuit-breakers

CMB Standards

9.1 General:

- 9.1.1 Supply voltage, normal current, fault capacity and type, as well as any special characteristics required for circuit breakers, shall be as stated elsewhere in Project Technical Specification.
- 9.1.2 Main circuit breakers are to be of one make throughout installation.
- 9.1.3 Main circuit breakers inside LV main distribution switchboards shall be equipped with adjustable instantaneous magnetic and inverse time delay thermal overload releases on each phase and shall be arranged for flush mounting. Shall be connected to

busbars with solid copper connections of adequate section to resist short circuit stresses that may be imposed by faults up to maximum rupturing capacity of breaker.

- 9.1.4 Where circuit breakers are used to control supply taken directly from Supply Authority, they shall be of a make approved by that Authority, and shall be set to trip within specified limits laid down by that Authority.
- 9.1.5 Rack-out type withdrawable air circuit breakers shall have interlocking to ensure that racking in or out can take place only with the circuit breaker open.
- 9.1.6 Moulded case circuit breakers shall have a time delay tripping on low overloads and high speed tripping on short circuit.
- 9.1.7 Three phase MCB's shall be fitted with suitable phase barriers.
- 9.1.8 Where MCB's are required to be connected to cables larger than 70mm², terminals shall be of stub busbar or rear connecting stud types. For all other cables, box type terminals shall be provided.

9.2 Installation

- 9.2.1 The connecting device between the incoming cable and air circuit breaker, and between said breaker and outgoing bars shall be fitted with shutters which are automatically closed and locked by the action of racking out.
- 9.2.2 MCB's shall be fitted with purpose made terminal shrouds where no fascia plate is provided.

10.0 SUPPLY AUTHORITY METERS

BS 5685

Electricity meters. Specification for Class 3 var-hour meters

CMB Standards

10.1 General:

- 10.1.1 Meters shall be of type as stated elsewhere in the Project Technical Specification.

10.2 Installation and Commissioning:

- 10.2.1 Meters shall be installed in kiosks / miniature substations as specified elsewhere in the Project Technical Specification.
- 10.2.2 Allowance must be made in tender price for calibration testing and programming of these meters to meet municipal requirements.

11.0 INSTRUMENTS, METERS AND PROTECTION RELAYS

SANS 473 / NRS 071

Automated meter reading for large power users

SANS 474 / NRS 057:2005

Code of practice for electricity metering

SANS 1524

Electricity payment systems

SANS 1799

Watt-hour meters - AC electronic meters for active energy

SANS 1966 / IEC 60211

Maximum demand indicators, Class I.0

SANS 60044 / IEC 60044

Instrument transformers

SANS 62052 / IEC 62052	Electricity metering equipment (A.C.) - General requirements, tests and test conditions
SANS 62053 / IEC 62053	Electricity metering equipment (A.C.) - Particular requirements
NRS 068	Electricity distribution - cable earth fault indicator
NRS 072	Overhead line fault path indicators
BS EN 60044, BS EN 60044	Specification for voltage transformers

CMB Standards:

11.1 General:

- 11.1.1 Indicating instruments and meters shall have HRC fuse protection on all voltage connections as specified elsewhere on the drawings.
- 11.1.2 Meters and instruments shall have labels fitted below, stating in which circuit they are installed.
- 11.1.3 Cases of all meters shall afford complete protection from dust and damp and shall be suitable for attachment of seals.
- 11.1.4 Selector switches shall be rated at 16A shall be provided with an "OFF" position.
- 11.1.5 Tenderer shall submit full details of meters, instruments and control switches offered in the tender, including connection diagrams for all equipment.
- 11.1.6 Unless otherwise specified in the Project Technical Specification, all meters shall be digital power meters.

11.2 Potential Indicators:

- 11.2.1 Potential indicators shall comprise three neon indicating lamps each energised from a capacitor bushing connected to indicate that incoming cable or busbars are alive, unless specified elsewhere in the Project Technical Specification.

11.3 Protection Relays:

- 11.3.1 Protection relays are specified elsewhere in the specification.

11.4 Current Transformers:

- 11.4.1 Current transformers are specified elsewhere in Project Technical Specification.

11.5 Voltage Transformers:

- 11.5.1 Voltage transformers shall be three phase and of the type specified in the Project Technical Specification.
- 11.5.2 Output shall be 50VA per phase at 110V phase to phase.
- 11.5.3 Fuse protection shall be provided on both primary and secondary.
- 11.5.4 Transformers shall not be affected by single-phasing on the MV side.

11.6 Indicating instruments:

- 11.6.1 All instruments shall be as specified elsewhere in the Project Technical Specification.

11.7 Ammeters:

- 11.7.1 Ammeters, including whole current ammeters, unless specified otherwise in the Project Technical Specification, shall be calibrated to 120% of rated current. Overload capability shall be 10 x rated current for 1,0 second. Those reading in excess of 100A shall be CT operated with 5A full scale deflection.
- 11.7.2 One instantaneous reading ammeter, unless specified otherwise in the Project Technical Specification, shall be provided and connected via a phase selector switch with "OFF" position.
- 11.7.3 Maximum demand reading ammeters, unless specified otherwise in the Project Technical Specification, shall be of combined maximum demand and instantaneous type, one meter being supplied per phase.
- 11.7.4 Shall comprise a thermal maximum demand ammeter with drag pointer combined with a moving iron instantaneous pointer. The drag pointer reset knob shall be sealable.
- 11.7.5 Where dual ratio CT's are specified, ammeter scale plates are to be engraved on both sides to suit these ratios, the plate for the lower ratio being outermost.

11.8 Voltmeters:

- 11.8.1 One instrument shall be provided in each instance connected via a selector switch to read line to line voltages and also line to neutral voltages.
- 11.8.2 Voltmeters for MV use shall be suitable for operation on the 110V side of the voltage transformer, while LV voltmeters shall operate off a nominal line to line voltage of 400V. Scales between 90% and 110% of nominal voltage shall be graduated in 1,25% divisions.

11.9 PF Indicators:

- 11.9.1 Power factor indicators shall be of the type specified in the Project Technical Specification.

11.10 Consumption Meters:

- 11.10.1 KWh meters shall be of the type specified in the Project Technical Specification.
- 11.10.2 Full details of programme facilities and operating instructions shall be supplied with these meters.
- 11.10.3 Allowance must be made in the tender price for calibration testing and the programming of the bulk meters.

11.11 Digital Power Meter:

- 11.11.1 Power analyser module shall display the voltage and currents of all three phases as well as the record the peak, i.e. maximum values of same. The true, reactive and apparent power consumed, power factor and total harmonic distortion (THD) of all three phases shall also be accesses via a scrollable menu interface.

11.12 Medium Voltage Metering Units:

- 11.12.1 Shall comprise of a free standing panel mounted on a concrete plinth.
- 11.12.2 When used in conjunction with extensible switchgear, metering unit shall form an integral part of the switchboard. In such cases it shall be specifically designed to match the associated switchgear and to be connected to the busbars of the extensible switches from which the complete switchboard is assembled.
- 11.12.3 When mounted adjacent to non-extensible switchgear or within an extensible switchboard it shall share a common plinth with the switchgear.

- 11.12.4 Voltage transformer, current transformers, and consumption metering equipment shall comply with the relevant requirements detailed elsewhere in this part and in the Project Technical Specification.
- 11.12.5 Operating voltages, CT and VT ratios, and metering requirements are detailed in the Project Technical Specification.
- 11.12.6 Voltage transformer shall not be affected by single phasing on the medium voltage side.
- 11.12.7 Cable boxes shall be suitable for the cable sizes and types specified in the particular specification or on the drawings.
- 11.12.8 Exposed metal work shall be hot dip galvanized or zinc metal sprayed and painted to match adjacent or associated MV switchgear. Where such switchgear is remote from the metering unit, the unit shall be painted as specified in Project Technical Specification.
- 11.12.9 Exposed bolts, nuts and hinges shall be galvanized or fabricated from a suitable grade of stainless steel designed to resist corrosion or discolouration in service.

12.0 **CONTROL EQUIPMENT AND WIRING**

SANS 767 Earth leakage protection units

SANS 1091 National colour standard

BS EN 60947 Specification for motor starters for voltages up to and including 1000 V A.C. and 1200 V D.C. Direct-on-line (full voltage) A.C. starters

CMB Standards:

12.1 **Time Switches:**

- 12.1.1 Time switches shall be mounted in an accessible position for ease of adjustment.
- 12.1.2 Shall be provided with re-chargeable batteries to provide up to 48 hours of operation should a power failure occur.
- 12.1.3 Shall be fully programmable as specified in the Project Technical Specification.
- 12.1.4 Shortest switching interval shall be 1,0 second for motor control and 30 minutes for general purposes.
- 12.1.5 Units shall include a manual override facility and be suitable for wall or DIN-rail mounting.
- 12.1.6 Protection shall be at least to IP42 and the units shall operate satisfactorily in the temperature range - 5°C to + 55°C.

12.2 **Low Voltage Transformers:**

- 12.2.1 Bell and other low voltage transformers shall be of the double wound type.
- 12.2.2 Shall have an adequate capacity for the duty required but not less than 50VA on short-time rating.
- 12.2.3 Transformers shall have one end or the centre point of the low voltage winding earthed.

12.3 Contactors:

12.3.1 Contactors shall, unless otherwise specified, comply with the standards for current making and breaking Category AC1 for non-inductive loads and Category AC3 for inductive loads.

12.4 Earth Leakage Protection Units:

12.4.1 Earth leakage protection units shall have a sensitivity of 30mA, unless stated to the contrary elsewhere in this Specification, or on the drawings.

12.4.2 Unit shall actuate a shunt trip isolator or MCB as specified.

12.4.3 Units shall carry the SABS Mark.

12.5 Motor Starters:

12.5.1 All Starters are to be of the same make.

12.5.2 Star-Delta starters are to be provided with both electrical and mechanical interlocks.

12.5.3 Starters are to be protected by moulded case circuit breakers as specified in Sub-Clause "Moulded Case Circuit Breakers" elsewhere in this Part.

12.5.4 Starters are to be so selected that they are not subjected to a higher fault current than that for which they are designed.

12.5.5 MCB's and isolators are to be lockable in "OFF" position where motors are situated remote from control panel.

12.5.6 Starters for all motors shall comprise magnetically operated contactors, shall be of robust design, operate without undue noise and vibration.

12.5.7 Unless otherwise stated, they shall be of continuous rating, current making and breaking Category AC3.

12.5.8 Contactors shall be of the hold-in type capable of operating satisfactorily without overheating for a period of 10 minutes if the supply voltage falls to two thirds nominal.

12.5.9 Contactors shall not chatter when opened at two thirds voltage, or at a frequency 10% below nominal.

12.5.10 Low voltage release is to be inherent in the operating coil.

12.5.11 Starters are to be equipped with a voltage free auxiliary change-over contact to provide a "RUN" signal during operating.

12.5.12 No motor control gear shall have a continuous rating of less than 10A at Category of duty AC3.

12.5.13 Contactors shall be capable of making and breaking the starting current of the motor and of carrying this current without damage for a period of one minute.

12.5.14 Contactors shall also be capable of withstanding, without damage, the passage of the maximum fault MVA of the circuit until such time as the fault can be cleared by the operation of the back-up protection.

12.5.15 Where anti-condensation heaters are fitted, these must be disconnected by the starter main switch.

12.5.16 Overloads of the thermal type shall be matched to the motor ratings and are to be manually reset.

12.5.17 Overloads are to be so set that the motor will trip within 30 seconds of a single phase condition arising when the motor is hot and operating at 80% of full load current. If the starter is not capable of this, then single phase protection devices are to be fitted for all motors of 10kW and over.

- 12.5.18 All overload devices must be fitted with a voltage free auxiliary changeover contact to provide a "tripped" signal. If this facility is not available on the overload offered, an interposing relay is to be provided to perform the same function. Such a relay must be energised upon an overload trip occurring.
- 12.5.19 The following shall be included as standard features :
Overload protection; Phase imbalance and single phase protection; Locked rotor and excessive re-starts protection; Thermal memory; Auxiliary supply dip-proofing; Fail-safe operation on main trip relay; Analogue or LED indication of percentage motor load and thermal memory.
- 12.5.20 Optional features which may be specified elsewhere in this Specification are:
Earth fault protection; Short circuit protection, etc.
- 12.5.21 In the case of dual-speed motors, protection shall be provided by a dual-operation relay separately configured to provide full protection at each speed.
- 12.6 Pilot Lights:
- 12.6.1 Pilot lights are to be either cluster LED, neon, transformer or resistor reduced wattage type.
- 12.6.2 Lights shall be easily seen when operating in normal daylight.
- 12.6.3 Where pilot lights are connected to remote equipment by multi-core control cables neon lamps shall not be used because of the inductive effect of the control cores.
- 12.6.4 100% spare lamps are to be provided for all pilot lights.
- 12.6.5 Lamp test facilities via a lamp test push button wired to all indicator lights must be provided.
- 12.6.6 Pilot lights are to be of the colours indicated below, unless elsewhere specified.
- | | | |
|----------|---|-------|
| Power on | - | Amber |
| Fault | - | Red |
| Run | - | Green |
- 12.6.7 Pilot lights indicating "STARTER CLOSED" and "OVERLOAD TRIP" shall be fitted to all motor circuits.
- 12.7 Hour Meters:
- 12.7.1 Hour meters shall be of the digital type reading up to 99999 hours, unless otherwise specified.
- 12.7.2 Meters shall be suitable for 230V, 50Hz. AC operation.
- 12.8 Duty Selector Switches:
- 12.8.1 Control of all items of equipment which can act as standby to each other must include a duty selector switch to enable the lead duty to be selected as well as second and third preference, i.e. 1,2,3; 2,3,1; 3,1,2 for a three motor system.
- 12.9 Hand/Off/Auto Switches:
- 12.9.1 The hand/off/auto switch shall be fitted to each starter subject to automatic control.
- 12.9.2 The hand control circuit, which shall comprise stop-start push button, shall be fed from a fuse other than that for the automatic control system.

12.10 Phase Failure Relays:

- 12.10.1 Phase failure relays are to provide reverse phase rotation protection.
- 12.10.2 The relay is to be so arranged with a timer that it will only initiate a trip upon a single phase condition occurring and not upon restoration of power.
- 12.10.3 Provision is to be made to ensure that a trip occurs irrespective of which phase is lost.

12.11 Relays:

- 12.11.1 Type of relay specified elsewhere in the Project Technical Specification.
- 12.11.2 Each relay is to be numbered and this number must appear on both relay and adjacent to its respective base in the case of the plug-in type.
- 12.11.3 Adjustable timing relays must be labelled with their function.

12.12 Photo-electric Controls:

- 12.12.1 Photo-electric switches shall be of the type comprising a photo-sensitive resistor, thermal actuator with an inherent operating delay to make it insensitive to short duration changes in light levels and a change-over switch mechanism, all housed within a tough, translucent, weather and ultra-violet resistant cover.
- 12.12.2 Operating level shall be factory preset to switch on at approximately 50 lux and off at approximately 100 lux.
- 12.12.3 Response time after sudden changes in light level shall be not less than 15 seconds.
- 12.12.4 Integral protection against voltage surges shall be provided.

12.13 Main and Control Circuits:

- 12.13.1 Control equipment shall be mounted in a separate hinged panel fitted with square key latches to permit ease of access to terminals, etc., at the rear of the panel.
- 12.13.2 Where busbars are located directly behind such panels, a separate removable insulated panel shall screen them.
- 12.13.3 Wiring shall be carried out using suitably rated, colour coded insulated wire.
- 12.13.4 Main terminals are to be connected in strict phase rotation.
- 12.13.5 Wires shall not be joined between terminal points and no terminal shall have more than two wires connected to it unless they are lugged connections.
- 12.13.6 Spare terminals are to be provided to accommodate all spare control cable cores.
- 12.13.7 Terminals for wires smaller than 16mm² shall have pressure plates.
- 12.13.8 Terminals for the connection of external control wiring shall be of the "disconnect" type.
- 12.13.9 Terminations shall be fitted with numbered ferrules, the numbers corresponding to those on the appropriate wiring diagrams to be prepared by the board Manufacturer. All terminal strips are to be similarly numbered.
- 12.13.10 Generally, wiring shall be enclosed in strategically placed plastic wireways. Small numbers of wires to remote positions may be neatly strapped, using plastic buckle clips or hard plastic "loom formers". Where wiring is run to equipment mounted on hinged doors, wiring shall be carried in a plastic "loom former" which is so installed that the wiring is not strained with the door fully open.
- 12.13.11 Colour of all panel wiring shall comply with the following:-

Colour of WireCircuit Particulars

Red, White and Blue

Phase connections in current and voltage transformer circuits and in all three phase circuits.

Green/Yellow bi-colour

Insulated earth wires.

Black

Neutral connections.

Grey

Control connections.

White

Connections in DC alarm circuits.

All control circuits shall have 5A HRC fuse protection.

12.14 Labelling:

12.14.1 Control equipment both within the panel as well as all projecting items, are to be labelled in accordance with Clause "Labels and Notices" elsewhere in this Part.

12.14.2 Any device which can be unplugged is to be labelled at the base and on the device.

13.0 **TRENCHING, EXCAVATION AND COMPACTION****CMB Standards:**13.1 General:

13.1.1 Contractor to allow for all excavation and backfilling of cable trenches and holes for planting of poles, unless specified otherwise in Project Technical Specification.

13.1.2 Contractor shall be responsible for ensuring that any trenches opened by him, or for him, do not constitute a hazard to the public.

13.1.3 Barriers and warning lights at night, or any other protection of trenches or excavations, to be provided as required by Engineer or any Statutory or Local Authority.

13.1.4 Contractor shall be responsible for leaving all areas affected by cable trenches, holes in the ground, and any other work done by him or on his behalf, in a clean and tidy state, and for making good all tarmacadam, concrete, paved or grassed surfaces.

13.1.5 Contractor's responsibility to make good any subsidence that may occur within six months of back-filling trenches, and, in case of tarred surfaces, to remove and re-tar with new material.

13.2 Routing:

13.2.1 Routes for underground cables are shown on the drawings.

13.2.2 Variation of these routes shall be approved by Engineer or Clerk of Works before trenching is done.

13.2.3 Contractor's responsibility to ensure that the routes of the cables are correct.

13.3 Pegs:

13.3.1 Contractor will be responsible for the replacement of any pegs disturbed or removed by him.

13.4 Trenching and Excavation by Others:

13.4.1 Contractor to co-operate closely with the Trenching Contractor at all times and is required to be in attendance during backfilling of all trenches, etc., to ensure that cables are not damaged in any way and that poles are correctly aligned.

13.5 Type of Material:

13.5.1 Unless otherwise specified elsewhere in this Specification or Bill of Quantities, Tenderers shall allow for excavating cable trenches and holes in earth. In addition, unit rates shall be provided for excavating in soft rock and hard rock.

13.5.2 Following definitions shall apply to the three categories: Where the conditions experienced are a combination of two or more of the conditions listed below, the Contractor shall be paid on rates in proportion to the contents of earth, soft rock or hard rock experienced in the excavations.

"Earth" shall mean ground that can be removed by hand and includes loose gravel, clay, made-up ground, loose or soft shale, loose oukclip, and boulders less than 75mm in diameter.

"Hard Earth" shall mean all hard ground such as oukclip, hard shale, decomposed rock, loose boulders and large stones, etc., which require the use of pneumatic tools, mechanical rippers and / or excessive hard labour to excavate and remove economically.

"Rock" shall mean granite, quartzite, dolomite, or other rock of similar hardness, which can only be excavated and removed economically by blasting, wedging or breaking.

13.6 Verification of Excavation Claims:

13.6.1 Notwithstanding any Provisional Amounts for excavation in rock included in the Schedule of Quantities, payment will only be authorised for excavation in ground other than "earth" and "hard earth" upon submission of documentary proof of such excavation made and signed as correct at the time trenches or holes were excavated.

13.6.2 In all cases where rock has to be excavated, or where poles, etc., have to be stabilised with concrete or by other means, in loose sand or in soft or waterlogged ground or where substitution of excavated material is necessary for backfilling, that the Engineer or Clerk of Works be notified before such excavation work is back-filled.

13.6.3 Amounts and type of rock encountered shall be measured by the Contractor in the presence of the Engineer or Clerk of Works.

13.7 Precaution with regard to other Services:

13.7.1 Contractor shall exercise extreme caution in his work to avoid damage to existing underground services.

13.7.2 Certain services may be indicated on the drawings but it is not to be assumed that these are the only services, nor that their indicated position is entirely accurate. Such information is given as a guide only and does not negate the above responsibility.

13.7.3 All excavation in the vicinity of other services must be undertaken by hand.

13.8 Compaction:

13.8.1 Care shall be taken in compacting pole holes, trenches crossing roads and those crossing or running under or within 1,0m of paved or tarred sidewalks.

13.8.2 In trenches, the backfill shall be replaced in 150mm layers and four to six passes with a vibrating pan compactor shall be made per layer. Around poles, a jumping jack shall be used on each 150mm layer.

13.8.3 When clay is encountered, Engineer should be advised and may instruct the Contractor to remove all such excavated material and replace it with more suitable material, which shall then be compacted as above.

13.8.4 Where material is too wet for proper compaction, it should be dried out and if too dry, shall be dampened.

- 13.8.5 In the case of road crossings, the excavated base and sub-base material shall be mixed and replaced up to the top level of the original sub-base. New material equal in composition to the original base course shall be supplied, this material being used for the full depth of the base course layer.
- 13.8.6 Degree of compaction required shall be field densities of 95% in respect of poles and road crossings and 90% in respect of sidewalks.
- 13.8.7 All trenches crossing roads and sidewalks shall be approved by the Civil Engineer, who will be responsible for the roads and pavements after hand-over. Engineer will, if the compaction is in doubt, arrange to have it independently tested and should the compaction prove to be below standard, the cost of the test will be debited to the Contractor, who will be required, at his own expense, to open and re-fill the trench or pole hole to obtain the specified compaction value.

14.0 **MV AND LV OVERHEAD POWER LINES**

SANS 182	Conductors for overhead electrical transmission lines
SANS 470	Concrete poles for telephone, power and lighting purposes
SANS 616	High-temperature wood-preserving creosote
SANS 673	Mixtures of copper-chromium-arsenic compounds for timber preservation
SANS 753	Pine poles, cross-arms and spacers for power distribution, telephone systems and street lighting
SANS 935	Hot-dip (galvanized) zinc coatings on steel wire
SANS 10280	Overhead power lines for conditions prevailing in South Africa
SANS 60282-1/IEC 60282-1	High-voltage fuses Part 1: Current-limiting fuses
SANS 60305/IEC 60305	Insulators for overhead lines with a nominal voltage above 1 000 V - Ceramic or glass insulator units for A.C. systems - Characteristics of insulator units of the cap and pin type
SANS 60372/IEC 60372	Locking devices for ball and socket couplings of string insulator units - Dimensions and tests
SANS 60383-1/IEC 60383-1	Insulators for overhead lines with a nominal voltage above 1 000 V Part 1: Ceramic or glass insulator units for A.C. systems - Definitions, test methods and acceptance criteria
SANS 61089/IEC 61089	Round wire concentric lay overhead electrical

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stranded conductors

SANS 61109/IEC 61109	Composite insulators for A.C.. overhead lines with a nominal voltage greater than 1 000 V - Definitions, test methods and acceptance criteria
SANS 61211/IEC 61211	Insulators of ceramic material or glass for overhead lines with a nominal voltage greater than 1 000 V - Impulse puncture testing in air
SANS 61284/IEC 61284	Overhead lines - Requirements and tests for fittings
SANS 61467/IEC 61467:1997	Insulators for overhead lines with a nominal voltage above 1 000 V - AC power arc tests on insulator sets
SANS 61643-1/IEC 61643-1	Low-voltage surge protective devices Part 1: Surge protective devices connected to low-voltage power distribution systems - Requirements and tests
SANS 61952/IEC 61952	Insulators for overhead lines - Composite line post insulators for alternative current with a nominal voltage > 1 000 V
NRS 022	Electricity distribution - stays and associated components
NRS 028	Cable lugs and ferrules - for copper and aluminium conductors
NRS 031	Alternating current disconnectors and earthing switches (up to 145 kV)
NRS 033	Guidelines for the application design, planning and construction of medium voltage overhead power lines up to and including 22kV, using wooden pole structures and bare conductors.
NRS 035	Outdoor distribution cut-outs
NRS 038	Concrete poles
NRS 039	Surge arresters for use in distribution systems
NRS 043	Code of practice for the joint use of structures for power and telecommunication lines
NRS 044	Working procedures and standards in respect of the installation of new electrical works and telecommunication facilities, or the extension or modification of such existing works and facilities

NRS 060	Code of practice for clearances for electrical systems with rated voltages up to and including 145 kV, for the safety of persons
NRS 066	Medium voltage insulators
NRS 073	Wood poles, cross-arms and spacer blocks
NRS 075	Mechanical torque shear connectors

CMB Standards:

14.1 **General:**

- 14.1.1 Overhead power lines shall be erected to ensure their compliance with requirements of Occupational Health and Safety Act, especially so far as clearances and factors of safety are concerned, as well as with requirements of Telkom's Regulations governing crossing, parallel running, etc. with Telkom lines and any other relevant Acts.

14.2 **Surveying and Pegging:**

- 14.2.1 Routes of overhead power lines are shown on drawings.
- 14.2.2 Contractor will be responsible for ensuring that route is accurately followed and that best locations are selected for poles, taking into account topographical conditions, road crossings, telephone crossings, buildings, gates, etc.
- 14.2.3 Contractor may not enter private property without owner's written consent.

14.3 **Bush Clearance:**

- 14.3.1 Bush clearing includes removal of all trees and bush within 5,0m off centreline of line and for lopping of branches encroaching within this area. Extend of bush clearing will be itemised in Bill of Quantities.
- 14.3.2 Under no circumstances are protected indigenous trees to be removed or lopped without written permission of Engineer.
- 14.3.3 All material is to be removed from Site although Contractor shall not be deemed to have ownership of any such material.

14.4 **Supports:**

- 14.4.1 Wood poles shall be used unless otherwise specified, various constructional arrangements being indicated on drawings.
- 14.4.2 All poles, crossarms, props and structures made from wood poles shall be Pinus-Radiata. No bent, bowed or split poles will be accepted. All rejected poles shall be removed and replaced at Supplier's / Contractor's expense.
- 14.4.3 All poles shall be preserved with creosote and all crossarms with a mixture of creosote and waxy oil or, if so specified, with a copper-chromium-arsenic mixture otherwise referred to as 'Tanolith'.
- 14.4.4 All poles shall carry SABS mark.
- 14.4.5 Lengths, top diameter, etc., of poles required are given in Project Technical Specification.
- 14.4.6 Extreme care shall be taken to ensure that correct size of pole is used at strain and intermediate positions.
- 14.4.7 All wood poles and crossarms are to be banded by nailing and stapling.

- 14.4.8 Poles up to 10m shall be planted 1,5m in ground, longer poles 1,8m in ground, unless detailed elsewhere in Project Technical Specification.
- 14.4.9 Care shall be taken to ensure poles are planted plumb and in line and are properly compacted in accordance with the Clause "Trenching, Excavation and Compaction" elsewhere in this Part.
- 14.4.10 All drilling of wood poles and wood structures shall be done prior to erection and all drilled holes, cut surfaces, and pole tops, etc., shall be coated with a creosote/tar mixture.
- 14.4.11 "Shell" of treated poles shall not be damaged by cutting, shaving or drilling unnecessary holes.
- 14.5 Pole Holes:
- 14.5.1 It is preferred that pole holes be auger drilled.
- 14.5.2 Where pole holes are hand-excavated, material is to be set aside in layers to ensure that during back-filling material is replaced in its original strata.
- 14.6 Wood Cross-arms:
- 14.6.1 Shall be of suitable lengths and diameter as detailed in Project Technical Specification.
- 14.7 Steel Cross-arms
- 14.7.1 Shall be hot dipped galvanised rolled steel channel section not less than 100mm x 50mm x 6mm unless otherwise specified and of suitable length for the particular purpose.
- 14.8 Insulators:
- 14.8.1 Type and material of MV and LV insulators shall be as specified elsewhere in Project Technical Specification.
- 14.8.2 MV Strain insulators are clevis/tongue and shall be "in-line" for tension and "twisted" for suspension applications. A thimble clevis, aluminium for aluminium conductor and cast iron for copper conductor, shall be used.
- 14.8.3 All spindles mounted on wooden poles or cross-arms are to be bonded with 16mm² HD bare copper.
- 14.8.4 Type of construction, method of insulator support, details of brackets, spacing, etc., together with details of insulators for other duties or voltages are specified in Project Technical Specification.
- 14.9 Cross-arm Fixing:
- 14.9.1 Contact between cross-arm and pole surfaces shall be such as to ensure no possible movement of cross-arm, either longitudinal or rotational. Where necessary, suitable hot dipped galvanised braces shall stabilize cross-arms.
- 14.9.2 Cross-arms supporting strain insulators or cradles shall be mounted so that they pull towards pole, no tension being taken by the attachment bolts.
- 14.10 Pole Washers:
- 14.10.1 All bolts used in wood pole construction, all "D" bracket fixing bolts, "A" frame fixing bolts, crossarm bolts, etc. are to be fitted with suitable heavy duty galvanised pole washers below nut.
- 14.11 Conductor:
- 14.11.1 Full details of conductors required are given in Project Technical Specification.

- 14.11.2 Stringing of conductors shall be carried out in accordance with sag curves given in SAIEE "Code of Practice for Overhead Power Lines". Before making off at appropriate tension, conductors shall be over strained to 45% of their breaking strain for 20 minutes.
- 14.11.3 At strain points "Preformed" dead-ends shall be used.
- 14.11.4 Binding-in at intermediate MV insulators shall be carried out using "Preformed" twin-ties. Care shall be taken to ensure that ties are correctly sized for both insulator and conductor.
- 14.11.5 For binding-in of aluminium conductor, armour rods shall always be used except where armouring is automatically provided by use of the proprietary tie installed. In this case extreme care should be taken to ensure that all recommended conductor protection pads are properly in place.
- 14.11.6 Where slack spans are employed, care is to be taken to ensure that conductors are free of kinks, bends, etc., and that span has a neat and tidy appearance.
- 14.12 Mid-span Joints:
- 14.12.1 Approved type proprietary mid-span joints shall be used for copper to copper or for aluminium to aluminium conductors.
- 14.12.2 Such joints shall be made strictly in accordance with the Manufacturer's instructions.
- 14.12.3 Mid-span joints of dissimilar conductors will not be permitted.
- 14.13 Connections and Joints:
- 14.13.1 Connectors shall be suitable for the particular conductors, and shall comply with conductor Manufacturer's recommendations.
- 14.13.2 For aluminium to aluminium or copper to copper non-tension joints, these shall be parallel groove clamp, double line tap or compression sleeve joints made with an hydraulic tool.

Extreme care shall be taken to ensure that only compatible materials are used for jointing aluminium conductors. Terminating lugs shall be of cold compression type.
- 14.13.3 Where aluminium to copper connections are to be made, either from line to line or line to cable tail, these shall be made using sacrificial tails. These tails, which shall be of same material as line, shall be joined by means of bi-metal connectors to prevent electrolytic corrosion occurring, and installed in accordance with Manufacturer's recommendations.
- 14.13.4 Where copper cables not larger than 25mm² are to be connected to aluminium lines, grease tubes and aluminium line taps must be used. In all cases where joints are made between different metals, copper conductor must be below aluminium to reduce risk of electrolytic corrosion.
- 14.13.5 All aluminium to aluminium joints are to be coated with "Densal" paste, regardless of method of jointing, and are to be wrapped in "Denso" tape, unless detailed elsewhere in Project Technical Specification.
- 14.14 Fittings:
- 14.14.1 All fittings shall be selected to ensure that their factor of safety is in compliance with Code of Practice at maximum design tension.
- 14.14.2 Pigtail hooks will not be accepted.
- 14.14.3 All fittings such as clamps, tower hooks, spindle brackets, eye nuts, rods, nuts, washers, stay rods, turnbuckles, etc., shall be hot dip galvanised mild steel, and shall comply with any other requirements elsewhere in this Specification.

14.15 Stays:

- 14.15.1 Stays shall be provided as indicated on drawings, and in any other places necessary for proper stability.
- 14.15.2 Stay wires shall be galvanised steel of 700MPa UTS and shall be 12mm diameter 1/7/4,00mm.
- 14.15.3 Stays shall, in all cases, be looped twice around pole at a point mid-way between two bolts in case of an 'A' frame construction or at level of middle conductor in case of a vertical construction. Where two stays are called for, these shall be between vertical conductors, or at top and bottom bolts of an 'A' frame.
- 14.15.4 Stay rods shall be galvanised steel of 400/500MPa UTS of circular section, inc. turnbuckle. Shall have at least 30% take up remaining after line has been tensioned. Stay rods shall be 20mm dia and 2,5m long and base plates shall be 450mm square.
- 14.15.5 In case of LV ABC lines, rod shall terminate in an eye and no turnbuckle shall be used, guy grip being made off into eye with a GMS 'U' bolt at end of grip.
- 14.15.6 All stays shall, except in case of LV ABC lines, be fitted with stay insulators. Shall be located not less than 5,0m above ground. In case of ABC lines stay wire is to be bonded to neutral conductor.
- 14.15.7 Angle between stay wire and pole shall be as near to 45° as possible, but shall not be less than 35°.
- 14.15.8 Stay wire shall be attached to poles and stay rods using "Preformed" pole and guy grips as required.
- 14.15.9 Wooden, or approved uPVC, stay guards, shall be fitted to all stays readily accessible to pedestrian or vehicular traffic. Guards shall be painted in alternate yellow and black cross stripes along their complete length.
- 14.15.10 Flying stays shall be installed as indicated on drawings.

14.16 Props (Struts):

- 14.16.1 Wood props shall be provided as indicated on drawings.
- 14.16.2 A concrete block shall be installed at pole butt to decrease ground pressure.

14.17 Cradles and Cradle Supports:

- 14.17.1 Cradles shall be in the form of two stringer wires of 16mm² hard drawn solid copper, with cross-rungs of same wire at 600mm intervals.
- 14.17.2 Cradle wire stringers shall be securely fixed to each cross-arm and at shackle points. Two clamps per stringer wire shall be used for fixing.
- 14.17.3 Cradle supports shall be similar in construction to cross-arms or as detailed elsewhere in this Specification.
- 14.17.4 Earth continuity of each cradle to its earthing point must be ensured.

14.18 Bonding of Steelwork:

- 14.18.1 All equipment, steelwork, cross-arms, insulator supports and any other hardware on a pole is to be bonded in accordance with Clause "Earthing and Bonding" elsewhere in this Part.

14.19 Expulsion (D) Fuses:

- 14.19.1 Expulsion fuses, three units to a set, suitable for voltage specified, shall be provided as shown on drawings.

14.20 Links:

14.20.1 Type of links (set of three) specified in Project Technical Specification.

14.20.2 All steelwork shall be hot dip galvanised.

14.21 Lightning Arrestors:

14.21.1 Arrestors shall, be rated as follows for 11kV and 22kV operation. Each value shall apply with a 1,2/50 wave form and peak discharge voltages with 8/20 micro-second current wave of 10kA.

Nominal Voltage	kV	11	22
Rated Voltage	kV	11	24
Rated Current	kA	10	10
Minimum Flash-Over Voltage	kV rms	17.5	38
Peak Flash-Over Voltage	kV rms	44	80

14.21.2 A set shall comprise three units, complete with suitable steel cross arm mounting bracket.

14.21.3 Earthing shall be by means of a 40mm² bare copper conductor to an earth spike, as specified in the Clause "Earthing and Bonding" elsewhere in this Part.

14.21.4 Where arrestors have a connection of a metal not compatible with earth conductor, a sacrificial tail shall be used, generally as specified in Sub-Clause "MV and LV Cable Joints and Terminations" elsewhere in this Part.

15.0 **MV AND LV AERIAL BUNDLED CONDUCTOR****SANS 1418**

Aerial bundled conductor systems

SANS 1713

Electric cables - Medium-voltage aerial bundled conductors for voltages from 3,8/6,6 kV to 19/33 kV

CMB Standards:15.1 General

15.1.1 Aerial bundled conductor shall be erected on wood poles whose supply and erection shall comply with Clause "MV and LV Overhead Power Lines" elsewhere in this Part.

15.1.2 Where mid-block distribution is called for construction must comply with Telkom's "Guidelines for Sharing of Structures Supporting Aerial Power Conductors and Telecommunication Lines".

15.2 Description:

15.2.1 Size of all conductors, together with details of any auxiliary (ie. streetlighting) cores or earth cores, shall be as specified in Project Technical Specification.

15.2.2 Supporting system shall be Trench type, i.e. supporting core system.

15.3 Suspension System:

Only three or four items of hardware shall be used for suspension of bundle irrespective of size of phase, neutral, streetlighting and earth cores. These items shall be:

- 1) Dead end or strain clamp assembly
- 2) Suspension clamp assembly
- 3) Suspension bracket
- 4) Eye bolts

15.3.1 Dead end or strain clamp assembly:

15.3.1.1 Shall comprise a heavy duty reinforced plastic body into which fits a glass fibre reinforced plastic or similar moulding designed to hold bundle in tension without damaging its insulation.

15.3.1.2 Clamp shall be attached to pole by means of an aluminium alloy bracket bolted to pole, a suitable pole washer being used on 16mm diameter bolt. Fixing with stainless steel strapping will not be accepted.

15.3.2 Suspension clamp assembly:

15.3.2.1 Shall comprise a support bracket of aluminium alloy with a suitable weather and wear resistant insert, the whole designed to hold the bundle rigidly into the clamp, while the clamp shall be unable to come loose from the suspension bracket.

15.3.2.2 Clamp shall be so designed that it can accommodate an angular line deviation of up to 35° when turning away from pole.

15.3.2.3 Clamp shall be attached to pole by means of an aluminium alloy bracket bolted to pole, a suitable pole washer being used on 16mm diameter bolt. Fixing with stainless steel strapping will not be accepted.

15.3.2.4 Suspension brackets shall be so designed that should line be subjected to excessive downward force due to a fallen tree etc, bracket will shear to prevent breakage of line.

15.3.3 Service conductor strain clamp assembly:

15.3.3.1 Shall generally comply with above, as appropriate, but strain clamp shall be fixed to pole by means of a threaded eye bolt, fitted complete with pole washer.

15.4 Joints and Terminations:

15.4.1 Bundled conductor jointing and termination shall be carried out by a qualified cable joiner using only standard methods approved by Manufacturer for particular type of bundle.

15.4.2 While mid-span joints will be accepted in LV conductor installations, they will not in case of MV installations.

15.4.3 All unconnected ends of line cores shall be sealed with an approved heat-shrink end cap.

15.4.4 MV connections shall be made using an approved heat-shrink termination for cable, as specified in Clause "MV and LV cable Joints and Terminations" elsewhere in this Part, and a termination system approved by the MV bundle Manufacturer for the line conductors.

15.5 Tap-off Connections:

15.5.1 Only tap-off connectors approved by bundle Manufacturer shall be used for connecting to bundled conductor.

- 15.5.2 Connectors (irrespective of conductor size) shall be of watertight, piercing type, to permit connection to a live cable without stripping of any insulation.
- 15.5.3 Contact faces of connectors shall have a sealant having a very high resistance to tracking, shall be watertight and have a minimum dielectric strength of 6kV.
- 15.5.4 Connectors shall have a main body manufactured of glass fibre reinforced plastic or similar material.
- 15.5.5 Contact faces of clamps shall have inserted copper alloy contact plates with teeth, which shall penetrate conductor insulation and establish sound electrical contact when bolt(s) that hold connector together are tightened. Bolts shall be hot dip galvanised.
- 15.5.6 Connector shall be suitable for insulated aluminium and copper conductors and shall be designed so that electrolytic corrosion does not occur. Entire construction shall be such that no part may be dislodged or lost during storage or installation.
- 15.6 Installation:
- 15.6.1 Installation shall be carried out in accordance with Manufacturer's recommendations. , the Contractor is to ensure that his employees erecting the system are familiar with all aspects of aerial bundled conductor, and shall be suitably equipped to install it.
- 15.6.2 Ground clearance of bundled conductor shall comply with latest requirements of Occupational Health and Safety Act.
- 15.6.3 Conductor shall be bound with heavy duty cable ties either side of all suspension points, at strain points and either side of all take-off points.
- 15.7 Earthing:
- 15.7.1 Earthing of neutral and/or earth conductor is to comply with appropriate requirements of Clause "Earthing and Bonding" elsewhere in this Part.

16.0 **STREETLIGHTING AND SITE LIGHTING**

SANS 141	Glass-reinforced polyester (GRP) laminates
SANS 470	Concrete poles for telephone, power and lighting purposes
SANS 475	Luminaires for interior lighting, streetlighting and floodlighting - Performance requirements
SANS 529	Heat resisting wiring cables
SANS 1088	Luminaire entries and spigots
SANS 1266	Ballasts for discharge lamps (excluding tubular fluorescent lamps)
SANS 1421	Rubber- or plastics-coated fabrics - Determination of tensile strength and elongation at break
SANS 1464	Safety of luminaires Part 22: Luminaires for emergency lighting

SANS 1507	Electric cables with extruded solid dielectric insulation for fixed installations (300/500V to 1 900/3300V) Part 3 PVC distribution cables.
SANS 1574	Electric flexible cores, cords and cables with solids extruded dielectric insulation. Part 3: PVC insulated cores and cables.
SANS 1777	Photoelectric control units for lighting (PECUs)
VC 8011	Lamp holders
SANS 10098	Public lighting
SANS 10225	The design and construction of lighting masts
SANS 60529	Enclosures for electrical equipment classified by IP Code
SANS 61000	Electromagnetic compatibility (EMC): Part 3-2: Limits – Limits for harmonic current emissions
SANS 61048	Capacitors for use with fluorescent and other discharge lamp ballasts.
SANS ARP 035	Guidelines for the installation and maintenance of street lighting
NRS 038	Concrete poles
BS EN 14598-1, BS EN 14598-2, BS EN 1459	Polyester moulding compounds for electrical and other purposes. Methods of test.
IEC 60598	Luminaires – Part1: General Requirements and tests. Part 2: Particular Requirements. Section 3: Luminaires for road and street lighting.

CMB Standards:

- 16.1 General:
- 16.1.1 Streetlighting poles and luminaires including type, mounting height, outreach dimensions, quantities, etc., are detailed elsewhere in Project Technical Specification.
- 16.1.2 All poles offered shall conform in all respects to requirements of Occupational Health and Safety Act, where applicable.
- 16.1.3 Poles shall be designed for terrain Category 2 locations using a basic 3 second gust speed for locality of site.
- 16.1.4 Poles shall have neat flush access openings with centre of opening approximately 500mm above ground level and bottom of opening not less than 350mm above ground level.
- 16.1.5 Opening shall have radiused corners and shall be adequately sized to facilitate installation of specified electrical equipment. Minimum size shall be 140mm x 355mm.

- 16.1.6 Opening shall be provided with a neat flush weatherproof door fitted with a stainless steel tamper proof locking device designed to secure door firmly in position and prevent unauthorised access into base compartment.
- 16.1.7 A hot dipped galvanised steel plate (250mm x 70mm) complete with DIN rail for two miniature circuit breakers shall be mounted to a bolt provided opposite access opening.
- 16.1.8 On steel poles a threaded 12mm earth stud shall be provided in a convenient position in base compartment to facilitate earthing of electrical equipment.
- 16.1.9 On concrete or glass fibre poles fitted with galvanised steel access opening covers, a stainless steel earthing stud complete with washer and two nuts shall be provided on inside of the cover to access opening.
- 16.1.10 Where control gear is to be mounted in pole base compartment it shall be Contractor's responsibility to ensure that dimensions of base compartment and access opening are adequate, notwithstanding minimum dimensions specified herein.
- 16.1.11 Poles shall have adequate cable entry slots for specific application in ground section on each side located 400mm below ground level.
- 16.1.12 Spigots shall be provided to suit the luminaires specified elsewhere in this Specification.
- 16.2 Steel Poles:
- 16.2.1 Material and Construction:
 - 16.2.1.1 Steel poles shall be fabricated from mild steel having an ultimate tensile stress of not less than 400MPa.
 - 16.2.1.2 Poles shall be hollow and shall have circular or polygonal cross-section.
 - 16.2.1.3 Vertical section above ground level shall be continuously tapered throughout its length and outreach shall be integral with pole.
 - 16.2.1.4 Base plates shall be provided for all poles.
 - 16.2.1.5 Base plates shall be a minimum of 610mm x 610mm x 6mm thick and shall be provided with drain holes.
 - 16.2.1.6 Base plates shall be bolted in position by means of a minimum of 2 x 20mm diameter hook bolts.
- 16.2.2 Corrosion Protection:
 - 16.2.2.1 All steel poles designed for a mounting height exceeding 8,0m shall be provided with anti-corrosion ground sleeves.
 - 16.2.2.2 Anti-corrosion ground sleeves shall be 600mm in length and shall be positioned such that centre of the sleeve will be at ground level with pole planted at its designed planting depth.
 - 16.2.2.3 Sleeves shall be welded to pole at top and bottom such that no moisture can penetrate between sleeve and pole. Sleeves shall be welded in position prior to galvanising.
 - 16.2.2.4 All poles shall be hot-dip galvanised to coastal conditions.
- 16.2.3 Handling and Transport:
 - 16.2.3.1 Poles shall be stacked and transported in such a way as to minimise mechanical damage to the zinc coating.
 - 16.2.3.2 Poles shall not be stored in direct contact with the ground and if stacked on top of each other, wood spacers shall be used to prevent formation of white rust

- 16.2.3.3 Any small areas of galvanised coating which have become damaged during transport, storage or erection, shall be repaired by in situ shot blasting and zinc spraying to a nominal thickness of not less than 0,1mm.
- 16.3 Concrete Poles:
- 16.3.1 Material and Construction:
- 16.3.1.1 Reinforcing shall be pre-stressed and concrete shall be compacted using centrifugal spun process.
- 16.3.1.2 Stainless steel spacers shall be used to ensure adequate cover over reinforcing steel.
- 16.3.1.3 Poles shall have a smooth finish free from surface defects.
- 16.3.1.4 No base plates are required but where planted in soft, sandy material or in fill material a flat, mesh reinforced, cable slab at least 600mm long shall be placed on a flat well compacted sand layer under butt of pole.
- 16.3.1.5 Access openings shall be not less than 80mm by 390mm for poles with a butt diameter less than 250mm and 110mm by 390mm for poles with a butt diameter of 250mm or larger.
- 16.3.2 Handling and Transport:
- 16.3.2.1 Poles up to 4,5m in length shall be supported in at least two places and poles exceeding 4,5m in length must be supported in at least three places during transport.
- 16.3.2.2 Supports must be shaped to accommodate poles and covered with rubber to avoid surface damage.
- 16.3.2.3 Poles should never be lifted at a single point during loading or off-loading.
- 16.3.2.4 Ropes or slings placed approximately 20% of length of pole from each end should be used.
- 16.3.2.5 Poles stored on site should be placed on 50mm by 75mm timber supports at same positions used for transport.
- 16.4 Glass Fibre Reinforced Polyester Poles:
- 16.4.1 Material and Construction:
- 16.4.1.1 Poles shall be fabricated from glass fibre reinforced polyester resin using filament winding process.
- 16.4.1.2 Material shall be coloured throughout with a colour finish as specified elsewhere in Project Technical Specification.
- 16.4.1.3 Poles for planting in earth shall be provided with a minimum 300mm by 300mm by 1,6mm thick hot dipped galvanised steel base plate fixed with two hot dipped galvanised steel hook bolts.
- 16.5 Erection of Poles
- 16.5.1 Poles shall be planted in positions indicated on drawings.
- 16.5.2 Poles shall be carefully aligned with each other to form straight lines or smooth curves generally following alignment of the associated roads.
- 16.5.3 Planting depth shall be carefully controlled to ensure that all luminaires will be at same height above level of carriageway.
- 16.5.4 Backfilling around pole as per requirements specified in the Sub-Clause "Trenching, Excavation and Compaction" elsewhere in this Part.
- 16.5.5 Where pole is planted in sloping ground height shall be carefully adjusted to ensure that not less than 150mm of ground sleeve projects above ground on high side and not more than 300mm on low side. If this is not possible due to slope of ground then a

platform shall be formed by
until this requirement can be met.

extending fill in vicinity of pole

- 16.5.6 Where poles are to be anchored into rock, base of pole shall have a reinforced concrete block cast around it as detailed elsewhere in Project Technical Specification.
- 16.6 Luminaires:
- 16.6.1 General Requirements:
- 16.6.1.1 Types and wattage of luminaires required are detailed in Project Technical Specification.
- 16.6.2 Materials and Construction:
- 16.6.2.1 Body shall be constructed from inherently corrosion resistant materials of adequate strength and rigidity as further detailed in Project Technical Specification.
- 16.6.2.2 Material shall be coloured throughout.
- 16.6.2.3 Colour of luminaries shall be as detailed in Project Technical Specification.
- 16.6.2.4 A smooth defect free finish is required.
- 16.6.2.5 Material shall be adequately protected against deterioration due to exposure to UV radiation and shall be designed to provide a normal service life of at least 10 years.
- 16.6.2.6 Control gear shall be mounted within luminaire body if required.
- 16.6.2.7 Control gear compartment shall have a hinged cover.
- 16.6.2.8 Control gear shall be easily removed and replaced with luminaire on pole.
- 16.6.2.9 Diffuser shall be constructed from high impact acrylic, tempered glass or other approved material which is not subject to degradation and discoloration through heat or exposure to UV radiation.
- 16.6.2.10 Diffuser shall have a smooth outer surface designed to limit accumulation of dirt and shall be attached to luminaire body in such a way that it provides easy access for relamping and cleaning.
- 16.6.2.11 No tools shall be needed to open lamp compartment.
- 16.6.2.12 When retaining clips are released diffuser shall swing down to allow relamping while remaining attached to luminaire body.
- 16.6.2.13 Design of hinge shall allow easy removal of diffuser, without tools, for replacement or cleaning.
- 16.6.2.14 Hinges and retaining clips shall be manufactured from a suitable grade of stainless steel or other approved material.
- 16.6.2.15 Lamp holders shall be porcelain or thermal plastic types depending on type of lamp to be installed.
- 16.6.2.16 Lamp compartment shall be gasketed to provide and maintain an IP65 rating in service.
- 16.6.2.17 Control gear compartment shall have a minimum IP23 rating.
- 16.6.2.18 All nuts, bolts, washers and screws shall be manufactured from corrosion resisting materials and where in contact with aluminium or other non-ferrous metals they shall be manufactured from a suitable grade of stainless steel.
- 16.6.3 Control Gear:
- 16.6.3.1 Control gear shall be designed specifically to operate specified lamps.
- 16.6.3.2 Ballasts shall bear SABS mark.
- 16.6.3.3 Connections shall be brought out to suitable terminals on ballast base plate.

- 16.6.3.4 Ballasts shall be provided with normal voltage. tappings for 95% and 100% of
- 16.6.3.5 Capacitors shall bear SABS mark.
- 16.6.3.6 Operating power factor at rated voltage shall not be less than 0,85 lagging.
- 16.6.3.7 External igniters shall be provided for all high pressure sodium and metal halide lamps exceeding 70 Watts in rating and shall be of superposed pulse type.
- 16.6.3.8 Where called for in Project Technical Specification, luminaires shall have a 5A, 2,5kA MCB mounted in control gear compartment and wired into incoming phase conductor. Switch shall project through a cut-out in cover such that it may be operated from outside luminaire.
- 16.6.4 Light Distribution:
- 16.6.4.1 Design of luminaire optical system shall provide a non-axial asymmetric luminous intensity distribution complying with requirements set out below.
- 16.6.4.2 Project Technical Specification will indicate whether a cut-off or semi-cut-off distribution is required, either explicitly, or by specifying a particular make, model and type of luminaire
- 16.6.4.3 Semi-cut-off luminaires shall limit direction of peak intensity to a maximum of 75° to downward vertical. Intensity at 90° to downward vertical shall be of order of 50cd/klm with a maximum of 1000cd. Intensity at 80° to downward vertical shall be of order of 30cd/klm.
- 16.6.4.4 Cut-off luminaires shall limit direction of peak intensity to a maximum of 65° to downward vertical. Intensity at 90° to downward vertical shall be of order of 10cd/klm with a maximum of 1000cd. Intensity at 80° to downward vertical shall be of order of 30cd/klm.
- 16.6.5 Labelling:
- 16.6.5.1 Self adhesive labels shall be fixed to underside of control gear compartment cover such that they are readily visible from ground.
- 16.6.5.2 Label shall identify type and wattage of lamp using black 40mm high lettering on a light orange background for sodium lamps, a strong blue background for mercury vapour lamps and a white background for metal halide lamps.
- 16.6.5.3 Letter "T" after wattage shall be used to distinguish tubular lamps from elliptical lamps.
- 16.7 High Intensity Discharge Lamps:
- 16.7.1 General:
- 16.7.1.1 All luminaires shall be supplied complete with specified type and wattage of lamp.
- 16.7.1.2 Lamps suitable for operation on either a 230V $\pm 10\%$, 50Hz supply or, where specifically called for, a 400V $\pm 10\%$, 50Hz supply.
- 16.7.2 Materials and Construction:
- 16.7.2.1 Lamps shall be robust and suitable in all respects for the intended duty.
- 16.7.2.2 Arc tube shall be accurately located in outer envelope.
- 16.7.2.3 Base shall be secured to glass envelope using a high quality heat resistant cement which will keep base securely fixed to glass envelope throughout life of lamp.
- 16.7.2.4 Coating of phosphor lamps shall be uniform and shall provide required spectral distribution.
- 16.7.3 Lamp Data:

- 16.7.3.1 Lamp data sheets shall be submitted with tenders. As a minimum they shall provide following information.

Guaranteed minimum lumen output at 100h and at 1000h.

Lumen maintenance and lamp mortality curves.

Spectral distribution and colour temperature.

Colour rendering index or group.

Minimum guaranteed life.

Life to 50% failures

16.8 Light Emitting Diode (LED):

16.8.1 General:

- 16.8.1.1 Luminaires shall be Class 1 and of the totally enclosed type.
- 16.8.1.2 Luminaires shall be delivered completely assembled with housing, driver, LED module and protector lens.
- 16.8.1.3 Luminaire output shall be provided as nominal flux at Ta of 35°C.
- 16.8.1.4 Colour temperature of luminaire shall be neutral white, 4000K to 5300K, and a colour rendering index of minimum 70, unless specified otherwise in the Project Technical Specification.
- 16.8.1.5 Luminaires shall deliver 70% of the initial lumens, when installed for a minimum of 50 000 hours.
- 16.8.1.6 The Tenderer shall provide a lumen depreciation graph by means of the IES LM 80-08 data of the LED's. The LED light source test data shall provide the expected data for at least 25% of rated LED light source life time, i.e. 10 000 hrs.
- 16.8.1.7 Luminaire shall offer a composite system efficiency of at least 90 Lumen/Watt.
- 16.8.1.8 All luminaires offered shall have a minimum guarantee period of five years.
- 16.8.1.9 The following information and conditions shall be met:
 - LED light source (s) have been tested according to LN-80-80.
 - LED drive current specified by luminaire manufacturer is less than or equal to the drive current specified in the LM-80 test report.
- 16.8.1.10 LED module shall be designed in such a manner that the failure of one LED shall not cause additional LED's to switch-off. LED's shall be series connected. Chip on Board not permitted due to parallel connections.
- 16.8.1.11 Temperature sensors shall be fitted as protection devices to the luminaire. These shall not switch-off the luminaire completely. Full details of how the luminaire manage its temperature, through the use of sensors and the effect on lumen maintenance, shall be supplied.
- 16.8.1.12 Only ceramic or metal core PCB's are to be used to maximize heat transfer.
- 16.8.1.13 Luminaires shall have a minimum rating of IP 66 for both the driver and LED module compartments, when mounted as per SANS 475.
- 16.8.2 Construction of Luminaires:
- 16.8.2.1 Luminaires shall be suitable for operation at an ambient temperature, Ta, of 35°C.

- 16.8.2.2 Luminaires shall contain a heat sink with no fans, pumps or liquids, and the design thereof on the external surfaces shall prevent the accumulation of dirt.
- 16.8.2.3 Body shall be constructed from inherently corrosion resistant materials of adequate strength and rigidity.
- 16.8.2.4 If powder coated, same shall be of a high quality.
- 16.8.2.5 Ferrous components shall be hot-dip galvanized and shall withstand the test specified in the SANS specifications for heavy duty application.
- 16.8.2.6 External components, such as toggle clips, bolts, screws, nuts, washers, shall be 304 stainless steel or better. Screws, which are used to secure covers, shall be held captive when opened.
- 16.8.2.7 Upgrading and / or service of LED unit and driver / power supply shall be possible.
- 16.8.3 Mounting:
 - 16.8.3.1 Spigot entries shall be designed to fit easily over bracket pipe and shall be truly parallel to the fitting axis.
 - 16.8.3.2 Attachment of the luminaire shall be designed to withstand wind speeds of up to 150km / hour on the projected surface of the luminaire without due deflection.
- 16.8.4 Optics:
 - 16.8.4.1 Luminaires shall be able to be equipped with a variety of lenses, providing the desired light distribution.
 - 16.8.4.2 Luminaires shall be photometered according to the C-Gamma system as detailed in the IEC publication.
 - 16.8.4.3 For LED luminaires with non-replaceable LED modules, the intensity values shall be given in candela. The results shall be published in an intensity distribution table, indicating the intensity in cd/klm at each horizontal and vertical angle. This intensity distribution table shall be converted by an accredited test facility and / or luminaire suppliers into a suitable electronic format for use with any of the commercially available lighting computer programs.
- 16.8.5 Diffuser:
 - 16.8.5.1 Diffuser shall be high-impact, toughened, clear flat glass.
 - 16.8.5.2 Diffuser shall form a seal completely preventing the entry of moisture, dust and insects into the lamp.
- 16.8.6 Power Supply or Driver Requirements:
 - 16.8.6.1 LED module (s) drivers shall be housed fully within the sealed body of the luminaire.
 - 16.8.6.2 Output frequency of the drivers shall be 100Hz or greater to avoid visible flicker.
 - 16.8.6.3 Harmonic distortion levels of the LED module driver (s) shall comply with the SANS or IEC standards.
 - 16.8.6.4 LED module driver (s) shall operate at a power factor of 0,9 or greater, and the harmonic distortion levels shall be limited to 20% so as to not cause interference on the electrical network.
 - 16.8.6.5 The driver shall be able to withstand surges of up to 10kV/10kA by means of an external inline fused surge protection device inside the gear compartment. This surge protection shall be easily replaceable.
 - 16.8.6.6 The driver shall incorporate a thermal switch to prevent exceeding the case temperature for maximum life time of equipment.

- 16.8.6.7 Lifetime of the driver shall be 100 000 hrs with 90% survival over the lifetime.
- 16.8.6.8 The driver shall be suitable for nominal 220V-240V, 50Hz, main supply.
- 16.8.7 Earthing:
- 16.8.7.1 Luminaire shall be earthed in accordance with the Electricity Machinery Regulations of the OHSACT.
- 16.8.7.2 All metal parts of luminaires shall be permanently and reliably connected to an earthing terminal and shall withstand the test specified in the standards.
- 16.8.7.3 All parts of earth terminals shall be made of brass or other corrosion resistant metal and the contact surfaces shall be bare metal and not painted or vanished surfaces.
- 16.8.7.4 Earth connections shall be effected by means of suitable lugs.
- 16.8.8 Wiring:
- 16.8.8.1 Internal wiring of luminaires shall be flexible and suitably insulated to withstand the voltage and the temperature encountered.
- 16.9 Electrical Connections:
- 16.9.1 No cable glands or gland plates are required for termination of PVCAS cables in streetlighting poles.
- 16.9.2 Cable shall be brought up to a convenient position adjacent to lower section of access opening.
- 16.9.3 Outer PVC sheath shall be stripped back and steel wire armouring pulled away from around cables, twisted into compact tails and bonded together by means of an adequately sized line tap.
- 16.9.4 All strands of armour wires shall be used.
- 16.9.5 A separate earth conductor shall be taken from this line tap to earth stud in pole base compartment.
- 16.9.6 Phase and neutral conductors shall be jointed using Pratley end connectors fitted with insulating sleeves.
- 16.9.7 Except where an integral circuit breaker is called for in luminaire phase conductor to luminaire control gear shall be protected by a MCB attached to dinrail.
- 16.9.8 Phase and neutral conductors between pole base and luminaires shall be 1,5mm² PVC insulated for luminaires up to 400W and 2,5mm² PVC insulated above this rating.
- 16.9.9 Phase to which each luminaire is to be connected is indicated on drawings.
- 16.10 Photo-Electric Controls:
- 16.10.1 Photo-electric control unit shall be used to switch streetlighting installation.
- 16.10.2 Photo-electric switches shall be of the fully electronic type.
- 16.10.3 Switching shall be fully electronic or by means of a sealed relay capable of switching streetlighting circuits directly or via a contactor with a 230V operating coil.
- 16.10.4 Sensor and switching device shall be housed within a tough, translucent, weather and ultra-violet resistant cover.
- 16.10.5 Operating level shall be factory pre-set to switch on at approximately 50 lux and off at approximately 100 lux.
- 16.10.6 Unit shall provide an operating delay to make it insensitive to short duration changes in light levels.

- 16.10.7 Response time after sudden changes in light level shall not be less than 15 seconds.
- 16.10.8 Integral protection against voltage surges shall be provided.
- 16.10.9 Where photo-electric switch is pole mounted it shall be positioned in such a way that it will not be affected by spill-light from streetlighting installation or by vehicle headlamps.
- 16.11 **Completion and Testing:**
- 16.11.1 Immediately after completion of installation streetlighting system shall be switched on and lamps allowed to stabilise for at least one hour.
- 16.11.2 Voltage at each luminaire shall be measured and tapings on ballasts set accordingly.
- 16.11.3 Before performance testing is carried out, installation shall be put into service until approximately 100h of operation has been reached. Procedure shall be carried out as follows.
1. An illuminance calculation shall be carried out using approved design software.
 2. Actual illuminance values shall be measured on calculation grid points using a suitable and accurate luxmeter. Measurements need only be taken along three longitudinal lines coinciding with left and right carriageway edges and centre of lane nearest to line of luminaires. Calculated and measured values shall be tabulated and delivered to Engineer together with a copy of a print out from approved software giving predicted lux values.
 3. If measured values are all within 15% of calculated values and uniformity along three measured lines is within 10% of calculated uniformity along same lines then installation will be considered to be performing to specification.
- 16.12 **Guarantees and Maintenance:**
- 16.12.1 Installation shall be guaranteed and maintenance carried out in accordance with requirements detailed in Project Technical Specification.

17.0 **PADLOCKS**

CMB Standards:

- 17.1 All padlocks shall be provided by Contractor.
- 17.2 In case of extensions to existing installations, all padlocks shall match existing with same combinations.
- 17.3 Padlocks with stainless steel shackles shall be provided.
- 17.4 Padlocks shall operate with a master key in addition to individual key. Where special combinations are required these will be stated elsewhere in Project Technical Specification. Padlocks and keys shall be stamped with combination number. Three (3) sets of keys for each combination shall be provided. Keys shall be handed to Employer's authorised Representative and a receipt obtained.

Following equipment shall be fitted with padlocks:

Combination No. 1.

Outdoor substation gates.

Transformer tap-change switches.

MV switches and isolators.

Minisub MV compartment doors.

Combination No. 2.

Minisub LV compartment doors.

Distribution kiosk doors.

Combination No. 3.

Doors of compartments containing consumer meters.

18.0

HOT DIP GALVANISING

General Hot Dip Galvanizing Standards:

SANS 32	Hot-dip (galvanized) zinc coatings (other than on continuously zinc-coated and sheet wire)
SANS 121	Hot-dip (galvanized) coatings on fabricated iron and steel articles
SANS 10094	The use of high strength friction grip bolts
SANS 14713	General principles of design and corrosion resistance

Mechanical Cleaning and Zinc Thermal Spraying Standards:

SANS 2063	Metallic and other inorganic coatings
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Continuously Hot Dip Galvanized Sheeting Standards:

SANS 4998	Continues hot dip zinc coated carbon steel sheet of structural quality
SANS 3575	Continues hot dip zinc coated carbon steel sheet of commercial, lock forming and drawing qualities
SANS 9364	Continues hot dip aluminium / zinc coated steel sheet of commercial, drawing and structural qualities
SANS 14788	Continues hot dip zinc / 5% aluminium alloy coated sheets

Continuously Hot Dip Galvanized Wire Standards:

SANS 675	Zinc coated fencing wire
SANS 935	Hot dip galvanized zinc coatings on steel wire
SANS 10244	Steel wire and wire products

CMB Standards:

- 18.1 Before galvanising, all cutting, drilling, welding, etc., shall be complete.
- 18.2 Galvanised parts shall be stored under cover and in stacks such that no part is resting on another and there is sufficient ventilation to prevent condensation occurring. No galvanised parts shall be stored directly on ground but on pallets or similar protection.

19.0 **PAINTING****SANS 1274**

Coatings applied by the powder-coating process

CMB Standards:

- 19.1 Equipment that is delivered to site painted shall, after installation, and as near as possible to handover be inspected for damaged paintwork and be touched up, if necessary, according to manufacturer's recommendation.
- 19.2 Where any galvanised or zinc coated surface has been damaged or cut, this shall be touched up using an organic zinc rich epoxy primer (containing min. 90% zinc).

20.0 **LABELS AND NOTICES****SANS 1186**

Symbolic safety signs

CMB Standards:

- 20.1 Contractor shall arrange for labelling of all equipment, instruments, meters, relays, cables, etc.
- 20.2 Where identical items of equipment can be removed from their housings, e.g. circuit breaker carriages, plug-in relays etc., both fixed and withdrawable portions are to be labelled identically.
- 20.3 All labels shall be ivory or other back engraved white on black labels of sizes indicated.
- 20.4 Labels are to be located in purpose made holders or otherwise are to be screwed or riveted into position.
- 20.5 "Dymo" tape or similar labels will not be accepted nor will labels which are glued in position only.
- 20.6 Labels on poles shall be manufactured from a material as specified in Project Technical Specification with the designated number. Labels shall be nailed to pole 3,5m above ground level, unless otherwise specified in the Project Technical Specification. Nails shall be electro-galvanised clout nails.
- 20.7 Prior to any equipment being labelled, Contractor shall request Engineer to provide a complete labelling schedule for all items of equipment. Under no circumstances is equipment to be labelled in accordance with tender drawings since any description thereon is for identification purposes during construction only and is unlikely to apply to the completed Works.
- 20.8 Following list indicates general labelling requirements but does not limit extent of labelling required, which shall encompass full extent of equipment supplied, or in case of existing equipment, any such which is affected by this Contract.
- 20.8.1 **50mm high lettering:-**

Substation and minisub designation.

Outdoor switchgear designation. Transformer designation.

Distribution kiosk and fused feeder panel designation.

20.8.2 20mm high lettering:-

Main or sub-main board designation. Control panel designation.

Indoor switchgear designation.

20.8.3 10mm high lettering:-

Individual switches on switchgear.

Cubicles.

Sub-distribution board designation.

Poles for OH lines.

20.8.4 5mm high lettering:-

Minisub feeder breakers and isolators.

Distribution kiosk feeder breakers and isolators.

General distribution switchgear.

Meters, instruments and relays.

Multiplying factors.

20.8.5 3mm high lettering:-

This size shall be used to designate conductor size and number of cores of each cable. In addition, all feeder cables shall be labelled to state from whence they are fed.

20.9 All substations, minisubs, kiosks, transformer rooms and switchrooms shall be provided with notices as required by Occupational Health and Safety Act. All doors to such locations shall be fitted with appropriate notices.

20.10 Where more than one similar item of equipment is fed from same board or control panel, item itself shall be labelled, this being fixed in a permanent position, i.e. not attached to motors, pumps, etc., but to bases or adjacent thereto. The lettering shall be 50mm high.

21.0 **DISMANTLING**

CMB Standards:

21.1 Where dismantling of existing parts of installation is called for, all components including wire, insulators, poles, cable, switchgear, transformers, etc., are to be removed and handed to appropriate Authority.

21.2 Under no circumstances is any material or equipment to be taken over by Contractor.

21.3 In case of reclamation of conductor, this is to be done after removing binding wires on intermediate insulators so that full strain lengths are recovered.

- 21.4 All such material is to be neatly coiled, packed, etc., as appropriate.
- 21.5 Extreme care is to be taken in dismantling all such equipment, since it will be re-used by Employer.
- 21.6 If, in opinion of Engineer, unnecessary damage is done, cost of replacing such equipment will be debited to Contractor's account.
- 21.7 Receipt detailing all equipment and materials delivered in accordance with above must be obtained and a copy submitted to Engineer.

22.0 **INSPECTION, TESTING AND COMMISSIONING**

CMB Standards:

- 22.1 Engineer shall have access at all reasonable times to such parts of the Works or Contractor's premises or premises of Manufacturer of component parts, as may be necessary for purpose of inspecting, examining and testing materials, workmanship and performance of any plant or equipment specified for Works.
- 22.2 Contractor shall ensure that complete project and inspection, testing and commissioning of any equipment shall be done as per the applicable SANS or BS Specification.
- 22.3 Contractor shall supply all equipment necessary for testing and commissioning procedures.
- 22.4 Contractor shall provide duplicate test certificates relating to cable tests, current injection tests of all instruments, meters and relays and results of earth mat tests.

23.0 **COMPLETION OF WORKS**

CMB Standards:

- 23.1 Completion of works will be executed as per relevant contract conditions.

24.0 **CERTIFICATE OF COMPLIANCE**

CMB Standards:

- 24.1 Contractor to complete and submit certificate of compliance as per the relevant contract conditions.

PART C4 - SITE INFORMATION

Existing electrical and civil services exists along the routes where the new MV & LV underground cable and overhead lines are to be supplied and installed. The drawings enclosed are not to be used by the contractor to determine the position of the existing underground electrical services. The routes of all existing electrical cables must be verified by means of a cable detector by the contractor and expose before trenching for new, or upgraded services, commence.

All Telkom and civil services must be verified before any trenching commence.

All work related to the project must therefore be discussed with the Client / Engineer before the works proceed to ensure that existing civil services are not damaged during construction.

All work is to be carried out in residential areas and in the vicinity of moving vehicles and due care must be taken to ensure that all the necessary precautions have been undertaken to ensure the safety off all workers and residents at all times.

Asla Construction will be the civil contractor on site and it will be expected that the Electrical Contractor must co-ordinate all his activities with Asla.

The site location is indicated on Layout Drawing No. 10600/E/01.

ANNEXURES

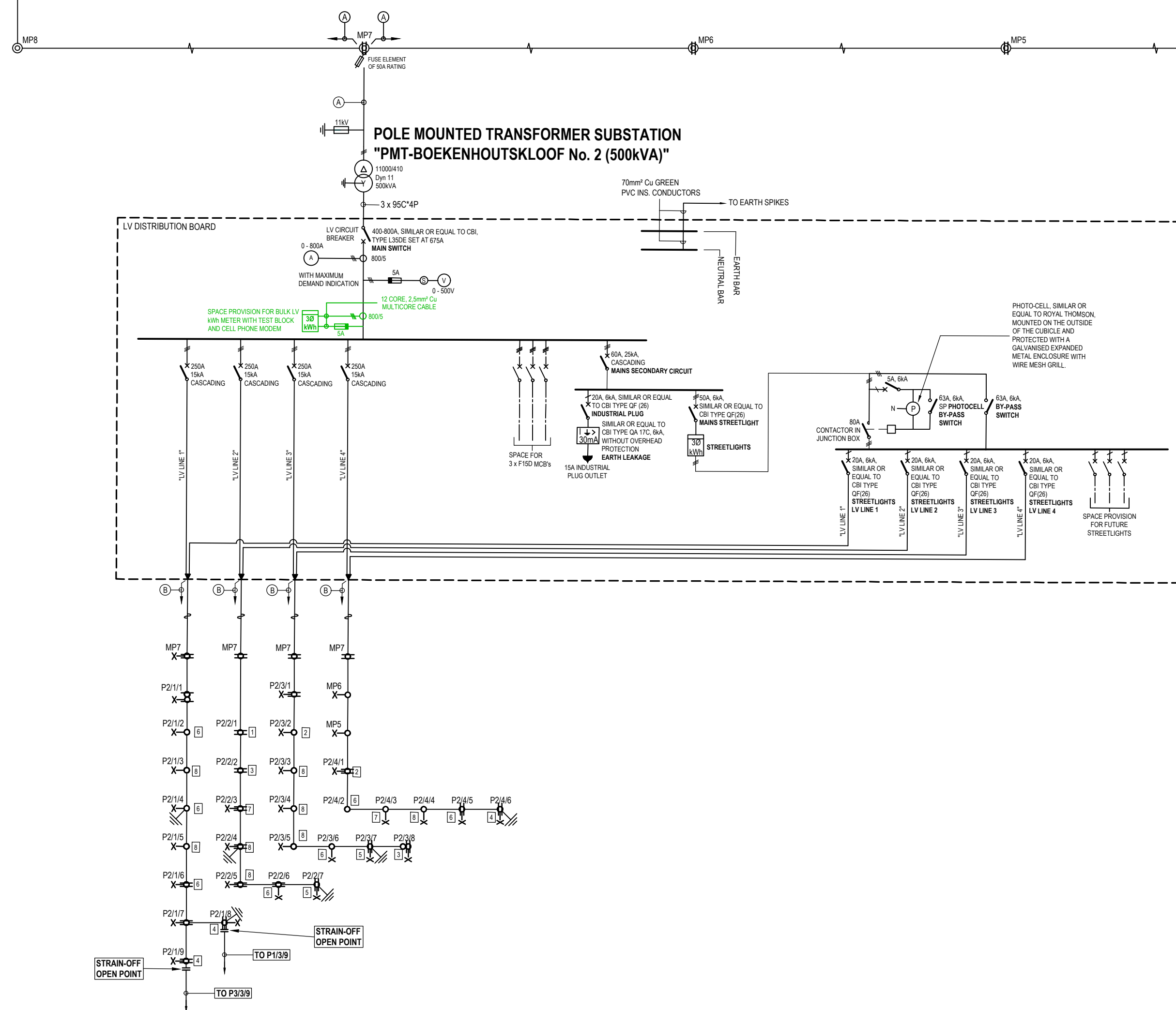
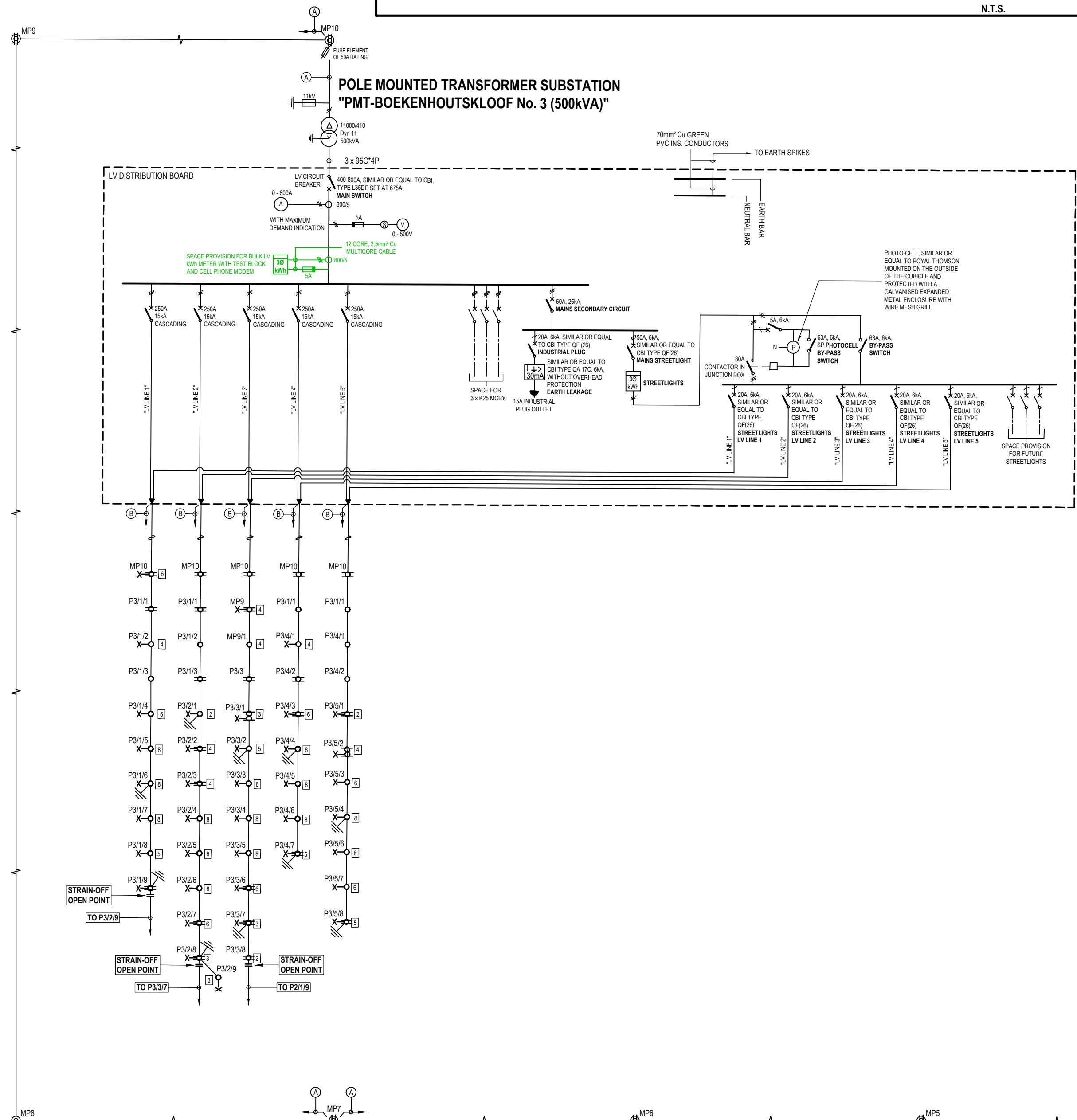
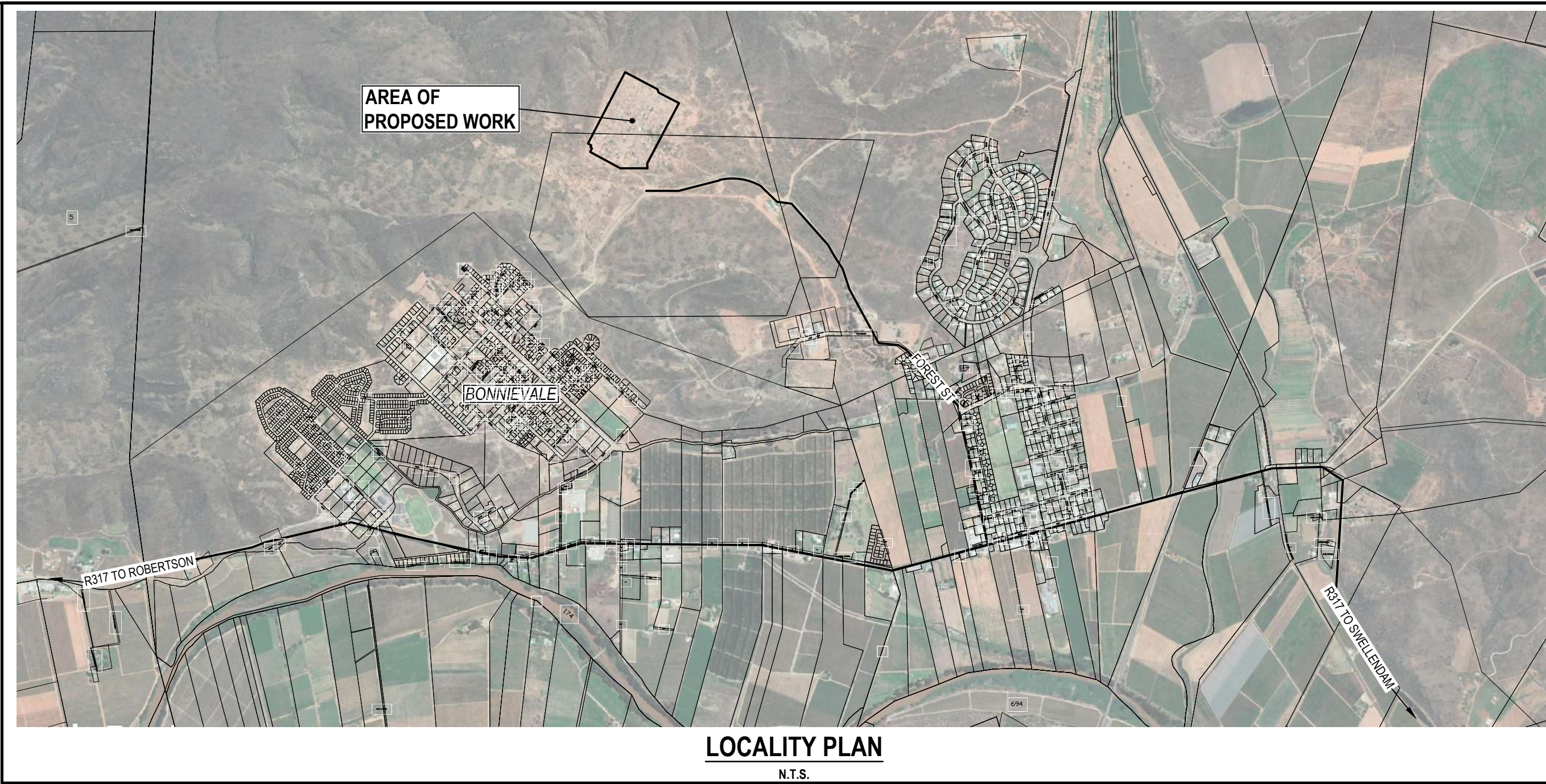
ANNEXURE A

Engineer's Drawings

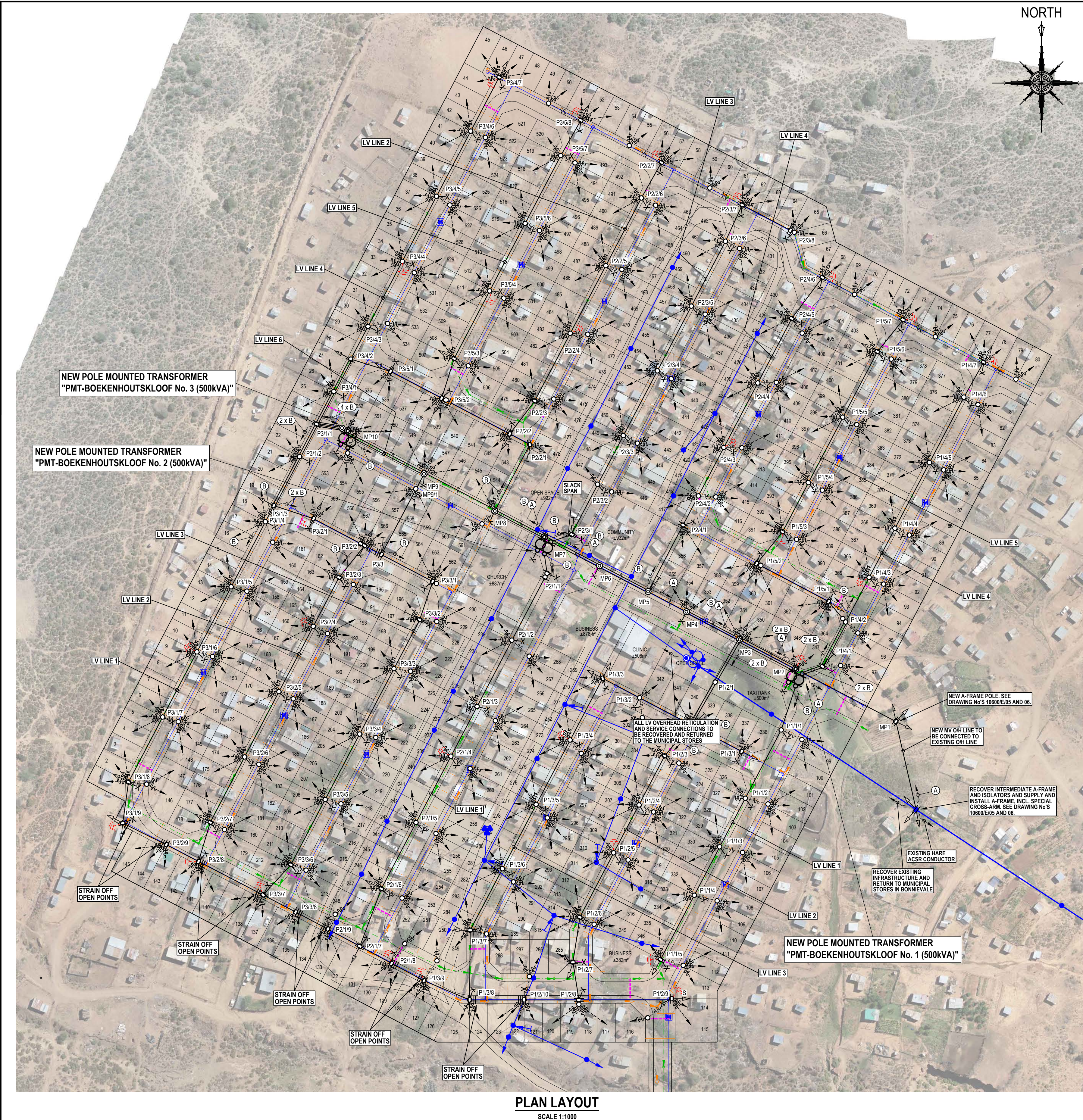
The following Engineer's Drawings are attached and bound to this Document and are applicable to this installation:

<u>Drawing No</u>	<u>Description</u>
10600/E/01	Electrification of Boekenhoutskloof, Bonnievale: Plan Layout & Schematic Diagram
10600/E/02	11/22kV O/H Line: Intermediate Pole Structure ("A" Frame)
10600/E/03	11/22kV O/H Line: "A" Frame for Intermediate Poles
10600/E/04	11/22kV O/H Line: "A" Frame for Single / Double Strain Poles
10600/E/05	11/22kV O/H Line: Right Angle Strain Pole with Separate Cross-Arm
10600/E/06	11/22kV O/H Line: Cross-Arm for use with "A" Frame at Tee-Off's and Right Angle Turns.
10600/E/07	MV/LV O/H Line: Single Stay Structure
10600/E/08	MV/LV O/H Line: Flyng Stay Structure
10600/E/09	MV/LV O/H Line: Prop Structure
10600/E/10	11kV A-frame Terminal structure with Cable Connections and Lightning Arrestors.
10600/E/11	Pole Mounted Transformer Substation No.1
10600/E/12	Pole Mounted Transformer Substation No.2
10600/E/13	Pole Mounted Transformer Substation No.3
10600/E/14	Pole Mounted Transformer Earthing Diagram
10600/E/15	Pole Mounted Transformer Legend and Notes
10600/E/16	Typical Pole Mounted Transformer LV Distribution Box
10600/E/17	Pole Mounted Transformer LV Distribution Box Legend
10600/E/18	LV O/H Line: Terminal Pole
10600/E/19	LV O/H Line: Intermediate Pole
10600/E/20	LV O/H Line: Intermediate Pole with Consumer Service Connection Box for Overhead Service Connections
10600/E/21	LV O/H Line: Strain Pole with Consumer Service Connection Box for Overhead Service Connections
10600/E/22	Larger Pole Mounted Consumer Service Connection Box (7 to 12 House Connections)
10600/E/23	Pole Mounted Consumer Service Connection Box (CSCB) for Max 6 x Split Prepaid kWh Meters.
10600/E/24	Mounting Board Detail for Split Prepaid kWh Meter keypad (UIU) and Ready Board.
10600/E/25	Overhead Service Connection: Typical Installation to House.
10600/E/26	Overhead Service Connection: Typical Installation to House: Alternative "B"

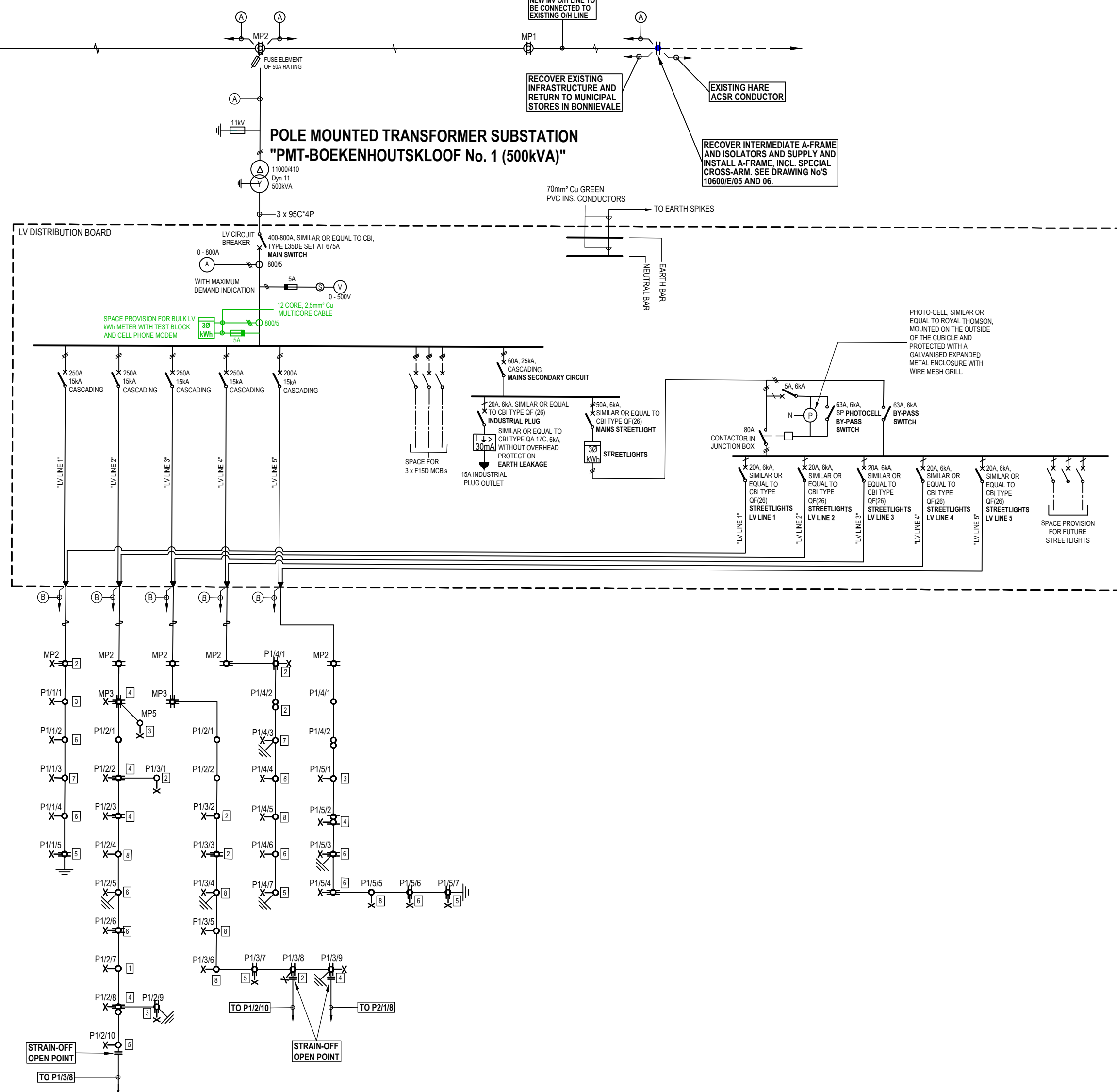
10600/E/27	Legend for Drawing No's 10600/E/25 and 26
10600/E/28	Notes for Drawing No's 10600/E/25 and 26
10600/E/29	Typical Streetlight Bracket Detail
10600/E/30	LV Intermediate Pole with Streetlight
10600/E/31	Typical Trench Detail for LV Cable



SCHEMATIC DIAGRAM
N.T.S.



PLAN LAYOUT
SCALE 1:1000



LEGEND

- NEW EQUIPMENT / MATERIAL
- EXISTING EQUIPMENT / MATERIAL
- FUTURE EQUIPMENT / MATERIAL
- NEW LV POLE
- POLE NUMBER
- ONE CONSUMER SERVICE CONNECTION BOX PER POLE
- NO. OF CONSUMERS SUPPLIED FROM CONSUMER SERVICE CONNECTION BOX
- FUSE
- DISCONNECTOR
- AMMETER
- VOLTMETER
- SELECTOR SWITCH
- 3 PHASE WITH METER
- CURRENT TRANSFORMER
- CIRCUIT BREAKER
- CONTACTOR
- CONTACTOR
- 3 PHASE
- 1 PHASE

NOTES

1. TP MCP'S PHASE BARBERS AND BUSBAR STUDS TO SLIT CABLE LUG SIZE
2. PROVIDE LABEL IN BOARDS TO READ
- DO NOT REPLACE ANY COMPONENT IN THE SYSTEM WITH A COMPONENT THAT IS NOT OF IDENTICAL TYPE AND RATING EXCEPT WHEN RECOMMENDED BY THE MANUFACTURER OF THE EXISTING COMPONENT OR THE MANUFACTURER OF THE DISTRIBUTION BOARD, OR A PERSON COMPETENT TO EXPRESS AN OPINION ON SUCH REPLACEMENT

LEGEND

- REFER TO DRAWING NO. S62- STANDARD GRAPHICAL SYMBOLS FOR ELECTRICAL RETICULATION SYSTEMS.
- 10mm² Cu ARCAD CABLE TO BE BURIED 0.5m FROM ERF BOUNDARY
 - PHASE COLOUR
 - COMBINED MV AND LV POLE
 - NEW LV OVERHEAD LINE
 - STREETLIGHT
 - EXISTING STAY
 - NEW STAY
 - EXISTING PROP
 - NEW PROP
 - NEW CABLES / EQUIPMENT
 - EXISTING CABLES / EQUIPMENT
 - WATER
 - SEWER
 - STORMWATER
 - SLEEVES
 - PHASE 1
 - PHASE 2
 - PHASE 3
 - PHASE 4
 - PHASE 5
 - PHASE 6

NOTES

1. MV IN THIS CASE IS 11kV, UNLESS SHOWN OTHERWISE
2. ALL EXISTING AND NEW POLE POSITIONS SHOWN ARE PROVISIONAL AND WILL BE DETERMINED ON SITE IN CONJUNCTION WITH THE ENGINEER
3. POLE POSITIONS TO BE CO-ORDINATED WITH THE EXISTING SEWER AND WATER PIPE INSTALLATION. POLES TO BE INSTALLED 1 METRE FROM EXISTING WATER AND SEWER PIPE LINES
4. FOR CONSTRUCTIONAL DETAILS SEE DRAWING No. 10600-E/2
5. MV AND LV POLES SHALL BE 11m AND 9m LONG, UNLESS SHOWN OTHERWISE
6. UNLESS SHOWN OTHERWISE THE MIN. SPACING BETWEEN 11kV AND LV CONDUCTORS SHALL BE 1900mm
7. MINIMUM CLEARANCE FOR MV OVERHEAD LINE:
 - A) ABOVE GROUND - 5.5 METRES
 - B) ABOVE ROADS - 6.4 METRES
 - C) TO COMMUNICATION LINES - 0.8 METRES
 - D) TO BUILDINGS, POLES AND STRUCTURES NOT FORMING PART OF THE POWER LINE - 3 METRES
 - E) BETWEEN LIVE METAL AND POSITION TO WHICH A PERSON IS POSSIBLE WITH THE EQUIPMENT LINE - 3 METRES
 - F) CONDUCTORS AT 11kV PHASE TO EARTH - 250mm & BETWEEN PHASES - 280mm
8. EARTHINGS:
 - TO COMPLY WITH THE SPECIFICATION AND AME CODE OF PRACTICE FOR APPLICATION OF THE NEUTRAL EARTHING ON LOW VOLTAGE DISTRIBUTION SYSTEM
 - RECOVER EXISTING LV OVERHEAD LINE, INCL. POLES, STAYS, PROPS, CONSUMER SERVICE CONNECTION BOXES, MCP'S, AND ARCAD CABLE, ETC. AND RETURN TO MUNICIPAL STORES.
 - SLEEVES HAVE BEEN INSTALLED BY OTHERS

20/06/2023 KJM GENERAL REVISIONS

REVISIONS

DESCRIPTION

REVISIONS

DESCRIPTION

REVISIONS

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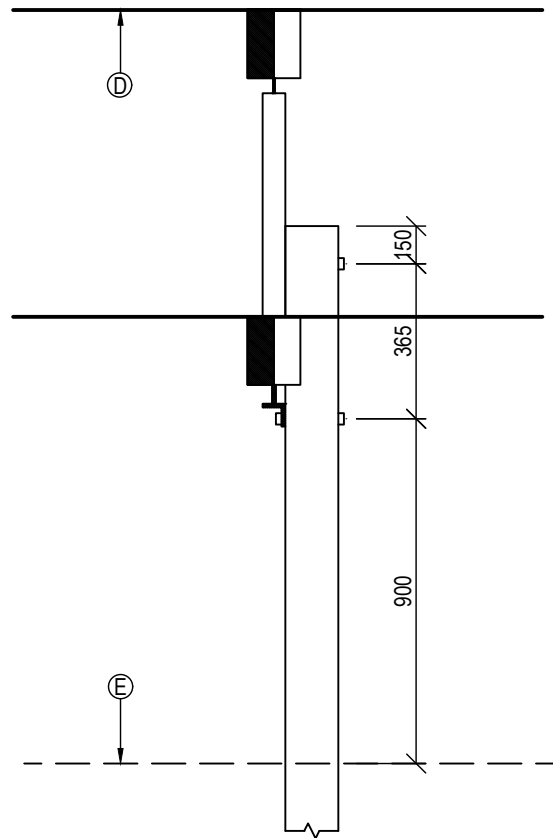
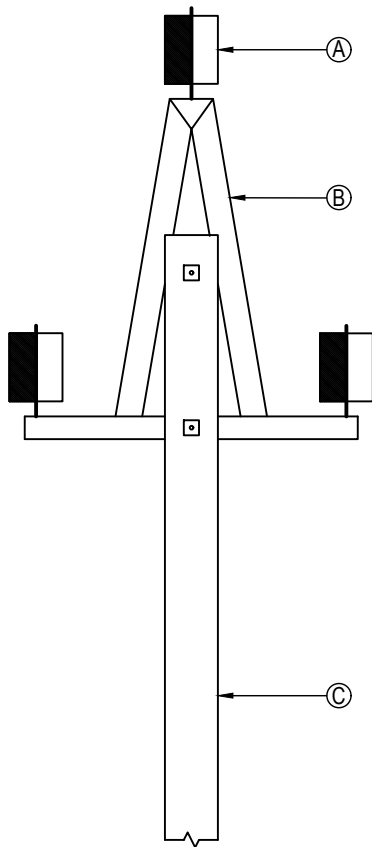
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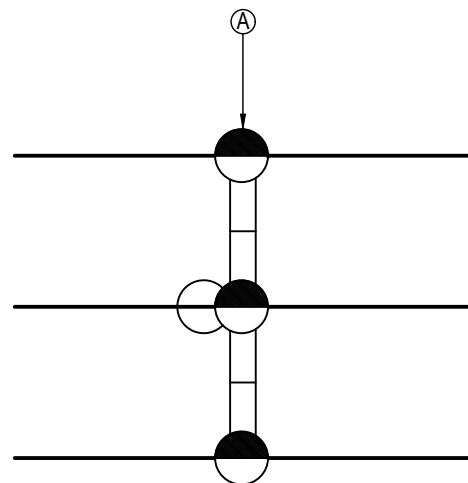
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DESCRIPTION



LEGEND

- (A) POST TOP INSULATOR.
- (B) INTERMEDIATE STEEL 'A' FRAME
- (C) POLE
- (D) MV O/H LINE CONDUCTOR
- (E) POSITION FOR LV BUNDLED CONDUCTOR IF REQUIRED



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CLIENT

LANGEBERG MUNICIPALITY

PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**11/22kV O/H LINE: INTERMEDIATE POLE
STRUCTURE ("A" FRAME)**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

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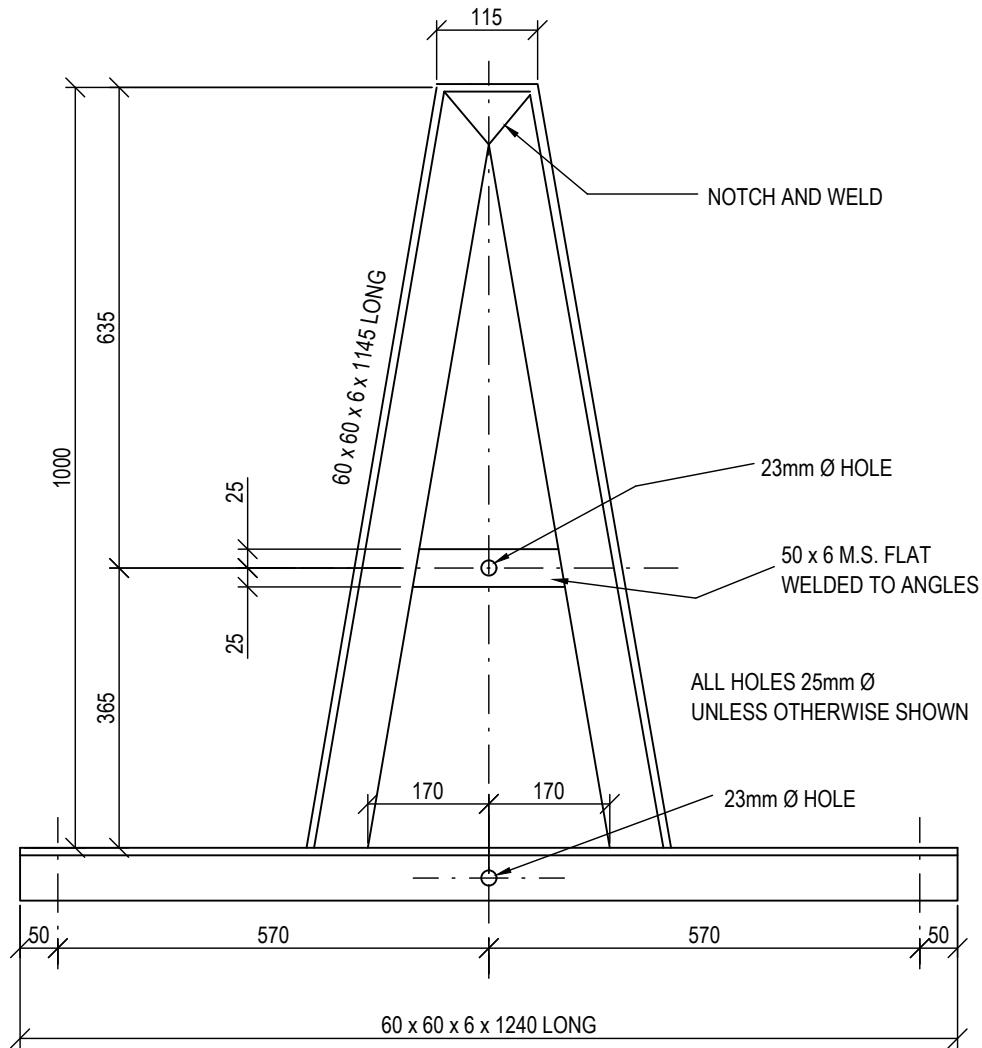
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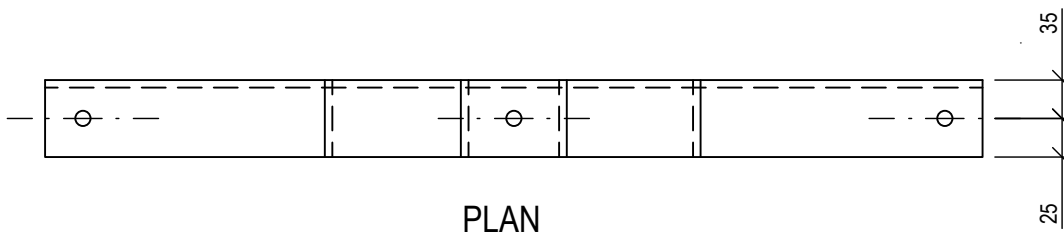
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FRONT ELEV.



END ELEV.



PLAN

NOTE: STEELWORK HOT-DIPPED GALVANISED AFTER MANUFACTURE



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**11/22kV O/H LINE: "A" FRAME FOR
INTERMEDIATE POLES**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

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SCALE

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DATE

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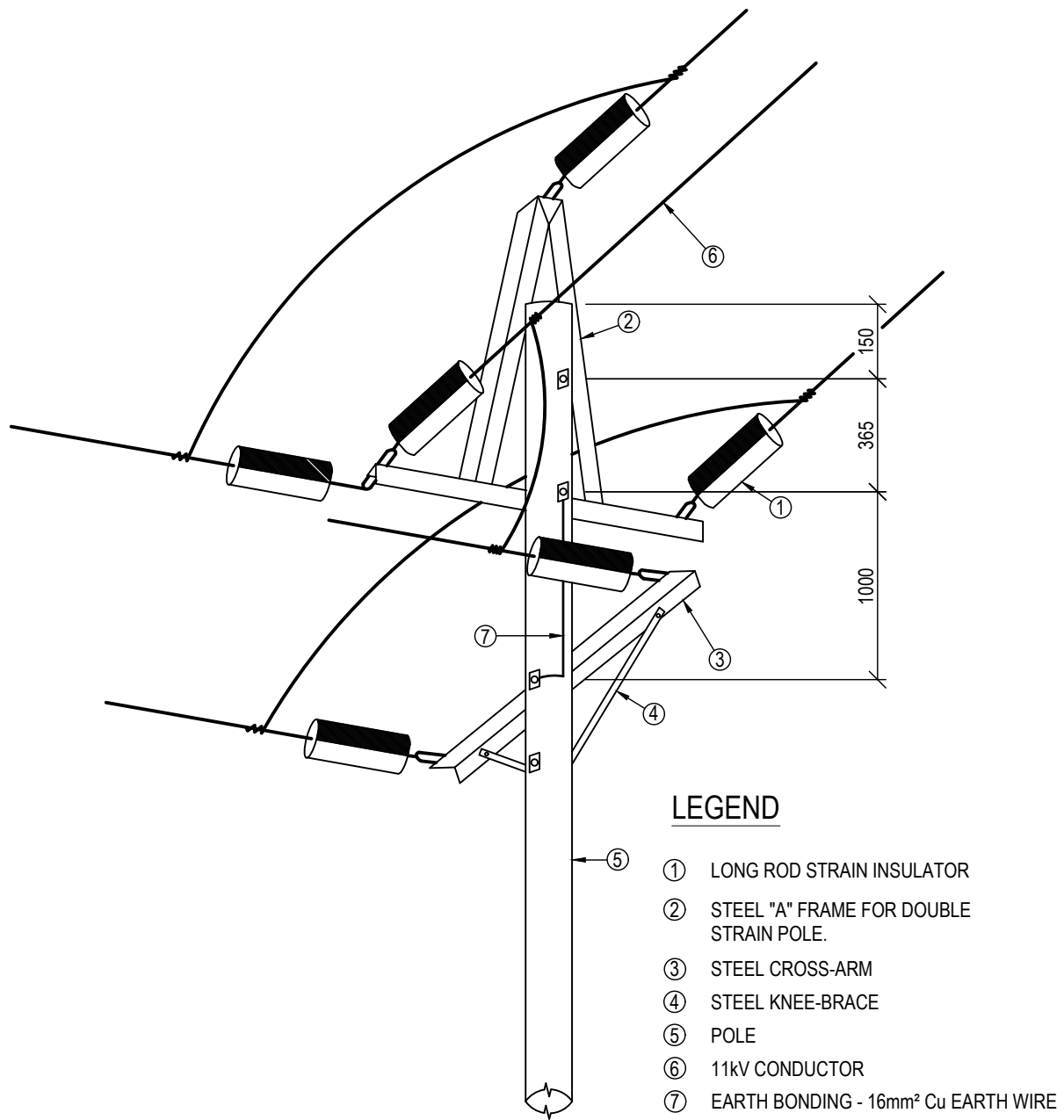
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10600/E/03

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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**11/22kV O/H LINE: RIGHT ANGLE STRAIN POLE
WITH SEPARATE CROSS-ARM**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

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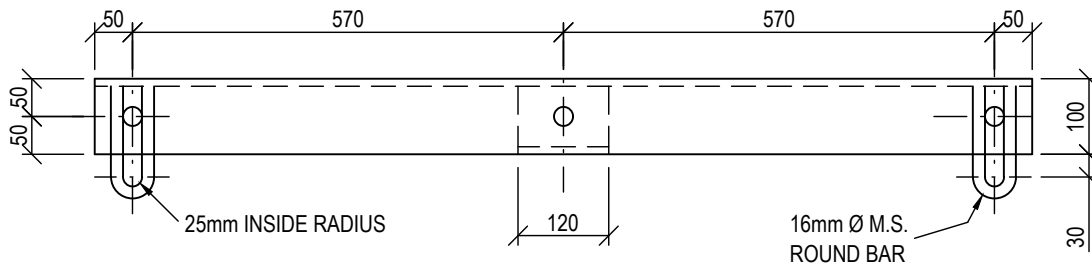
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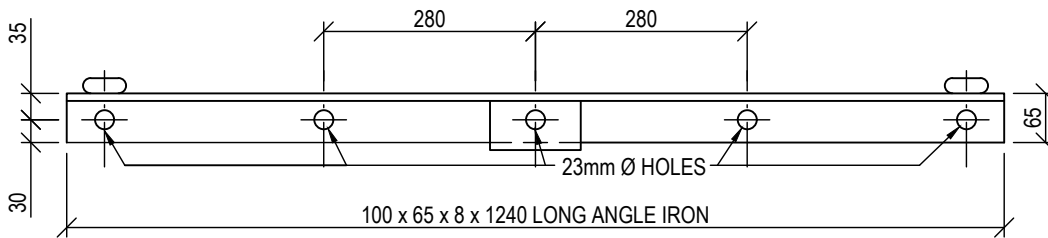
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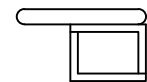


PLAN

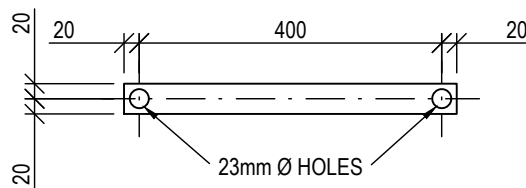
ALL HOLES 25mm Ø
UNLESS OTHERWISE SHOWN



FRONT ELEVATION



END ELEVATION



KNEE-BRACE FOR ANGLE CROSS-ARM

NOTE: STEELWORK HOT-DIPPED GALVANISED AFTER MANUFACTURE



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**11/22kV O/H LINE: CROSS-ARM FOR USE WITH
"A" FRAME AT TEE-OFF'S AND RIGHT ANGLE
TURNS**

DRAWN

KJM

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CP

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Jdv

APPROVED

SCALE

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DATE

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A4

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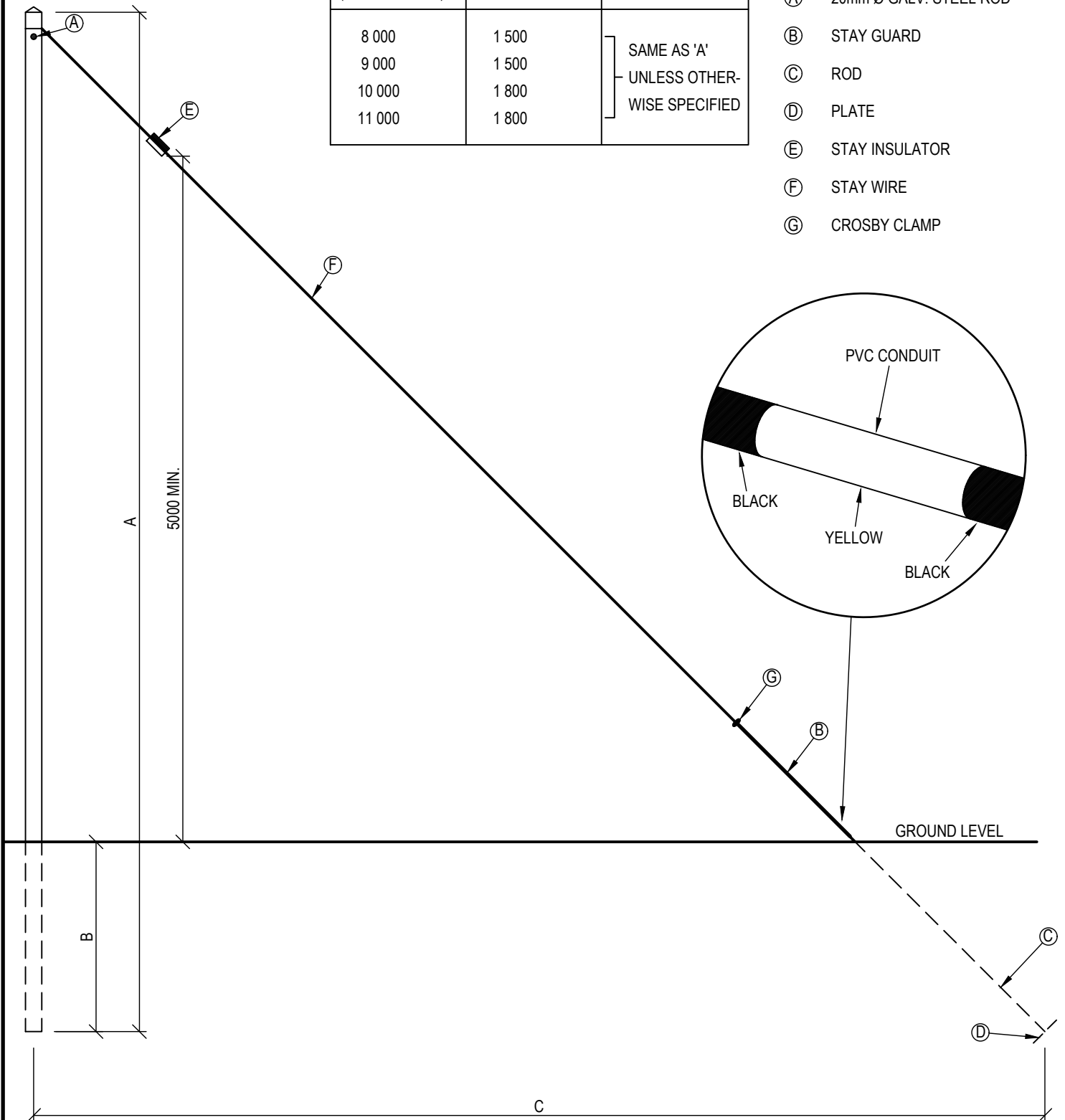
10600/E/06

REVISION

DIMENSIONS (MILLIMETRES)		
A (POLE LENGTH)	B	C
8 000	1 500	SAME AS 'A' UNLESS OTHER- WISE SPECIFIED
9 000	1 500	
10 000	1 800	
11 000	1 800	

LEGEND

- Ⓐ 20mm Ø GALV. STEEL ROD
- Ⓑ STAY GUARD
- Ⓒ ROD
- Ⓓ PLATE
- Ⓔ STAY INSULATOR
- Ⓕ STAY WIRE
- Ⓖ CROSBY CLAMP



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

MV/LV O/H LINE: SINGLE STAY STRUCTURE

DRAWN

KJM

DESIGNED

CP

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Jdv

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SCALE

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DATE

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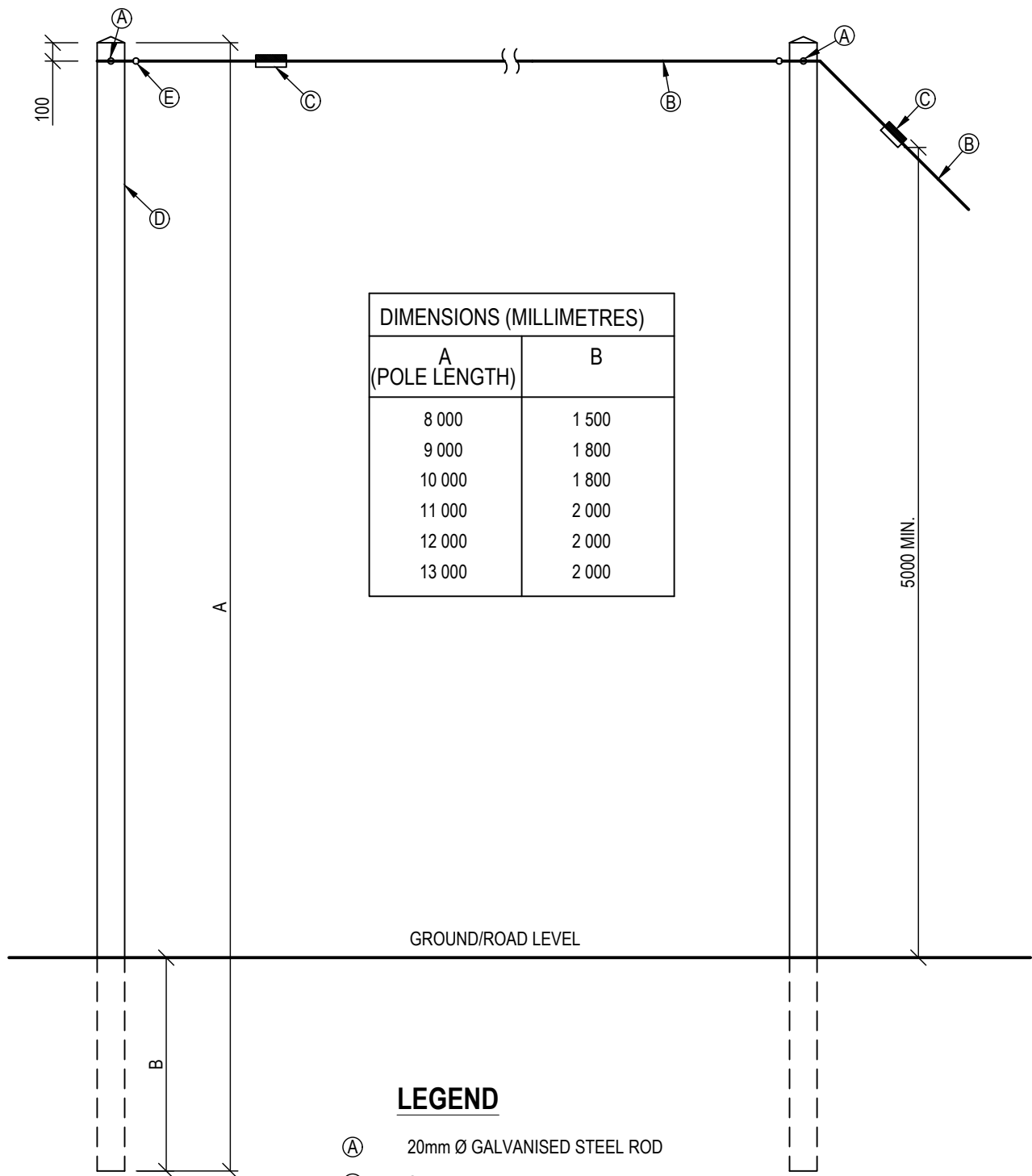
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REVISION



LEGEND

- Ⓐ 20mm Ø GALVANISED STEEL ROD
- Ⓑ STAY WIRE
- Ⓒ STAY INSULATOR
- Ⓓ STRAIN POLE
- Ⓔ EYE BOLT



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**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

MV/LV O/H LINE: FLYING STAY STRUCTURE

DRAWN

KJM

DESIGNED

CP

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Jdv

APPROVED

SCALE

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DATE

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10600-E-DET

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A4

DRAWING NO

10600/E/08

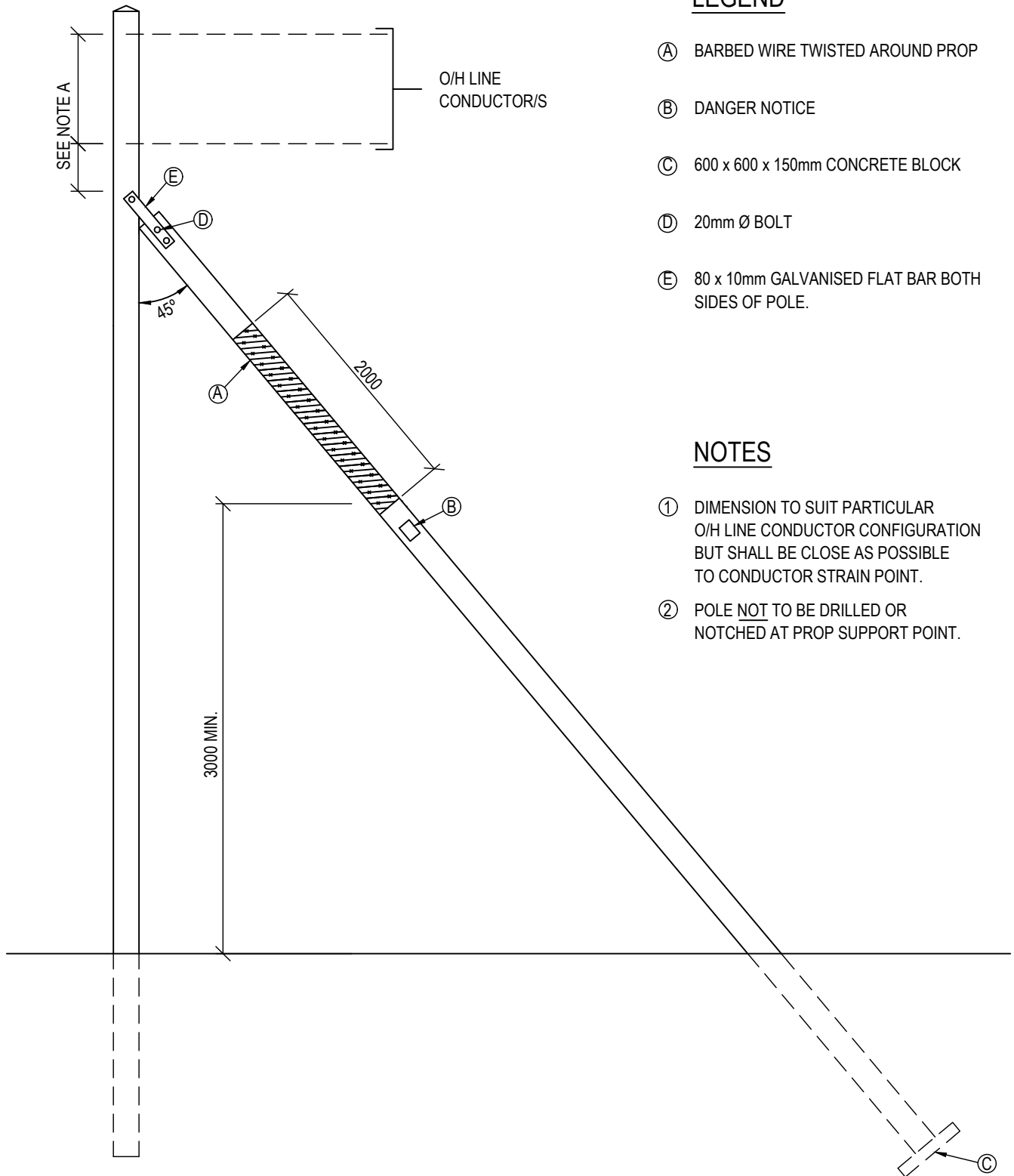
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LEGEND

- Ⓐ BARBED WIRE TWISTED AROUND PROP
- Ⓑ DANGER NOTICE
- Ⓒ 600 x 600 x 150mm CONCRETE BLOCK
- Ⓓ 20mm Ø BOLT
- Ⓔ 80 x 10mm GALVANISED FLAT BAR BOTH SIDES OF POLE.

NOTES

- ① DIMENSION TO SUIT PARTICULAR O/H LINE CONDUCTOR CONFIGURATION BUT SHALL BE CLOSE AS POSSIBLE TO CONDUCTOR STRAIN POINT.
- ② POLE NOT TO BE DRILLED OR NOTCHED AT PROP SUPPORT POINT.



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**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

MV/LV O/H LINE: PROP STRUCTURE

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

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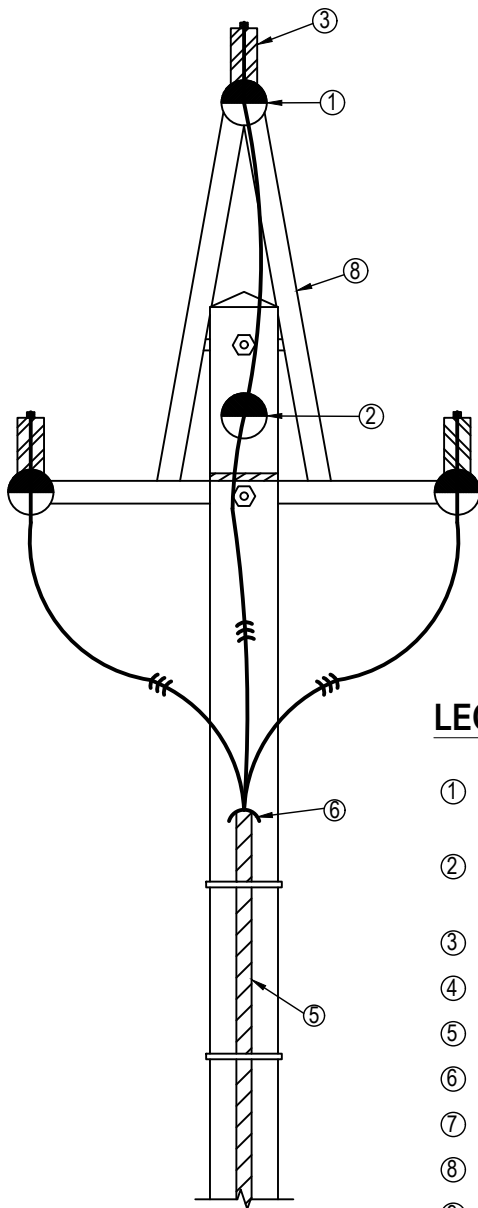
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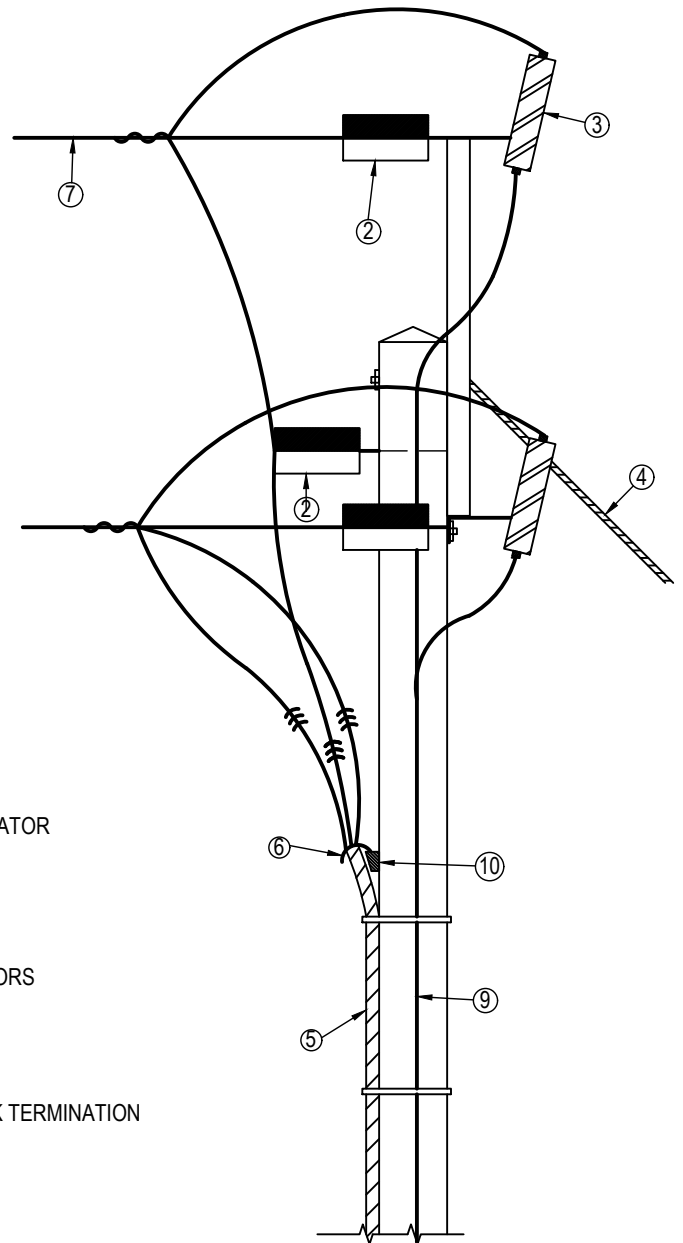
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FRONT ELEVATION

LEGEND

- ① LONG ROD STRAIN INSULATOR
CAT.NO. EP342/01
- ② POST TOP INSULATOR
CAT.NO. EP477
- ③ 11kV LIGHTNING ARRESTORS
- ④ STAY WIRE
- ⑤ 11kV CABLE
- ⑥ 11kV CABLE HEAT SHRINK TERMINATION
- ⑦ O/H LINE CONDUCTOR
- ⑧ A-FRAME
- ⑨ EARTH CONDUCTOR
- ⑩ WOODEN BLOCK SPACER



SIDE ELEVATION



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**11kV A-FRAME TERMINAL STRUCTURE
WITH CABLE CONNECTIONS AND
LIGHTNING ARRESTORS**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

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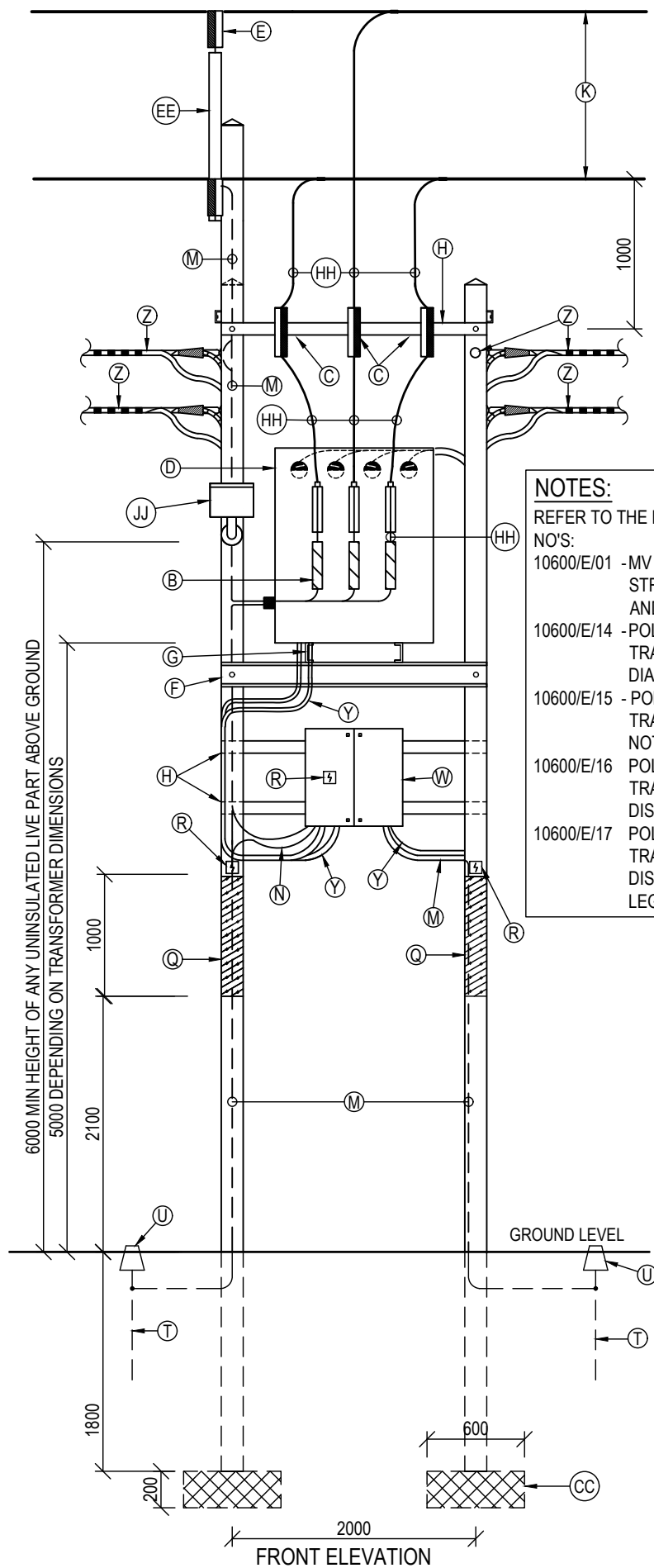
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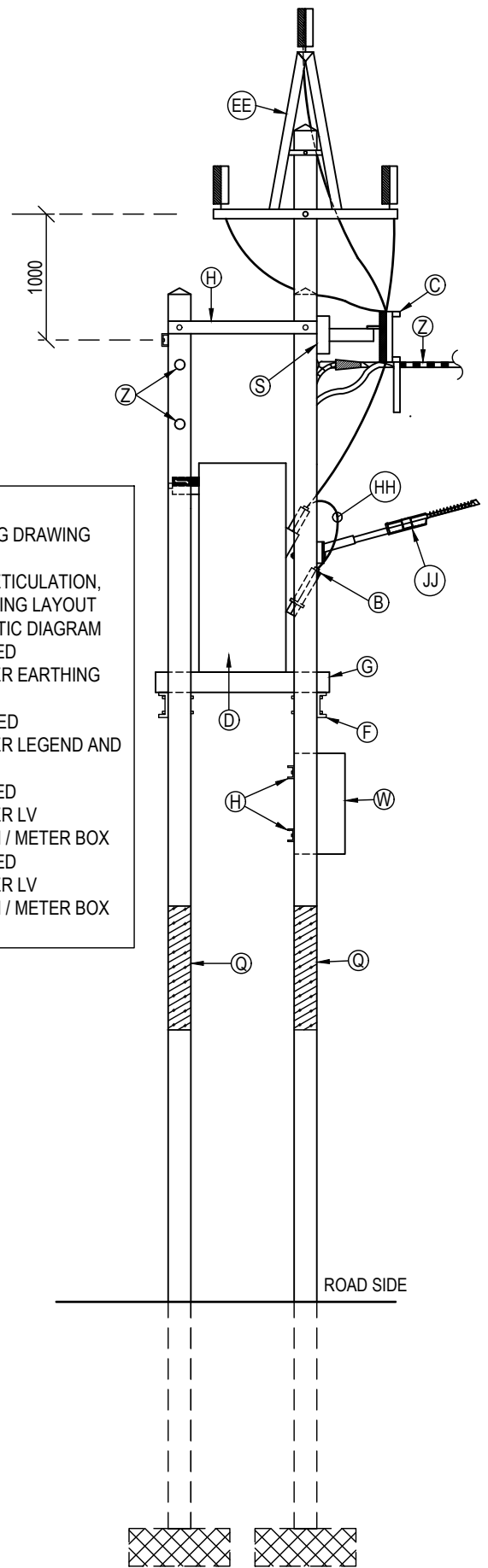
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FRONT ELEVATION



SIDE ELEVATION

NOTES:

REFER TO THE FOLLOWING DRAWING NO'S:

- 10600/E/01 - MV AND LV RETICULATION, STREETLIGHTING LAYOUT AND SCHEMATIC DIAGRAM
- 10600/E/14 - POLE MOUNTED TRANSFORMER EARTHING DIAGRAM
- 10600/E/15 - POLE MOUNTED TRANSFORMER LEGEND AND NOTES
- 10600/E/16 POLE MOUNTED TRANSFORMER LV DISTRIBUTION / METER BOX
- 10600/E/17 POLE MOUNTED TRANSFORMER LV DISTRIBUTION / METER BOX LEGEND



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PROJECT

ELECTRIFICATION OF BOEKENHOUTSKLOOF, BONNIEVALE

DRAWING TITLE

**POLE MOUNTED TRANSFORMER
"PMT-BOEKENHOUTSKLOOF No. 1 (500kVA)"**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

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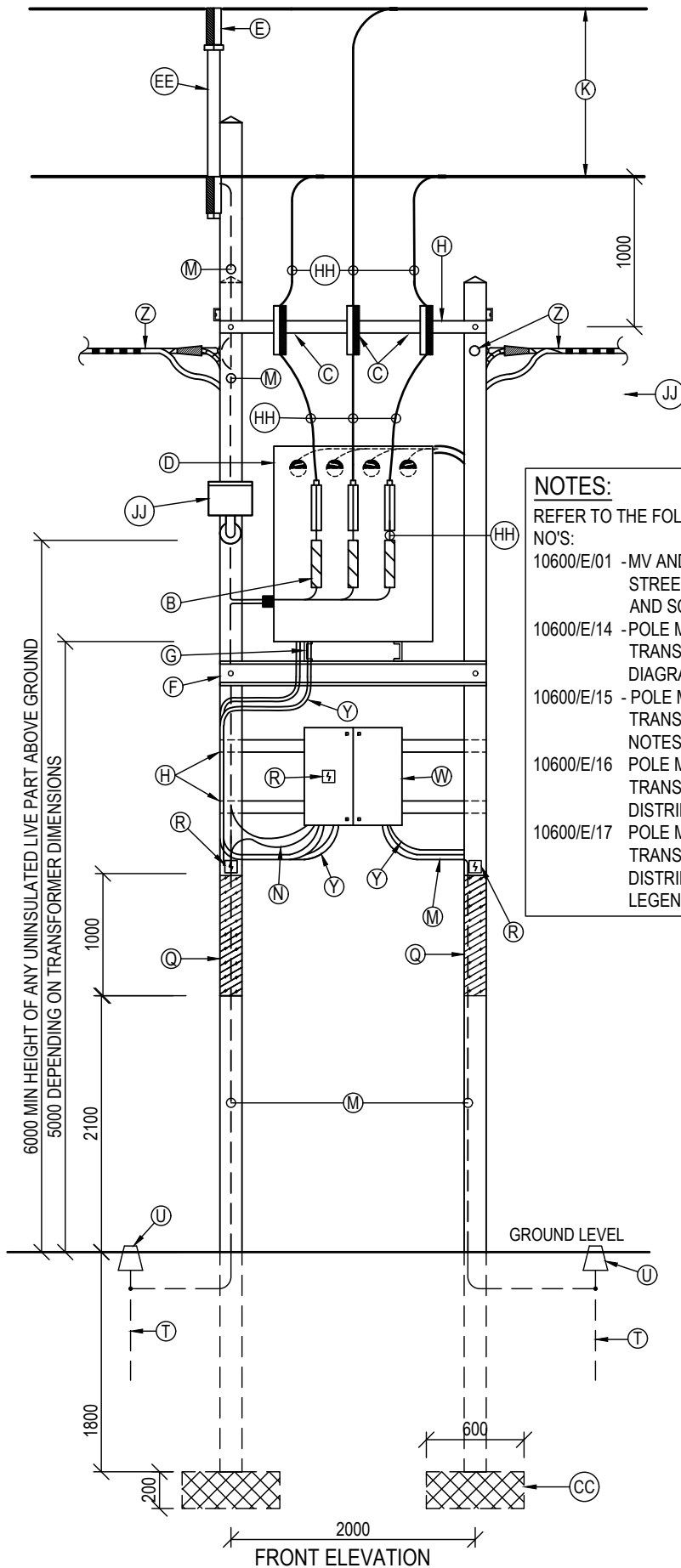
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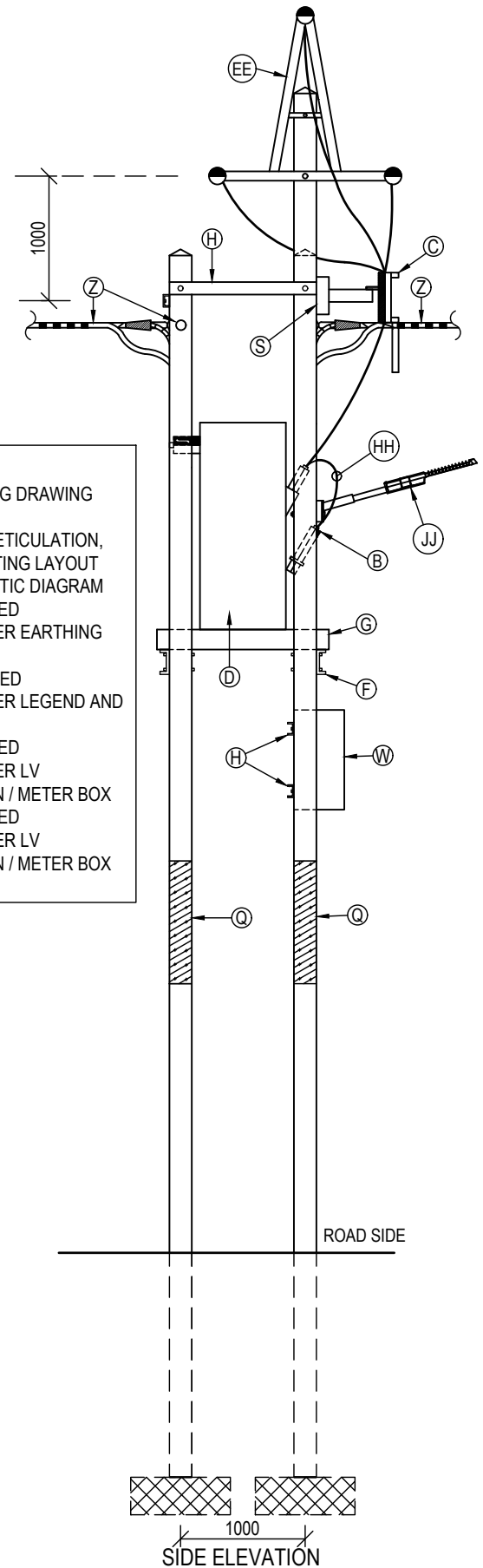
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NOTES:

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- 10600/E/14 - POLE MOUNTED TRANSFORMER EARTHING DIAGRAM
- 10600/E/15 - POLE MOUNTED TRANSFORMER LEGEND AND NOTES
- 10600/E/16 POLE MOUNTED TRANSFORMER LV DISTRIBUTION / METER BOX
- 10600/E/17 POLE MOUNTED TRANSFORMER LV DISTRIBUTION / METER BOX LEGEND



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CLIENT

LANGEBERG MUNICIPALITY

PROJECT

ELECTRIFICATION OF BOEKENHOUTSKLOOF, BONNIEVALE

DRAWING TITLE

**POLE MOUNTED TRANSFORMER
"PMT-BOEKENHOUTSKLOOF No. 2 (500kVA)"**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

10600-E-DET

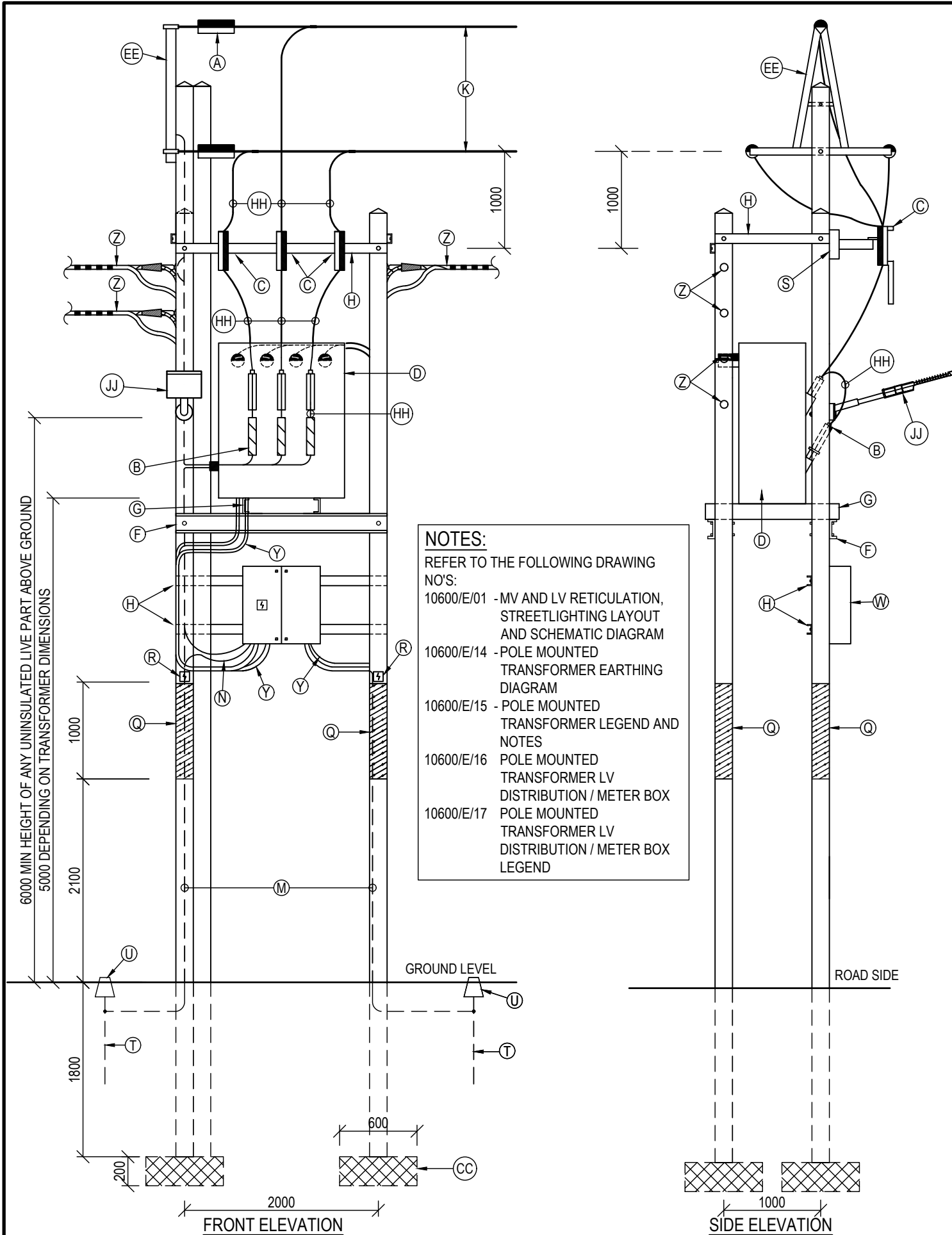
DWG-SIZE

A4

DRAWING NO

10600/E/12

REVISION



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CLIENT

LANGEBERG MUNICIPALITY

PROJECT

ELECTRIFICATION OF BOEKENHOUTSKLOOF, BONNIEVALE

DRAWING TITLE

**POLE MOUNTED TRANSFORMER
 "PMT-BOEKENHOUTSKLOOF No. 3 (500kVA)"**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

10600-E-DET

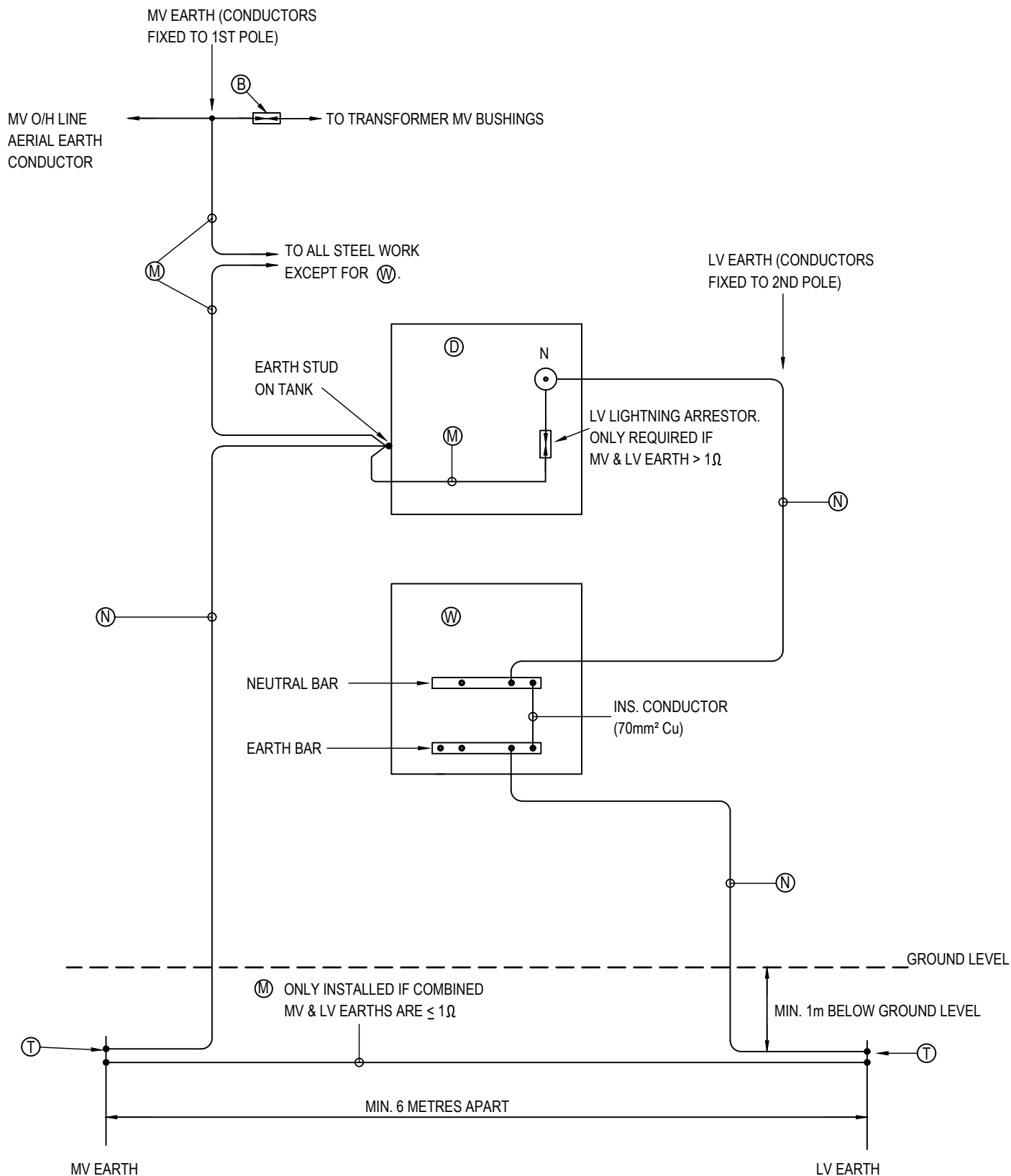
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A4

DRAWING NO

10600/E/13

REVISION



NOTE: REFER TO DRAWING No. 10600/E/14 FOR LEGEND



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Consulting Engineers South Africa

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LANGEBERG MUNICIPALITY

PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**POLE MOUNTED TRANSFORMER:
EARTHING DIAGRAM**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

10600-E-DET

DWG-SIZE

A4

DRAWING NO

10600/E/14

REVISION

LEGEND

- (A) 22 kV STRAIN INSULATOR.
- (B) 22 kV LIGHTNING ARRESTOR.
- (C) 22 kV EXPULSION FUSES.
- (D) NEW 22 kV TO 420/240V TRANSFORMER.
- (E) 22 kV POST TOP INSULATOR.
- (F) 160mm x 65mm x 19 GALVANISED STEEL CHANNEL IRON.
- (G) 60mm x 6mm GALVANISED STEEL FLAT IRON.
- (H) EXTENDED GALVANISED STEEL L-BRACKET.
- (J) 50mm x 12mm GALVANISED STEEL FLAT IRON.
- (K) 22 kV OVERHEAD LINE CONDUCTOR.
- (L) SUBSTATION DESIGNATION BOARD.
- (M) 70mm² BARE HARD DRAWN Cu EARTH CONDUCTOR.
- (N) 70mm² Cu BLACK PVC INSULATED EARTH CONDUCTOR PROTECTED WITH 25mm DIA. GALVANISED STEEL KICKER PIPE FROM 500mm BELOW TO 3,5m ABOVE GROUND LEVEL.
- (P) STAY WITH INSULATOR.
- (Q) BARBED WIRE TWISTED AROUND POLES.
- (R) DANGER NOTICE.
- (S) 100mm x 50mm x 11 GALVANISED STEEL CHANNEL STAND-OFF BRACKET FOR EXPULSION FUSES AT FOUR POLE CONSTRUCTION PMT'S.
- (T) EARTH SPIKE.
- (U) CABLE MARKER LABELLED "EARTH SPIKE".
- (W) LV DISTRIBUTION BOX FORMING PART OF TRANSFORMER.
- (Y) LV BUNDLED CONDUCTOR.
- (Z) LV PVCAS CABLE TO HIGH MAST LIGHT OR TELKOM MAST PROTECTED WITH A GALVANISED STEEL KICKERPIPE FROM 500mm BELOW TO 3,5m ABOVE GROUND LEVEL.
- (AA) PHOTO-CELL.
- (BB) GALVANISED STEEL EARTH WIRE.
- (CC) 600 x 600 x 200mm CONCRETE FOOT.
- (DD) 100mm x 50mm x 11 GALVANISED STEEL CHANNEL IRON FOR EXPULSION FUSES AT TWO POLE CONSTRUCTION PMT'S.
- (EE) SINGLE/DOUBLE STRAIN A-FRAME.
- (FF) BOBBIN INSULATOR.
- (GG) INTERMEDIATE A-FRAME.
- (HH) 25mm² Cu XLPE INSULATED CONNECTIONS.
- (JJ) STREETLIGHT
- (KK) PROP STRUCTURE.
- (LL) 100mm x 50mm x 11 GALVANISED STEEL CHANNEL IRON.
- (RR) CABLE CONNECTIONS.
- (TT) 150mm x 75mm x 12mm GALVANISED STEEL ANGLE IRON.
- (UU) 100mm x 65mm x 8mm x 1500mm LONG ANGLE IRON. (SEE DRG NO. 4231/E/40)

NOTES

- ① MINIMUM CLEARANCE BETWEEN 22kV PHASE AND EARTH - 305mm.
MINIMUM CLEARANCE BETWEEN 22kV PHASES - 360mm.
- ② INSTALL BUNDLED CONDUCTOR IN BLACK PVC SLEEVE WHERE IT IS STRAPPED TO POLES AND WHERE IT IS IN CONTACT WITH STAY WIRE.
- ③ ALL BOLTS TO BE M20 & GALVANISED STEEL.
- ④ REFER TO DRAWING NO'S S/E/120 - S/E/128.
- ⑤ DISCONNECT AND REMOVE EXISTING 25kVA THREE PHASE TRANSFORMERS AND POLE MOUNTED DISTRIBUTION BOXES FOR HIGH MAST LIGHTS, AND RE-USE FUSES AND LIGHTNING ARRESTORS AT NEW PMT'S A, C, E, G, M, N, P AND T.



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CLIENT

LANGEBERG MUNICIPALITY

PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

POLE MOUNTED TRANSFORMER: LEGEND

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

10600-E-DET

DWG-SIZE

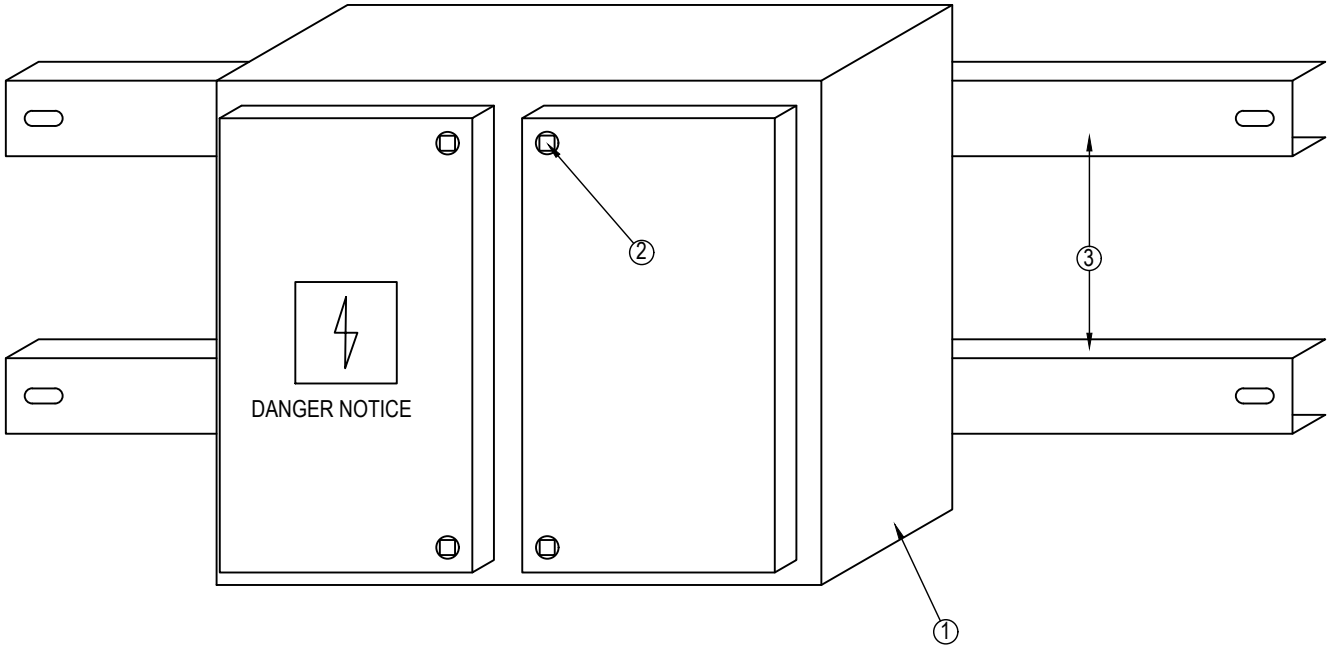
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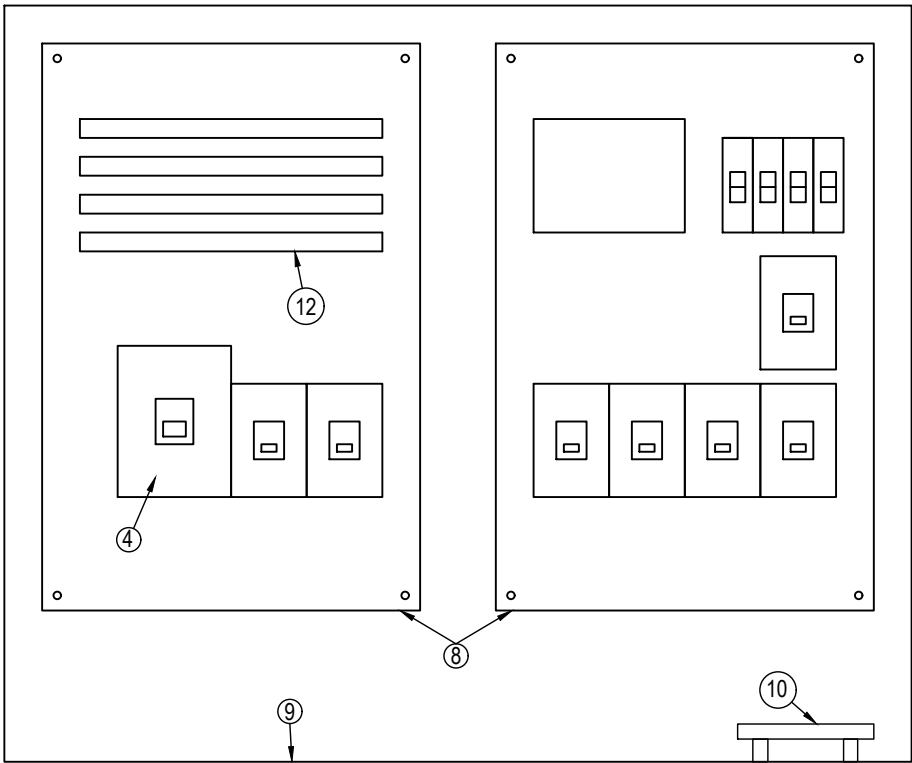
10600/E/15

REVISION

NOTE: REFER TO DRAWING NO. 10600/E/17 FOR LEGEND



ENCLOSURE AND MOUNTING BRACKETS



INTERNAL LAYOUT



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LANGEBERG MUNICIPALITY

PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**TYPICAL POLE MOUNTED TRANSFORMER LV
DISTRIBUTION BOX**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

10600-E-DET

DWG-SIZE

A4

DRAWING NO

10600/E/16

REVISION

LEGEND:

- ① ENCLOSURE (DIMENSIONS TO SUIT EQUIPMENT SPECIFIED)
- ② LATCH WITH PADLOCK FACILITY
- ③ 100 x 50 x 11mm GALVINISED CHANNEL
- ④ TRIPLE POLE (TP) MAIN CIRCUITBREAKER
- ⑤ TP DISTRIBUTION CIRCUIT BREAKER
- ⑥ STREETLIGHTING EQUIPMENT
- ⑦ THUMB SCREWS
- ⑧ REMOVABLE FACE PLATE
- ⑨ GLAND PLATE PRE-DRILLED FOR CABLE SIZES AS PER DRAWING NO'S. 10600/E/01.
- ⑩ EARTH BAR
- ⑪ 23 x 60mm SLOTS
- ⑫ BUSBARS
- ⑬ PHOTOCCELL

NOTES:

- Ⓐ REFER TO DRAWING No. 10600/E/15.
- Ⓑ IVORINE LABELS, 10mm HIGH LETTERING, INSTALLED ON FACE PLATES FOR ALL EQUIPMENT.
- Ⓒ ENCLOSURE AND INTERNAL STEELWORK TO BE MANUFACTURED OF GALVANISED SHEET METAL ENCLOSURE TO BE SAME COLOUR AS TRANSFORMER SUBSTATION AND INTERNAL STEELWORK WHITE.



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

LEGEND FOR DRAWING No. 10600/E/16

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

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10600-E-DET

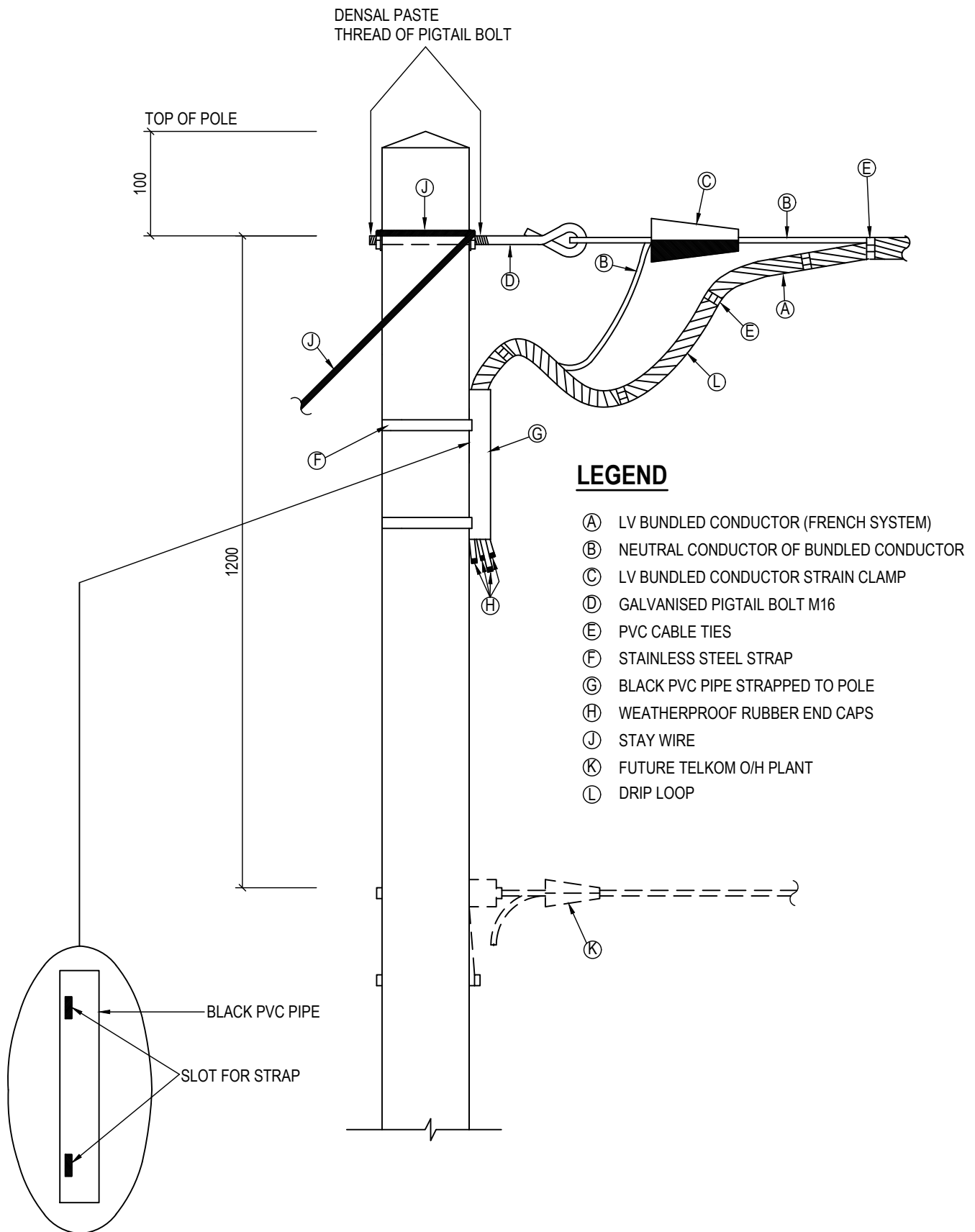
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DRAWING NO

10600/E/17

REVISION



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

LV O/H LINE: TERMINAL POLE

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

10600-E-DET

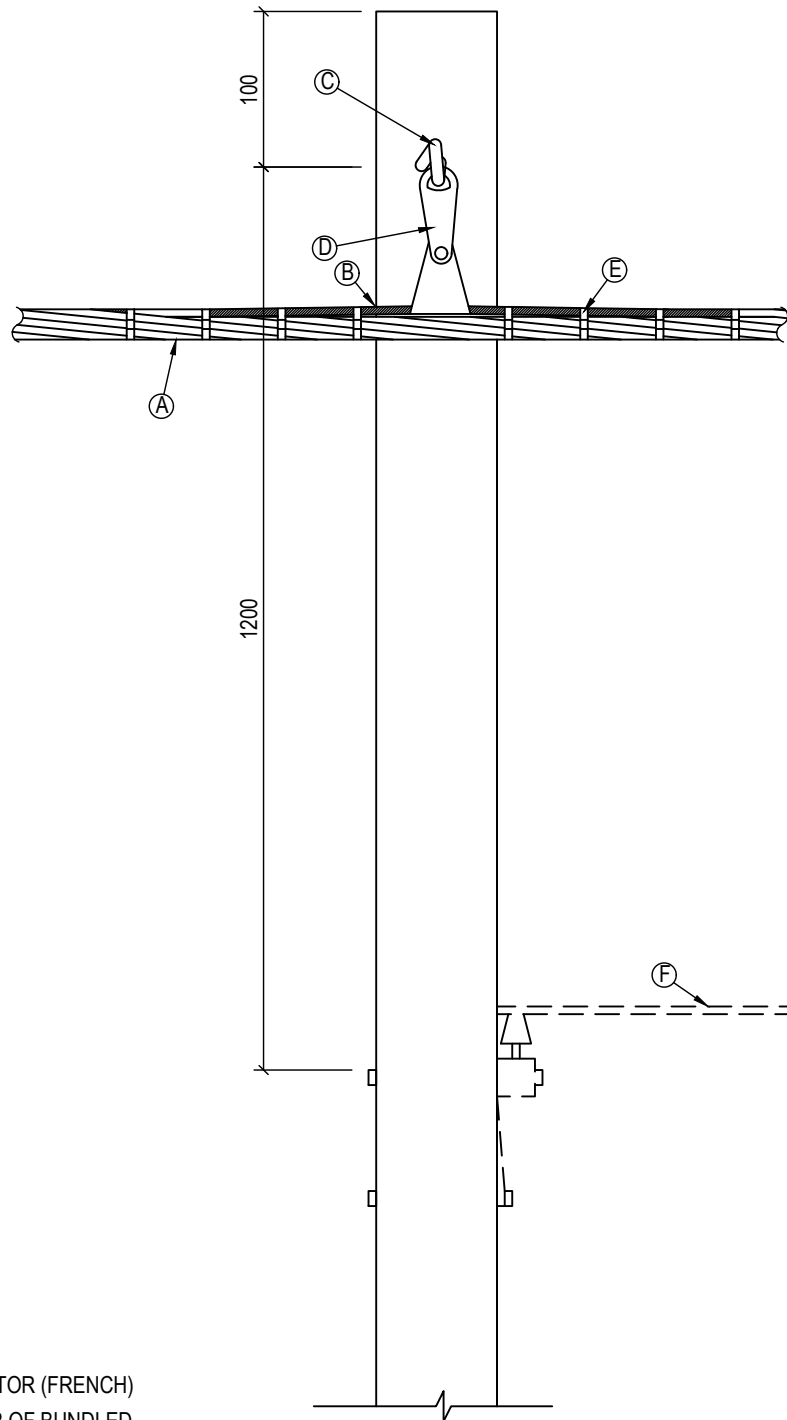
DWG-SIZE

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DRAWING NO

10600/E/18

REVISION



LEGEND

- (A) LV BUNDLED CONDUCTOR (FRENCH)
- (B) NEUTRAL CONDUCTOR OF BUNDLED CONDUCTOR
- (C) PIGTAIL BOLT
- (D) BUNDLED CONDUCTOR INTERMEDIATE SUSPENSION CLAMP
- (E) PVC CABLE TIES
- (F) POSSIBLE FUTURE TELKOM O/H PLANT



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LANGEBERG MUNICIPALITY

PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

LV O/H LINE: INTERMEDIATE POLE

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

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CAD REF No.

10600-E-DET

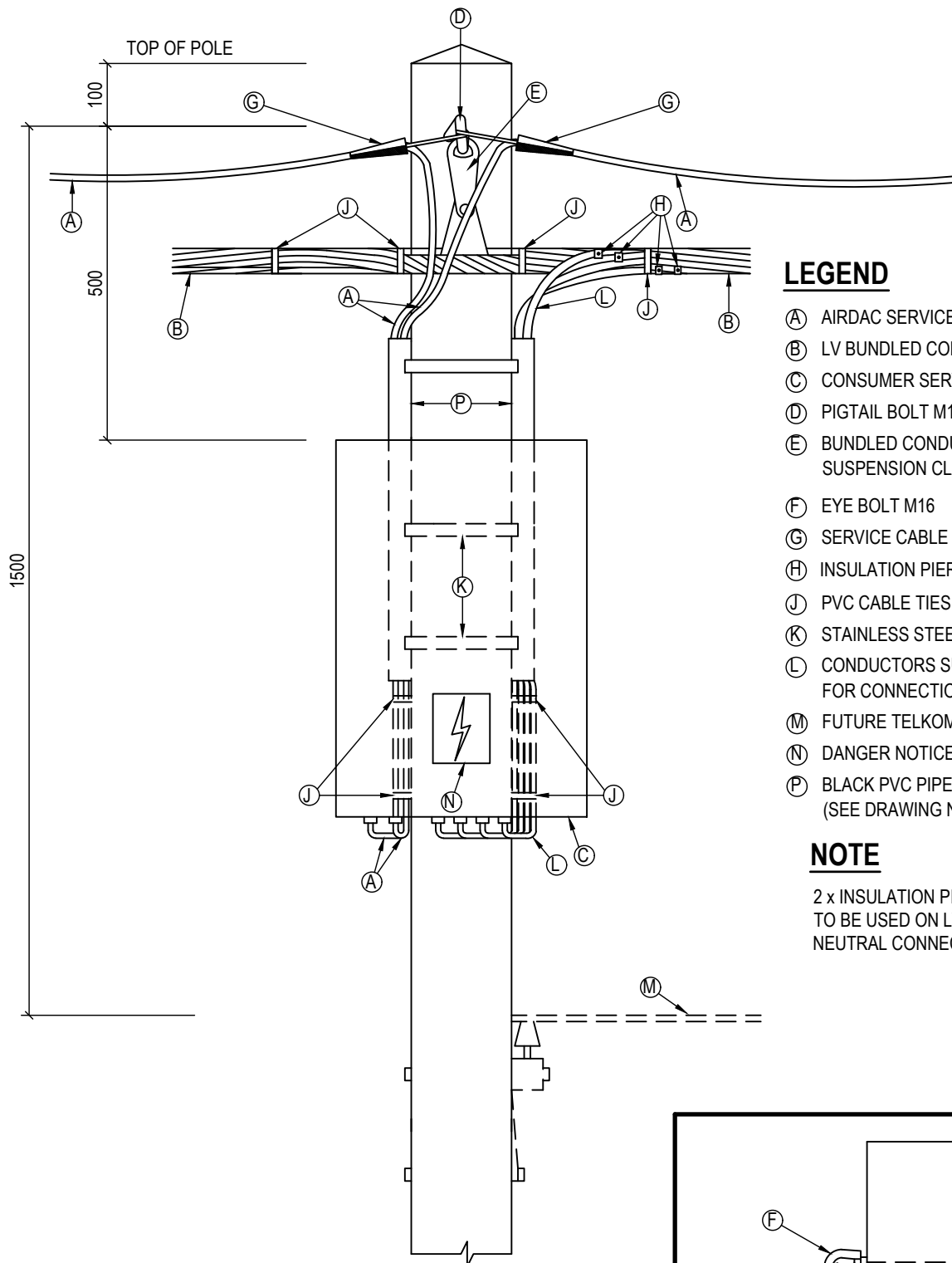
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DRAWING NO

10600/E/19

REVISION

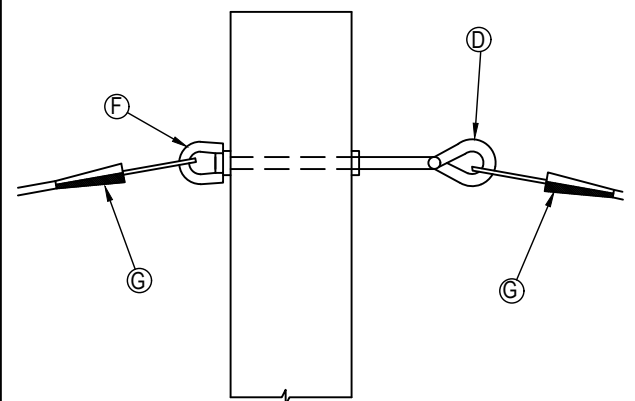


LEGEND

- (A) AIRDAC SERVICE CONNECTION CABLE
- (B) LV BUNDLED CONDUCTOR (FRENCH)
- (C) CONSUMER SERVICE CONNECTION BOX
- (D) PIGTAIL BOLT M16
- (E) BUNDLED CONDUCTOR INTERMEDIATE SUSPENSION CLAMP
- (F) EYE BOLT M16
- (G) SERVICE CABLE STRAIN CLAMP
- (H) INSULATION PIERCING CONNECTORS
- (J) PVC CABLE TIES
- (K) STAINLESS STEEL STRAP
- (L) CONDUCTORS SUPPLIED WITH (C) FOR CONNECTION TO (B).
- (M) FUTURE TELKOM O/H PLANT
- (N) DANGER NOTICE
- (P) BLACK PVC PIPE STRAPPED TO POLE (SEE DRAWING NO. 10518/E/16 FOR DETAIL)

NOTE

2 x INSULATION PIERCING CONNECTORS TO BE USED ON LV BUNDLED CONDUCTOR NEUTRAL CONNECTIONS.



SIDE VIEW SHOWING SERVICE CABLE STRAIN POINTS.



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CLIENT

LANGEBERG MUNICIPALITY

PROJECT

ELECTRIFICATION OF BOEKENHOUTSKLOOF, BONNIEVALE

DRAWING TITLE

LV O/H LINE: INTERMEDIATE POLE WITH CONSUMER SERVICE CONNECTION BOX FOR O/H SERVICE CONNECTIONS

DRAWN
KJM

DESIGNED
CP

CHECKED
Jdv

APPROVED

SCALE
N.T.S.

DATE
30/05/2023

CAD REF No.
10600-E-DET

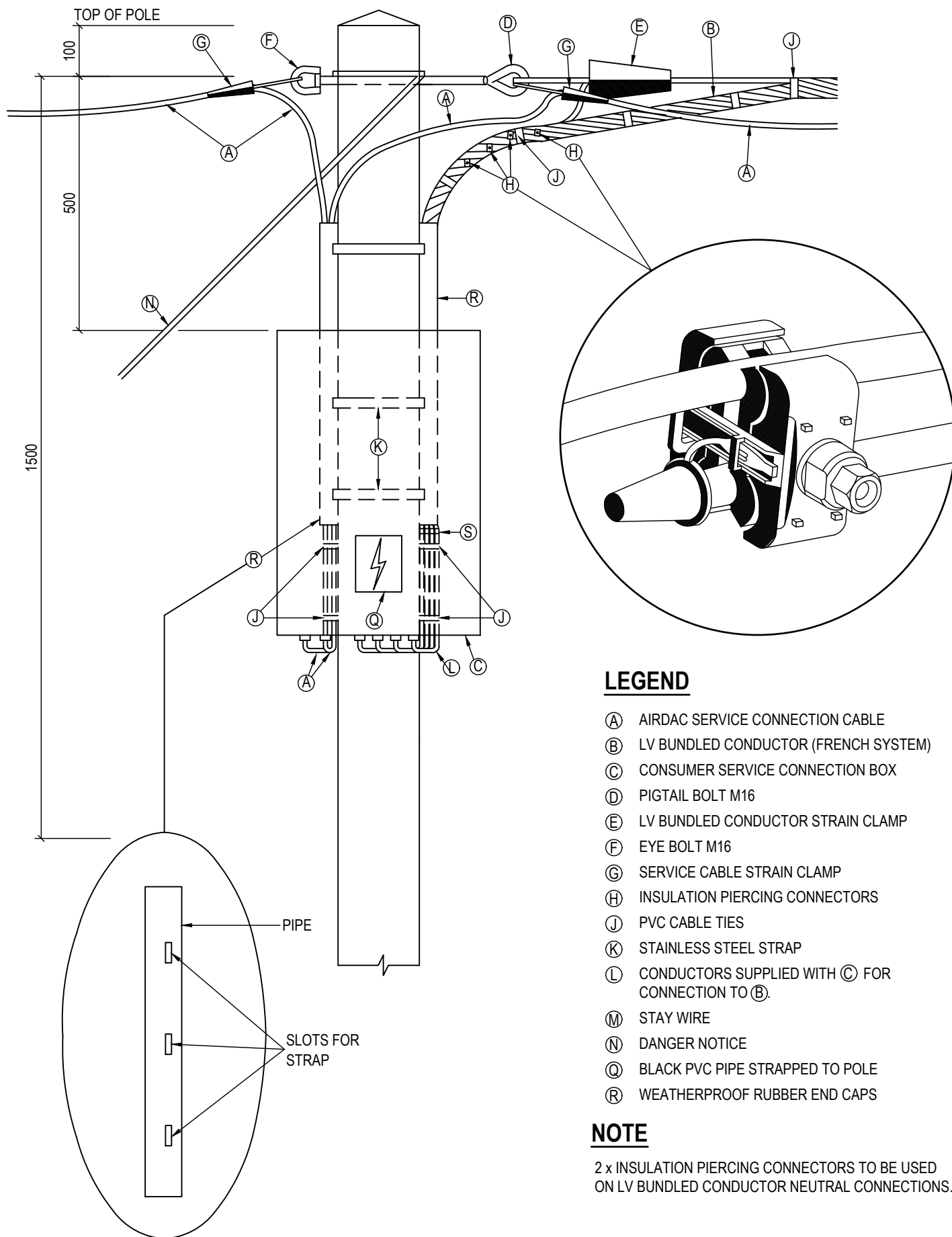
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LANGEBERG MUNICIPALITY

PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**LV O/H LINE: STRAIN POLE WITH CONSUMER
SERVICE CONNECTION BOX FOR O/H SERVICE
CONNECTIONS**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

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CAD REF No.

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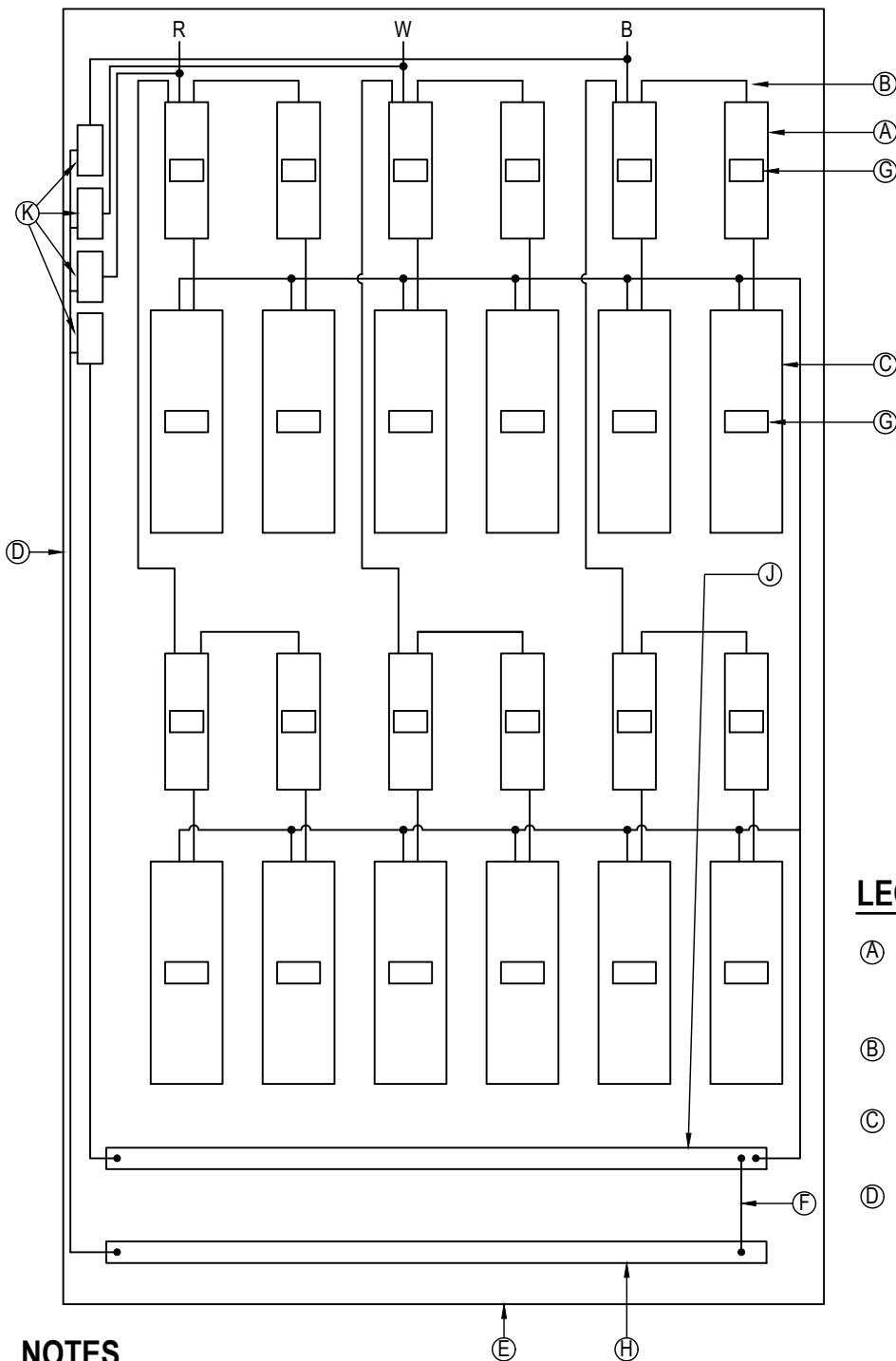
DWG-SIZE

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DRAWING NO

10600/E/21

REVISION



NOTES

- BOX TO BE PROVIDED COMPLETE WITH MIN. 2,5m LONG 16mm² Cu BLACK, UV STABLE, CONDUCTORS FOR CONNECTIONS TO OVERHEAD LINE. RED, BLUE & WHITE COLOUR CODED HEAT SHRINK TAGS TO BE INSTALLED ON ALL CONDUCTOR TAIL ENDS.
- *TO BE SUPPLIED WITH CONSUMER SERVICE CONNECTION BOX.
- ALL BOLTS, NUTS, POP RIVETS, HINGES, HASP AND STAPLE TO BE STAINLESS STEEL.
- CONTRACTOR TO ENSURE THAT THE CSCB IS OF SUFFICIENT SIZE TO ACCOMMODATE ALL THE EQUIPMENT SHOWN. MINIMUM SIZE AP2 POLE BOX (600mm HIGH x 450mm WIDE x 165mm DEEP) OR SMBA (521mm HIGH x 480mm WIDE x 155mm DEEP)

LEGEND

- (A) 50A SP MCB'S, CBI TYPE QF, ORANGE HANDLE (CURVE 1) FIXED TO CLIP IN FRAME COMPLETE WITH SHROUD.
- (B) 16mm² Cu INSULATED CONDUCTOR CONNECTIONS TO PHASES.
- (C) SPLIT PREPAID kWh METER MEASUREMENT AND CONTROL UNITS (MCU'S) FIXED TO DIN RAIL
- (D) POLYETHYLENE POLE MOUNTED CONSUMER SERVICE CONNECTION BOX (CSCB) FITTED WITH STAINLESS STEEL MOUNTING BRACKETS SUITABLE FOR FIXING BOX TO POLE WITH 19mm STAINLESS STEEL STRAPS. CSCB TO BE PROVIDED WITH A HINGED DOOR.
- (E) PRE-DRILLED FOR LV CONDUCTOR
- (F) BRIDGE BETWEEN NEUTRAL AND EARTH BAR USING 16mm² Cu BLACK PVC INSULATED CONDUCTOR
- (G) LABEL TO INDICATE ERF NO. SERVED BY MCB / METER
- (H) EARTH BAR
- (J) NEUTRAL BAR
- (K) 4 x SURGE ARRESTORS CBI TYPE QFLN-4(13)



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CLIENT

LANGEBERG MUNICIPALITY

PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**LARGER POLE MOUNTED CONSUMER
SERVICE CONNECTION BOX (7 TO 12 HOUSE
CONNECTIONS)**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

10600-E-DET

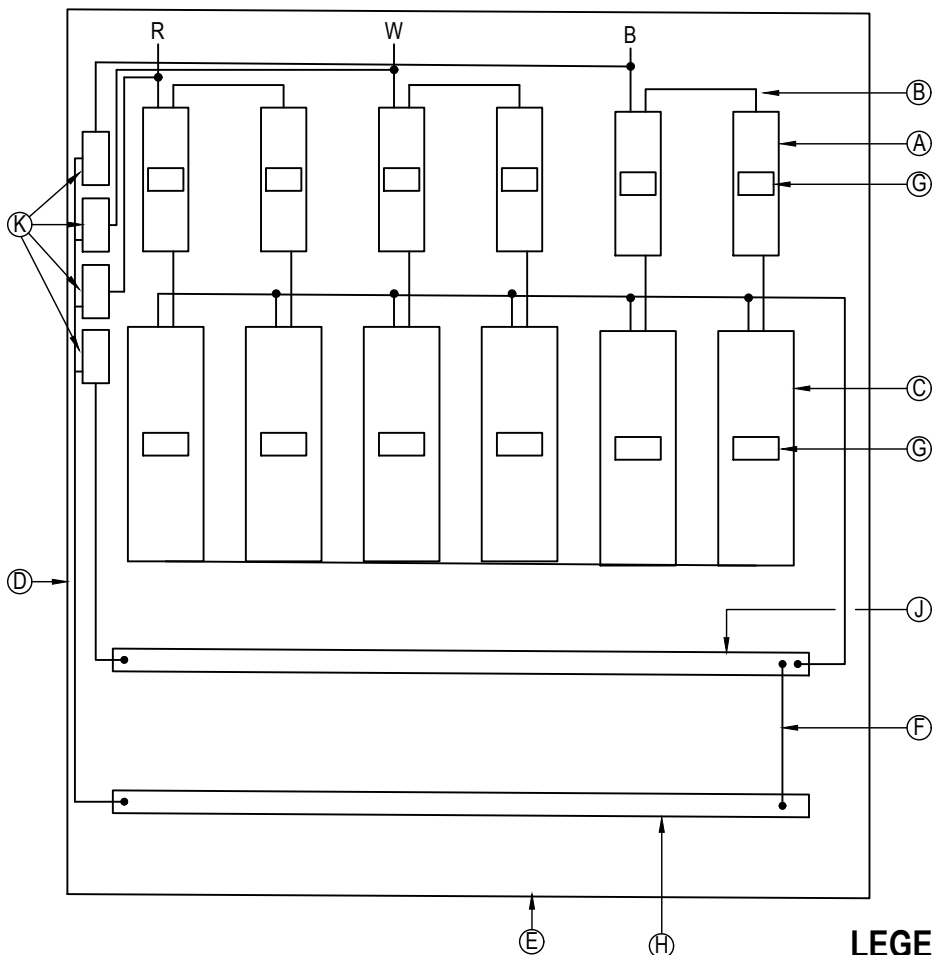
DWG-SIZE

A4

DRAWING NO

10600/E/22

REVISION



INTERNAL LAYOUT

LEGEND

- (A) 50A SP MCB'S, CBI TYPE QF, ORANGE HANDLE (CURVE 1) FIXED TO CLIP IN FRAME COMPLETE WITH SHROUD.
- (B) 16mm² Cu INSULATED CONDUCTOR CONNECTIONS TO PHASES.
- (C) SPLIT PREPAID kWh METER MEASUREMENT AND CONTROL UNITS (MCU'S) FIXED TO DIN RAIL
- (D) POLYETHYLENE POLE MOUNTED CONSUMER SERVICE CONNECTION BOX (CSCB) FITTED WITH STAINLESS STEEL MOUNTING BRACKETS SUITABLE FOR FIXING BOX TO POLE WITH 19mm STAINLESS STEEL STRAPS. CSCB TO BE PROVIDED WITH A HINGED DOOR.
- (E) PRE-DRILLED FOR LV CONDUCTOR
- (F) BRIDGE BETWEEN NEUTRAL AND EARTH BAR USING 16mm² Cu BLACK PVC INSULATED CONDUCTOR
- (G) LABEL TO INDICATE ERF NO. SERVED BY MCB / METER
- (H) EARTH BAR
- (J) NEUTRAL BAR
- (K) 4 x SURGE ARRESTORS CBI TYPE QFLN-4(13)

NOTES

1. BOX TO BE PROVIDED COMPLETE WITH MIN. 2,5m LONG 16mm² Cu BLACK, UV STABLE, CONDUCTORS FOR CONNECTIONS TO OVERHEAD LINE. RED, BLUE & WHITE COLOUR CODED HEAT SHRINK TAGS TO BE INSTALLED ON ALL CONDUCTOR TAIL ENDS.
2. *TO BE SUPPLIED WITH CONSUMER SERVICE CONNECTION BOX.
3. ALL BOLTS, NUTS, POP RIVETS, HINGES, HASP AND STAPLE TO BE STAINLESS STEEL.
4. CONTRACTOR TO ENSURE THAT THE CSCB IS OF SUFFICIENT SIZE TO ACCOMMODATE ALL THE EQUIPMENT SHOWN. MINIMUM SIZE AP2 POLE BOX (600mm HIGH x 450mm WIDE x 165mm DEEP) OR SMBA (521mm HIGH x 480mm WIDE x 155mm DEEP)



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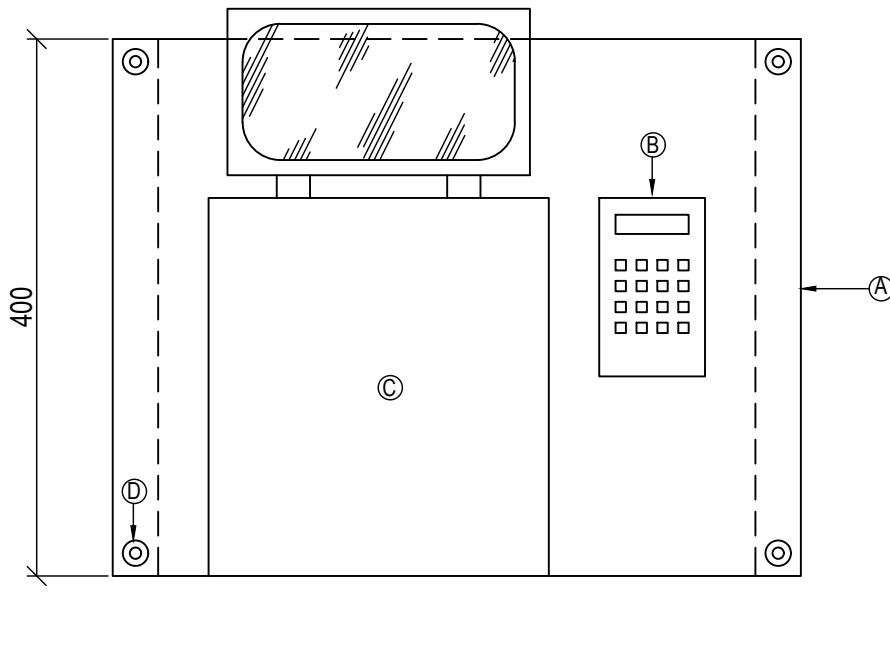
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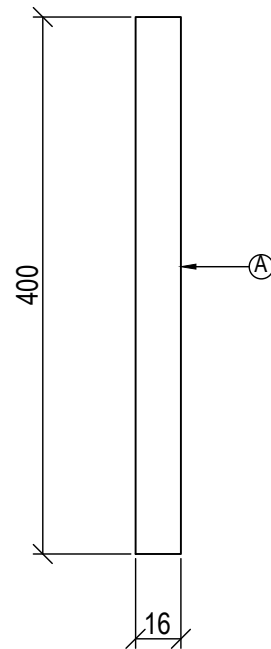
PROJECT
**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE
**POLE MOUNTED CONSUMER SERVICE
CONNECTION BOX FOR MAX 6 x SPLIT
PREPAID kWh METER**

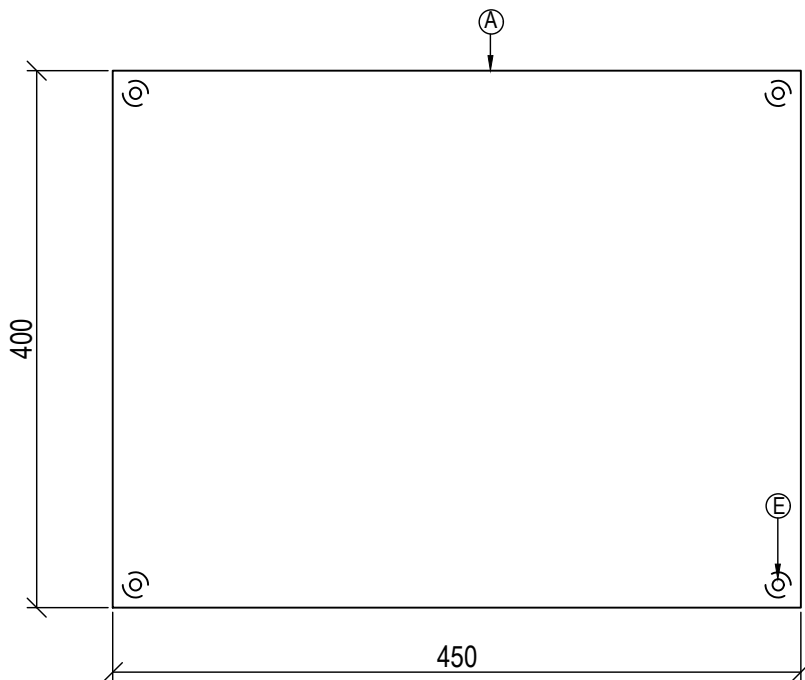
DRAWN KJM	DESIGNED CP	CHECKED Jdv	APPROVED
SCALE N.T.S.	DATE 30/05/2023	CAD REF No. 10600-E-DET	DWG-SIZE A4
DRAWING NO 10600/E/23			REVISION



**FRONT VIEW ELEVATION WITH kWh
METER KEYPAD & READY BOARD**



**SIDE VIEW ELEVATION,
EXCLUDING kWh METER KEYPAD
AND READY BOARD**



**REAR VIEW ELEVATION, EXCLUDING kWh
METER KEYPAD AND READY BOARD**

LEGEND

- (A) 450 x 400 x 16mm THICK LAMINATED WOODEN BOARD MOUNTING BOARD FIXED TO WALL WITH 4 GALVANISED STEEL BOLTS / SELF-TAPPING SCREWS
- (B) kWh METER KEYPAD (USER INTERFACE UNIT)
- (C) READY BOARD
- (D) 16mm Ø HOLE FOR SCREW DRIVER ENTRY TO SECURE FIXING SCREWS
- (E) 6mm Ø HOLE FOR FIXING SCREWS



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**MOUNTING BOARD DETAIL FOR SPLIT
PREPAID kWh METER KEYPAD (UIU) AND
READY BOARD**

DRAWN

KJM

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CP

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SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

10600-E-DET

DWG-SIZE

A4

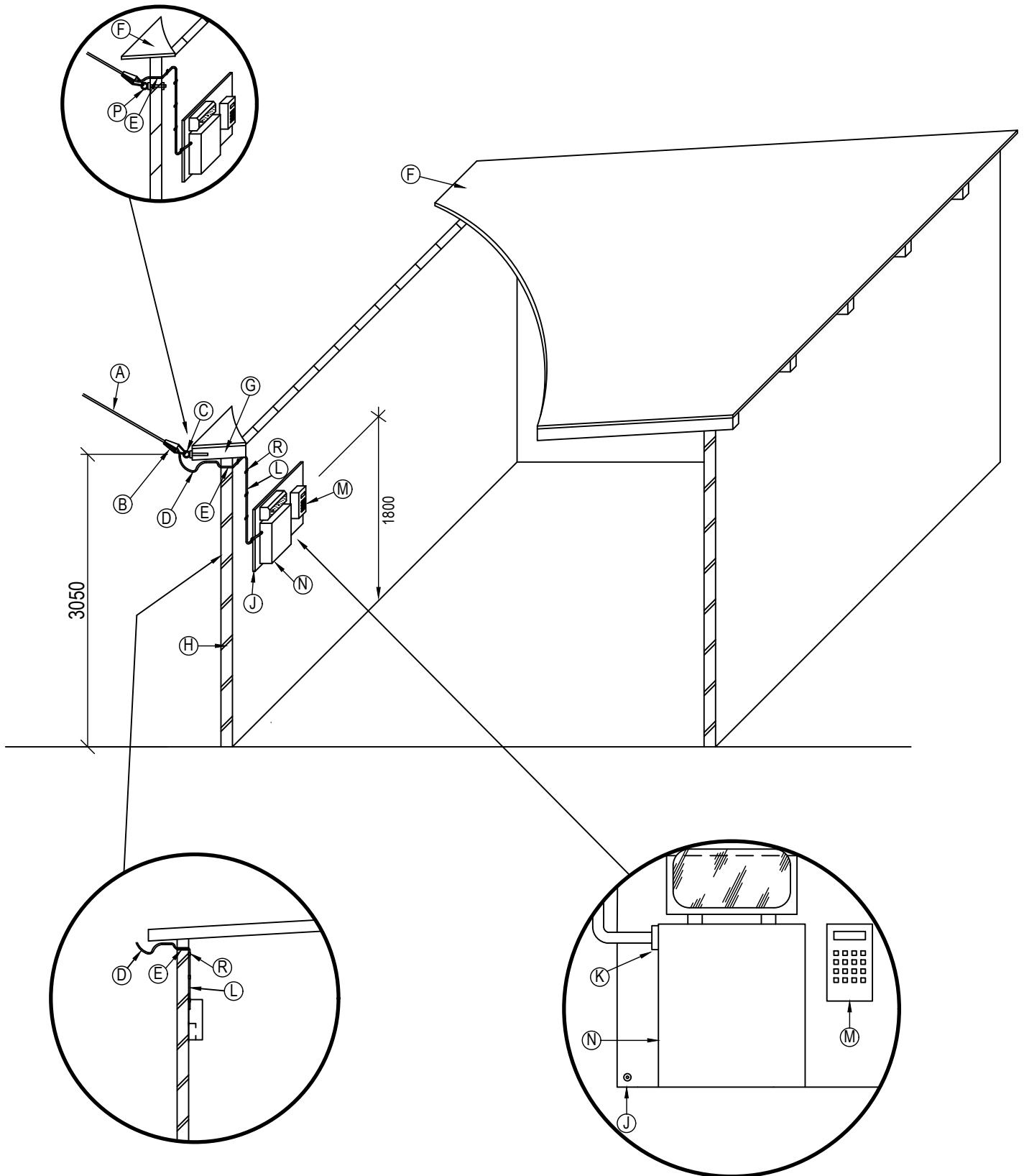
DRAWING NO

10600/E/24

REVISION

NOTE: REFER TO DRAWING NO'S 10600/E/27 & 28 FOR LEGEND AND NOTES

ALTERNATIVE "A"



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**OVERHEAD SERVICE CONNECTION TYPICAL
INSTALLATION INSIDE HOUSE**

DRAWN

KJM

DESIGNED

CP

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Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

10600-E-DET

DWG-SIZE

A4

DRAWING NO

10600/E/25

REVISION

LEGEND

- (A) AIRDAC SERVICE CONNECTION CABLE
- (B) STRAIN CLAMP
- (C) PIGTAIL SCREW
- (D) DRIP LOOP IN SERVICE CABLE
- (E) HOLE IN WALL WITH 25mm Ø PVC CONDUIT FOR SERVICE CABLE FITTED WITH UV STABLE NYLON COMPRESSION GLAND SUITABLY SIZED FOR AIRDAC SERVICE CONNECTION CABLE.
- (F) WOOD, ASBESTOS OR CORRUGATED IRON ROOF
- (G) WOODEN BEAM
- (H) WOOD, CORRUGATED IRON, CLAY OR BRICK WALLS
- (J) 450 x 400 x 16mm LAMINATED WOODEN MOUNTING BOARD FIXED TO WALL WITH 4 GALVANISED STEEL BOLTS/SELF-TAPPING SCREWS (SEE DRAWING NO. 10600/E/24 FOR DETAIL).
- (K) PVC COMPRESSION GLAND
- (L) 10mm² AIRDAC, FIXED TO WALL
- (M) SPLIT PREPAID kWh METER KEYPAD (UIU)
- (N) READY BOARD WITH BULKHEAD LIGHT FITTING
- (P) M10 GALVANISED STEEL EYE BOLT
- (Q) 4,5m WOODEN POLE
- (R) GALVANISED WALL SADDLES FIXING AIRDAC CABLE TO WALL, SPACED MIN. 400mm APART.



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**LEGEND FOR DRAWING No.S 10600/E/25 AND
26**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

10600-E-DET

DWG-SIZE

A4

DRAWING NO

10600/E/27

REVISION

NOTES

- 1) IT IS THE CONTRACTOR'S RESPONSIBILITY TO EVALUATE EACH ERF'S SITE CONDITIONS IN ORDER TO DETERMINE THE BEST METHOD OF CONNECTION TO THE HOUSE CONCERNED.
- 2) WHERE THE ROOF IS SUPPORTED BY WOODEN BEAMS OR IF THESE BEAMS ARE FOUND TO BE SUITABLE FOR THE ATTACHMENT OF THE SERVICE CABLE, THEN ALTERNATIVE "A" IS TO BE USED.
- 3) WHERE THE WALLS AND STRUCTURE OF THE HOUSE ARE FOUND TO BE UNSUITABLE FOR THE ATTACHMENT OF THE SERVICE CABLE OR IF NO SUITABLE POINT OF ATTACHMENT CAN BE FOUND OR IF THE ONLY ACCEPTABLE POINT OF ATTACHMENT TO THE HOUSE IS LESS THAN THE MINIMUM OF 2800 mm FROM GROUND LEVEL, THEN ALTERNATIVE "B" IS TO BE USED.
- 4) IF THE SOIL AROUND THE 4,5m POLE IS NOT SUITABLE FOR COMPACTION THEN A SAND CEMENT MIXTURE, OF THE RATIO 10:1, IS TO BE USED AS BACKFILL.
- 5) MOUNT THE SPLIT PREPAID kWh METER KEYPAD (UIU) AND READY BOARD ON THE WOODEN MOUNTING BOARD USING GALVANISED SELF TAPPING SCREWS.
- 6) THE MOUNTING BOARD WITH THE EQUIPMENT MUST NOT BE MOUNTED WITHIN A RADIUS OF 1000mm FROM ANY WATER TAP.
- 7) THE MOUNTING BOARD SHALL BE MOUNTED SO THAT THE TOP OF THE BOARD IS 1800mm ABOVE THE FLOOR.
- 8) SERVICE CABLE ENTRY INTO HOUSE TO BE SEALED AT BOTH ENDS WITH SILICON SEALER AFTER INSTALLATION OF THE CABLE. WHERE POSSIBLE, THE ENTRY MUST BE MADE DIRECTLY ABOVE THE MOUNTING BOARD.
- 9) THE ERF DESIGNATION SHALL BE NEATLY STENCILED WITH A PERMANENT MARKER ON THE MOUNTING BOARD, 20mm HIGH LETTERING.



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

**LEGEND FOR DRAWING No'S 10600/E/25 AND
26**

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

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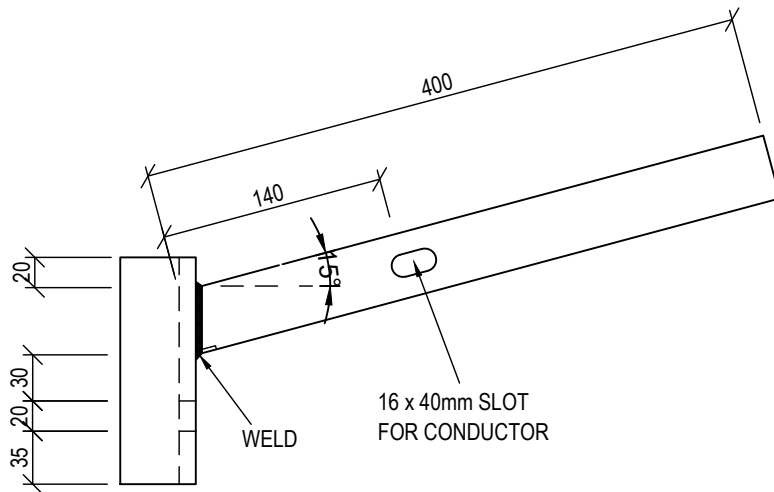
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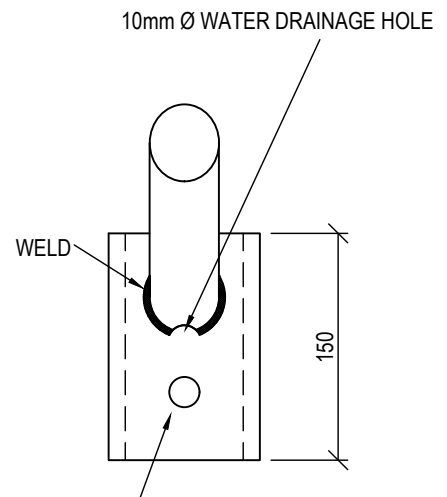
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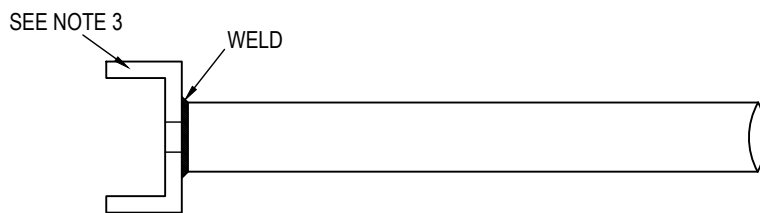
REVISION



SIDE ELEVATION



FRONT ELEVATION



PLAN

NOTES

- 1) PIPE DIAMETER TO BE DECIDED IN CONJUNCTION WITH STREET LIGHT SUPPLIER, THE PIPE SHALL HOWEVER HAVE A WALL THICKNESS OF NOT LESS THAN 2.5mm.
- 2) ALL WELDS TO BE FULL STRENGTH.
- 3) CHANNEL IRON TO BE 100 x 50 x 11mm.
- 4) ALL STEEL WORK TO BE HOT DIPPED GALVANISED AFTER MANUFACTURE.



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

TYPICAL STREETLIGHT BRACKET DETAIL

DRAWN
KJM

DESIGNED
CP

CHECKED
Jdv

APPROVED

SCALE
N.T.S.

DATE
30/05/2023

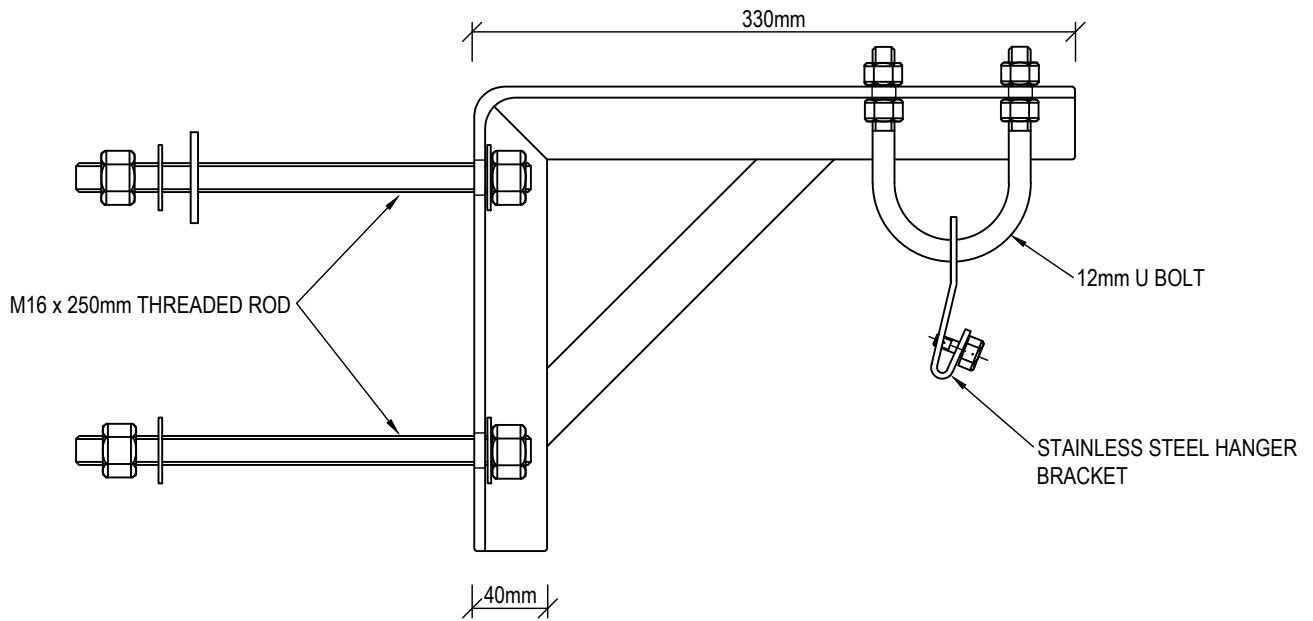
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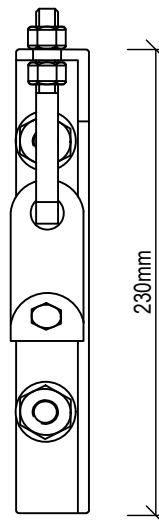
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SIDE VIEW



END VIEW



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PROJECT

**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

LV INTERMEDIATE POLE WITH STREETLIGHT

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

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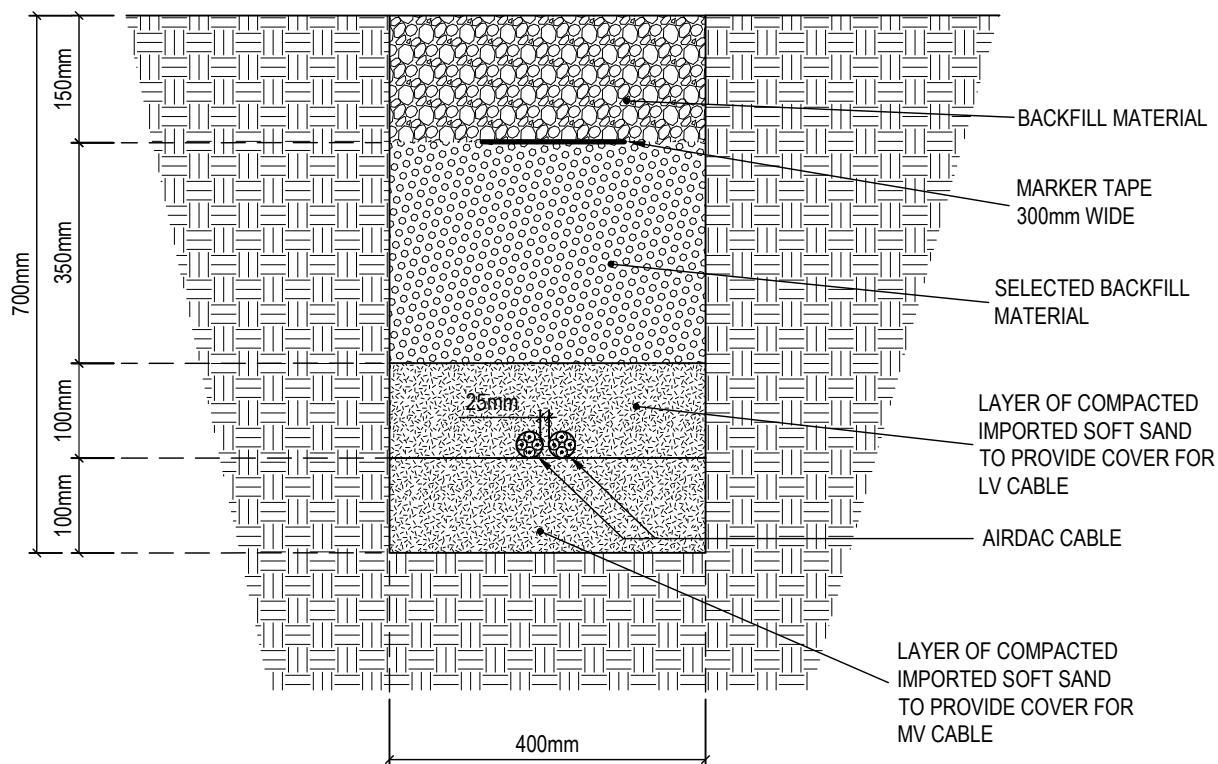
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**ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE**

DRAWING TITLE

TYPICAL TRENCH DETAIL FOR LV CABLE

DRAWN

KJM

DESIGNED

CP

CHECKED

Jdv

APPROVED

SCALE

N.T.S.

DATE

30/05/2023

CAD REF No.

10600-E-DET

DWG-SIZE

A4

DRAWING NO

10600/E/31

REVISION

ANNEXURE B

Project Notice Board

The following drawings of the project notice board are bound into this Document and must be used when constructing and erecting the engineer's project notice board.

Drawing No

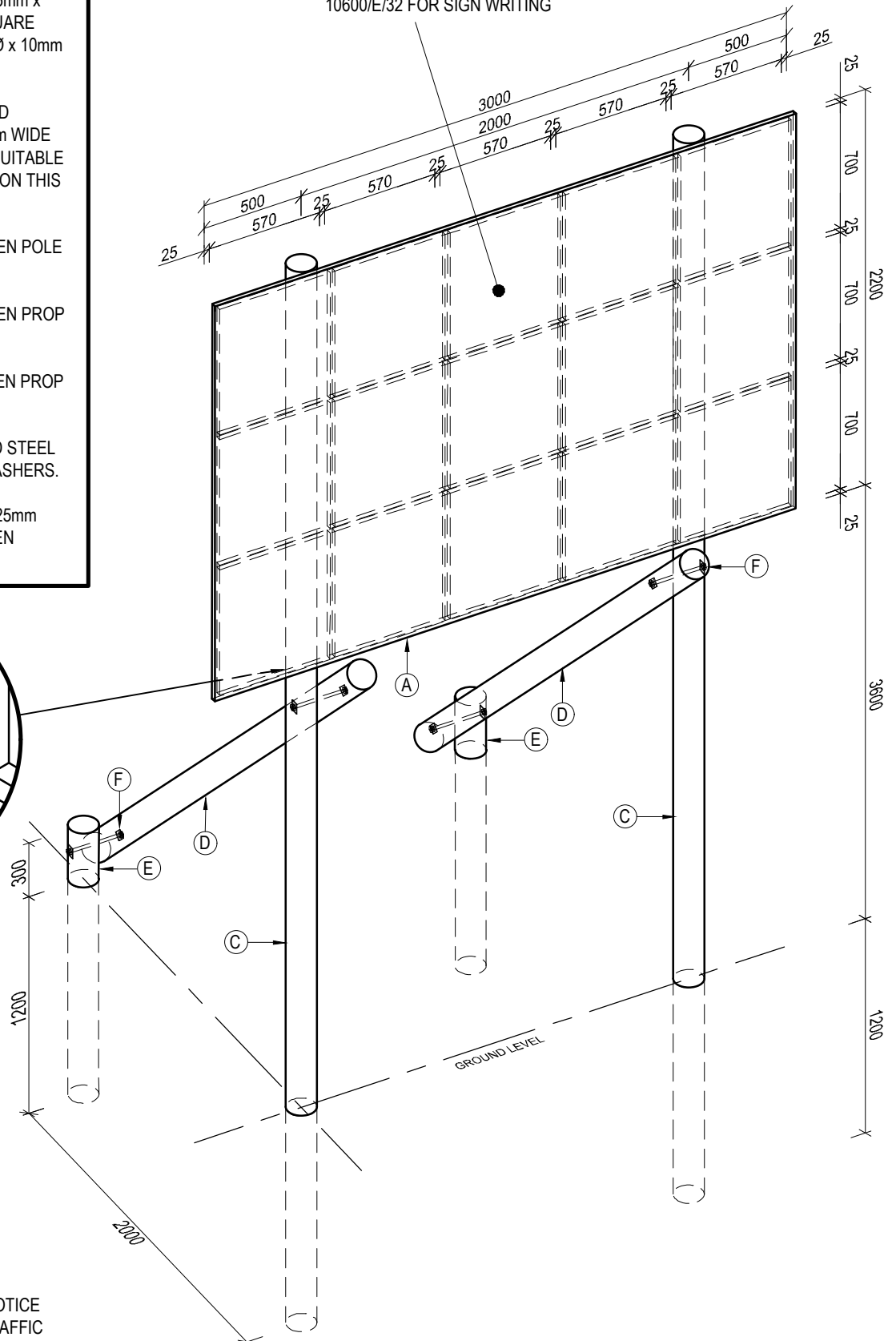
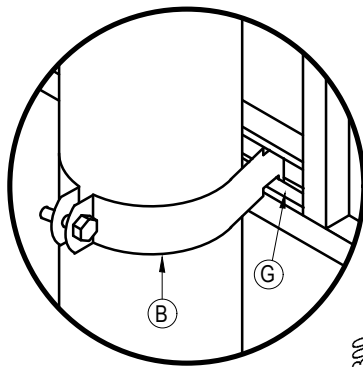
Description

10600/E/32	Project Notice Board
10600/E/33	Support Structure Detail for Project Notice Board

LEGEND

- (A) 3000mm x 2200mm, 1mm THICK SHEET METAL BOARD SECURED TO 25mm x 25mm GALVANISED STEEL SQUARE TUBING FRAME USING 4,8mm Ø x 10mm LONG ALUMINIUM REVITS.
- (B) FRAME FIXED AGAINST TARRED WOODEN POLES USING 76,2mm WIDE GALVANISED STEEL CLAMPS SUITABLE TO FIT IN UNISTRUT IN ITEM G ON THIS DRAWING.
- (C) 7000mm LONG TARRED WOODEN POLE MIN. 140mm DIAMETER.
- (D) 3500mm LONG TARRED WOODEN PROP POLE MIN. 140mm DIAMETER.
- (E) 1500mm LONG TARRED WOODEN PROP POLE MIN. 140mm DIAMETER.
- (F) 300mm LONG M20 GALVANISED STEEL BOLT WITH TWO NUTS AND WASHERS.
- (G) GALVANISED STEEL 76,2mm x 25mm UNISTRUT WELDED IN BETWEEN SQUARE TUBING.

REFER TO DRAWING No.
10600/E/32 FOR SIGN WRITING



NOTE:

SUPPORT STRUCTURE TO BE
INSTALLED SO THAT PROJECT NOTICE
BOARD IS FACING ONCOMING TRAFFIC
AT AN ANGLE OF 45° RELEVANT TO THE
ROAD.



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PROJECT

ELECTRIFICATION OF
BOEKENHOUTSKLOOF, BONNIEVALE

DRAWING TITLE

PROJECT NOTICE BOARD
SUPPORT STRUCTURE DETAIL

DRAWN KJM	DESIGNED CP	CHECKED JdV	APPROVED
SCALE N.T.S	DATE 07/06/2023	CAD REF No 10600-E-33	DWG SIZE A4
DRAWING No. 10600/E/33			REVISION

ANNEXURE C

**Client's Occupational Health and Safety Baseline Risk Assessment and Specification -
prepared by Messrs Devac (Pty) Ltd.**

 	DOC. NAME	SITE SAFETY HEALTH AND SAFETY SPECIFICATION (SSHSS)		
	CLIENT	Langeberg Municipality	DOC NO	598
	PROJECT NAME	BOEKENHOUTSKLOOF	COMMENCE DATE	28 July 2023
	ADRESS	Langeberg Municipality, Ashton Office. 28 Main Road, 6715		

REVISION STATUS		
REVISION DATE	DESCRIPTION OF REVISION	DETAIL:
2023/07/28	REVISED AND CUSTOMIZED FOR THE PROJECT TAKING PLACE AT:	ELECTRIFICATION of BOEKENHOUTSKLOOF, BONNIEVALE (PHASE 1)

AUTHOR OF THIS DOCUMENT (SSHSS)	
CLIENT	
NAME OF CLIENT	Langeberg Municipality
RESPONSIBLE DEPARTMENT	Legal Department
APPROVAL DATE	Friday, 28 July 2023
PAGES INCLUDED IN THIS DOCUMENT	68
SIGNATURE OF APPROVAL	

RECEIPT BY CONTRACTOR	
CONTRACTOR	
NAME OF CONTRACTOR	
DOCUMENT REFERENCE	Legal / Compliance
ACCEPTANCE DATE	Friday, 28 July 2023
PAGES INCLUDED IN THIS DOCUMENT	68
SIGNATURE OF APPROVAL	

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Cover Page & Document Control Sheet

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- 2.2. H&S goals
- 2.3. Hazard identification and risk assessments (RAMS)
- 2.4. Design information
- 2.5. Communication and consultation
- 2.6. Co-operation between contractors
- 2.7. H&S Monitoring
- 2.8. H&S Inspections
- 2.9. H&S Review
- 2.10. Training Attestation
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- 2.14. Site security, access and transport arrangement
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- 4.2. Contact detail to H&S Practitioner
- 4.3. Copy of CWP / NC
- 4.4. Complete Contact details for parties
- 4.5. Physical Address for construction site and site office
- 4.6. Nature of the work describe
- 4.7. Commencement and completion date
- 4.8. List of Contractors appointed by PC
- 4.9. Procedures to ensure PC maintain H&S file
- 4.10. Updated record of "as-built" drawings and plans
- 4.11. Criteria for design loadings for structural elements
- 4.12. Detail of potential hazard included in structure eg. tension beams or slabs
- 4.13. General details of construction methods and materials
- 4.14. Equipment and maintenance of facilities within the Structure
- 4.15. Maintenance procedures and requirements provided for the Structure
- 4.16. List and proof of appointments of each contractor

- 4.17. Procedures to approve, monitor and review all Contractors H&S files for the project
- 4.18. Manuals for operating, maintenance procedures & schedule for plant and equipment
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Annexure 1 – Professional team and information on this project

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BASELINE Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

Introduction

A responsible Occupational Health and Safety management is **essential** to protect the client, consultants, contractors, employees, visitors and the public to provide a work environment that encourages a health and safety culture.

Purpose

The purpose and objectives of this Specification is to ensure that all Contractors (herein referred to as the “*Contractor*” (including Principal Contractor, Contractors, Subcontractors, Service Providers, Suppliers, Consultants or similar) shall enter into a **contractual agreement** / relationship with Langeberg Municipality (herein referred to as the “*Client*”). Such Contractor shall achieve and maintain an acceptable level of Occupational Health and Safety performance whilst conducting work for or on behalf of the Client.

These health and safety specifications (“*specifications*”) have been prepared in terms of the Occupational Health & Safety Act, Act 85 of 1993 (hereinafter referred to as the “*OHS Act*”) and the regulations promulgated there under and as amended, in particular the Construction Regulations 2014 and guidelines published there under and **must be complied with**.

It is a **requirement** that Contractor’s shall **provide a safe and healthy working environment** and to direct his activities in such a manner that his employees and any other persons, who may be affected by his activities, are not exposed to hazards to their health and safety, maintain OHS Act legislative compliance and minimize the risks of incidents, injuries, contracting diseases and damage to the employees’ health, environment, assets or property of the Client.

Scope

This **document is part of** the tender requirement, all contracts, principal agreements, applicable service level **agreements** and legal **appointments** entered into with Langeberg Municipality and a Contractor or service provider.

The Contractor is required to use and apply it when **developing** Health and Safety documentation for implementation on sites. This document will carry equal weight to the contracts, principal agreements, service level agreements and legal appointments as far as enforcement, compliance and breach is concerned.

These **specifications form an audit guideline** and management tool for the use of the Contractor to **ensure compliance with the OHS Act and Regulations, Directions, Directives, Notices and Guidelines** promulgated there under and updated from time to time. **Covid-19 compliance requirements is included in the OHS Direction as published.**

Any **contradiction** between these specifications and the OHS Act, the OHS Act take preference except where explicitly stated. When these specifications do not cover specific health and safety requirement, the **OHS Act must be used as the standard requirement**.

Adherence

The specifications are **mandatory before the commencement** and for the duration of any contract works to be conducted on any Langeberg Municipality premises (owned or leased). These specifications shall be implemented and be subject to audits, without prior announcement from time to time.

It is the responsibility of the contractor to familiarise himself with the **contents of this specification** and any subsequent updates hereto. The latest version should always be kept in the contractors file on site.

Failure to adhere to this specification may result in disciplinary action, penalties and a breach being raised in the event of continuous non-conformances.

Reputational impact

Any action or inaction taken relevant to this Specification which may have potential to incur reputation risk for Langeberg Municipality , i.e. likely to result in material criticism and / or censure of Langeberg Municipality by key stakeholders or opinion formers (including clients,

market counterparties, regulators, government officials, law enforcement agencies, media or NGOs) should be escalated to the appropriate committee.

Penalties

Penalties may be implemented for continuous non-compliance to sample provisions set out later in this specification.

Interpretation

The SSHSS contains clauses that are generally applicable to building / construction / civil work and to impose pro-active controls associated with activities that impact on human Health and Safety as it relates to plant and machinery.

Compliance to the requirements of the OHS ACT is in addition to the requirements of the SSHSS and is part of the Contractor's responsibility. The CLIENT will monitor that the Contractors comply with the requirements of the OHS ACT and will not prescribe to the Contractor how such compliance is achieved.

Definitions

For the purpose of this SSHSS some of the definitions / acronyms given hereunder have been extracted (but not limited) from the Construction Regulation shall apply:

"Construction Work" (as defined in the Construction Regulations, 2014) means any work in connection with –

- a) The construction, erection, alteration, renovation, repair, demolition or dismantling of or an addition to a building or any similar structure; or
- b) The construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work.

"Hazard Identification, Risk Assessment and Risk Control" means a documented plan, which identifies hazards, assesses the risks and detailing controls.

"Site" means the area in the possession of the Principal Contractor after site hand-over for the construction of the works. Where there is no demarcated boundary it will include all adjacent areas, which are reasonably required for the activities for the Principal Contractor, and approved for such use by the Client's representatives / Engineer.

"The Act" means, unless the context indicates otherwise, the Occupational Health and Safety Act, 1993 (ACT NO. 85 of 1993) and Regulations promulgated there under.

"Client" means Langeberg Municipality.

"Hazard" means a source of or exposure to danger (source which may cause injury or damage to persons or property)

"Risk" means the probability or likelihood that a hazard can result in injury or damage

“Principal Contractor’s Responsible Person” means any person appointed in writing by the Principal Contractor to supervise construction or building work. The appointment shall be as required by the OHS ACT which shall stipulate Health and Safety responsibilities, area of responsibility and the proposed duration of the project.

“Employer’s Personnel” means any Employee of the Principal Contractor, Contractor or Sub Contractors.

“SSHSS” means Site Specific Health and Safety Specifications / Occupational Health and Safety Specification.

Health and Safety Plan

The Contractor shall be required to develop and provide for review and approval by the client’s representative, a comprehensive site and project specific Health and Safety Plan, prior to work commencement.

Such plan shall be specific to the scope of work of the contractor including his sub-contractor scope of work, addressing the requirements set out in this specification.

Such plan must follow this specifications layout and shall detail the Contractor’s planned methods of management on site for the duration project. The detail required shall provide the client with a clear indication of how the Contractor (as well as his sub-contractors) intends to address, implement and manage the requirements of this specification in terms of his own scope of works.

The contractor’s health and safety plan must include a **Table of Content (INDEX)**.

The CIDB has gazette a best practice Standard for Health and Safety Plans and auditing requirements (Grade 2 to 9), Vol 641 9 November 2018 No 42021. The potential principal contractor should adopt such **standard for the layout of the Principal Contractor’s Health and Safety Plan**.

Such health and safety plan audit standard were gazetted by the CIDB to ensure that every contractor’s health and safety plan is evaluated fairly.

1. Project information

This health, safety and environmental specifications have been prepared for the preparation of construction work. Thereafter the enforcement of these specifications will be applicable during the construction phases. The appointed contractor’s health and safety plan cannot override the client’s specifications.

A general description of the type of work activities involved in the project.

This description of the works is not necessarily complete and shall not limit the work to be carried out by the principal contractor and contractor under this contract.

The Scope of Work consists of:

EMPLOYER’S OBJECTIVES

LANGEBERG MUNICIPALITY: ELECTRIFICATION OF BOEKENHOUTSKLOOF, BONNIEVALE (PHASE 1)

OVERVIEW OF THE WORKS

The scope of the work includes the following, as detailed on the attached drawings:

- (i) The supply and installation of a new MV Overhead Line;
- (ii) The main LV Reticulation to to approximately 130 erven; and
- (iii) The testing and commissioning of the complete installation.

GENERAL INTENT

The general intent of this Contract is that the Contractor shall procure all items necessary for, construct and complete the Works in accordance with the terms of Contract, in a workman-like and expeditious manner, and shall have full authority over all the Works.

The Engineer shall have the right to verify that all work is carried out in accordance with this Contract and to approve or reject materials supplied and work undertaken by the Contractor or approved subcontractors.

EXTENT OF THE WORKS

The Works in general include but is not restricted to the following:

1. Site clearance;
2. Excavations and fill for poles and trenches;
3. Installation of Switchgear in substation;
4. Earth works for shaping of work area; and
5. Structural works.

LOCATION OF THE WORKS

The works is located within the Langeberg Municipal area around the Railton Suburb.

Scope of principal contract

- (i) The supply and installation of a new MV Overhead Line;
- (ii) The main LV Reticulation to to approximately 130 erven; and
- (iii) The testing and commissioning of the complete installation.

SUBSOIL INVESTIGATIONS AND TEST RESULTS

No soil investigations were undertaken. Tenderers shall therefore acquaint themselves with conditions on site.

EXISTING SERVICES, KNOWN SERVICES

Information about piped and other services below the surface of the site.

No record drawings of existing services, except those which are shown on construction drawings, are available. The successful tenderer will have to consult with the relevant authorities to point out existing services prior to commencement construction activities.

The Contractor shall take whatever precautions are required to protect these services from damage during the period of the contract. The Contractor must take every effort to locate such services which may be damaged as a result of construction.

TREATMENT OF EXISTING SERVICES

The treatment of existing services, i.e. their termination, diversion of continued use, either temporarily or permanently, is shown on the relevant drawings. Any services encountered on site which are not on the drawings, must be pointed out to the Employer's representatives. The Employer's representatives will issue further instructions with regard to the treatment of these services.

Construction activities shall include the following:

- Detection and adjustment of existing services;
- Site clearance;
- Excavation;
- Training, supervision and provision of equipment for local labourers;
- Installation of electrical network and switchgear; and
- Reinstatement of surfaces.

General activities may also include, but are not limited to:

- a. Public safety and security;
- b. Protection of environment;
- c. Site Organization, Establishment and Barricading / Hoarding;
- d. Site handover meeting and progress meetings;
- e. Deliveries and other Construction Vehicles;
- f. Manual Handling of Material and Equipment;
- g. Earthworks (Excavation);
- h. Backfilling;
- i. Compacting and Filling;
- j. Construction of Access Roads;
- k. Road Signs and - markings;
- l. Demolition works;
- m. Installation of Services;
- n. Electrical Reticulation;
- o. Steel reinforcing;
- p. Concrete Works;
- q. Bricklaying & Plastering;
- r. Plumbing;
- s. Roof Erection;
- t. Scaffolding & Working on ladders;
- u. Working in elevated positions;
- v. Welding and gas cutting;
- w. Fire prevention;
- x. Hoisting and lifting Operations;
- y. Landscaping; and

- z. Subcontractors and Visitors on site.

Throughout the construction process it is required that the contractors are compliant to the require regulations.

Health and Safety is everyone's responsibility, report Unsafe Acts and Unsafe Conditions to your superior immediately.

Project program or schedule details, including start and finish dates, showing principal activities and intermediate stages.

- i. Project Program / schedule details

A project program with schedule detail need to be prepared by the appointed contractor once the tender has been assigned. Such program must be updated and recorded in the meetings and site-specific health and safety file of the contractor.

- ii. Start and finish dates

Once an appointment has been made the official starting date will be confirmed with the contractor and site handover arrange once all documentation work, including the approval of the health and safety plan and the site-specific health and safety file, has been approved.

- iii. Principal Activities

Within the Scope of Works section, a general list of activities was described. These activities form part of the Hazard identification process

- iv. Intermediate stages

This SSHSS was prepared for incorporation during stage 4 to form part of the Tender documentation to ensure that the potential contractor make provision for these requirements during Stage 5 and 6. Stage 5 is the construction phase and stage 6 the close-out stage. Within the construction period different progress stages may also be defined by the professional team.

2. Client's requirements for health and safety management on project.

2.1 Health and Safety Responsibilities

The principal contractor's health and safety responsibility are delegated following an organizational structure whereby the involvement of management, contractor's and employees are coordinated through both their skills, training and experiences to be acceptable **competent persons** to perform their delegated duties.

A diagrammed **Organogram** (See annexure below as sample) **must be included in the Contractor's health and safety plan** and kept up to date in the health and safety file on site. When a **change of management** occurs, the client must be notifying and supplied with the required CV, which shall include the qualification and health and safety training for such person, for approval. Change of management qualifications will meet the **same criteria** as recorded in the tender documents. Legal appointments must be updated when a change of management occur.

Each appointment letter shall indicate:

- a. Legal reference to the appointment (Please note: one legal reference one appointment. E.g. CR 8. (1) cannot be appointed as CoVid-19 Compliance Officer on the same document with only indicating additional duties);
- b. The name of the person appointing and his / her designation;
- c. The name of the company who this person represents;
- d. The name of the appointee and the appointment;
- e. The detail of the site / address
- f. Period of validity of such appointment (not longer than 3 year);
- g. Signature of the Company's representative making the appointment & date of signature;
- h. Duties or reference to requirements in regulations (to include Checklists & Registers);
- i. Acceptance of appointment;
- j. Signature of acceptor and date; and
- k. Designation.
- l. Training certificate (where applicable)

All contractors including the professional team members has to ensure that an arrangement is in place to ensure all their employees have valid medical certificates of fitness.

2.2. H&S goals

The project team and contractor's management must commit to the implementation of Health, Safety & Environmental standards from management down.

During the following goals need to be adhered:

- Site supervisor must be on Site at all times;
- Employees and client employees required to comply by wearing minimum required PPE – Personal Protective Equipment as risk assessments may indicate;
- Construction Supervisors to ensure all employees were supplied PPE as Job Category register to ensure employees work safe;
- Work safely;
- Report all Near-Hits to the Client;
- Comply with SHE Management System;
- Comply with site-specific Work Rules;

- Prevent and/or correct unsafe behaviours;
- Prevent and/or correct unsafe work conditions;
- Implement Specifications;
- Security required at site entrance;
- Will be managed through Monthly site audits and Weekly inspections, PTO's, SWP, DSTI's.
- Site Manager and Safety Managers to supervise this on a daily base.

To achieve such goals the contractor must **monitor and review** these goals, targets, key performances indicators, etc.

2.3. Hazard identification and risk assessments

Baseline Risk Assessment

The client prepared a baseline risk assessment to cover all the possible identified risks on the project as required by Construction Regulation 5. (1)(a). The Principal Contractor shall take cognisance and incorporate this baseline risk assessment into their construction risk assessment.

The Contractor shall submit their "construction" **risk assessment** (can also be referred to as a project "**method statement**" with reference to a project schedule / plan) for the project, which shall form part / addendum when submitting the Health and Safety plan and place in the health and safety file. The above incorporate "RAMS" (Risk Assessment and Methodology Statement) methodology.

The Risk Methodology applied should follow the hierarchy of controls mitigation and must form part of the Risk Assessment, and be included in the Health and Safety File. Within such documentation the Principal Contractor **shall address risk rating** strategy (Matrix) used.

Should the Principal Contractor commence work without approval of the risk assessment, or should the risk assessment not reflect the activities being undertaken, the CLIENT may instruct the work to be immediately halted, and the Principal Contractor **will have no claim** against the CLIENT in such a case for lost time or costs, irrespective of whether it can be demonstrated that the work was being safely undertaken

The risk assessment should include the following:

- (a) The identification of the risks and hazards to the Health and Safety to which persons may be exposed;
- (b) The analysis and evaluation of the hazards identified;
- (c) A documented plan and safe working procedures to mitigate reduce or control the risks identified;
- (d) The monitoring and review plan of the risks and hazards; and
- (e) The relevant personal protective equipment or clothing.

The Principal Contractor shall ensure that all persons entering the site are informed of all hazards on site; record of this is to be kept on the Health and Safety File.

The risk assessment should take into consideration the following key processes for this project, but are not limited (nor exhausted) to:

- Site Establishment inclusive of long-lasting hoarding separating construction area with the operations of the other contractors
- Identification of existing services, exposure and protection thereof
- Access Control of Public, including Students, to site
- Backfilling of trenches
- Bricklaying
- Brush / Bush Cutting
- Chainsaw use
- Compacting and Filling
- Compacter Operations
- Cutting of Concrete, Road Surfaces or Kerbs
- Cutting of Steel
- Demolition
- Electrical Tools and Electrical Installations
- Electrical works and connection/disconnection of electricity to municipal supply or other
- Excavating of trenches / foundations (hand and mechanical)
- Fire
- Flammable Liquids / Gas
- Fragile materials
- Goods - / Material - / Passenger Hoist Operations
- Hand Tools
- Hazardous Bio-waste
- Hazardous Chemicals
- Hygiene requirements
- Hot Works
- Kerb Laying
- Lifting Operations
- Manhole Rings and Pipes Storage
- Manual Handling of General Items
- Members of Public, including Students
- Movement (transport) of Construction Vehicles (Inclusive of light vehicles)
- Noise and dust
- Overhead Services
- Painting
- Paving
- Plant / Vehicle and Equipment operations
- Plastering
- Plumbing
- Precast slabs
- Road Construction / - Marking
- Road Working
- Rope Access Work
- Scaffolding (Erection / Inspection and Dismantling)
- Site Strip
- Skipping of concrete with hoist / crane
- Temporary Works (Shoring / Scaffolding or False Works)
- Tower Cranes
- Traffic Management

- Underground Services
- Working at Heights
- Working during inclement weather
- Working near sewage water
- Working near water environments
- Work near underground services

All health hazards that can be present during any of the above activities should include individual, dusts, gases, fumes, vapours, noise, extreme temperatures, illumination, vibration and ergonomic hazards.

Preventative measures must first address the elimination of the hazard or risk. Should PPE be required to reduce risk then appropriate equipment or clothing must be used and be SABS approved.

Issue Based Risk Assessment

As circumstances and needs arise, separate risk assessment studies will need to be conducted. These will be associated with a system for the management of change. An additional risk assessment will need to be conducted and submitted to the CLIENT for verification when for example:

- (a) A new machine is introduced onto site;
- (b) A system for work is changed or operations altered;
- (c) After an accident or a 'near miss' has occurred
- (d) New knowledge comes to light and information is received which may influence the level of risk to employees on site.

Continuous Risk Assessment

This is the most important form of risk assessment which should take place continually, as an integral part of day-to-day management.

This should be conducted by Construction Manager on site and it is essential that formal **training** be provided to enable this process to be efficient.

The Principal Contractor shall be responsible for making sure that all employees under his / her control are conversant with the content of the Risk Assessment and what appropriate measures have been put in place to either eliminate or reduce the identified risks. The Principal Contractor shall outline to employees what role they are expected to play in the Risk Assessment and control measure process. Records are to be kept of this communication. Such information can also be communicated through Safe Work Procedure (SWP), Safe Operation Procedure (SOP), Toolbox talks, Job Base Analysis (JBA) or Task Bases Assessment (TBA).

Continuous Risk Assessment is also commonly known as a Daily Safe Task Instruction (DSTI's).

2.4. Design Information

In terms of Construction Regulation (2014), regulation 6.(1)(c&d), the designer must -

- Make available in a report all relevant health and safety information about the design, the geotechnical-science aspects and loading that the structure is designed to withstand; and
- Inform the client in writing of any known or anticipated dangers or hazards relating to the construction work, and make available all relevant information required for the safe execution of the work upon being designed or when the design is subsequently altered.

An alteration in the design requires the principle contractor to review the *management of change* procedure to anticipate if any hazards may arise due to such alterations.

- a. Relevant existing records available on services would either be obtained through the Project Implementing Agent or from the Municipality's building Inspectorate.
- b. Surveys, site-investigations and Geotechnical reports conducted on behalf of the client can be requested through the Project Implementing Agent should it be available.
- c. "As-built" drawings could be sourced from the appointed Architect.
- d. The municipality has traffic flow statistics should density and traffic flow information be of relevance to a project.
- e. Should any change of design occur the contractor must address how this will be received on site, recorded and distributed. Liaison with the PIA on design changes must be recorded. The latest version of any new design must always be available on the site.
- f. The line of communication is discussed under a later section, but the principle contractor should note this in his plan at this point as well.
- g. An arrangement how on-site changes, potential health and safety implication of variation orders (VO's), Request for Information (RFI's and site Instructions to be explained.
- h. Due to the institution's continuous use of facilities all areas need to be available most of the time. Should areas be demarcated permission must be sought and approved through the PIA.
- i. Should new work "packages" be handed over during the project the incorporation of such work package be into the existing programs to be indicated.
- j. An arrangement for continuous interaction with the client representatives must be indicated where the design is on-going.

2.5. Communication and Consultation

2.5.1 Communication: Client

The Contractor must provide the client with their client communication procedure that shall include:

- a. Reporting prior to work commencement on any client site with:
 - i. an approved health and safety plan;
 - ii. an in-dated letter of good standing;
 - iii. stamped Notification of Construction work (each contractor); and
 - iv. Certificate of Compliance (COC) to commence after the implemented health and safety file has been audited.
- b. Reporting site mobilisation and site establishment for a site inspection;
- c. Reporting of review and approvals of appointed sub-contractors to perform work on the client site (in line with a.i-iv above);
- d. Notifying the client if there is any change to the site management;
- e. **Ensure all employees has previously been approved with security clearance;**

- f. Notify the client of any incidents, accidents or served notices by any regulatory authority while on site and during the project;
- g. Reporting to the client site inspection and audit findings;
- h. Report corrective and preventative actions (non-conformance close-out) within 48 hours;
- i. Advise the client in writing of any emergencies including actions taken.

2.5.2 Communication: Workforce

The Contractor must provide the client with their workforce consultation and communication procedure that shall include, but not limited to:

- a. CoVid-19 hygiene, sanitising, awareness and PPE;
- b. Medical conditions, restrictions or recommendations;
- c. Health and Safety Rules;
- d. Incident and near miss reporting;
- e. Report findings and corrective actions in incident investigations;
- f. Lessons from non-conformances and audits;
- g. Communicating of Risk Assessments for the work to be performed;
- h. Awareness (posters) & Toolbox Talks;
- i. DSTI communication
- j. OHS meetings to initiate, promote, maintain and review measures of ensuring the health and safety of persons on site. Note that this may be included in the progress or site meetings as an agenda item.

2.6. Co-operation between contractors

The contractor must coordinate and make arrangements:

- a. Identifying where works by one contractor and their assessment and control of risks may affect the works of another contractor;
- b. Between all contractors such as where the type and frequency of health and safety meetings are described;
- c. For preventative and control measures where more than one contractor may be exposed to the same risk; and
- d. for Health and safety surveillance and/or assistance between various contractors.

2.7. H&S Monitoring

A contractor must document:

- a. How the Health and Safety performance on site is going to be monitored?
- b. How the Health and Safety performance of others especially contractors are going to be measured and monitored?
- c. Who, on the site, will stop unsafe acts by contractors and employees?

2.8. H&S Inspections

General Inspection, Monitoring and Reporting

A table of intended inspections (with the stipulated frequency) are to be included in the Health and Safety plan and placed on a Site Calendar for ease of reference. Inspection registers and checklists must be kept in the Health and Safety File.

Internal Audits

The Principal Contractor shall conduct monthly Health and Safety audits of the project Health and Safety Management System, including the sub-contractor records, to ensure compliance with the OHS Act and OHSS. Records of audits must be kept and non-conformance reported, investigated and corrective action must be taken and reported to prevent re-occurrence to the client. Proof hereof recorded as a non-conformance close-out must be submitted to the client's agent within 24 hours after the non-conformance was reported on an internal audit report.

External Audits

The CLIENT, or its relevant Representative, shall conduct monthly Audits on site. All documentation held by the Principal Contractor shall be available for inspection. The Principal Contractor shall provide any additional information required. The Principal Contractor is required to (must) participate in the Audit and adheres to the section of these specifications.

A copy of the Close-out report must be submitted to the client's representative within 48 hours of audit report placed in Principal Contractors Health and Safety File. The Principal Contractor has 3 (three) working days after hard copy of audit was placed in contractors file to rectify any non-conformances.

As information the full process of health and safety documentation approval is stipulated as follow:

- a. Invited contractor's health and safety file be electronically submitted and approved;
- b. Evaluation of health and safety plan of potential contractor during tender evaluation;
- c. Discuss, negotiate and approve health and safety plan after appointment of contractor;
- d. Evaluate the implementation of the health and safety file on site with site establishment;
- e. Conduct monthly audits and where required bi-weekly site visits. Reports on such must be documented and provided by auditor in hard copy to the site within 7 days after the audit was conducted signed by auditor and a site supervisor who were present during the visit;
- f. Audit close-out report on findings documented and distributed to client's representative within 3 days after the documented hard copy of audits / visit was placed in contractors file;
- g. Final project close-out, when zero working hours are reached, submitted to the client to include:
 - i. Withdraw, close, retract and cancel all legal appointments;
 - ii. Consolidated list of contractors (Name, Area of work, Contact number & email)
 - iii. Final month's Health and Safety audit report and Certificate of Compliance
 - iv. Minutes of the Health and Safety Committee meetings (when applicable)
 - v. Summary of Incidents & IOD report (Incidents on Duty)
 - vi. Summary of WCA /COIDA Claims
 - vii. Total project Man-hours and DIFR (Disable Injury Frequency Rate / 200,000 hours)
 - viii. Environmental rehabilitation status
 - ix. Current or outstanding Health and Safety Non-conformances.

- x. Ensure that all registers and checklist are closed with the last sentence being on the document marked as “CLOSED” with the applicable date and “closed” marked across the full page.

2.9. Health and Safety Review

Contractors must ensure that health and safety documentation included in the health and safety file be reviewed **monthly** or when any change of management occur. The responsibility of review lies with the contractor’s management and the responsibility must be designated.

The results of such review must be submitted for approval by the client.

2.10. Training

Health and Safety Training

The Construction Regulation requires that ***“A Client must ... ensure that potential principal contractors submitting tenders have made adequate provision for the cost of health and safety measures”***.

The Principal Contractor shall at project start-up conduct a training needs analysis (**training / skill matrix**) to ascertain what Health and Safety training is required and what already exist. The training needs should specifically be based on the scope of work in relation to supervision with daily risk assessment qualification / experience, first aider, incident investigation, ladder inspection and tool inspection competencies.

The single page in tabular format as intended plan of action should be drafted and included in the Health and Safety file and **submitted with the tender**.

Once the identified people have attended training, the Principal Contractor must ensure copies of the certificates are kept in the Health and Safety File.

Where a Part-time OHS Practitioner is appointed the Construction Managers and / or - supervisors are required to have, as minimum, **legal liability training** with SAQA US certificates. SAQA US for CIVIL is 120344.

Excavation supervisors and construction manager must have a SAQA US 365183 competency certificates.

The following skills training to be considered:

- a. Legal Liability;
- b. Excavation Supervisors;
- c. Fall Protection;
- d. Fire Equipment Inspector;
- e. Fire Marshal;
- f. First Aider;
- g. Formwork & Support;
- h. Hand Tool Inspector;
- i. Health and Safety Representatives;
- j. Legal Liability Training for Management;
- k. Machine Operator;

- l. Scaffolding Erectors;
- m. Scaffolding Inspectors;
- n. Stacking & Storage Supervisor;
- o. Welder, grinding / cutting machine operator;
- p. Working at heights;

Induction

The Principal Contractor shall conduct Site Specific Inductions to all new employees and visitors on site. Proof of inductions in a form of attendance registers must be kept in the Health and Safety File.

Should any new equipment or plant be brought to site employees should be inducted on such ensuring the understanding, **blind spots, risks** and coordination when these units are being used.

Within the Contractor's Health and Safety Plan a layout of such induction to be performed should be indicated that will include Safety Rules. An attendance register must be kept and signed by all attendees.

Awareness

The Principal Contractor shall conduct, on site, periodic toolbox talks, preferably weekly or before any hazardous work takes place. The talks shall cover the relevant activity and an attendance register must be kept and signed by all attendees.

A record of who attended and the content of the topic will be kept in the site Health and Safety file as evidence of training.

Competency

After the Principal Contractor has identified the training to be conducted, based on the Hazard Identification & Risk Assessment (HIRA); he/she shall send the relevant persons on appropriate courses and keep the accredited certificates of training for reference in the site health and safety file. A maximum grace period of 30 days from the start of the project are provided for this training to be conducted and proof must be submitted to the client's representative.

2.11. Purchasing

The contractor has to ensure that the purchasing procedure include the evaluation of competencies and adequate resources of the contractors, suppliers and manufacturers. No Principal Contractor may appoint a specialist contractor who then appoints a subcontractor for such services.

2.12. Site rules

The Contractor shall ensure that all persons working under his control observe the health and safety rules of the client at all times and shall not permit any person who is not directly associated with the work from entering the site.

These specifications express various rules and other restrictions on contractors, suppliers and manufacturers such as permit-to-work procedures and arrangements for compliance by others with the rules herein and those of the contractor's health and safety plan.

2.13. Permits

The Contractor must implement a permit system for high risk activities, but not only limited to:

- a. Concrete pouring;
- b. Confined spaces;
- c. Electricity and other energy sources;
- d. Excavations;
- e. Explosive, corrosive or toxic gases or atmospheres;
- f. Extreme temperatures;
- g. Hazardous substances or Radioactive material;
- h. Hot work or Steam;
- i. Isolation of the fire alarm or fire suppression;
- j. Lifting operations;
- k. Night work;
- l. Operations requiring lockout
- m. Possibility of drowning in bulk material / tanks;
- n. Restricted access, exit and movement
- o. Welding, grinding or any other operation that could result in sparks;
- p. Working at heights, - isolation;
- q. Working in close proximity to water environment
- r. Working on live/pressurized equipment
- s. Working on public holidays, weekends and during a shutdown period;

The permit shall include the arrangements for competence and authority for issuing, acceptance, renewal (validity) and clearance of permits to work.

The Contractor shall ensure that work for which a permit is required by legislation, this specification or own permit to work procedure, is not performed by his employees prior to obtaining such permit. The Contractor shall additionally also ensure that Langeberg Municipality or the Municipalities permit for specific work procedure (way leave) is prior obtained and complied with on site, for the duration of the project.

2.14. Site security, access and transport arrangement

Security

The Principal Contractor shall ensure that each person working on or visiting a site, and the surrounding community, shall be made aware of the dangers likely to arise from on-site activities and the precautions to be observed to avoid or minimise those dangers.

The construction area should be permanently hoarded-off to prevent access of non-construction staff into the construction area. This should further be able to prevent excessive dust. Appropriate Health and Safety signage shall be posted at all times.

The Principal Contractor have a duty in terms of the OHS ACT to do all that is reasonably practicable to prevent members of the public and others being affected by the construction processes to be aware and put preventative measures in place.

The visitors to site shall go through a visitor's Health and Safety induction detailing hazards and risks they may be exposed to and what measures are in place to control these hazards and risks. A proof of such induction must be kept on the safety file for audit purposes.

Each of the Contractor's employees must be issued with a company identification card which must be displayed on his/her person at all times whilst on site (card only when required).

Such identification **cards** shall include as a minimum:

- a. Company Logo;
- b. Employee name and surname;
- c. Employee photo; and
- d. Identity number.

A list of employees with their next of kin must always be available on site (COVID requirement as well).

The Contractor acknowledges that its employees, vehicles as well as that of its agents, subcontractors and service providers may be subject to security searches at any time, and the Contractor shall ensure the aforementioned parties co-operate fully with such searches.

Access

The Contractor is required at all times to be aware of all subcontractors on site and ensure that they have means of identification and proof to verify their authorization to be on site. It is important to note that failure to produce such means of authorization for site work will result in the immediate eviction of the subcontractor from the site.

The road surface of all public and private roadways and pavements/pedestrian walkways must remain in a reasonably clean state, free of excessive sand, stone, water or other construction related materials – daily inspections to be conducted by the Contractor with action to be taken without delay.

The Contractor must upon site establishment identify and **demarcate** designated walkways. Signage should be displayed indicating it as a designated and safe to use walkway. Walkways should be safe to use in terms of distances from hot works, works with electrical tools, overhead work, and trenches and should be of such that persons using the walkway do not disturb any work activities taking place in the area.

Transport of Workers

The Principal Contractor shall refer and comply with the requirements set in the National Road Transport Regulations, 2000. The Principal Contractor shall, and not be limited to:

- Not transporting persons together with goods or tools unless there is an appropriate area or section to store them;
- Not transport persons in a non-enclosed (top) vehicle, e.g. truck, there must be a proper canopy (properly covering the back and top) with suitable sitting area. Workers shall not be permitted to stand or sit at the edge of the transporting vehicle;
- Not transporting workers on the back of open light motor vehicles;
- Provision of a serviced portable fire extinguisher in vehicles at all times;
- Driver must have a valid PDP license transporting people; and
- Adequate seating arrangement specifically in respect of social distances.

2.15. Deliveries

The contractor must make arrangement and get approval from the client for deliveries, any restriction such as delivery times, demarcation, reserved storage areas, loading and unloading areas, and working area for prefabrication to be put in place. Banksmen / direct supervision from contractor's side must be present receiving, offloading and departure of delivery vehicles.

2.16. Construction employees' facilities

The Principal Contractor shall provide facilities for

- a. Safekeeping, e.g. lockers etc.;
- b. Temporary shaded structure to serve as a mess room or eating area;
- c. Sufficient toilets for each gender (1 toilet per 30 workers);
- d. Hand washing facilities;
- e. Soap and toilet paper;
- f. Disposable paper hand drying material;
- g. Where there is a risk of exposure to HCS separate lockers shall be provided for clean and soiled/ contaminated clothing for each employee;
- h. **COVID-19 requirement;**
- i. Waste bins must be strategically placed around the site and emptied regularly but no less than weekly;
- j. Workers must not be exposed to HCS while eating and must be provided with adequate, sheltered eating areas complete with benches and tables separated from the work areas; and
- k. Stores may not double up as change rooms, mess areas or eating areas.

The weather conditions might be unsuitable for workers to be exposed to, e.g. in rainy season.

2.17. Waste

The responsibility to ensure that all Contractors enforce, in terms of their waste management, environment sustainable methods, the disposal, keep sufficient waste containers for different waste types as described below and record such in a waste management plan.

Contractor to reduce the amount of waste that is generated and where waste is generated ensures that useable waste is re-used / recycled or recovered in an environmentally sound manner before being safely treated and disposed of.

Any waste of material value the client needs to be informed and when and where possible handed over to the client.

Waste will be classified in the following categories and these requirements incorporated into the contractor's waste management plan:

LIQUID WASTE:

- a. When mobile toilets are used it must be serviced on a weekly basis and waste dispose by the service provider in an acceptable manner;
- b. Service records must be documented;

- c. Cleaning of the inside of the toilets are part of the hygiene requirement and recording must be daily conducted;
- d. The contractor must provide sufficient toilet paper for such toilets as required by the facilities regulation;
- e. Cleaning of paint buckets / brushes and disposal of paint may not be through the storm water system;
- f. Run-off from wash bays must be intercepted
- g. Chemical spills must be contained and cleaned

SOLID WASTE:

- a. Any littering is prohibited;
- b. Bins must be provided and cleaned on regular basis, preferably by end of each week or whenever possible;
- c. Disposal must be to a legal dumpsite;
- d. Sites must be swept of material that could cause injury or damage to persons or vehicles;
- e. Hand mixing of cement is only permitted inside a batch mixing bucket (brimmed area) or on the footprint of a construction area.
- f. Contaminated ground / soil must be treated or be removed and the area rehabilitated immediately.

HAZARDOUS WASTE:

- a. Hazardous materials may only be disposed of at an appropriately permitted landfill or disposal sites for hazardous material;
- b. Dedicated containers clearly marked for Hazardous waste must be used and only be used for designated purpose as designed; and
- c. Hazardous waste registers to be maintained.

GENERAL WASTE REQUIREMENTS

- a. Disposing of waste must be conducted as soon as possible at a legal dumpsite, skip or on permitted municipal landfill site;
- b. Contractor must monitor the presence of litter on the work sites;
- c. Waste must not be allowed to stand on site to decay resulting in bad odours;
- d. Poisonous or material capable of fermentation, putrefaction or constituting a nuisance shall be treated or disposed of by methods approved by the local authorities.

2.18. Personal Protective Equipment

Personal Protective Equipment (PPE)

A PPE needs analysis is to be conducted in accordance with the HIRA. PPE is to be issued free of charge. The Principal Contractor is to indicate procedure for Lost or Stolen and Worn Out or Damaged PPE.

~~At the beginning of the project each employee to receive two three ply cloth masks. Such cloth masks need be washed regularly and damaged masks be replaced immediately.~~

The following PPE shall be used on site as minimum required for everyone on site:

- Steel-Toe Safety Shoes/Boots;
- Hard-hat;
- Two Piece Overalls;
- Protective gloves where required; and
- Hi-Viz Vest **in cases where visibility is impaired.**
- Employees working at access points need to wear cloth masks and **face shield** when recording employees and visitors entering the site.

2.19. Working hours

The regional sectorial requirement in terms of the BCEA should be complied with. Contractor must document their working hours and breaks. Total working hours per week not to be exceed legislative requirement.

An arrangement for working at night, after hours, over weekends and during holidays with supervision must be documented in health and safety plan.

All works will be supervised on site.

Where accelerate work programs are implemented adherence to undisturbed weekly or two weekly rest period (BCEA 15.(1) & 15.(2)) should be adhered to (weekly is 36 consecutive hours and fortnight basis is 60 hours).

Night Work

The Principal Contractor shall not undertake any night work without prior arrangement and a written authorization from the CLIENT. The Principal Contractor shall ensure that adequate lighting is provided for all night work and failure to do so shall result in work being stopped.

All works must be supervised directly by management on site.

NB: risk assessment to be revised should night works be approved.

2.20. Notice boards

Different notice board may be required depicting the following information on a site:

The professional team involve in the project (external Organogram); and

Displaying health and safety pictographs, access control, PPE requirement and contact details to the site management (Internal Organogram).

A layout for the professional team will be provided by the Consulting engineer / Program Implementing Agent. Only approved erecting locations may be used. The requirement and provision for the implementation of Notice Boards will be indicated within the Bill of Quantity.

2.21. Emergency and first aid

Emergency Procedures

The Principal Contractor shall submit a detailed Emergency Procedure for approval by in the Health and Safety File.

The procedure shall detail the response plan including the following key personnel:

- List of key personnel,
- Details of emergency services,
- Actions or steps to be taken in the event of the emergency; and
- Information on hazardous material / situation, including each material's / hazardous potential impact or risk on the environment or human and measures to be taken in the event of an accident.

Emergency procedure(s) shall include, but not be limited to, fire, spills, accidents to employees and use of hazardous substances.

A contact list of all service providers (Fire department, Ambulance, Police, Medical and Clinic, etc) must be maintained and available to site personnel.

First Aid Box and First Aid Equipment

General Safety Regulations 3.(2) Where more than 5 employees are employed .. provide a first aid box ... at or near the workplace. (4) Where more than 10 employees are employed, ... at least one person is readily available.

The Principal Contractors shall provide an on-site First Aid Box, adequately stocked (19 items as prescribed) at all times, and ensure that the First Aid Box is accessible and fully controlled by a qualified First Aider.

2.22. Medical certificates

The contractor has to ensure that an arrangement is in place to ensure all the management and employees have valid medical certificates of fitness specific to the construction work to be performed.

2.23. Medical surveillance

OCCUPATIONAL HYGIENE

- Proper health and hygiene measures must be put in place to prevent exposure to hygiene hazards.
- Prevention should include the prevention of accidental inhalation, ingestion, and absorption of any hazardous substance or high noise level exposure.

MEDICAL SURVEILLANCE

The Contractor shall provide in the OHS Plan for the management of employee medical surveillance and ensure that:

- All employees on site to undergo routine medical examinations specific to the work to be performed taking into account the hazard and risk exposures;
- This should address pre-employment examination, periodic monitoring and exit examinations;
- Exit examination will be compulsory for employees working with hazardous chemicals;
- A declaration should be noted in the close-out report declaring all employees fit on completion of the project;

- e. All employees performing work on site must be declared medically fit for the work they are to perform (especially for working at heights);
- f. Employees will be notified the results of their medical examinations and any concerns made available that may become evident from medical examinations;
- g. Copies of valid medical certificate of fitness must be available on site as a duty of care towards employees to ensure employees are made aware of any health conditions or health restrictions which may have resulted from or may be aggravated by work activities on site.
- h. The consultation, notification and communication with the employee should, with the employees' written consent, be made available upon request for verification by the client, regulatory authority or their representatives.

CONTACT TRACING

- a. Records kept on site of employees and visitors entering the site for contract tracing purposes.

2.24. Reporting fatality, permanent injury and occupational diseases

The Contractor shall provide in the OHS Plan a summarized section providing information pertaining to his incident management procedure which should include at least the framework of the procedure and noting the requirements set out below.

Incident management procedure

In addition to the above the Contractor shall be required to prepare a comprehensive incident management procedure to be implemented on the client's sites. The procedure should address at least, but not limited to:

- a. Incident classifications
- b. Incident and near miss reporting process
- c. Incident reporting timeframes
- d. Investigation teams
- e. Investigation techniques/methods to be used
- f. Investigation timeframes
- g. Investigation reporting
- h. Corrective action implementation

Without derogating from the generality of the above, the Contractor shall ensure incidents are investigated by, where appropriate, a competent multidisciplinary team within 7 days. The Contractor shall ensure all incident and investigation records shall be available in the OHS File.

The Contractor shall notify the client of any incidents, accidents and notices served by any regulatory authority while on site. The client shall further be provided with copies of any written documentation relating to any incident. The Contractor will be responsible to inform the relevant authorities of any Reportable Incidents which may occur in terms of the applicable legislation.

All correspondence with the relevant authorities regarding these incidents must be copied and kept in the OHS File.

Incident management documentation

The Contractor shall note in the OHS Plan the incident management supporting documentation which should provide for and include, at least:

- a. Legislative reporting and recording documents
- b. Contractor's own reporting and recording forms (near miss to be provided for)
- c. First aid kit contents list
- d. First aid kit inspection checklist
- e. First aid dressing register / treatment register

Medical procedure – CoVid-19

The following documentation should be submitted to the Compensation Commissioner

- Employer Report of an Occupational Disease (W.CL.1)
- Notice of an Occupational Disease & Claim for Compensation (W.CL.14)
- Exposure and Medical Questionnaire
- First Medical Report in respect of an Occupational Disease (W.CL.22) (Should list the diagnosis as U 07.1 ICD-10 code for COVID-19)
- Exposure history (W.CL.110) and/or any other employment history
- A medical report from Dr and/or Specialist
- Progress medical reports (W.CL.26)
- Final medical report (W.CL.26) once MMI reached

2.25. Method statements

Method statements, Safe Work Procedures (SWP), Safe Operating Procedures (SOP), Daily Safe Task Instructions (DSTI's)

Certain changes have been made in the Construction Regulation of 2014 in these regards and are extracted below to indicate current requirements.

Extractions from the Construction Regulations where reference to “**method(s) or method statements**” appear:

QUOTE

Construction Regulation 2003

“**method statement**” means a written **document detailing the key activities** to be performed in order **to reduce** as reasonably as practicable the **hazards identified in any risk assessment**;

Construction Regulation 2014

“**Method statement**” The description of a Method Statement was removed from definition section. ...

Risk Assessment for construction work 9.(1) ... (b) ... documented **method**;

Fall protection Plan 10.(1) ... (2) ... procedures and **methods** used to address all the risks

...

Temporary works 12.(1) ... (3) A contractor must ensure that - ... (n) a temporary works drawing or any other relevant document includes construction sequences and **methods statements**; ...

Excavation 13 (2) A contractor who performs excavation work – ... (k) must, where the excavation work involves the use of explosives, appoint a competent person in the use of

explosives for excavation, and must ensure that a **method statement** is developed by that person in accordance with the applicable explosives legislation; and ...

Demolition work 14. ... (2) A Contractor must ensure that before any demolition work is carried out, and in order to ascertain the method of demolition to be used, a detailed structural engineering survey of the structure to be demolished is carried out by a competent person and that a **method statement** on the procedure to be followed in demolishing the structure is developed by that person. ...

(11) Where the demolition work involves the use of explosives, a **method statement** must be developed in accordance with the applicable explosive legislation, by an appointed person who is competent in the use of explosives for demolition work ...

Cranes 22. A contractor must, in addition to compliance with the driven Machine Regulations, 1988 ensure that where tower cranes are used – ... (b) a relevant risk assessment and **method statement** are developed and applied; ...

UNQUOTE

It is therefore a legal requirement that method statements be prepared for:

- a. Temporary Works;
- b. Excavation;
- c. Demolition Work; and
- d. Cranes.

Anywhere else, but not exhausted, where method(s) is used the contractor must prepare at least the applicable SWP / SOP or DSTI for such method statement.

2.26. Health and Safety File

Based on the scope of work the health and safety file shall include and address, but not limited to, the items set out in the relevant specifications as stipulated by Langeberg Municipality .

2.27 Hand tools

The purpose of this procedure is to ensure employees understand and practice the general safety requirements when using hand tools.

There is a big variety of hand tools in the market. The objective of this is to cover the basic safety principles of a hand tool. The responsibility lies with the Contractor to ensure employees are aware of the safety requirements on any given specific hand tool

Hazards / Risks

- Hand injury from broken or homemade tools.
- Hand injury from incorrect storage of hack saw / “Stanley” knife.
- Eye injury from using a hammer and chisel.
- Hand/body injury from forcing tools beyond their stress capability.

Control Measures to Minimize Risks

- Fitter/leather Gloves to prevent cuts from sharp edges.
- Safety glasses to prevent eye injuries when using tools that can projectile foreign objects (Chisel, Copper hammer, etc.)
- Routine inspections to ensure tools are in safe working order.
- × Never throw a tool to another person.
- × Never leave your tools lying around.
- × Never use a hammer with a loose head.
- × Never use none insulated tools for live electrical work.

- × Never use tools which have been declared unfit/unsafe.
- × Never use another spanner as leverage on a spanner.
- × Never leave tools lying on ladders.
 - a) Always keep your work area clean and neat.
 - b) Always wear safety glasses and gloves if you are going to work with a hammer, metal file, hand saw and any tool that might produce flying objects and sharp edges.
 - c) Always report damaged or worn tools by end of shift.
 - d) Always grind off mushroom heads on chisels and copper hammers.

Pre-Start Procedure

1. Check the condition of the tool before use.
2. Make sure the tool is the correct tool for the job. (Example: correct size and fitment)

Job Steps

1. Inspect tool for wear and damages.
2. Put your gloves, safety glasses and long sleeve overalls on if necessary.
3. Store the toolbox or tool bag out of walkways.
4. Select a tool that is appropriate for the job.
5. Do the job safely
6. Place tool in a carry container until the tool is going to be used again.

2.28 Registers & Checklists

A tabular layout should be included in the contractor's Health and Safety Plan. It is important that the legal required frequencies are adhered to and must therefore be stipulated. (Sample included in Annexure below)

2.29 Legal Appointments

A tabular layout should be included in the contractor's Health and Safety Plan to correspond with the contractor's organogram depicting a list of legal appointments. (Sample included in Annexure below.) Section 2.1 above depict the layout of such appointments.

2.30 Health and Safety Budgets

Construction Regulation 5.(1)(g) requires that the client must ensure that a potential contractor has made adequate provision for the cost of health and safety measures. This includes the following, but not only limited to: Medicals, PPE, Fire-fighting, First Aid, Health and safety personnel, Facilities, Fall Protection, Vehicle and equipment upgrade for use on site, Lifting machinery and equipment, Insurance, First Aid, Training, Signage, Electrical & Plant and Scaffolding.

A contractor should prepare and submit, in tabular form as an annexure, their health and safety budget.

Should a contractor exclude various items as noted above or indicate a no costs, in his own discretion, to an item it will be understood that such costs are included in the contractor's tender costs.

Re-useable items (equipment) costed and claimed in such Budget and approved by the client, e.g. road cones, testing equipment, fire extinguishers, etc., become the ownership of the client after the project has been completed.

3. Environmental restrictions and existing on-site risks arrangements

3.1 Fall protection

Where a fall protection plan is required a competent fall protection planner with SAQA US 229994 certificate must be made available with such plan.

Where employees then work at heights / elevated positions those employees could be trained with a SAQA US 120362.

The person(s) erecting scaffolding must proof competencies with a SAQA US 263205 and for a scaffolding inspector SAQA US 263205.

Where fall arrest systems are implemented SAQA US 229995 and SAQA US 229998 be required.

- a. An additional pre-emptive Risk Assessment will be required for any work to be carried out where there is a fall risk and will be classified as "Working at Heights".
- b. As far as is practicable, any person working in an elevated position will work from a platform, ladder or other device that is at least as safe as if he/she is working at ground level and whilst working in this position, as required by the risk assessment contemplated above, shall wear and use a full body harness that will prevent the person falling from the platform or other device utilised. This safety harness will be, as far as is possible, secured to a point away from the edge over which the person might fall and the double lanyard must be of such length that the person will not be able to move over the edge.
- c. Any platform, slab, deck or surface forming an edge over which a person may fall must be fitted with suitable guard rails at two different heights as prescribed in SABS 10085-1 Code of Practice for the Design, Erection, Use and Inspection of Access Scaffolding.
- d. Where the requirement above is not practicable, the person will be provided with a full body harness that will be worn at all times and shall be attached above the wearer's head at all times. The lanyard must be fitted with a shock-absorbing device or the person must be attached to a fall arrest system (anchorage connector; body wear; and connecting device).
- e. Where the requirements above are not practicable, a suitable catch net must be erected. Employees working at heights must be trained to work without risk to their health and safety or that of others and be declared medically and psychologically fit to perform work at elevated positions. Proof of medical fitness and working at heights training must be maintained in the Contractor's OHS File.
- f. Where work on roofs is carried out, a risk assessment must be performed and take into account the possibility of persons falling through fragile material, i.e. skylights and openings in the roof. The Risk Assessment shall place specific emphasis on the placing and handling of roofing materials such as IBR Sheeting or similar materials, (including contingency safety measures), which when exposed to windy conditions represents a serious safety hazard.
- g. The Contractor shall ensure a comprehensive fall protection plan and rescue procedure is drafted by an appointed competent person who is trained and knowledgeable in the development of such plans.

- h. All employees required to perform work in elevated positions shall be trained and conversant with the requirements of the fall protection plan and the rescue procedure.

Fall Arrest Equipment:

- a. Each employee required to perform work at elevated positions shall be issued with a body harness for his/her exclusive use. No harnesses should be shared
- b. Fall arrest equipment shall be inspected prior to use by a competent person
- c. Fall arrest equipment must be stored in such manner as to not compromise the integrity of the equipment
- d. Employees required to use fall arrest equipment shall be sufficiently trained in the correct use thereof
- e. Records of training and inspections shall be maintained in the OHS File.

3.2 Fall prevention

Elevated positions including roof work

The Principal Contractor shall ensure that a detailed fall protection plan, rescue plan and HIRA has been undertaken and submitted for approval to the CLIENT before commencement of such activity on site. Such plan shall include (but not limited or exhausted) to: Introduction, Scope, Goals, Definitions, Worksite Information, Fall Protection Risk Assessment, Designations and Responsibilities, Training Management, Employee Health Management, Equipment Management, Operating Procedures, Rescue Procedures, Document Review and Amendments, Records – Training, Records – Medical Certificate of Fitness, Records – Inspection Registers & Records – Staff Register and Personal Details.

Where working on roofs take place the slope of the roof may cause edge protection to be implemented.

Working at heights –height of +1.5m

The Principal Contractor shall ensure that a detailed fall protection plan, rescue plan and HIRA has been undertaken and submitted for approval to the CLIENT before commencement of such activity on site.

All work at height must be:

- Appropriately supervised;
- Properly planned; and
- Carried out in a manner which is safe.

A detailed risk assessment and a fall protection plan that is site and task specific must be approved before working at height may be done. Please ensure that supervision is conducted as per Construction Regulation section 10, a competent person qualified for fall protection development.

Suitable and sufficient means must be provided to prevent workers falling from height. This must include the following measures supplied by the contractor appointed on the project:

- a. Scaffolding to allow safe access, both externally and internally;
- b. Scaffolding to be signed off weekly and after inclement weather;
- c. Internal Scaffolding to be erected for roof work acting as a working platform;
- d. Suitable working platforms to ensure safe access to all elevated areas;
- e. Suitable fall protection for worker working at height (harness); and
- f. Lifelines.

Ladders must only be allowed when it is not possible to use other more suitable access equipment (Scaffolding or platform / podium steps) for access or work of short durations (less than 10 minutes) and where 3 points of contact can be maintained at all times by the person working on the ladder. Suitable platforms must be used where both hands are required to be free and only in cases where it is not possible to use other more suitable access equipment e.g. scaffolding.

Where a slab is being prepared solid edge protection should also be put in place at a height of 1m above floor level.

Ladders and Ladder work

The Principal Contractor shall ensure that all ladders are numbered and inspected regularly keeping record of inspections. It should be noted that Aluminium ladders are preferred to wooden ladders. Ladders must be selected as suitable for the work to be performed.

3.3 Roof work

When working at heights during the roof erection work scaffolding will be erected in the inside of the structure to prevent the employees from falling to the ground.

Again, the employees working at height are required to make use of safety harnesses and fall prevention techniques to be put in place like safety cables / attachment slings.

Where work on roofs is carried out the Risk Assessment must take into account the possibility of persons falling through fragile material, skylights, soffits and openings in the roof, steel support work trusses and purlins so designed to support the roof structure.

The Risk Assessments shall place specific emphasis on the placing and handling of roofing materials which when exposed to windy conditions represent a serious safety hazard or overload factor.

Where working on roofs take place the slope of the roof may cause edge protection to be implemented.

All life lines and secure/anchor points must be designed and signed off by a competent appointed person or Design Engineer.

Life lines, fall arrest equipment and fall prevention equipment must be inspected prior to use and have a SWL displayed and the SWL certificate must be kept on site.

All fall arrest and fall prevention equipment shall be subject to inspections and tests as required by the Regulations and SANS standards and records of such inspections and tests kept in the site health and safety file.

3.4 Falling objects

Erect a catch platform or net above an entrance or passageway or above a place where persons work or pass under, or fence off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe where there is a danger or possibility of persons being struck by **falling objects**.

3.5 Structures

Existing structures

Contractor will always have in place an emergency plan. The prevention of fire damage, fragility and stability of existing structures is of utmost importance to complete this project in time.

Existing structures with recognized hazard will be reported to the client and Contractor will assist the client to improve the quality of compliance to structural integrity of such structure.

New Structures

During construction Contractor will adhere to the design specifications of the appointed engineering consultant. Pre-cast inspections of steel lay down are implemented in the registers and engineers have to approve pre-cast registers on site. Contractor will adhere to the removal of supports in accordance to the requirements to prevent any uncontrolled collapse of such structure.

When environmental conditions create bad conditions employees will not be allowed to use such uncompleted structure as a hiding place during inclined weather.

3.6 Temporary works

Contractor will adhere to the erection and removal of temporary structures for the casting of slab supports in accordance to the requirements to prevent any uncontrolled collapse of such structure. The engineering design or competent person will stipulate safe removing of such support and document such in the register.

3.7 Excavations and Ground Conditions

Excavation

Survey must be done to determine soil conditions, compaction and location of underground services. Where the uncertainty pertaining to the stability of the soil exists, the decision (documented) from a professional engineer or a professional technologist competent in excavation shall be decisive and such a decision shall be in writing and signed by both the excavation supervisor and the professional engineer or technologist as the case may be.

Excavation supervisors and / or construction manager must have a SAQA US 365183 competency certificates (or obtain one within the first month after appointment).

The following conditions should also be complied with for excavation:

- a. Excavation should be sloped to prevent collapse;
- b. Excavation should be shored / braced to prevent caving / falling in;
- c. Soil dumped at least 1m away from edge of excavation
- d. On sloping ground soil should be dumped on lower side of excavation;
- e. Use of stop blocks and signs for dumpers and place a banksman;
- f. If more than 2-meter-deep shoring must be used and safe access be provided and must be seen as a confined space entry;
- g. Protect vehicles from falling into excavation;
- h. Provide barriers and signage and lights at night;
- i. Beware of undermining adjacent structures integrity;
- j. Appoint only a competent person as excavation supervisor;
- k. Ensure that no load or plant is placed near excavated areas; and

Work strictly according to the plans provided by the client when searching for current and existing services. Stop work when the current or existing services have not been found within a radius of 1 meter and consult the client's representative before commencing. Preliminary safety talks will be noted and the potential hazards explained to all employees prior to works. Digging will commence with hand tools at all times when looking for existing services.

Caution should be taken and emergency measure put in place when digging in areas where flooding may occur

The Excavation Supervisor to inspect:

- I. Daily, prior to each shift;
- II. After an unexpected fall of ground;
- III. After any damaged to supports, bracing or shoring;
- IV. After Rain

3.8 Demolition works

The Contractor must ensure that before any demolition work is carried out, and in order to ascertain the method of demolition to be used, a detailed structural engineering survey of the structure to be demolished is carried out by a competent person and that a method statement on the procedure to be followed in demolishing the structure is developed by that person.

The Contractor is required to appoint a competent person to supervise and control all demolition work on site. During demolition, the competent person must inspect the structural integrity of the structure at intervals determined in the method statement, in order to avoid any premature collapses.

Contractors who perform demolition work must ensure that:

- a. no floor, roof or other part of the structure is overloaded with debris or material in a manner with regard to a structure being demolished;
- b. Sufficient steps to ensure that all reasonably practicable precautions are taken to avoid the danger of the structure collapsing would render it unsafe;
- c. When any part of the framing of a framed or partly framed building is removed or when reinforced concrete is cut would render it safe; and
- d. Precautions are taken in the form of adequate shoring or other means that may be necessary to prevent the accidental collapse of any part of the structure or adjoining structure.

Further:

- a. Ensure that no person works under overhanging material or a structure which has not been adequately supported, shored or braced;
- b. Ensure that any support, shoring or bracing contemplated above, is designed and constructed so that it is strong enough to support the overhanging material.
- c. Where the stability of an adjoining building, structure or road is likely to be affected by the demolition work on a structure, take steps to ensure the stability of such structure or road and the safety of persons;
- d. Ascertain as far as is reasonably practicable the location and nature of electricity, water, gas or other similar services which may in any way be affected by the work to be performed, and must before the commencement of demolition work, take the steps necessary to render circumstances safe for all persons involved.
- e. Cause every stairwell used and every floor where work is being performed in a building being demolished, to be adequately illuminated by either natural or artificial means.
- f. Cause convenient and safe means of access to be provided to every part of the demolition site in which persons are required to work.
- g. Erect a catch platform or net above an entrance or passageway or above a place where persons work or pass under, or fence off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe where there is a danger or possibility of persons being struck by falling objects.
- h. Ensure that no material is dropped to any point, which falls outside the exterior walls of the structure, unless the area is effectively protected.
- i. Ensure that every chute used to dispose of rubble is designed and managed in accordance with the relevant section for waste management of this specification.

3.9 Tunneling

Where tunnelling work encounter the Contractor will appoint a competent tunnelling supervisor and have the required documentation / registers in place. No work will be conducted in tunnels with a height dimension smaller than 800mm.

3.10 Scaffolding

Scaffolding

The Principal Contractor shall ensure that a detailed fall protection plan and HIRA has been undertaken and submitted for approval to the CLIENT before commencement of such activity on site. The Principal Contractor shall appoint and train scaffolding inspectors and erectors to ensure all scaffolding is erected according to SANS 10085.

Form and Support Work for Structures

Should the design require this type of work, the Principal Contractor shall ensure that formwork and support work structures are examined and checked for suitability by a competent Person, Structural Engineer, before use, during and after placement of concrete. Records of such examinations are to be kept on the Health and Safety file.

3.11 Suspended platforms

If suspended platforms are used a competent person will be appointed to design such requirement that will provide a designer's health and safety report and certificate for the design. A competent person will be appointed to erect such platform following an operational compliance plan developed by a competent person.

Copies of the design and competent certificates for the suspended platform will be delivered to the regional Chief-Inspector for recognition.

3.12 Rope access work

Where rope access is used the contractor must ensure compliance to section 18 of the Construction Regulation and ensure that a competent person is appointed in writing as a rope access supervisor with the duty of supervising all rope access work on the site, including ensuring health and safety compliance in respect of rope access work.

In addition to the required of section 10 of the Construction Regulation, fall protection, the contractor shall provide a site, work and environment specific fall protection plan for rope access work developed by a competent person prior to the commencement of the work.

The fall protection plan contemplated above shall include:

- a. Risk assessment;
- b. Procedure to evaluate employee's medical fitness;
- c. Training for the work to be conducted;
- d. Procedure addressing the inspections, testing and maintenance of equipment; and
- e. Rescue plan.

3.13 Material hoists

The Principal Contractor shall ensure that lifting machinery and tackle is inspected before use and/or on a monthly basis. The Principal Contractor shall have lifting machinery and tackle inspector who will inspect the equipment daily or before use, taking into account that:

- All lifting machinery and tackle have a safe working load clearly indicated;
- Records of inspections and load testing certificates are kept on site.
- There is proper supervision in terms of guiding the loads which includes a trained banks man to direct and check lifting tackle if it is safe for use.

3.14 Bulk mixing plant

Where bulk mixing plants is used the contractor shall ensure compliance to Construction Regulation 20 for the construction, maintenance and operation of a bulk mixing plant on site.

Only competent and trained supervisors and operators shall be appointed in writing as bulk mixing plant operators. No person may be authorised to operate a bulk mixing plant that is not declared competent.

Safety devices provided to prevent the accidental starting of the bulk mixing plant are to be maintained and operational at all times. All machinery and dangerous moving parts of the mixer shall be adequately guarded or fenced and no such guard or fence shall be removed or modified.

Compliance to General Safety Regulation section 5 for confined spaces entry shall be adhered to when as a precautionary measure when entering any silo.

3.15 Explosive actuated fastening device

Where explosive actuated fastening devices are used the Contractor shall ensure that all the requirements and provisions of Construction Regulation 21 are implemented and maintained for explosive actuated fastening devices.

Controllers, inspectors and operators of explosive actuated fastening devices are to be competent persons appointed in writing and specifically trained and proof of training held on record.

Operators shall be issued with suitable protective equipment and the use thereof enforced. A cartridge issue and return register shall be maintained by the appointed person and cartridges shall be kept in a lockable facility and under the control of the appointed person at all times.

Warning signage to be prominently displayed in areas where explosive actuated fastening devices are used on site and such area shall be demarcated to prevent access of unauthorised persons.

3.16 Cranes

Projects classified as a CIDB Category C project may require the use of mobile cranes or truck mounted cranes.

Referencing Construction Regulation 22, Construction Regulation 27, Driven Machinery Regulation 18 and SANS 12480- 1, cranes and lifting equipment must be designed and constructed in accordance with generally accepted technical standards and operated, used, inspected and maintained in accordance with the requirements of the Driven Machinery Regulation.

The requirements of Construction Regulation 22 and Driven Machinery Regulation 18 are to be stringently applied and maintained in respect of all tower cranes, mobile cranes, lifting tackle and lifting operations. SANS 12480 shall further be applicable for the installation and use of tower cranes.

If required, the Contractor shall notify the Civil Aviation Authority of the erection of a tower crane or use of a mobile crane that exceeds the allowable limits.

3.17 Construction vehicles and plant

Construction Plant

“Construction Plant” encompasses all types of plant including but not limiting to, cranes, cherry pickers, piling frames, boring machines, and excavators, draglines, dewatering equipment and road vehicles with or without lifting equipment.

It is envisaged that such plant will be used on this project and where the need arise the Principal Contractor shall ensure that all such plant complies with the requirements of the

OHS Act. The Principal Contractor shall inspect and keep records of inspections of the tools and equipment used on site. Only authorised persons are to use machinery under proper supervision. All operational manuals requirements should be complied with and checklists duly completed. Appropriate PPE and clothing and as specified by the HIRA, shall be provided and maintained in good condition at all times.

Where construction plant (hired included) operates with a joystick a “joystick protection bar” should be installed to protect the operational mechanisms from objects falling on or persons falling on the operational mechanism in case of a slip. Should a contractor not comply with this requirement the principal contractor will be fined in terms of section 4.32 as a severe non-conformance.

Hired Plant and Machinery

The Principal Contractor shall ensure that any hired plant and machinery brought to site is safe for use. The necessary requirements as stipulated by the OHS ACT as well as those that are stipulated by this OHS Specification, shall apply (see *Construction Plant* above).

The Principal Contractor shall ensure that operators hired with machinery (seen as a contractor) have proof of competency to operate the machinery, proof of medical certificate of fitness and undergo a Health and Safety induction, appropriate tool box talks and be issued with the necessary PPE.

3.18 Electrical installations and machinery

High Voltage Electrical Equipment and any electrical works

The Principal Contractor shall ensure that, where the work is under, on or near high-voltage electrical equipment that a SWP is drafted and approved by a competent person and the client's representative and that such approval document to be kept in the Health and Safety File.

Such SWP shall include relevant risk management procedures (e.g. **Lock-out Procedure**). The Principal Contractor shall communicate with and receive approval from the relevant representatives prior to commencement of any **live** or tie-in electrical works.

Portable Electrical Tools / Explosive Power Tools

The Principal Contractor shall ensure that use and storage of all explosive powered tools and portable electrical tools are in compliance with relevant legislation. The Principal Contractor shall consider that:

- A competent person undertakes routine inspections;
- Only authorised persons use the tools;
- There are safe working procedures applied;
- Awareness training is carried out and compliance is enforced at all times; and
- PPE and clothing are provided and maintained.

Telescopic Link sticks or Hot sticks

- Telescopic Link sticks or Hot sticks are used by linesman to open and close solid links (open/close circuits) on overhead lines. Linesman use telescopic link sticks to

carry out maintenance operations on links, fuses, live line surge arrestors and rocker isolators. These are used to provide restoration of power to sectionalised sections of overhead networks without having to climb poles.

- The cylindrical shaft provides mechanical strength to the unit. Fibreglas units are foam filled at the end section for the first meter. The remaining sections are fibreglass with the telescopic buttons.
- It is important to observe the minimum working distances between the operator and the live conductor. Although the telescopic link stick is tested to standards all instruments are manufactured from the highest grade electrical rated fibreglass to meet or exceed all applicable industry performance criteria including ASTM F711, ASTM F1826, and OSHA 1926.951(d). Eskom approved link sticks are manufactured to **SAP 021 2806 number D-DT-12600 standards**.
- Valid Test certificates should accompany this equipment and be available in Safety files.

3.19 Flammable and hazardous materials

Hazardous Chemical Substances (HCS)

In addition to the requirements in the HCS Regulations, the Principal Contractor must provide proof in the Health and Safety Plan that:

- Safety Data Sheets (SDS's) of the relevant materials/hazardous chemical substances are available prior to use by the Principal Contractor. Mention should be made how the Principal Contractor is going to act according to special/unique requirements made in the relevant SDS's. All SDS's shall be available for inspection by the agent at all times.
- Risk assessments are to be done when new HCS are introduced on site.
- How the relevant HCS's are being/going to be controlled by referring to:
 - a) Limiting the amount of HCS
 - b) Limiting the number of employees
 - c) Limiting the period of exposure
 - d) Substituting the HCS
 - e) Using engineering controls
 - f) Using appropriate written work procedures
- The correct PPE is being used.
- HCS are stored and transported according to SABS 072 and 0228.
- Training with regards to these regulations is conducted.

The Health and Safety plan should make reference to the disposal of hazardous waste on classified sites and the location thereof (where applicable).

The First Aider must be made aware of the SDS and how to treat HCS incidents appropriately.

Asbestos (Not to be used on new construction site)

The Principal Contractor/Contractor shall comply with the Provisions of Asbestos Regulations should they have to work with asbestos related materials.

No new asbestos contained material should be use on this project.

3.20 Water environments

Unless water is accumulated within excavations the Contractor need to ensure that any water entrapment where public could gain access be barricaded and access restricted to such environment.

However, should such areas exist on the site the Contractor will have a trained first aider on site to assist with medical conditions as, when and where possible.

3.21 Housekeeping and general safeguarding

Contractor will provide proper storage of materials for housekeeping. In the waste management plan the disposal procedures for waste is described. No materials be place where it would interference with other operations.

Where chutes are required when waste is removed from higher levels (3 levels 9m) Contractor will install the required mechanisms.

When internal waste storage area is provided it will be fenced off and will have access control via a lock. No waste bins or other collection articles will be place at entrances or passageways, but rather on an outside wall or under an overhead screen.

The construction manager and all other employees must ensure and maintain at all time during work that;

- a. A housekeeping supervisor will be appointed
- b. Housekeeping will be managed on a **daily basis**

The appointed person will make use of daily/weekly and Monthly checklists.

- ◆ Housekeeping is continuously implemented and maintained;
- ◆ Materials and equipment are properly stored;
- ◆ Scrap, waste and debris is removed;
- ◆ Materials placed for use are placed safely and not allowed to accumulate or cause obstruction to the free-flow of pedestrians and or other employees;
- ◆ An unimpeded work space is maintained for every employee;
- ◆ Every workplace is kept clean, orderly and free of tools, materials and the like that are not required for the work being done;
- ◆ As far as is practicable, every floor, walkway, stair, passage and gangway is kept in good state of repair, skid-free and free of obstruction, waste and materials

3.22 Stacking and storage

Stacking of Materials

The Principal Contractor shall ensure that there is an appointed stacking and storage supervisor for all materials, scaffolding and all equipment that are stacked and stored in accordance with legislation.

All materials shall be neatly stacked in a designated lay down area within the confines of the Principal Contractor's allocated construction area.

3.23 Fire precautions

The importance of fire protection and precautionary measures is recognised and arrangements shall be implemented to ensure that adequate procedures are adopted to **prevent risk** of injury or damage from fire.

Non-Smoking signs will be placed in close proximity of the stores and where any flammable materials are stored.

Good maintained fire-equipment will be placed at appropriate intervals.

Sufficient number of employees will be trained with fire equipment.

Contractor will be reliant on the existing Escape plan of the institute or otherwise put in place its own Escape and evacuation plan.

Competent **Fire Fighter must be appointed** for this project and will manage all Hot works and any other task that may result in possible fire. Such competent person should carry the correct SAQA qualification. Additionally, to a Fire Fighter a **Fire Equipment Inspector** must also be appointed with at least a similar qualification as the Fire Fighter.

Fire prevention procedures require HOT work Permits to be in place with the required Fire Equipment available on site, Site require trained employees when any Hot work is required.

Once Hot Work Permit is signed and in place work may commence.

Smoking will be limited to smoking area.

No open flames are allowed in or near site.

All electrical equipment will be checked for loose wires.

All flammable substances are removed from hot works area.

Fire Extinguishers and Fire Fighting Equipment

The Principal Contractor shall provide adequate regularly serviced fire extinguishers located at strategic points on site. The Principal Contractor shall keep spare serviced portable fire extinguishers. Safety signage shall be posted up in all areas where fire extinguishers are located.

Employees should be trained on using the correct type extinguisher for the correct application (electrical, wood, chemicals, etc).

The Principal Contractor shall have adequate persons trained or competent to use the Fire Fighting Equipment.

3.24 Construction employees' facilities

Where the client does not authorize the use of existing facilities the Contractor will provide at least 1 shower for each 15 employees on site. Contractor will provide at least one sanitary

facility for each sex and for every 30 employees. There will be changing facility for each sex. A temporary shelter eating area will be erected and made available to employees.

3.25 Contaminated land

Any contaminated land will be handled through the environmental management plan.

3.26 Client activities (risks)

The client may have ongoing lectures or students occupying residential facilities there for the Contractor will accommodate such activity. Where major work is required adjacent to such lecture rooms Contractor will pre-warn the facility of such activities and mutually agree upon action to be taken.

3.27 Manual handling of materials

Manual material handling will occur and Contractor will find the most **ergonomic** manner to work with such requirement ensuring that no employees stand chance for injuries.

3.28 Noise and vibration

Noise Induced Hearing Loss (NIHL)

Where noise is identified as a hazard, the requirements of the NIHL regulations must be complied with and means of compliance is to be stipulated in the Health and Safety Plan.

The Contractor is to ensure that noise is minimised to acceptable levels and try to conduct noisy activities at times where it would not make any nuisance to the institution. Proper planning and finding means of reducing noise levels with regards to these activities is highly encouraged. (See also section 3.31)

Vibration:

Any excessive vibration can cause Hand-arm vibration syndrome (Raynaud's phenomenon).

Employees working on vibrating equipment must take regular breaks.

When working on vibrating equipment a kidney belt is to be worn where applicable.

3.29 Working near fragile materials

Cautionary manners will be implemented when working in close proximity of fragile materials. A no-smoking - and use of mobile phone policy must be in place.

3.30 Traffic planning

The contractor must ensure that all the necessary traffic/vehicle and pedestrian accommodation safety measures are taken into account to ensure the safety of personnel and members of the public (including site visitors) both on site and adjacent to site.

Such measures must be in accordance with recognized practices and be pre- approved by the Client and if required by the local municipality and traffic authority.

The contractor must place the necessary emphasis on safe pedestrian walkways and routings throughout the construction stage. The site is located in a densely populated area with pedestrian walkways on two sides of the site.

Roadways are situated directly behind these walkways. Traffic and pedestrian accommodation drawings must be available on site as a source of reference and to assist with daily inspections and enforcement.

During construction the contractor must ensure that dust suppression through watering is utilized. When mud damage to the adjacent roads is due to the construction on site the contractor will remove these obstacles from the adjacent roads.

3.31 Monitoring of noise, silica and dust levels

Contractor need to implement sufficient precaution to ensure that the construction activities reduce their noise to the lowest possible level.

Silica and dust levels are kept to an acceptable level and that it does not pose a threat to the Health and Safety of employees, adjacent residents or the public on the premises.

3.32 Confined spaces

Areas identified as confined spaces as defined in General Safety Regulation GNR 1031 of May 1986 are (but not limited to):

- All tank manholes;
- Dispenser Sumps;
- Trenched less than 1m wide and deeper than 1.5m;
- Ceiling crawl space;
- Canopy crawl space;
- Chambers;
- Sewer Pipes;
- Pipes;
- Pit;
- Container;
- Calve;
- Pump Sump or Construction equipment, machinery, dangerous liquids or dangerous concentration of gas; and
- Any object where a dangerous vapour, dust fumes may be present.

Entering and working in a confined - or enclosed space requires a Confined Space Permit. The Principal Contractor shall provide his supervisor / contractor with the permit authorized through the Client's representatives with the work procedure for authorized persons prior to work commencement.

The responsibility for safe work procedures, both at the time of entry and during the entire operation of entering and working in confined spaces, rests with the Contractor.

3.32.1 The Contractor shall ensure that:

- a. All persons working in a confined space or managing entry to a confined space are appropriately trained;

- b. Adequate steps are taken to eliminate or control hazards. Before working in an area that contains dust, the area is to be ventilated and hosed down to settle and dampen the dust; and
- c. All necessary equipment to manage confined spaces, including all necessary monitoring and rescue equipment (such as tripods, breathing equipment and the like) made available.

3.32.2 Records to be maintained by the Contractor:

- a. Confined space entry permits;
- b. Confined space entry registers;
- c. Safety harness registers; and
- d. Atmospheric monitoring results.

3.32.3 Compulsory requirements during work in and entry to a confined space:

- a. Continuous supervision and monitoring;
- b. Adequate ventilation;
- c. Communication (radio) and
- d. Trained emergency rescue teams

3.32.4 Safety equipment where applicable, but not limited to:

- a. Employees issued with gas monitoring equipment, safety harnesses and self-rescuers;
- b. Trained with the safe use of the proper safety equipment;
- c. Upon entering an excavation, the requirements of work in confined spaces, must be observed;
- d. Any confined space may only be entered after the air quality has been tested to ensure that it is safe to breathe and does not contain any flammable or noxious air mixture;
- e. The confined space must be purged and ventilated of any hazardous or flammable gas, vapour, dust or fumes if and when such hazardous or flammable gas, vapour, dust or fumes have been identified;
- f. The safe atmosphere must be maintained and, where necessary;
- g. Employees are to be provided with breathing apparatus and must wear a safety harness with a rope with the free end of the rope being continuously attended to by a person outside the confined space;
- h. An additional person, trained in resuscitation, to be in full-time attendance immediately outside the confined space;
- i. Additional serviceable breathing and rescue apparatus is kept immediately outside the confined space for rescue purposes;
- j. All pipes, ducts etc. that may leak into the confined space to be blanked off sufficiently to prevent any leakage or seepage;
- k. The contractor must ensure that all employees have left the confined space after the completion of work; and
- l. Where flammable gas is present in a confined space no work may be performed in close proximity to the flammable atmosphere.

4. H&S File requirements

4.1 H&S Practitioner preparing the file

Contractor must provide detail of the Practitioner who prepared the health and safety plan in this section that includes skills, experience and if any base is use in preparing such document.

4.2 Contact detail to H&S Practitioner

Contractor must provide contact detail of the Practitioner who prepared the health and safety plan in this section.

4.3 Copy of CWP / NC

Where a Construction Work Permit (CWP) is required the client will prepare and submit such application. CWP must be conspicuously display at all entrances to the construction site.

Each Contractor must submit a Notification of Construction work, where the conditions specified under regulation 4. (1)(a-d) is triggered, 7 days prior to commencing on site to the department of employment and labour's provincial office. Take 2 copies of the document and ask for a stamp at the reception.

An appendix added to the specifications give a sample layout of the required notification also found in the Construction Regulation. An electronic copy of this document may also be available from the project manager.

4.4 Complete Contact details for parties

The contractor shall place a tabular sheet in their health and safety plan that depict the detail of the Client, Professional team and Contractors management involve on the project (Annexure 1).

4.5 Physical Address for construction site and site office

This information will be depicted in the tender document and must be noted in Annexure 1 of the contractor.

4.6 Nature of the work describe

The full scope of work for the project are described in the tender documents and need to be recorded in the contractor's health and safety plan.

4.7 Commencement and completion date

Once a contractor has been appointed this information will discussed and made available.

The appointed contractor is required to provide a work schedule for the project and submit for approval before work may commence on site.

4.8 List of Contractors appointed by PC

Principal Contractor must have a list of the entire appointed contractor in the H&S file on site where it also indicates the status of each contractor in respect of man-days / month, LOG, H&S Plan approval, Notification date, Audits Conducted, etc.

4.9 Procedures to ensure PC maintain H&S file

Client's representatives will perform CR 5.1.o-p requirement audit and documentation verification on all contractors, as specified in the definition above.

4.10 Updated record of "as-built" drawings and plans

Any changes in design will be communicated to client and as build drawings for the responsible area communicated.

4.11 Criteria for design loadings for structural elements

The Client normally contract a consulting engineer for the design to handles such responsibility. Should this not be the case the principal contractor should inform the client immediately of any loading requirements to ensure all structures has the capacity to withhold the increased load capacity.

4.12 Detail of potential hazard included in structure eg. Pre- or Post –tension beams or slabs

The Client normally contract a Civil Engineer for the design to handles such responsibility. Should this not be the case the principal contractor should inform the client immediately of any encountered potential hazards.

4.13 General details of construction methods and materials

Matter expert contractors are contracted for specific scope of works. No contractor may appoint a 3rd party as matter expert to perform their contracted scope of works. Where a conflict to the contracted **contractor's competencies and resources** occur, the detail must be declared to the Client's representatives before approval may be granted.

4.14 Equipment and maintenance of facilities within the Structure

Contractor depends on the client's available equipment and maintenance of facilities in the structure. When a contractor completed his scope of works any residual risk must be convened to the client's representative in writing and communicated with the relevant facility maintenance management.

4.15 Maintenance procedures and requirements provided for the Structure

Contractor depends on the client's maintenance procedures of facilities in the structure. Should it be found that additional requirements be implemented the contractor must inform the client in writing through the client's representative (facility managers).

4.16 List and proof of appointments of each contractor

Contractor will include in the H&S file a list of appointed contractors. Refer to 4.8 & 4.13 above as well.

4.17 Procedures to approve, monitor and review all Contractors H&S files on site for the project

The Principal Contractor shall implement a Contractor Management System to ensure compliance to the OHS Act and OHS Specifications. The Contractor Safety Management System procedures are to be stipulated in the Health and Safety Plan.

Contractor will implement the following process for contractor evaluation:

- a. Provide the Contractor with the Client's Health and Safety Specifications (this specifications);
- b. Provide the Contractor with the Principal Contractors Health and Safety Plan;
- c. Negotiate and approve the contractors Health and Safety plan;
- d. Approve Contractors competencies, resources & budget;
- e. Approve Contractors implementation of Health and Safety file to site by issuing a Certificate to Commence ("CCC");
- f. Monthly compliance documentation verification and site audit ("Periodic Site Audit");
- g. Submit a **hard copy** to the contractor within 7 days (CR 5.(1)(p))
- h. Issue PSA certificate on audit;
- i. Site visit reports and closure of audit findings; and
- j. Close-out report and indicate man-days of project per contractor.

4.18 Manuals for operating and maintenance procedures and schedule for plant and equipment

Contractor will keep Risk Assessment; operational manuals & Checklist accompanied any plant or equipment.

When a contractor completed his scope of works any residual risk must be convened to the client's representative in writing and communicated with the relevant facility maintenance management.

4.19 Details of location and nature of utilities and services (emergency and fire-fighting systems)

The Client will ensure that the contractor be inducted on site indicating access to all the arrangements, utilities and services on the site.

Should this not be the situation then the Contractor will prepare an induction and provide this to its employees and appointed contractors.

4.20 Responsible for “as-build” drawings

Any changes in design will be communicated to the client and as build drawings for the responsible area communicated and handed over to the client after the project is completed.

4.21 Procedures for marking–up drawings to as-build

The Client contracted a Civil Engineer for the design and handles such responsibility.

4.22 Procedures to pass on residual risk information to those who need such

In accordance to section 6. (1)(d) of the Construction Regulation the designer are responsible to document in a report to the client the residual risk of the design before the project goes out on tender.

Any changes in design need to be communicated to the client and as build drawings for the responsible area communicated.

4.23 General Record Keeping

The Contractor shall keep and maintain Health and Safety records to demonstrate compliance with the OHSS and the OHS Act in the frequency describe in the contractor’s health and safety plan. The contractor shall ensure that all records of incidents, spot fines, training etc. are kept on site.

All documents shall be available for inspection by the CLIENT, his nominated representative or the Department of Employments and Labour’s Inspectors.

4.24 Unanticipated Hazards (Inclusive of adverse weather such as strong winds)

Any contractor shall immediately notify the CLIENT of any hazardous or potentially hazardous situations arising during the performance of activities. **CoVid-19 is known hazard.**

A record must be minute in the monthly progress meetings regarding **rainfall and working days lost.**

4.25 Occupational Health and Safety Signage

The Contractor shall ascertain and provide adequate on-site Warning, Prohibition, Mandatory and General Signage and adhere to those instated by the Client.

The Contractor shall be responsible to maintain the quality and replacement of signage.

4.26 Occupational Safety

4.26.1 Site Access, Speed Restrictions and Protection

The Contractor shall ensure that a separate entrance/exit to the construction site is opened and erected for the sole use of construction activities.

The exact opening shall be discussed and agreed upon with the client representatives. The Contractor shall ensure that all persons in their employ and all those that are visiting the site are aware and comply with the site speed restriction(s).

The speed limit is set to not exceed 20km/h when entering grounds/site.

4.26.2 Pressure Equipment or Gas Bottles Including Operations

Should such equipment be used, the Principal Contractor shall comply with Pressure Equipment Regulations, including:

- Providing competency and awareness training to the operators;
- Providing PPE or clothing;
- Providing and maintain appropriate signage in areas where Pressure equipment are used;
- Inspect equipment regularly and keep records of inspections;
- Providing appropriate firefighting equipment (Fire Extinguishers).

4.27 General Machinery

The Principal Contractor shall comply with the Driven Machinery Regulations, which include inspecting machinery regularly, appointing a competent person to inspect and ensure maintenance, issuing PPE or clothing and training those that use machinery and enforce compliance.

As a precautionary matter it is a requirement that a **protective bar** be placed over the joystick / control of movement of machinery to prevent any uncontrolled operation of the machinery if a person or material falls on top of the controls.

The Principal Contractor shall report in the minutes of the progress meeting the type of machinery on site.

4.28 CIDB Health and Safety Plan Audit

The CIDB has gazette a best practice Standard for Health and Safety Plans and auditing requirements (Grade 2 to 9), Vol 641 9 November 2018 No 42021 and the principal contractor should adopt such layout as **standard for the layout of the Principal Contractor's Health and Safety Plan to ensure a fair evaluation.**

4.29 HIV/Aids Programme (when applicable)

Client commits itself to providing guidance and leadership in the implementation of HIV and AIDS, TB and Sexually Transmitted Infections (STI) programmes by all stakeholder organisations. It is a requirement that Principal Contractors shall provide HIV/Aids awareness training and roll out an HIV/Aids Programme for all employees.

The HIV/Aids Awareness Programme Requirements:

- HIV Programme Coordinator appointed (part-time)
- Appoint and train Peer Educator/s (Part-time)
- Male condom dispensers, sufficient male condom available and is it placed in high trafficked areas.

- Female condom dispenser, sufficient female condoms available and is it in high trafficked area
- All types of HIV/Aids related posters displayed in a high trafficked area and in a good condition.
- HIV/Aids Awareness workshops/tool box talk
- HIV/Aids Prevention Measures
- HIV/Aids Care and Support
- Free voluntary HIV testing

Duties of the HIV/AIDS Coordinator:

- Ensure on-site programme implementation
- Ensure Peer Educators are elected, trained and active and supported
- Ensure Voluntary Counselling and Testing takes place
- Ensure awareness talks and education initiatives take place
- Posters, awareness materials and condoms are freely available on site
- Ensure that evidence of programme implementation is readily available
- Facilitate Site Management commitment

No Principal Contractor shall require an employee, or an applicant for employment, to undertake an HIV test in order to ascertain that employee's HIV status. As provided for in the Employment Equity Act, employers may approach the Labour Court to obtain authorisation for testing.

All Personnel must be encouraged to undertake voluntary testing. Voluntary Testing and Counselling (VCT) must be encouraged by all Principal Contractors.

4.30 Non-Compliance to set requirements

Should it be found that the principal contractor is in non-compliance with the specifications or their approved Health and Safety Plan, the Occupational Health and Safety Practitioner has the responsibility and authorization to stop any activity or all construction until compliance has been reached. The cost of stoppage on site due to non-compliance will be borne by the principal contractor / contractor

In the event of extra audits being done by the OHS Practitioner due to ongoing non-compliance, non-availability of Safety File or an audit score less than 80%, the **cost of that additional audit will be borne by the principal contractor** / contractor and will be equal to the amount as stipulated in the agreement with the client.

The appointed Safety Officer for the principal contractor will be required to draft a **close-out report** after each audit. The close-out report must address all non-conformities identified during the audit and highlight the measures taken to rectify the non-conformity. This report must be forwarded to the OHS practitioner **within 24-72 hours of receiving** date of the audit.

Should the construction work run longer than the anticipated project period the Principal Contractor / Contractor will be liable for the cost of the additional health and safety audits.

4.31 Handling conflict of interest

The following is accepted during the course of the contract:

The potential Principal Contractor may appoint only one construction manager for the project and various construction supervisors on each area of responsibility should work be active on more than one area.

The client's health and safety practitioner can assist the Principal Contractors management to ensure the health and safety requirements, as set out by these specifications and the Health and Safety Plan of the Principal Contractor, are complied with at a cost to the Principal Contractor.

Should the Principal Contractor appoint a contractor these contractors can request the client's health and safety practitioner to prepare their required documentation for health and safety compliances on this project without any conflict of interest.

4.32 Penalties

Should, at any time, the works, or part of the works, be stopped due to unsafe acts or non-compliance with the Clients or PCs OHS Plan; neither the PC nor any other Principal Contractor or Contractor shall have a claim for extension of time or any other compensation.

In cases of any **repetitive non-conformances**, the non-conforming party shall be penalised as per the table below:

The following constitute examples of the types of non-conformances that will attract penalties:

<u>Minor:</u> Fine: R50/count	<u>Medium:</u> Fine: R500/count and a non-conformance	<u>Severe:</u> Fine: R5, 000/count, a non-conformance and/or activity stoppage
Non-use of basic PPE supplied (e.g. Overalls, Safety Shoes, Hardhats) per person	Toilets not supplied or regularly serviced; lack of drinking water	Principal Contractors working without OHS Plan approval
Non completion of registers for plant and equipment on site	Principal Contractors not audited	Workers transported in contravention of the OHS Plan or legal requirements
Lack of OHS signage at work areas	Working without training or the appropriate OHS SWP / HIRA	Invalid/expired Letters of Good Standing with licensed Compensation Insurer
Tools and equipment identified in poor condition during inspections	Non-conformances identified during the previous audit and not addressed within the agreed time frame	Allow people to work at heights without proper training and PPE

	No internal monthly Audit Report on file.	Fall Arrest Harness not tied off / worn when a risk of falling exists
	No Medical Certificates of Fitness for relevant workers	Threat to the OHS of persons
	Unsafe work at heights	3rd Offence on Unsafe Work at Heights
	Poor Housekeeping	Failure to submit consolidated Health and Safety report and relevant document.

All penalties shall be communicated to the Principal Contractor on a monthly basis.

The Principal Contractor will be expected to confirm receipt of such penalties. The total deductible amount as per penalties issued shall be tabled in the Monthly Progress Meeting for noting purposes. All monthly penalties shall be deducted from the Certified Certificates submitted by the Principal Contractor.

4.33 Project Close - Out Requirements

Upon completion of the project, the Principal Contractor shall submit a well-documented consolidated Health and Safety file (to be in electronic form) confirming the H & S history of the project.

The following **summary** of information is required in the file, but not limited to:

- Final closure of all registers and checklists;
- Monthly Health and Safety audit reports;
- Minutes of the Health and Safety Committee meetings (Min every 3 months);
- Summary of Incidents & IOD report;
- WCA /COIDA Claims;
- Total Man-hours and DIFR (0:200,000);
- Environmental rehabilitation status;
- Copies of Pre and Post Employment Medical Certificates of all employees that worked on the project (Medical surveillance and final declaration) where applicable;
- Health and Safety Non-conformances (current / outstanding); and
- Copies of all Hazardous Waste Disposal Certificates (where applicable)

Handover of the consolidated Health and Safety file can only commence once all personnel has been demobilized and **nil man-hours** are recorded. Electronic submission must be provided to the CLIENT, or its Health and Safety Advisor, who are required to store this information for 3 subsequent years.

The Health and Safety Advisor or - Agent will evaluate the Health and Safety performance of the Principal Contractor i.e. compliance, performance, quality and refer in a cover letter which will be added to the Principal Contractors consolidated file with the contractor's close-out report.

Acknowledgement:

I, _____ representing _____ as Contractor have satisfied myself with the content of the Occupational Health and Safety Specification (OHSS) and shall ensure compliance and that the personnel and other people visiting the site comply with all relevant obligations in respect thereof.

Signature of Principal Contractor

Date

Signature of Principal Agent

Date

Signature of Client

Date

Comments:

Annexure 1 – Professional team and information on this project

Annexure 2 - Notification of Construction work

Annexure 3 - Organogram

Annexure 4 - Legal Appointments

Annexure 5 - Registers & checklists

Annexure 6 - Returnable Documents

BASELINE Risk Assessment

Annexure 1 – Professional team and information on this project

<u>CLIENT:</u>	Name	Person	Email
Name of Client	Langeberg Municipality		
Address	Ashton Office . 28 Main Road, Ashton, 6715		
Project Name	ELECTRIFICATION of BOEKENHOUTSKLOOF, BONNIEVALE (PHASE 1)		
Principal Agent	Clinkscales Maughan-Brown, 39 Victoria street, George 6529	Johan De Villiers, 082-331.47.40	jdevilliers@cmbgeorge.co.za
Address			
<u>DESIGN TEAM:</u>			
OHS Practitioner & CHSA Mentor: Fadley Valley	DEVAC (Pty) Ltd	De Munck Menderoi, 081-559.64.71	demunck@devac.co.za
<u>PRINCIPAL CONTRACTOR</u>	<u>Tender</u>		
Name of PC:			
16.1			
16.2			
8.1			
8.7			
<u>CONTRACTORS</u>	To be announced	List of contractors will be in H&S file	
Plumbing			
Electrical			
<u>MAJOR SUPPLIERS</u>	To be announced	List of contractors will be in H&S file	
<u>EXTENT AND LOCATION OF:</u>			
Relevant existing records		To receive from client	
Surveys		To be conducted with appointment	
Site investigation & Geotechnical reports		To be conducted with appointment	
Records of “as- built” drawings		To received from client	
H&S File			In site office
Maps			

Annexure 2 – Notification of Construction Work

ANNEXURE A- NOTIFICATION OF CONSTRUCTION WORK**Regulation 4 of the Construction Regulations, 2014**

1 (a)	Name and postal address of principal contractor:	
(b)	Name and telephone number of principal contractor's contact person:	
2	Principal contractor's compensation registration number:	
3 (a)	Name and postal address of client:	Langeberg Municipality,
(b)	Name and telephone number of client's contact person or agent:	
4 (a)	Name and postal address of designer(s) for the project:	Clinkscapes Maughan-Brown, 39 Victoria street, George 6529
(b)	Name and telephone number of designer's contact person:	Johan De Villiers, 082-331.47.40, jdevilliers@cmbgeorge.co.za
5	Name and telephone number of principal contractor's construction manager on site appointed in terms of regulation 8(1):	
6	Name/s of principal contractor's subordinate managers on site appointed in terms of regulation 8(2):	
7	Exact physical address of the construction site or site office:	BOEKENHOUTSKLOOF, BONNIEVALE (PHASE 1)
8	Nature of the construction work:	Electrical network and reticulation installation
9	Expected commencement date:	
10	Expected completion date:	
11	Estimated maximum number of persons on the construction site:	Total: Male: Female:
12	Planned number of contractors on the construction site accountable to principle contractor:	
13	Name(s) of contractors already selected:	

Principal contractor

Date

Client's Agent (where applicable)

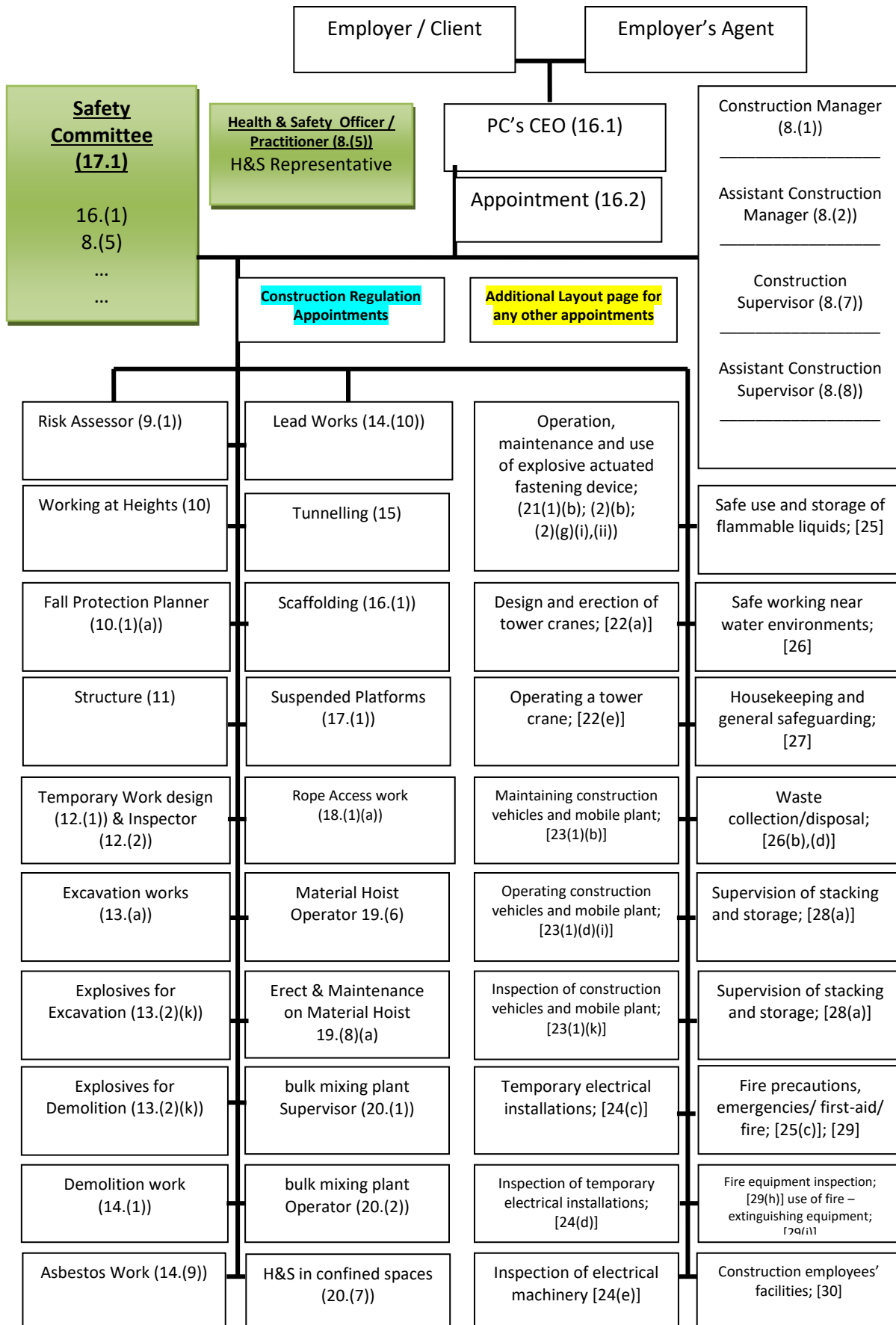
Date

Client

Date

THIS DOCUMENT TO BE FORWARDED TO THE OFFICE OF THE
DEPARTMENT OF LABOUR **PRIOR TO COMMENCEMENT** OF WORK ON SITE

Annexure 3 - Organogram



Annexure 4 – Legal appointments

Each appointment letter shall indicate:

- a. Legal reference to the appointment requirement;
- b. The name of the person appointing and his / her designation;
- c. The name of the company who this person represents;
- d. The name of the appointee and the appointment;
- e. The detail of the site / address
- f. Period of validity of such appointment (not longer than 3 year);
- g. Signature of the Company's representative making the appointment & date of signature;
- h. Duties or reference to requirements in regulations (to include Checklists & Registers);
- i. Acceptance of appointment;
- j. Signature of acceptor and date; and
- k. Designation.

All contractors including the professional team members has to ensure that an arrangement is in place to ensure all their employees have valid medical certificates of fitness.

Sample of tabular list to be included in health and safety plan (not limited or exhausted to only these

Appointment description (Safety File)	Appointment required in terms of	
Assistant to Chief Executive Officer	OHSACT Section 16(2)	
Principal contractor for each phase or project	Construction Regulation 5(1)(k)	
Construction Manager	Construction Regulation 8(1)	
Construction Supervisor	Construction Regulation 8(7)	
Assistant Construction Supervisor	Construction Regulations 8(8)	
CHS Officer registered with SACPCMP	Construction Regulation 8(5)	
Construction vehicle and mobile plant operator	Construction Regulation	
Construction vehicle inspector	Construction Regulations	
CoVid-19 Compliance Officer	Dept Labour and Employ. Guidelines	
CoVid-19 Manager	Disaster Management Act	
Demolition Supervisor	Construction Regulation	
Electrical installation and appliances inspector	Construction Regulation 24	
Emergency evacuation controller	Construction Regulation	
Excavation supervisor	Construction Regulation 13 (1)	
Explosive powered tool supervisor	Construction Regulation 21(2)	
Fall Protection Developer	Construction Regulation 8	
Fire Fighter	Construction Regulation	
Fire Fighting Equipment Inspector	Construction Regulation 27	
First-Aiders	General Safety Regulation 3	
Hand Tool Inspector	General Safety Regulations	
Hazardous chemical substances supervisor	Hazardous Chemicals Substances Regulations	
Housekeeping supervisor	Construction Regulation	
Incident Investigator	General Administrative Regulation 9(2)	
Ladder Inspector	General Safety Regulation 13(a)	
Occupational Health and Safety Committee	OHSACT Section 19	

Occupational Health and Safety Representatives	OHSACT Section 17	
Personal Protective Equipment Inspector	Construction Regulation	
Portable Electrical Equipment	Construction Regulation	
Risk Assessor	Construction Regulation 9(1)	
Safety Harness inspector	General Safety Regulations	
Scaffolding supervisor	Construction Regulation 14	
Stacking and storage supervisor	Construction Regulation 28	
Structures supervisor	Construction Regulation	
Supervisor demolition work	Construction Regulation	
Suspended platform supervisor	Construction Regulation 15	
Temporary electrical installations inspector	Construction Regulation	
Traffic management supervisor	OHSACT Section	
Vessels under pressure supervisor (Fire)	Vessels under Pressure Regulations	
Welding supervisor	General Safety Regulation	
Working on or next to water supervisor	Construction Regulation	

Sample

FIRST AIDER

OCCUPATIONAL HEALTH AND SAFETY ACT, Act 85 of 1993
General Safety Regulations 3.(4)

... (legal reference)

I, _____ (Employer Responsible Person), for _____
(Company) do hereby appoint _____ (Employee) as First Aider and to ensure
that all first aid boxes are maintained in accordance with General Safety Regulation 3 at
_____ (Site/Address).

This appointment is valid from ___ / ___ / 20__ to the completion of the stipulated construction
work. (Not more than 3 years)

Signature: _____ Date: _____

Your duties are to:

- Ensure that the first aid box or boxes under your control remain properly stocked to meet all foreseeable incidents which may occur in your designated area of responsibility;
- Perform kit inspection by documenting the content on the provided checklist;
- Attend to and report incidents / accidents to the supervisor immediately;

...

Acceptance

I, _____, the undersigned do hereby acknowledge receipt of, understand
the duties in this appointment, are competent to perform this appointment with regards to
First Aid.

Signature: _____, Date: _____ & Designation _____

Annexure 5 – Registers & Checklists (Sample)

Sample of tabular list to be included in health and safety plan (not limited or exhausted to only these registers & checklists)

Statutory Registers (Safety File)	Register Intervals	YES/NO
	Daily Before work commence	
Approval to Cast Concrete	Before Casting	Yes
Concrete and Mixer	Daily	Yes
Confined space entry		
Construction Vehicle inspection register	Daily	Yes
Daily Safe Task Instructions	Daily	Yes
Electrical installations Register	Daily before work commence	Yes
Electrical Tools Register	Monthly	Yes
Excavation Register	Daily, before each shift, etc	Yes
Explosive fastening device	Daily	Yes
Fall Protection Inspections Register	Daily before work commence	Yes
Fire Equipment Inspection Register	Monthly	Yes
First-Aid Box Content Register (vehicle)	Weekly	Yes
First-Aid Treatment Register	After each treatment	Yes
First-Aid Dressing Register	After each treatment	Yes
Formwork and support	Weekly	Yes
Hand Tool Inspection Register	Monthly	Yes
Hazardous Chemical Substances Register	After use of Substance	Yes
Health and Safety Rep Inspection Register	Monthly	Yes
Hygiene Inspection: Toilets	Daily	Yes
Induction training	Project Start	Yes
Ladder Inspection Register & Checklist	Monthly	Yes
Personnel Protective Equipment Issue Register	At start of project and at every issue	Yes
Personnel Protective Inspection Register	Weekly – Part of DSTI	Yes
Powered Tools Register	Daily before work commence	Yes
Safety Harness Inspection Register	At Start of project and then every month	Yes
Scaffold Inspection Register	Daily before work commence	Yes
Stacking and Storage Register	Weekly Per site	Yes
Structures Inspection Register	Weekly	Yes
toolbox talks	Weekly –	Yes

Annexure 6 - Returnable Documents

Health and Safety documents to be submitted with tender:

2. Health and Safety Plan
3. Health and Safety Budget (Construction Regulation 5.(1)(g))
4. Skills training / existing qualification matrix (Construction Regulation 5.(1)(h))

e.g.

a. Competencies for:

- Legal liability training (Min Construction Manager & Supervisor);
- Excavation Supervisor;
- First Aider on site;
- H&S Representative (CHSO/M qualification registration);
- Fire Fighter & Equipment Inspector,
- Risk Assessor;
- Incident Investigator;
- Fall Protection Planner / Developer; and
- Working on Heights

b. Resources evaluation:

- Scaffolding
- Mobile plant & construction vehicles
- Artisans registration (Plumbing / Electrical, etc)

BASELINE RISK ASSESSMENT
HIRA – Hazard Identification and Risk Assessment

TASK / ACTIVITY	HAZARD	RISK TO SAFETY, HEALTH & ENVIRONMENT	TYPE			RISK ANALYSIS			RESPONSIBLE ENTITY / PERSON
			H	S	E	L	E	C	
1. Project initiation and briefing session	- Appoint CHS Practitioner - Develop a health and safety brief for project - Determine the required competency for the matter expert consultants - Record scope of construction work project	- Non compliance to construction regulation in later stages of project - Bad health and safety project profile	x	x	x	1	1	1	CLIENT / AGENT
2. Concept and feasibility study	- Attend to design and consultant meetings - Documenting project risk profile and health and safety policies that will affect cost estimation and budgeting for health and safety for project	- No records of decision making for health and safety implementation - Over / under calculation for health and safety budget requirements	x	x	x	2	2	4	CLIENT / AGENT
3. Design Development	- Prepare this Baseline Risk Assessment for intended construction work project. (CR 5.(1)(a)) - Prepare health and safety specification base on the this Baseline Risk Assessment (CR 5.(1)(b)) - Provide Designer with health and safety specifications as mentioned above. (CR 5.(1)(c)) - Receive the designers hazard report for use in tender process - Layout format of site health and safety file - Prepare health and safety plans for early works - Initial projects health and safety estimation / budgets	- To minimize design risk - Restrict legal liability exposure through constructability, maintainability and operability of structure - Non compliance to construction regulation in later stages of project	x	x	x	2	2	4	CLIENT / AGENT
4. Tender documentation and procurement	- Define procurement process for health and safety - Assemble records in preparation for the construction work permit. - Ensure that the health and safety specifications, including hazard report from designer, are issued to potential contractors tendering for the intended construction work project - Ensure that principal contractor to be appointed has the necessary competencies	- Non compliance to construction regulation in later stages of project - Site Establishment delays due to construction permit issue - Non-clarifications on discrepancy in tender process	x	x	x	2	2	4	CLIENT / AGENT

TASK / ACTIVITY	HAZARD	RISK TO SAFETY, HEALTH & ENVIRONMENT	TYPE			RISK ANALYSIS			RESPONSIBLE ENTITY / PERSON
			H	S	E	L	E	C	
	and resources to carry out the construction work safely ▪ Prepare appointment documents for signature	▪ Appointment of non-compliant contractors ▪ Delay in start of project							
5. Construction documentation and management	▪ Assess, discuss, negotiate and approve the implementation of plan ▪ Apply for construction work permit ▪ Ensuring Principal Contractors compliance to Construction Regulation and clients health and safety specifications ▪ Ensure periodic audits are conducted ▪ Design risk management	▪ Non compliance to construction regulation in later stages of project ▪ Liability exposure risk ▪ Incidents / Accidents ▪ Work stoppage ▪ Financial lost due to delays	x	x	x	2	2	4	CLIENT / AGENT
6. Project close-out	▪ Recording of defects ▪ Hand over Health and safety file to client ▪ Close-out report	▪ Non compliance to construction regulation in later stages of project	x	x	x	2	2	4	CLIENT / AGENT
7. Site organization and establishment	▪ Insufficient infrastructure ▪ Environmental impact assessment ▪ Not sufficient or unknown location of services ▪ Not enough hoarding ▪ Access and traffic control ▪ Creation of site office in containers ▪ Erroneous off-loading ▪ Inadequate facilities for staff ▪ Stores - Unsecured storage of tools and materials ▪ Excessive dust generated during site establishment	▪ unlawful persons entering site, grievance to people ▪ Traffic disruption ▪ Fatalities or injury to employees ▪ Damage to property ▪ Loss of time in maintenance	x	x	x	4	3	12	PRINCIPAL CONTRACTOR
8. Deliveries and other construction vehicles	▪ Vehicles movement entering / leaving site ▪ Inadequate traffic plan ▪ Inadequate signals in place when reversing and offloading ▪ impact with equipment ▪ Spillages from trucks & materials	▪ Injury to employees ▪ Traffic disruption, ▪ Injury to visitors ▪ Damage to property ▪ Environmental damage, Waste generation	x	x	x	4	3	12	PRINCIPAL CONTRACTOR
9. Manual handling of materials & equipment	▪ Carrying, lifting & positioning heavy & unmanageable pieces of material & equipment	▪ Injury to employees ▪ Damage to property	x	x	x	4	4	16	PRINCIPAL CONTRACTOR

TASK / ACTIVITY	HAZARD	RISK TO SAFETY, HEALTH & ENVIRONMENT	TYPE			RISK ANALYSIS			RESPONSIBLE ENTITY / PERSON
			H	S	E	L	E	C	
10. Excavations	- Unstable soil - Unsuitable access to working area Suitable access in and out of excavations not provided - Incompetent operators - Restricted view of driver - Employees assisting using hand tools when carrying out excavation work - Overcrowding of employees in trenches - Excavation conducted without supervision of competent person - Excavations not barricaded - Unidentified services - Unauthorised access - Extensive noise, Sparks operation in rocky soils	- Collapse of excavation and falling material - Machine getting stuck in wet soil condition - Properly planned escape routes not available - Collapsing of shoring - Employees injuries - Visitors or vehicles falling into excavations - Harm to property - Disruption of service supply to surrounding community - Damage to equipment	x	x	x	4	3	12	PRINCIPAL CONTRACTOR
11. Mobile Crane and tower-crane, lifting operations, rigging and lifting equipment	Incompetent crane operator Crane operator not medically fit Defective crane Crane not inspected before work commences Man machine interface Use of damaged slings/chains Incorrect slings used for load Crane and lifting equipment not load tested and certified not done No lifting/sling plan No work permit and task risk assessment No banksman available	Loss time injuries Fatalities Property damage							
12. Mobile Elevated Working Platforms (MEWP)	Collision with other vehicular traffic. Arcing or contact with overhead cables or other overhead obstructions. Fall of operative from platform. Materials falling from platform. Entrapment of persons in moving parts or mechanism. Overturning of the MEWP	Muscular skeletal injuries. Back injuries Cuts, bruises and fractures Damage to property							
13. Steel reinforcing	- Delivery vehicles on site - wrong off-loading by untrained personnel - Unsafe stacking and storage of reinforcing - Overcrowding walkways and access ways - Manual handling of heavy reinforcing - Incorrect PPE required	- Disruption of road traffic - Damage to property - Injury to employees - Injury to visitors	x	x		4	3	12	PRINCIPAL CONTRACTOR

TASK / ACTIVITY	HAZARD	RISK TO SAFETY, HEALTH & ENVIRONMENT	TYPE			RISK ANALYSIS			RESPONSIBLE ENTITY / PERSON
			H	S	E	L	E	C	
14. Concrete works	▪ Delivery vehicles movement onto site ▪ Incorrect handling of concrete pump and chute during discharge ▪ Manual moving of concrete to remote location by wheel barrow or dumpster. ▪ Concrete spills during activities ▪ Environmental spillage due to washing out of ready mix delivery truck. ▪ Incorrect PPE required	▪ Disruption of road traffic ▪ Damage to property ▪ Injury to employees ▪ Injury to visitors ▪ Unauthorised / untrained operator ▪ Environmental damage, Waste generation	x	x	x	4	3	12	PRINCIPAL CONTRACTOR
15. Electrical Work	▪ Use of damaged hand tools when mixing plaster ▪ Cement powder emissions from mixing plaster ▪ Removal of rubble from area ▪ Climbing onto working scaffolding ▪ Spillages from cement and other materials	▪ Electrocuting or Injuries to employees ▪ Inhalation of excessive cement powder ▪ Environmental damage through Waste generation	x	x	x	4	3	12	CONTRACTOR
16. Welding & gas cutting	▪ Operating of equipment by unskilled personnel ▪ Poorly maintained equipment ▪ Welder not in constant control over equipment ▪ Incorrect earth on welding equipment ▪ No welding screens between operations and other employees ▪ No ventilation in welding areas ▪ Not sufficient welding PPE ▪ Argon / Oxygen pressure vessels free standing ▪ Welding spats & sparks not captured	▪ Injury to employees ▪ Inhalation of excessive gasses and fumes ▪ Electrocution, fire , burns, Shocks ▪ Arc eyes due to wrong PPE ▪ Explosions, deaths, injury to employees ▪ Damage to property	x	x	x	4	4	16	PRINCIPAL CONTRACTOR
17. Fire prevention	▪ Untrained and emergency drills not done on regular basis ▪ Equipment in store rooms and not distributed on site ▪ Poorly maintained firefighting equipment ▪ Safety signs not adequate or put up ▪ Emergency exits obstructed ▪ Emergency plan not communicated	▪ Damage to property as a result of fire ▪ Death and/or injury to employees	x	x	x	4	5	20	PRINCIPAL CONTRACTOR
18. Hoisting and Lifting equipment	▪ Untrained riggers ▪ Failure lifting equipment due to poor rigging methods ▪ Movement of employees under suspended materials during crane operations	▪ Damage to material. ▪ Damage to property ▪ Lost of load ▪ Falling material ▪ Injury to employees	x	x	x	4	4	16	PRINCIPAL CONTRACTOR

TASK / ACTIVITY	HAZARD	RISK TO SAFETY, HEALTH & ENVIRONMENT	TYPE			RISK ANALYSIS			RESPONSIBLE ENTITY / PERSON
			H	S	E	L	E	C	
	- Unattended loads without supervision - Swaying of lifted materials without guide rope								
19. Sub contractors on site	- No safety file for site - Unstructured employee force - Unskilled supervision - In experience employees - Not registered for COID - Foreign employees, language barrier - Poorly maintained equipment - Environmental disrespect	- Risk other employees - Delays due to non-compliance - Contravention notices - Delays in completion - Environmental risk due to uncontrolled dumping on sites	x	x	x	4	4	16	PRINCIPAL CONTRACTOR
20. Waste material removal	Build-up of waste material Combustible / flammable materials Smoking near sources of ignition	Muscular skeletal injuries. Back injuries Cuts, bruises and fractures Damage to property Fires							
21. Alcohol and Drugs	Use of drugs that impair perception / vision Working / on duty under the influence Stress, tension, high blood pressure	Muscular skeletal injuries. Back injuries Cuts, bruises and fractures Damage to property							
22. Medical and / or Emergency	Unclear location of first aid station / box Visitors unaware of protocols Unclear who is trained Blood borne pathogens	Muscular skeletal injuries. Back injuries Cuts, bruises and fractures Damage to property							
23. Use of Ablution Facilities	Insufficient WC / washing facilities Not washing hands after use. Spread of germs, disease, etc. Incorrect use of WC Spillage of fluids on the floor. Slips and falls	Muscular skeletal injuries. Back injuries Cuts, bruises and fractures Damage to property							
24. Pregnant Women	Difficulty in emergency and evacuation situations Stress and morning sickness	Muscular skeletal injuries. Back injuries Cuts, bruises and fractures Damage to property							
25. General and Miscellaneous	Young workers on site New and Inexperienced Workers	Muscular skeletal injuries. Back injuries Cuts, bruises and fractures Damage to property							

Severity (Consequences)	Risk Rating Matrix	Likelihood				
		<Low (1) Not credible i.e. the team have never heard of event occurring in industry	Low (2) Conceivable but would require multiple failures of systems and controls	Medium (3) Less than average i.e. easy to postulate a scenario for accident but considered unlikely	>Medium (4) More than average i.e. the team do not have direct knowledge but suspect that event may have occurred and represents a credible scenario	High (5) Likely to occur and the team have knowledge of a similar event
	High (5) Multiple deaths, lung diseases, permanent debility or fatality. Major pollution with long-term implication and very high restitution costs	5	10	15	20	25
	>Medium (4) Involving a single death or severe injury, poisoning, sensitization or dangerous infection. Damage to equipment resulting in production shutdown and significant production loss. Severe pollution with short-term localized implications incurring significant restitution costs	4	8	12	16	20
	Medium (3) Event leading to a Lost Time Incident or persistent dermatitis, acne or asthma. Localized damage to equipment requiring extensive repair, significant loss of function or production or moderate pollution incurring some restitution costs	3	6	9	12	15
	Low (2) Minor injury requiring first-aid treatment or headache, nausea, dizziness, mild rashes. Damage to equipment requiring minor remedial repair, loss of production or impact to the environment	2	4	6	8	10
	<Low (1) Negligible injury or health implications, no absence from work. Negligible loss of function or production with no damage to equipment or the environment	1	2	3	4	5
1 - 6	MAY BE ACCEPTABLE: however, review task to see if risk can be reduced further					
8 - 12	TASK SHOULD ONLY PROCEED after consultation with personnel and assessment team. Where possible, the task should be redefined to take account of hazards involved or the risk should be reduced further prior to task commencement.					
15 – 25	TASK MUST NOT PROCEED. Almost inevitable that an incident would result. It should be redefined or further control measures put in place to reduce risk. The controls should be re-assessed for adequacy prior to task commencement.					

Construction Manager's responsibility is to review, implementation and monitoring the site assessment.

This risk assessment was prepared on known construction work, but must be re-assessed by the Principal Contractor's Construction Manager by walking the site to confirm that all hazards have been correctly identified and appropriate control measures specified are in place.

Employees are required to wear relevant PPE for tasks being performed.

All work to be carried out under a PERMIT TO WORK system is applicable to the specifications of that permit.

WHEN ACTIVITIES, HAZARDS OR RISKS CHANGES THE CONSTRUCTION MANAGER MUST –

- A. STOP THE JOB;**
- B. REVISE THIS RISK ASSESSMENT; AND**
- C. DISCUSS WITH RELEVANT EMPLOYEES.**

Team involved in the preparing of the risk assessment			
1. De Munck MENDEROI	2. Fadley Valley	3.	4.
5	6.	7.	8.
PREPARED BY: DE MUNCK MENDEROI	POSITION: RISK ASSESSOR	SIGNATURE: 	DATE: Friday, 28 July 2023
CHECKED BY: FADLEY VALLEY	POSITION: CHS AGENT	SIGNATURE: 	DATE: Friday, 28 July 2023
APPROVED BY:	POSITION: Construction Manager	SIGNATURE:	DATE: