

EASTERN CAPE DEPARTMENT OF HEALTH

TENDER

UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD

TENDER No: SCMU3-P26/27-0413-HO

NAME OF COMPANY: _____

CSD Nr: _____

CRS Nr (CIDB): _____

CLOSING DATE: _____ TIME: 11:00 am

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THE TENDER

PART T1
TENDERING PROCEDURES

PART T1.1: TENDER NOTICE AND INVITATION TO TENDER

T1.1 Tender Notice and Invitation to Tender

The Eastern Cape Department of Health invites contractors with the CIDB grading of **2EB OR Higher** in the following Class of works **Electrical Building (EB)** to tender for "Tender No: **SCMU3-P26/27-0413-HO** UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD for a **3-months** contract. The contract will be based on the JBCC Edition 6.2 of 2018, and the Eastern Cape Department of Health will enter a contract with the successful tenderer.

Bid documents are downloadable free of charge from the website (e-tenders.gov.za). Bid documents will be available on 02 July 2026. No bid documents will be available at departmental offices.

There will be a compulsory virtual briefing meeting on **13 July 2026**. The purpose of the meeting is to introduce bidders to the site and to have a brief overview of the scope of works.

Queries relating to the issue of these documents may be addressed in writing to through email: Noluthando.mjuluki@echealth.gov.za _ **Technical enquiries:** may be addressed in writing to Ms. Noluthando Mjuluki Noluthando.mjuluki@echealth.gov.za

The closing time for receipt of tenders by the ECDOH is **11:00am** on 20 July **2026**. Tender will be open in public.

It is the responsibility of the tenderer/s to ensure that bid documents /proposals are submitted on or before closing time and the correct location as the department will not take responsibility of wrong delivery. Tenderers using courier services for delivery of their bid documents must ensure the delivery is at the correct place / location and time as the department will not be held responsible for wrong delivery. Not delivered to Departmental officials. The Department will not accept responsibility if bids received by officials are not timely deposited in the Bid Box.

Tenders may only be submitted on the tender documentation that is issued. Tenderers must be registered on the National Treasury Central Supplier Data Base and proof of registration must be submitted with the proposal (<https://secure.csd.gov.za>).

Requirements for sealing, addressing, delivery, opening and assessment of tenders are stated in the Tender Data.

B. TENDER SUBMISSIONS:

Bids must be submitted electronically, named "Tender No: **SCMU3-P26/27-0413-HO** " UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD"

At www.etenders.gov.za

C. BID EVALUATION:

This bid will be evaluated in **Two (2) phases as follows:**

Phase One: Functionality and Compliance, responsiveness to the bid rules and conditions

Phase Two: Price and Specific Goals.

PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT (PPPFA) AND PREFERENTIAL PROCUREMENT REGULATIONS 2022 POINTS WILL BE AWARDED AS FOLLOWS:

Maximum points on price	-	80 points
Maximum points for Specific Goals	-	20 points
Maximum points	-	100 points

C. BID SPECIFICATIONS, CONDITIONS AND RULES

1. The minimum specifications, other bid conditions and rules are detailed in the bid document under Tender Data
2. The Department of Health SCM policy applies.
3. Tender validity period is **12 weeks**

D. ENQUIRIES WITH REGARD TO THIS ADVERT MAY BE DIRECTED TO:

SCM RELATED ENQUIRIES

Email Address: Noluthando.mjuluki@echealth.gov.za

TECHNICAL ENQUIRIES

Ms. Noluthando Mjuluki

Email Address: Noluthando.mjuluki@echealth.gov.za

FOR COMPLAINTS, FRAUD, & TENDER ABUSE:

Call: 0800 701 701

PART T1.2: TENDER DATA

T1.2 Tender Data

The conditions of tender are the latest edition of SANS 10845-3, *Standard conditions of tender*. SANS 10845-3 makes 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 provisions of SANS 10845-3 *and* as contained in **Annexure C of Standard for Uniformity in Construction Procurement (Board Notice 423 of 2009 Government Gazette No 42622 of August 2019)**. Each item of data given below is cross-referenced to the clause in SANS 10845-3 to which it mainly applies

Clause number	Tender Data
3.1	The Employer is the Department of Health - Eastern Cape
3.2	The tender documents issued by the employer comprise the following documents: THE TENDER Part T1: Tendering procedures T1.1 - Tender notice and invitation to tender T1.2 - Tender data Part T2: Returnable documents T2.1 - List of returnable documents T2.2 - Returnable schedules THE CONTRACT Part C1: Agreements and Contract data C1.1 - Form of offer and acceptance C1.2 - Contract data C1.3 - Dispute Resolution Mechanism Part C2: Pricing data C2.1 - Pricing Instructions C2.2 - Bills of Quantities Part C3: Scope of work C3 - Scope of work Part C4: Site information C4 - Site information
3.3	The tender documents issued by the employer comprise the documents listed on the contents page
3.4	The employer's agent is: Name: MJT Consulting Address: 62 Bonza Bay Road Tel No: 0833 521906 Fax: 086 556 3754 Email Address: lengoaf@gmail.com
3.5	The language for communications is English
3.6	The competitive negotiation procedure shall be applied.
4	Tender's obligations
4.1	Joint Venture is Allowed
4.2	The employer will compensate the tender as follows JBCC Edition 6.2 of 2018 The employer will not compensate the tenderer for any costs incurred in attending interviews or making any submissions in the office of the employer.
4.3	It is the responsibility of the tenderer to check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.
4.4	Confidentiality and copyright of documents Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a tender offer in response to the invitation.
4.5	Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are incorporated into the tender documents by reference.

4.6	Acknowledge receipt of addenda to the tender documents, which the employer may issue, and, if necessary, apply for an extension to the closing time stated in the tender data, in order to take the addenda into account.
4.7	The arrangements for a compulsory clarification meeting are as stated in the Tender Notice and Invitation to Tender. Tenderers must sign the attendance list in the name of the tendering entity. Addenda will be issued to and tenders will be received only from those tendering entities appearing on the attendance list. Tender documents will not be made available at the clarification meeting
4.8	Seek clarification <i>Request clarification of the tender documents, if necessary, by notifying the employer at least 7 (Seven) working days before the closing time stated in the tender data.</i>
4.9	Tenderers are required to state the rates and currencies in Rands. Include in the rates, prices, and the tendered total of the prices (if any), all duties, taxes which the law requires to be paid [except value added tax (VAT)], and other levies payable by the successful tenderer, that are applicable 14 days before the closing time stated in the tender data. Show the VAT payable by the employer separately as an addition to the tendered total of the prices. Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the contract data. State the rates and prices in monetary value of the contract unless otherwise instructed in the tender data.
4.10	Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer or to correct errors made by the tenderer and ensure that all signatories to the tender offer initial all such alterations. Do not make erasures using masking fluid.
4.11	Main tender offers are not required to be submitted together with alternative tenders.
4.12	No alternative tender offers will be considered
4.13.1	Parts of each tender offer communicated on paper shall be submitted as an original. Submit a) the parts of the tender offer communicated on paper as an original plus the number of copies stated in the tender data, with a translation of any documentation in a language other than the language of communication established in 3.5, and b) the parts communicated electronically by the employer or its agents on paper format with the tender.
4.13.2	Sign the original and all copies of the tender offer where required in terms of the tender data. State in the case of a joint venture which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer. NOTE The employer holds all authorized signatories liable on behalf of the tenderer.
4.13.3	A tender security in the amount of N/A is required and shall remain valid for a period not exceeding N/A days after the closing date for tender offers. The form of the tender security shall not differ substantially from the sample provided in Annex D of SANS 10845-3.
4.13.4	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: Bids must be submitted electronically, named "Tender No:SCMU3-P26/27-0413" UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD" "closing time and date: 2026 at 11:00am
4.13.5	The tenderer is required to submit with his tender the following certificates: 1) a copy of the CSD report showing, amongst other things, that tax matters of the service provider are in order the South African Revenue Services. In the case of a Joint Venture/Consortium/Sub-contractors each party must submit a separate CSD report showing, amongst other things, that tax matters of the service provider are in order the South African Revenue Services. 2) CIDB Grading certificate or CRS number.
4.13.6	A two-envelope procedure will not be required.
4.13.7	Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted. The tenderer accepts that the employer does not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.
4.14	The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender. Ensure that the employer receives the tender offer at the address specified in the tender data not later than the closing time stated in the tender data. Proof of posting shall not be accepted as proof of delivery. Accept that, if the employer extends the closing time stated in the tender data for any reason, the requirements of the standard conditions of tender in this part of SANS 10845 apply equally to the extended deadline.
4.15.1	The tender offer validity period is 12 weeks Hold the tender offer(s) valid for acceptance by the employer at any time during the validity period stated in the tender data after the closing time stated in the tender data. If requested by the employer, consider extending the validity period stated in the tender data

	for an agreed additional period, with or without any conditions attached to such extension. Extend the period of the tender security, if any, to cover any agreed extension requested by the employer.																
4.15.2	<p>Placing of contractors under restrictions / withdrawal of tenders</p> <p>If any tenderer who has submitted a tender offer or a contractor who has concluded a contract has, as relevant: withdrawn such tender or quotation after the advertised closing date and time for the receipt of submissions; after having been notified of the acceptance of his tender, failed or refused to commence the contract; had their contract terminated for reasons within their control without reasonable cause; offered, promised or given a bribe in relation to the obtaining or the execution of such contract; acted in a fraudulent, collusive or anti-competitive or improper manner or in bad faith towards the Provincial Government; or, made any incorrect statement in any affidavit or declaration with regard to a preference claimed and is unable to prove to the satisfaction of the Provincial Government that the statement was made in good faith or reasonable steps were taken to confirm the correctness of the statements, such tenderer/s may be placed under restriction from tendering with the state.</p> <p>Procedures are outlined in the EC SCM Policy for Infrastructure procurement and Delivery Management and also on cidb Inform Practice Note #30. Excerpts of the policy can be availed on request of any interested tenderer.</p>																
4.16	Access shall be provided for the following inspections, tests and analysis: N/A																
4.17	the preferred tenderer will be required to submit an approved insurer undertaking to provide the Performance Bond / Guarantee / Surety / Security to the format and/or standard as per DPWI policy																
5	Employer's undertakings																
5.1	The Employer will respond to requests for clarification received up to Seven (7) working days before the tender closing time. If, as a result of the issuing of addenda, it is necessary to extend the closing time stated in the tender data, grant such extension and notify all respondents accordingly.																
5.2	The employer shall issue addenda until Seven (7) working days before tender closing time.																
5.3	Tenders will be opened immediately after the closing time for tenders at 11:00am hours .																
5.4	Do not disclose to tenderers, or to any person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful tenderer.																
5.5	<p>Determine, after opening and before detailed evaluation, whether each tender offer that was properly received</p> <p>a) complies with the requirements of the standard conditions of tender in this part of SANS 10845,</p> <p>b) has been properly and fully completed and signed, and</p> <p>c) is responsive to the other requirements of the tender documents.</p> <p>A responsive tender is one that conforms to all the terms, conditions, and scope of work of the tender documents, without material deviation or qualification. A material deviation or qualification is one which, in the employer's opinion, would</p> <p>d) detrimentally affect the scope, quality, or performance of the works, services or supply identified in the scope of work,</p> <p>e) significantly change the employer's or the tenderer's risks and responsibilities under the contract, or</p> <p>f) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.</p> <p>Reject a non-responsive tender offer, and do not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.</p>																
5.6	<p>Arithmetical errors, omission and discrepancies</p> <p>Check responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.</p> <p>For Vat related discrepancies, National and Provincial Treasury prescripts in relation to VAT procedures apply.</p>																
5.7.1	<p>The financial offer will be reduced to a comparative basis using the Tender Assessment Schedule.</p> <p>Table F.1: Formulae for calculating the value of A</p> <table border="1"> <thead> <tr> <th>Formula</th> <th>Comparison aimed at achieving</th> <th>Option 1^a</th> <th>Option 2^a</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Highest price or discount</td> <td>$A = \left(1 + \frac{(P - P_m)}{P_m} \right)$</td> <td>$A = P / P_m$</td> </tr> <tr> <td>2</td> <td>Lowest price or percentage commission / fee</td> <td>$A = \left(1 - \frac{(P - P_m)}{P_m} \right)$</td> <td>$A = P_m / P$</td> </tr> <tr> <td>a</td> <td colspan="3">P_m is the comparative offer of the most favourable comparative offer. P is the comparative offer of the tender offer under consideration.</td> </tr> </tbody> </table>	Formula	Comparison aimed at achieving	Option 1 ^a	Option 2 ^a	1	Highest price or discount	$A = \left(1 + \frac{(P - P_m)}{P_m} \right)$	$A = P / P_m$	2	Lowest price or percentage commission / fee	$A = \left(1 - \frac{(P - P_m)}{P_m} \right)$	$A = P_m / P$	a	P_m is the comparative offer of the most favourable comparative offer. P is the comparative offer of the tender offer under consideration.		
Formula	Comparison aimed at achieving	Option 1 ^a	Option 2 ^a														
1	Highest price or discount	$A = \left(1 + \frac{(P - P_m)}{P_m} \right)$	$A = P / P_m$														
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a	P_m is the comparative offer of the most favourable comparative offer. P is the comparative offer of the tender offer under consideration.																
5.7.2	The Employer applies the two-stage process of evaluating tenders, namely functionality then Price/ BBBEE component, using the preferential procurement mechanism of the 80/20 rule.																

PHASE 1: FUNCTIONALITY

- All tenders duly lodged as specified in this document will be examined to determine compliance with tender requirements and conditions. Tenders with deviations from the requirements/ conditions, will be eliminated from further consideration.
- Firstly, the assessment of functionality will be done in terms of the evaluation criteria and minimum threshold. A tender will be disqualified if it fails to meet the minimum threshold for functionality.

- Thereafter, only the qualifying Tenders will be evaluated in terms of the 80/20 preference mechanism, where 80 points will be used for price and 20 points are allocated to Broad Based Black Economic Empowerment, in line with the grading per the Specific Goals in place at the time of the advertisement.

- Elimination of Proposals on Grounds of Functionality

Scoring Functionality threshold for this Tender is 70%. Failure to meet this threshold will lead to disqualification of the Tenderer.

The following preference point system is applicable to this Tender:

The 80/20 system for requirements with a Rand value equal to or above R30,000 up to R50 Million (all applicable taxes included) as stipulated in the Preferential Procurement Policy Framework Act (Act Number 5 of 2000) of the GGDA's Procurement Policies and Procedures

ADJUDICATION USING POINT SYSTEM

The Tenderer obtaining the highest number of total points will be awarded the contract.

- Preference points shall be calculated after prices have been brought to a comparative basis taking into account all factors of non-firm prices and all unconditional discounts.
- Points scored must be rounded off to the nearest 2 decimals places.
- In the event that two or more Tenders have scored equal total points, the successful Tender must be the one scoring the highest number of preference points for Specific Goals.
- However, the functionality is part of the evaluation process and in the event that two or more Tenders have scored equal points including preference points for Specific Goals, the successful Tender must be the one scoring the highest score for functionality.
- Should two or more Tenders be equal in all respects, the award shall be decided by the drawing of lots.

RESPONSIVENESS TO THE BID REQUIREMENTS AND RULES

Bidders' proposals must meet the following minimum requirements and supporting documents must be submitted with the completed bid document electronically at the closing date and time. Failure to comply will automatically eliminate the bid for further consideration:

1. Bid Document (This Document must be submitted in its original format)
2. Bids which are late, incomplete, unsigned or submitted by facsimile or electronically, will not be accepted.
3. Bidder must be registered with CIDB in the correct grading and class of works as per the tender notice and requirements. The status on CIDB must be active. It is the responsibility of the bidder to keep the status on CIDB active throughout bidding process (advert till award stage).
4. Bidders must be a legal entity OR partnership or consortia.
5. Form of offer and Acceptance (fully completed and signed).
6. SBD 4- Declaration of Interest (fully completed and signed). **SBD4 must be duly completed and signed. Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract, such interest must be disclosed on question 2.3.1.**
7. Incomplete or unsigned or poorly completed forms **SBD 4 will lead to a bidder being declared non-responsive.**
8. Compulsory Enterprise Questionnaire (Completed and signed)
9. If the offer is "Vat Inclusive", the VAT registration number of service provider must be indicated and if a service provider is not a VAT Vendor but include VAT in its prices, the successful service provider will be given 21 days to register as a VAT Vendor

- with SARS, after the issuing of an appointment letter. If a bidder is a VAT vendor/registered, the bidder is required to explicitly state the VAT amount. VAT vendors must include VAT at 15% in the bid offer(s).
10. If the Bid Sum (amount in words) differ from the Bid Sum (amount in figures), the Bid Sum (amount in words) will govern.
 11. Resolution to Sign (must be completed, if applicable).
 12. Declaration of Employees of the State or other State Institutions.
 13. Only one offer per bidder is allowed and alternative offers will not be considered. If more than one offer is received, none of the offers will be considered.
 14. Attendance of compulsory briefing meeting (Proof will be drawn from the Microsoft Teams attendance register by SCM)
 15. **Bidders must submit a minimum of three (3)** written contactable references for projects successfully completed in the past (clearly indicating client name, contract value, contract term, and contact person, contact details). This is not an elimination factor, but important for the department to make a decision. Unless it is used for Quality/functionality Points.
 16. **Submission of key staff:** It is a compulsory requirement that the tenderer provides all the specified key staff. Omission of even one of them will render the tender as non-responsive

Other Conditions of bid (Non eliminating unless expressly mentioned in the document):

1. The bidder must be registered on the Central Supplier Database (CSD) prior the award
2. All bidders' tax matters must be in order prior to award. Bidders' tax matters will be verified through CSD. In cases where the bidder's status is found non-compliant, the bidder will be granted 7 days to correct the status. **A bidder that fails to rectify its tax matters with SARS will be declared non-responsive.**
3. The bidder has duly completed and signed the **SBD 1**, and **SBD 6.1**.
4. Bidders need to complete and sign **SBD 6.1** to claim points for specific goals. **Failure will lead to the non-awarding of points for specific goals.**
5. The bidder must also list all projects where there are pending litigations or litigations that have been concluded. The form for this is also attached in Annexure I.
6. The Department will contract with the successful bidder by signing a formal contract.
7. This tender will be awarded as a whole. All trades listed in the Bills of Quantities or Pricing schedule must be priced for (except provisional sums and allowances which also need to be added to the total), failure to do so will increase the commercial risk of the bid and may lead to elimination or passing over of the bidder.
8. Wherever a brand name is specified in this document (i.e. specifications, pricing schedule, bill of quantities or anywhere), the department requires an item similar/equivalent or better.
9. Protection of personal information: Consent (POPIA).
10. The successful tenderer (after being informed) will be required to bring along an unsigned copy of the form of contract to be signed by parties (e.g. JBCC Edition 6.2 of 2018).
11. **Bidders must submit a list of current projects that are not yet completed on Annexure G**
12. **Bidders must submit a list of their litigation history on Annexure H**
13. **Proof of Office Address:** Submission of a municipal account or valid lease agreement in the name of the tendering entity proving a physical business address
14. **Project Specific Local Economic Development (LED) Plan:** Submission of a completed returnable schedule detailing the strategy for engaging suppliers from within the Enoch Mgijima Local Municipality

PHASE TWO: EVALUATION POINTS ON PRICE AND SPECIFIC GOALS

The **80/20 preference point system** shall be applied for the purposes of this bid as per the requirements of the *Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000)* and Specific Goals/Preferential Procurement Regulations 2022

Criteria	Points
POINTS ON PRICE	80
SPECIFIC GOALS	20
TOTAL	100

The 90/10 preference point system for acquisition of services, works for goods exceeding Rand value of R50 million:

(a) The following formula must be used to calculate the points for price in respect of tenders (including price quotation) with a Rand value equal to, or above R 30 000 and up to Rand value of R 50 000 000 (all applicable taxes included):

The financial offer will be scored using the following formula:

$$A = (1 - (P - P_m))$$

	<p>Pm</p> <p>The value of W₁ is:</p> <p>1) 90 where the financial value inclusive of VAT of all responsive tenders received have a value in excess of R50 000 000 or</p> <p>2) 80 where the financial value inclusive of VAT of one or more responsive tender offers have a value that equals or is less than R 50 000 000.</p> <p>Allocation of Points for Locality Ownership:</p> <ul style="list-style-type: none"> - Within Enoch Mgijima Local Municipality 8 - Within Chris Hani District Municipality 6 - Within Eastern Cape Province 4 - Outside the Eastern Cape 0
5.7.3	The procedure for the evaluation of responsive tenders is Method 2 (Administrative Responsiveness, price and Specific Goals, Risk Assessment)
5.8	<p>Tender offers will only be accepted if:</p> <ul style="list-style-type: none"> a) the tenderer is registered on the Central Supplier Database (CSD) for the South African government (see https://secure.csd.gov.za/) unless it is a foreign supplier with no local registered entity b) the tenderer is in good standing with SARS according to the Central Supplier Database. Bidders must submit a CSD no. or tax status compliance pin. c) the preferred tenderer will be required to submit an approved insurer undertaking to provide the Performance Bond / Guarantee / Surety / Security to the format and/or standard within 21 days after the appointment. d) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation; e) the tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector. f) the tenderer has not: <ul style="list-style-type: none"> i) abused the Employer's Supply Chain Management System; or ii) failed to perform on any previous contract and has been given a written notice to this effect. g) the tenderer has completed the Compulsory Declaration and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process.
	<ul style="list-style-type: none"> h) the tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest that may impact the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process and persons in the employ of the state are permitted to submit tenders or participate in the contract; i) the tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer; j) The tenderer undertakes to maximize the sourcing of building material or infrastructure input material from Eastern Cape based suppliers or manufacturers. k) the employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2014, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely. l) The tenderer has duly completed and signed the Declaration Certificate for Local Production and Content and Local Content Declaration: Summary Schedule and submitted the documents at the closing date and time of the bid. m) the tender has offered a market-related offer. If the offer is believed not to be market related, the department through its Supply Chain Management bid committees will attempt to negotiate the offer with identified bidder/s to a reasonable amount. Bidders are not allowed to increase their tender offers during this process. n) A Resolution of signatory form has been completed and signed by director/s or a letter bearing a letterhead of the tenderer has been attached (specific to this bid) to the bid submission; it must be duly signed by all directors and submitted the bid. Only a duly authorized official can sign the bid. o) NOTE: The amount reflected on the Form of Offer and Acceptance takes precedence over any other total amount indicated elsewhere in bidder's tender submission. If the Form of Offer and Acceptance has no value or figure, the bidder will be regarded as having made no offer. p) The department reserves the right not to award the bid to the most favourable tenderer if the Risk Assessment Matrix reveals a High Risk profile regarding current commitments (over-extension) or a history of litigation that suggests a high probability of project failure or reputational damage to the ECDOH.
5.9	The number of paper copies of the signed contract to be provided by the employer is 1.

	<p>The additional conditions of tender are:</p> <ul style="list-style-type: none"> • Wherever a brand name is specified in this document (i.e., specifications, pricing schedule, bill of quantities or anywhere), the department requires an item similar/equivalent or better.
T.2.1	<p>A. List of returnable documents</p>
1	<p>Documentation to demonstrate eligibility to have tenders evaluated i.e. List all documentation to demonstrate eligibility to have a submission evaluated.</p> <ul style="list-style-type: none"> • All required returnable schedules
2	<p>Returnable Schedules required for tender evaluation purposes</p> <p>The tenderer must fully and appropriately complete and sign the following returnable schedules as relevant:</p> <ul style="list-style-type: none"> • Record of Addenda to Tender Documents • Proposed amendments and qualifications • Compulsory Enterprise Questionnaire (In the case of a joint venture, separate enterprise questionnaires in respect of each partner must be completed and submitted). • SBD 1, 4, 6.1, Declaration of Local Production and Local Content. • Protection of personal content: Consent (POPIA) • Form of Offer and Acceptance • Complete priced Bills of Quantities, including Final Summary • Tenderer's experience • Organogram and Experience of key personnel • Preliminary program • Valid Tax Clearance Certificate and/or a tax compliance status (TCS) Pin • Letter of good standing from COIDA • Occupational Health and Safety Officer's Certificate • Appointment Letters for current projects • Completion letters-Projects Completed in the past 5 years • Company registration documents (CIPC Documents) • Certified ID copies of members/directors/Shareholders or Owners • Plant and Equipment • Proof of office • Local economic development (LED) strategy <ul style="list-style-type: none"> ○ Local Material Sourcing Plan (A signed undertaking identifying specific Eastern Cape suppliers or manufacturers the contractor intends to use for the LV upgrades.
3	<p>Other documents required for tender evaluation purposes</p> <p>The tenderer must provide the following returnable documents:</p> <ul style="list-style-type: none"> • A CSD Report for a contractor with valid and correct information. • A letter of good standing from the Compensation Fund or a licensed insurer as contemplated in the Compensation for Occupational Injuries and Diseases Act 1993 (Act No. 130 of 1993)
4	<p>Returnable Schedules that will be used for tender evaluation purposes and be incorporated into the contract</p> <p>The tenderer must complete the following returnable documents:</p> <ul style="list-style-type: none"> • A duly completed form of Offer and Acceptance (and any revision of prices if there are any). • JV Agreement if JV submission • Certified ID copies of Members/directors/Shareholders or owners • Company registration Documents (CIPC documents)
5	<p>Only authorized signatories may sign the original and all copies of the tender offer where required.</p> <ul style="list-style-type: none"> • In the case of a ONE-PERSON CONCERN submitting a tender, this shall be clearly stated. • In the case of a COMPANY submitting a tender, include a copy of a resolution by its board of directors authorizing a director or other official of the company to sign the documents on behalf of the company. • In the case of a CLOSE CORPORATION submitting a tender, include a copy of a resolution by its members authorizing a member or other official of the corporation to sign the documents on each member's behalf. • In the case of a PARTNERSHIP submitting a tender, all the partners shall sign the documents, unless one partner or a group of partners has been authorized to sign on behalf of each partner, in which case proof of such authorization shall be included in the Tender.

	<ul style="list-style-type: none"> In the case of a JOINT VENTURE/CONSORTIUM submitting a tender, include a resolution of each company of the joint venture together with a resolution by its members authorizing a member of the joint venture to sign the documents on behalf of the joint venture. <p><u>Accept that failure to submit proof of authorization to sign the tender shall result in the tender offer being regarded as non-responsive.</u></p>
6	<p>Information and data to be completed in all respects</p> <p>Accept that tender offers, which do not provide all the data or information requested completely and, in the form, required, may be regarded by the employer as nonresponsive.</p>
7	<p>Canvassing and obtaining of additional information by tenderers</p> <p>The Tenderer shall not make any attempt either directly or indirectly to canvass any of the Employer's officials or the Employer's agent in respect of his tender, after the opening of the tenders but prior to the Employer arriving at a decision thereon.</p> <p>The Tenderer shall not make any attempt to obtain particulars of any relevant information, other than that disclosed at the opening of tenders.</p>
8	<p>Prohibitions on awards to persons in service of the state</p> <p>The Employer is prohibited to award a tender to a person -</p> <ol style="list-style-type: none"> who is in the service of the state; or <ol style="list-style-type: none"> if that person is not a natural person, of which any director, manager, principal shareholder or stakeholder is a person in the service of the state; or a person who is an advisor or consultant contracted with the Department or municipal entity. <p>In the service of the state means to be -</p> <ol style="list-style-type: none"> a member of:- <ol style="list-style-type: none"> any municipal council; any provincial legislature; or the National Assembly or the National Council of Provinces; a member of the board of directors of any municipal entity; an official of any Department or municipal entity; an employee of any national or provincial department; provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999); a member of the accounting authority of any national or provincial public entity; or an employee of Parliament or a provincial legislature. <p>In order to give effect to the above, the questionnaire for the declaration of interests in the tender of persons in service of state in part T2 of this procurement document must be completed.</p>
9	<p>Awards to close family members of persons in the service of the state</p> <p>Accept that the notes to the Employer's annual financial statements must disclose particulars of any award of more than R2000 to a person who is a spouse, child, or parent of a person in the service of the state (defined in clause 8 above), or has been in the service of the state in the previous twelve months, including -</p> <ol style="list-style-type: none"> the name of that person; the capacity in which that person is in the service of the state; and the amount of the award. <p>In order to give effect to the above, the questionnaire for the declaration of interests in the tender of persons in service of state in part T2 of this procurement document must be completed.</p>
10	<p>Respond to requests from the tenderer</p> <p>The employer will respond to requests for clarification up to 7 (seven) working days before the tender closing time.</p>
11	<p>Opening of tender submissions</p> <p>Tenders will be opened immediately after the closing time for tenders</p>
12	<p>Scoring quality / functionality: N/A</p>

13	<p>Cancellation and re-invitation of tenders</p> <p>An organ of state may, prior to the award of the tender, cancel the tender if-</p> <ul style="list-style-type: none"> (a) due to changed circumstances, there is no longer a need for the services, works or goods requested; or (b) funds are no longer available to cover the total envisaged expenditure; or (c) no acceptable tenders are received. (d) Tender validity period has expired. (e) Gross irregularities in the tender processes and/or tender documents. (f) No market related offer received (after attempts of negotiation processes) <p>Where applicable, the decision to cancel the tender will be published in the CIDB website and in the Tender Bulletin or the media in which the original tender invitation as advertised.</p>
14	Dispute resolution mechanism will be done through the Adjudication route.
15	<p>The department must when be acting against the tenderer or person awarded the contract on a fraudulent basis, considers the provisions of Regulation 14:</p> <p>The remedies provided for in Preferential Procurement Regulations 2022 do not prevent an institution from instituting remedies arising from any other prescripts or contract.</p>
16	<p>Where the employer terminates the contract due to default of the contractor in whole or in part, the employer may decide to: a) Refer the breach in contract to the cidb for investigation as a breach of the cidb Code of Conduct in terms of the cidb Regulations; or b) may impose a restriction penalty on the contractor in terms of Section 14 of the Preferential Procurement Regulations. The outcomes of such investigations in terms of both the cidb Regulations and the Preferential Procurement Regulations may prohibit the contractor from doing business with the public sector for a period not exceeding 10 years.</p>

PART T2
RETURNABLE DOCUMENTS

PART T2.1: LIST OF RETURNABLE DOCUMENTS

T2.1 List of Returnable Documents

The tenderer must complete the following returnable documents:

1 Returnable Schedules required for bid evaluation purposes

- Compulsory enterprise questionnaire (In the case of a joint venture, separate enterprise questionnaires in respect of each partner must be completed and submitted).
- Record of addenda issued (Only if addenda is issued)
- Certificate of authority for joint ventures (Only where the tender/ quotation is submitted by a joint venture)

2 Other documents required for bid evaluation purposes

The tenderer must complete the following returnable documents

- Valid Tax Clearance Certificate and/or a Tax Compliance Status (TCS) PIN.
- Proof of Registration with the CIDB grade 2EP Or higher
- Proof of registration on CSD
- Occupational Health and Safety Officer Certificate
- Letter of Good standing from COIDA
- References and Completion certificates on similar projects
- Proof of Office address (municipal account/Lease agreement)
- Project specific LED plan (Local Economic Development Strategy)

3 Returnable Schedules that will be incorporated into the contract

- Particulars of Electrical Contractor
- Standard Submission Documents (SBD, 1 & 4)
- Certified ID Copies of Directors
- Joint Venture Agreement if JV Submission

4. Documents Required for Evaluation of Functionality (add risk evaluation for)

QUALITY CRITERIA	MAX. NUMBER OF POINTS
Tenderers Experience	35
Organogram and Experience of Key Staff Personal	30
Preliminary Programme	20
Local Economic Development Strategy	10
Risk Profile (Capacity and Litigation)	5
	100

PART A

SBD 1

INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE EASTERN CAPE DEPARTMENT OF HEALTH					
BID NUMBER:		CLOSING DATE:		CLOSING TIME:	11:00
DESCRIPTION:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD				
BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT					
DEPARTMENT OF HEALTH, GLOBAL LIFE CENTRE, SCM UNIT, C/O PHATHLO, AVENUE AND 63 (OPPOSITE ENGINE GARAGE), BHISHO					
BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO			TECHNICAL ENQUIRIES MAY BE DIRECTED TO:		
CONTACT PERSON	Ms. Noluthando Mjuluki		CONTACT PERSON	Ms. Noluthando Mjuluki	
TELEPHONE NUMBER	040 608 9501		TELEPHONE NUMBER	040 608 9501	
FACSIMILE NUMBER			FACSIMILE NUMBER		
E-MAIL ADDRESS	noluthando.mjuluki@echealth.g ov.za		E-MAIL ADDRESS	noluthando.mjuluki@echealth.g ov.za	
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					
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		OR	CENTRAL SUPPLIER DATABASE No:	MAAA
ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES ENCLOSE PROOF]		ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED?	<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES, COMPLETE QUESTIONNAIRE BELOW]	
QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS					
IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?	<input type="checkbox"/> YES <input type="checkbox"/> NO				
DOES THE ENTITY HAVE A BRANCH IN THE RSA?	<input type="checkbox"/> YES <input type="checkbox"/> NO				
DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?	<input type="checkbox"/> YES <input type="checkbox"/> NO				
DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?	<input type="checkbox"/> YES <input type="checkbox"/> NO				
IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?	<input type="checkbox"/> YES <input type="checkbox"/> NO				
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 BELOW.					

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 IN THE MANNER PRESCRIBED IN THE BID DOCUMENT.
1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000 AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.
1.4. THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (SBD7).
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 VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.
2.3 APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.
2.4 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
2.5 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
2.6 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.
2.7 NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE.”

SIGNATURE OF BIDDER:

CAPACITY UNDER WHICH THIS BID IS SIGNED:
(Proof of authority must be submitted e.g. company resolution)

DATE:

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: 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

a) **Section 5: Particulars of companies and close corporations**

Company registration number

Close corporation number

Tax reference number

b) **Section 6: Record in the service of the state**

Indicate by marking the relevant boxes with a cross, if any sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months in the service of any of the following:

<input type="checkbox"/>	A member of any municipal council	<input type="checkbox"/>	An employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the public finance management act, 1999 (act 1 of 1999)
<input type="checkbox"/>	A member of any provincial legislature	<input type="checkbox"/>	A member of an accounting authority of any national or provincial public entity
<input type="checkbox"/>	A member of the National or National Council of Provinces	<input type="checkbox"/>	An employee of parliament or a provincial legislature
<input type="checkbox"/>	A member of the board of directors of any municipal entity	<input type="checkbox"/>	
<input type="checkbox"/>	An official of any municipality or municipal entity	<input type="checkbox"/>	

***If any of the above boxes are marked, disclose the following:**

Name of sole proprietor, partner, director, manager, principal shareholder or stakeholder	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	Within last 12 months

*insert separate page if necessary

Section 7: Record of spouses, children and parents in the service of the state

Indicate by marking the relevant boxes with a cross, if any spouse, child or parent of a sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months been in the service of any of the following:

	A member of any municipal council		An employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the public finance management act, 1999 (act 1 of 1999)
	A member of any provincial legislature		A member of an accounting authority of any national or provincial public entity
	A member of the National or National Council of Provinces		An employee of parliament or a provincial legislature
	A member of the board of directors of any municipal entity		
	An official of any municipality or municipal entity		

Name of spouse, child or parent	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	Within last 12 months

*insert separate page if necessary

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

- i) authorizes the Employer to obtain a tax clearance certificate from the South African Revenue Services that my / our tax matters are 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 tenderers 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.....

BIDDER'S DISCLOSURE

1. PURPOSE OF THE FORM

Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the bidder to make this declaration in respect of the details required hereunder.

Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.

2. Bidder's declaration

2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest¹ in the enterprise?

Employed by the state?

YES/NO

2.1.1 If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below.

Full Name	Identity Number	Name of State institution

2.2

Do you, or any person connected with the bidder, have a relationship with any person who is employed by the procuring institution? **YES/NO**

2.2.1 If so, furnish particulars:

2.3 Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract? **YES/NO**

2.3.1 If so, furnish particulars:

3 DECLARATION

I, the undersigned, (name)..... in submitting the accompanying bid, do hereby make the following statements that I certify to be true and complete in every respect:

3.1 I have read and I understand the contents of this disclosure;

3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;

3.3 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 consortium² will not be construed as collusive bidding.

¹ the power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.

² 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.

- 3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.
- 3.4 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.
- 3.5 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.
- 3.6 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.

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 1, 2 and 3 ABOVE IS CORRECT. I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 6 OF PFMA SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND COMBATING ABUSE IN THE SUPPLY CHAIN MANAGEMENT SYSTEM SHOULD THIS DECLARATION PROVE TO BE FALSE.

..... Signature	..... Date
..... Position	..... Name of bidder

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

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

I. GENERAL CONDITIONS

I.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).

I.2 To be completed by the organ of state

(delete whichever is not applicable for this tender).

The applicable preference point system for this tender is the **80/20** preference point system.

The lowest/ highest acceptable tender will be used to determine the accurate system once tenders are received.

I.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.

I.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

I.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.

I.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 THE 80/20 PREFERENCE POINT SYSTEMS

A maximum of 80 or 90 points is allocated for price on the following basis:

80/20

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

Where

- Ps = Points scored for price of tender under consideration
 Pt = Price of tender under consideration
 Pmin = Price of lowest acceptable tender

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

3.2.1. POINTS AWARDED FOR PRICE

A maximum of 80 or 90 points is allocated for price on the following basis:

80/20

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

Where

- Ps = Points scored for price of tender under consideration
 Pt = Price of tender under consideration
 Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table I below as may be supported by proof/documentation stated in the conditions of this tender:

4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—

- (a) an invitation for tender for income-generating contracts, that either the 80/20 preference point

system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or

- (b) any other invitation for tender, that either the 80/20 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,

then the organ of state must indicate the points allocated for specific goals for both the 80/20 preference point system.

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

(Note to organs of state: Where either the 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 (80/20 system) (To be completed by the organ of state)	Number of points claimed (80/20 system) (To be completed by the tenderer)
Historically Disadvantaged Individuals Ownership	20% (4)	
Women Ownership	10% (2)	
Youth Ownership	10% (2)	
Disability Ownership	10% (2)	
Military Veterans Ownership	10% (2)	
Locality Ownership (Tiered Scoring)	40% (8)	
- Within Enoch Mgijima Local Municipality	8	
- Within Chris Hani District Municipality	6	
- Within Eastern Cape Province	4	
- Outside the Eastern Cape	0	
TOTAL	100% (20)	

- a) Service providers must submit proof of its Specific Goals points claimed / status of contributor.
- b) The Specific Goals supporting documents required to verify claimed points may inline with the specified requirements include:
- Historically Disadvantaged Individuals Ownership: Proof of ownership (CIPRO certificate) with id no.
 - Women Ownership: Ownership: Proof of ownership (CIPRO certificate) with id no.
 - Youth Ownership: Ownership: Proof of ownership (CIPRO certificate) with id no.
 - Disability Ownership: Proof of ownership (CIPRO certificate) with valid medical documentary proof.
 - Military Veterans Ownership: Proof of ownership (CIPRO certificate) with valid proof of veteran status.
 - Locality Ownership: Proof of business address (municipal account or valid lease agreement) in the name of the tendering entity. "Points will be awarded based on the proximity of the physical business address to the site (Tarkastad) as defined in Table 1

above. The address on the municipal account or lease agreement must match the name of the tendering entity”

- Updated CSD report

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm.....

4.4. Company registration number:

4.5. 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]

4.6. 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 I 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

..... SIGNATURE(S) OF BIDDER(S)	
SURNAME AND NAME:	.....
DATE:	.....
ADDRESS:	.....

**PROOF OF REGISTRATION ON THE NATIONAL TREASURY
CENTRAL SUPPLIER DATABASE**

(ATTACH FULL REPORT HERE)

VALID COPY CIDB CERTIFICATE
(ATTACH CERTIFICATE HERE)

PROTECTION OF PERSONAL INFORMATION: CONSENT (POPIA)

PROTECTION OF PERSONAL INFORMATION: CONSENT (POPIA)

The introduction of The Protection of Personal Information Act (POPIA) ensures the regulation of personal information through its entire life cycle of collection, transfer, storing and deletion.

As part of its business activities, the Eastern Cape Department of Health obtains and requires access to personal data from a wide range of internal and external parties, including without limitation bidders who respond to requests for proposals that are published by the Eastern Cape Department of Health from time to time. The Eastern Cape Department of Health confirms that it shall process the information disclosed by Bidders for the purpose of evaluating and subsequently awarding/appointing a successful Bidder.

The Eastern Cape Department of Health hereby states that it does not and will never modify, amend, or alter any personal information submitted to it by a Bidder. Not unless directed to do so by an order of court, the Eastern Cape Department of Health does not disclose or permit the disclosure of any personal information to any Third Party without the prior written consent of the owner of the information.

Similarly, Bidders will from time-to-time access and be seized with information of a personal nature pertaining to the Eastern Cape Department of Health. Some of the information may because of legislative compliances be available in the public domain, whilst some is uniquely provided to bidders in pursuit of procurement or other business-related activities. In this regard, the Eastern Cape Department of Health requires that Bidders which receive or have access to its personal information, process any such information in a manner compliant with the requirements of the POPIA.

AGREEMENT

1. The Eastern Cape Department of Health and the Bidder (the Parties) agree and undertake that upon obtaining and having access to personal information relating to either of them, they shall always ensure that:
 - a) They process the information only for the express purpose for which it was obtained.
 - b) Information is provided only to designated and authorized personnel who require the personal information to carry out the Parties' respective obligations in terms of the Procurement processes.
 - c) They will introduce, and implement all reasonable measures ensure the protection of all personal information from unauthorized access and/or use.
 - d) They have taken appropriate measures to safeguard the security, integrity, and authenticity of all personal information in its possession or under its control.
 - e) The Parties agree that if personal information will be processed for any other purpose other than the one for which the accessing of the information was intended, explicit written consent will be obtained prior to the execution of such reason.
 - f) The Parties shall carry out regular assessments to identify all reasonably foreseeable internal and external risks to the interception of personal information in its possession or under its control and shall implement and maintain appropriate controls in mitigation of such risks.
2. The Parties agree that they will promptly return or destroy any personal data in their possession or control which belongs to the other Party once it no longer serves the purpose for which it was collected, subject to any legal retention requirements. The information will be destroyed in such a manner that it cannot be reconstructed to its original form, linking it to any individual or organization.
3. Bidder's Obligations
 - a) The Bidder is required to notify the Information Officer of Eastern Cape Department of Health, in writing as soon as possible after it becomes aware of or suspects any loss, unauthorized access or unlawful use of any of the Eastern Cape Department of Health's personal information.
 - b) The Bidder shall, at its own cost, promptly and without delay take all necessary steps to mitigate the extent of the loss or compromise of personal data.
 - c) The Bidder shall be required to provide the Eastern Cape Department of Health with details of the persons affected by the compromise and the nature and extent of the compromise, including details of the identity (if known) of the unauthorized person who may have accessed or acquired the personal data.

- d) The Bidder undertakes to co-operate with any investigation relating to security breach which is carried out by or on behalf of Eastern Cape Department of Health.

On behalf of the Bidder:

.....
Signature

.....
Date

.....
Position

.....
Name of the Bidder

On behalf of the Client:

.....
Signature

.....
Date

.....
Position

.....
Name of Client Representative

T2.2 Documents Required for Evaluation of Functionality

T2.2.1 Tenderers Experience

T2.2.1 TENDERER'S EXPERIENCE (35 POINTS)

The experience of the tendering entity as opposed to the key staff members/ experts, in projects of **SIMILAR TYPE AND SCALE (i.e. Similar Experience)** will be evaluated.

Contact details of clients of the relevant projects must also be provided.

It is **compulsory** that the tenderer completes the attached "Tenderers Experience Schedule "G", and the client reference sheets - failing which, zero points will be awarded

Tenderer's Experience			
The tenderer shall submit proof that they have successfully completed Low Voltage Electrical Installation and Maintenance work. Tenderers are to provide/list of similar projects carried out in the last 5 years including their completion certificates and corresponding references on the letterhead of the client(s) those projects were undertaken			
	Years of company experience (Company or Directors) (5)		
	Years of company experience" (5 points) is measured from the date of incorporation for the legal entity, provided its primary business has been electrical infrastructure or years of experience of the directors in LV Electrical Installation construction and maintenance		
	5 years and above experience	5	35
	3 to 4 years experience	3	
	1 to 2 years experience	1	
	Less than 1 year experience	0	
	Relevant project experience (15)		
	Tenderer listed a minimum of 3 similar projects	15	
	Tenderer listed 1-2 similar projects	5	
	Tender listed no similar projects	0	
	Past Performance on Similar Projects (15) (Completion certificates (8), References (7))		
	Completion certificates		
	The tenderer submitted a minimum of 3 completion certificates corresponding to listed projects	8	
	The tenderer submitted 1 -2 completion certificates corresponding to listed projects	3	
	Tenderer did not submit completion certificates corresponding to listed projects	0	
	Reference letters		
	The tenderer submitted a minimum of 3 reference letters corresponding to listed projects	7	
	The tenderer submitted 1-2 reference letters corresponding to listed projects	3	
	The tenderer did not submit reference letters corresponding to listed projects	0	

T2.2.2 Organogram And Experience Of Key Personnel

T2.2.2 ORGANOGRAM AND EXPERIENCE OF KEY PERSONNEL (30 Points)

The experience of assigned staff member/s in relation to the scope of work will be evaluated from the following points of view:

- 1) Submission of an Organogram indicating the following levels of resources as a minimum: Construction Manager, Safety, health, Environmental and Safety Officer, Construction Supervisor, Installation Electrician. The years of experience in their current position is to be indicated in the Organogram.
- 2) A certified copy of the relevant qualification is to be submitted, failing which, zero points will be awarded for qualifications.
- 3) The skills and experience of the assigned staff are of similar nature in the operational area which the staff have been resourced.
- 4) Failure to submit CV's or incomplete CV's of the personnel listed in the scoring below will be scored zero.

CVs of the construction team of **not more than 2 pages each** should be attached to this schedule. Each CV should be structured as per the template contained within the Tender document located on Page 42

NOTE: TENDERERS ARE ADVISED THAT AT MINIMUM, ALL RESOURCES NEED TO COMPLY WITH ANY ONE OF THE CATEGORIES IN ORDER TO SCORE THE MAXIMUM POINTS IN ANY PARTICULAR CATEGORY.

The scoring will be as follows:

1. KEY STAFF			
<p>Certified copies of the qualifications together with CVs of proposed key personnel with experience in construction and maintenance of LV Electrical Installation projects must be submitted. The key persons need not be in the current employ of the entity at the time of submission of the RFP, but a commitment either of subcontract agreement between entity and subcontractor (person or entity) or consent between the entity and person whose CV is submitted shall be presented and signed by the proposed individual/subcontractor.</p>			
KEY STAFF	QUALIFICATION AND KEY EXPERIENCE	POINTS	WEIGHT
Construction Manager (10)	<u>Qualification</u> NHD or higher (All in Electrical) Professional Registration: PrEng/PrTech/PrTechni	10	
	5 years or more post professional registration experience	10	
	3 to 4 years post professional registration experience	6	
	1 to 2 years post professional registration experience	2	
	<1 year post professional registration experience	0	
Safety, Health, Environmental and Quality Officer (4)	<u>Qualification</u> Diploma or higher in safety and quality management Professional Registration: SACPCMP	4	

			30
	5 years or more post professional registration experience	4	
	3 to 4 years post professional registration experience	2	
	1 to 2 year post professional registration experience	1	
	<1 year post professional registration experience	0	
Construction Supervisor (4)	<u>Qualification</u> Electrical Engineering Diploma (N6) or higher Professional Registration: Trade Test Registration Must have EOU MV Authorization (outcome 4) and ORHVS (HV04)	6	
	5 years or more post professional registration experience	6	
	3 to 4 years post professional registration experience	4	
	1 to 2 year post professional registration experience	1	
	<1 year post professional registration experience	0	
Installation Electrician (4)	<u>Qualification</u> Electrical Engineering Diploma (N3) or higher Registration: Wireman's License (as an Installation Electrician (IE))	10	
	5 years or more post professional registration experience	10	
	3 to 4 years post professional registration experience	6	
	1 to 2 year post professional registration experience	2	
	<1 year post professional registration experience	0	

Along with the submission of the Organogram specific to this Tender, Tenderers are required to submit the Key Personnel Schedule as indicated below.

KEY PERSONNEL	NAME	AGE	YEARS OF EXPERIENCE	PERIOD WITH COMPANY	HIGHEST VALUE CONTRACT HANDLED
Construction Manager					
Safety, Health, Environmental and Quality Officer					
Construction Supervisor					
Installation Electrician (IE)					

The undersigned, who warrants that he/ she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

NAME : _____

(Block Capitals)

SIGNATURE : _____ DATE: _____

(of person authorised to sign on behalf of the Tenderer)

The Tenderer shall complete the following table to be submitted with the Tender

CURRICULUM VITAE TEMPLATE OF KEY PERSONNEL

DESIGNATION.....

Name:

Date of birth:

Profession:

Nationality:

Formal Qualifications:

	Qualification	From: Name of Institution	Year Obtained
1			
2			
3			
4			
5			

Professional Registrations/ Designation:

	Professional Registrations/ Designation	Professional Body/Council	Registration Number
1			
2			
3			
4			
5			

Name of Current Employer (firm):

Full Time:

Yes

No

Current Position:

Years of Experience:

Name of Previous Employer (firm):

Full Time:

Yes

No

Position held:

Years of Experience:

Name of Previous Employer (firm):

Full Time:

Yes

No

Position held:

Years of Experience:

Name of Previous Employer (firm):

Full Time:

Yes

No

Position held:

Years of Experience:

--

Employment Record:

Specific Experience Record Pertinent to Required Service:

CERTIFICATION:

I, the undersigned, certify that, to the best of my knowledge and belief, this data correctly describes me, my qualifications and my experience.

SIGNATURE: _____

(Of Key Personnel who confirms the details on the CV as recorded above)

DATE: _____

SIGNATURE: _____

(Of person authorised to sign on behalf of the Tenderer)

DATE: _____

T2.2.3 Preliminary Programme

T2.2.3 PRELIMINARY PROGRAMME (20 POINTS)

The Tenderer shall submit a detailed programme clearly decomposing the construction activities by indicating the hierarchy of activities.

The activities shall indicate the duration and the dependencies between the tasks.

In addition to construction activities, the programme is to allow and include for the following:

- Annual builders' holiday
- 15 working days for project delays such as but not limited to inclement and exceptionally inclement weather and an extension of time shall only be considered for inclement and exceptionally inclement weather beyond this Fifteen (15) working day period.

The overall project duration is **3 Months**.

For the purpose of evaluating this Tender, the tenderer is to assume the start date to be **30 Sept 2026**.

The successful tenderer will be requested to revise the programme to accommodate the shift in the start date.

NOTE: Should the tender programme exceed the project duration of 3 months (3 months including provision for anticipated project delays), the tenderer shall be scored zero points for this section.

CATEGORY	BASIS OF POINTS CALCULATION	MAX POINTS PER CATEGORY
No Response or exceed project duration	0% X 20 Points	0
The programme/ implementation plan only shows main activities with no dependencies between them and the project duration is within the project period.	20% X 20 Points	4
The programme/ implementation plan DOES NOT clearly show all activities, the dependencies between them are NOT in a logical sequence and project duration is within the project period.	40% X 20 Points	8
The programme/ implementation plan clearly shows all activities, the dependencies between them are in a logical sequence and project duration is within the project period.	60% X 20 Points	12
The programme/ implementation plan clearly shows all activities, the dependencies between them are in a logical sequence and project duration is within the project period. In addition, the durations of each activity are clear indicated and is appropriate and realistic.	80% X 20 Points	16

<p>The programme/ implementation plan clearly shows all activities, the dependencies between them are in a logical sequence and project duration is within the project period.</p> <p>In addition, the durations of each activity are clear indicated and is appropriate and realistic and the programme clearly indicates the project's critical path.</p>	100% X 20 Points	20
---	------------------	----

T2.2.4 Local Economic Development (LED) Strategy (10 points)

Local Economic Development (LED) Strategy		
This section formalizes the socio-economic requirements for the Enoch Mgijima Local Municipality and the Eastern Cape Province. (10 Points)		
		10
Local Material Sourcing (10)		
Points are awarded based on a signed Local Material Sourcing Plan		
Detailed plan specifying Eastern Cape-based suppliers for at least 50% of construction and infrastructure input materials:	10	
Detailed plan for 20% to 49% provincial sourcing	5	
No local sourcing plan or sourcing primarily from outside the Eastern Cape	0	

T2.2.5 Risk Profile (Capacity and Litigation)

Risk Profile's Risk Assessment Matrix					
This allocation splits the 5 points between Commitment & Capacity (3 Points) and Litigation History (2 Points) ,				5	
RISK CATEGORY	LOW RISK (Favorable)	MEDIUM RISK (Cautionary)	HIGH RISK (Pass-over)		MAX POINTS
A: Commitment & Capacity (Schedule G)	Tenderer has 0–2 active projects. Key personnel confirmed available.	Tenderer has 3–5 active projects. Resources are stretched; mitigation plan provided.	Tenderer has >6 active projects		3
Points Awarded	3 Points	1.5 Points	0 Points		
B: Litigation History (Schedule H)	No litigation involving the entity or directors in the past 10 years.	Resolved commercial disputes (payment delays, etc.) with no findings of fraud.	History of H&S negligence, fraud/corruption, or JBCC Clause 29.0 defaults.		2
Points Awarded	2 Points	1 Point	0 Points		

THE CONTRACT

PART C1
AGREEMENTS AND CONTRACT DATA

PART C1.1: FORM OF OFFER AND ACCEPTANCE

C1.1- Form of Offer and Acceptance

Annex C *(normative)*

FORM OF OFFER AND ACCEPTANCE

Project title	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

OFFER

The employer, identified in the acceptance signature block, has solicited offers to enter into a contract for the procurement of:
UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD

R.....

The tenderer, identified in the offer signature block, has examined the documents listed in the tender data and addenda thereto as listed in the returnable schedules, and by submitting this offer has accepted the conditions of tender.

By the representative of the tenderer, deemed to be duly authorized, 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) (or other suitable wording)

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.

Signature

Name

Capacity

for the tenderer

(Name and address of organization)

Name and signature

of witness 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 the above listed Parts.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the returnable 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 form of offer and acceptance. No amendments to or deviations from said documents are valid unless contained in this schedule.

The tenderer shall within 3 weeks after 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 securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the conditions of contract identified in the contract data. 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 working 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.¹

Signature

Name

Capacity

for the Employer

(Name and address of organization)

Name and signature

of witness Date

Schedule of Deviations

- 1 Subject _____
Details _____
- 2 Subject _____
Details _____
- 3 Subject _____
Details _____
- 4 Subject _____
Details _____

By the duly authorized representatives signing this agreement, 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 changes 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/ quotation 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.

¹As an alternative, the following wording may be used:

Notwithstanding anything contained herein, this agreement comes into effect two working days after the submission by the employer of one fully completed original copy of this document including the schedule of deviations (if any), to a courier-to-counter delivery / counter-to-counter delivery / door-to counter delivery /door-to-door delivery /courier service (delete that which is not applicable), provided that the employer notifies the tenderer of the tracking number within 24 hours of such submission. Unless the tenderer (now contractor) within seven working days of the date of such submission 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

A

RECORD OF ADDENDA TO BID DOCUMENTS

PROJECT TITLE	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD		
Tender No:	SCMU3-P26/27-0413-HO		
I / We confirm that the following communications received from the Eastern Cape Department of Health before the submission of this tender offer, amending the tender documents, have been taken into account in this bid offer: (Attach additional pages if more space is required)			
Item	Date	Title or Details	No. of Pages
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Attach additional pages if more space is required.

Signed _____ Date _____

Name _____ Position _____

Tenderer _____

B

PROPOSED AMENDMENTS AND QUALIFICATIONS

The Tenderer should record any deviations or qualifications he may wish to make to the tender documents in this Returnable Schedule. Alternatively, a tenderer may state such deviations and qualifications in a covering letter to his tender and reference such letter in this schedule.

The Tenderer's attention is drawn to clause 5.8 of SANS 10845-3 regarding the employer's handling of material deviations and qualifications.

PROJECT TITLE	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

Page	Clause /Item	Proposal

The undersigned, who warrants that she/ he is duly authorised to do so on behalf of the enterprise, confirms that the content of this schedule that presented by the tenderer are within my personal knowledge and are to the best of my knowledge both true and correct

Signed

Date

Name

Position

Enterprise name

C

RESOLUTION FOR SIGNATORY

A: CERTIFICATE OF AUTHORITY FOR SIGNATORY

Signatory for companies shall confirm their authority hereto by attaching a duly signed and dated copy of the relevant resolution of the board of directors to this form or on company letter head.

An example is given below:

“By resolution of the board of directors passed at a meeting held on _____

Mr/Ms _____, whose signature appears below, has been duly authorised to

sign all documents in connection with the tender for Contract No. _____

and any Contract which may arise there from on behalf of (Block Capitals) _____

SIGNED ON BEHALF OF THE COMPANY: _____

IN HIS/HER CAPACITY AS: _____

DATE: _____

SIGNATURE OF SIGNATORY: _____

WITNESSES:

DIRECTOR (NAMES)		SIGNATURE	
DIRECTOR (NAMES)		SIGNATURE	
DIRECTOR (NAMES)		SIGNATURE	
DIRECTOR (NAMES)		SIGNATURE	
DIRECTOR (NAMES)		SIGNATURE	
DIRECTOR (NAMES)		SIGNATURE	

If you cannot complete this form, attach a separate sheet (in a company letter head, project specific and signed by all directors):

Failure to submit proof of authorization to sign the tender shall result in the tender offer being regarded as non-responsive

D

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 authorize Mr/Ms, authorized 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.		
PROJECT TITLE	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD	
Tender No:	SCMU3-P26/27-0413-HO	
NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
Lead partner:		Signature. Name Designation.....
..... .		Signature. Name Designation.....
..... .		Signature. Name Designation.....
..... .		Signature. Name Designation.....

Failure to submit proof of authorization to sign the tender shall result in the tender offer being regarded as non-responsive

E
CAPACITY OF THE BIDDER

PROJECT TITLE	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

Certified copies of the qualifications together with CVs of key personnel with experience in LV Electrical installation construction and Maintenance projects must be submitted. The key persons need not be in the current employ of the entity at the time of submission of the tender, but a commitment either of subcontract agreement between entity and subcontractor (person or entity) or consent between the entity and person whose CV is submitted shall be presented and signed by the proposed individual/subcontractor.

Quantity / No. of Resources	Categories of Employee - Key Personnel (part of Business Enterprise)	Professional Registration No.	Date of Employment
	Construction Manager NHD or Higher (in Electrical) Professional Registration: PrEng/PrTech/PrTechni		
	Construction Safety, Health, Environmental and Quality Officer (SHEQ) Diploma or bachelor's degree in safety management Professional Registration: SACPCMP		
	Construction Supervisor Electrical Engineering Diploma (N6) or higher Professional Registration: Trade Test Registration Must have ECOU Authorization and ORHVS (HV04)		
	Installation Electrician Electrical Engineering Diploma (N3) or higher Registration: Wireman's Licence		

The undersigned, who warrants that she/ he is duly authorised to do so on behalf of the enterprise, confirms that the content of this schedule that presented by the tenderer are within my personal knowledge and are to the best of my knowledge both true and correct.

Signed:	.....	Date	.....
Name:	.....	Position	.....
Enterprise Name:			

Note: It is a compulsory requirement that the tenderer provides all the specified key staff. Omission of even one of them will render the tender as non-responsive.

E

RELEVANT PROJECT EXPERIENCE – COMPLETED PROJECTS

Tenderers must submit a max one-page description of at least three LV Electrical Installation construction and Maintenance projects successfully completed in the past 5 years

Attach a Completion Certificate for each of the projects provided.

The description of each project must include the following information:

1. Essential introductory information:
 - 1.1. Name of project.
 - 1.2. Name of client.
 - 1.3. Contact details of client.
 - 1.4. Contact details (including telephone numbers and email addresses) of currently contactable references.
 - 1.5. The period during which the project was performed, and also, if this is different, the period during which the tenderer's team members were contracted.
 - 1.6. Cost of works and/or contract value (making it clear in broad terms what this cost/value purchased, and to what extent (if any) this cost/value was part of a larger project budget or programme budget).

NO.	NAME OF PROJECT.	NAME OF CLIENT.	CONTACT DETAILS OF CLIENT.	PROJET PERIOD	PROJECT VALUE	DATE COMPLETED
1						
2						
3						
4						
5						
<p>The undersigned, who warrants that she/ he is duly authorised to do so on behalf of the enterprise, confirms that the content of this schedule that presented by the tenderer are within my personal knowledge and are to the best of my knowledge both true and correct.</p>						

Signed.....

Date.....

Name.....

Position.....

Enterprise name.....

G

RELEVANT PROJECT EXPERIENCE – CURRENT PROJECTS

Tenderers must submit a max one-page description of at least three projects under construction/ on hold/ just handed over/ towards completion (if they exist) **Attach an Appointment letter for each of the projects provided.**

The description of each project must include the following information:

2. Essential introductory information:
 - 2.1. Name of project.
 - 2.2. Name of client.
 - 2.3. Contact details of client.
 - 2.4. Contact details (including telephone numbers and email addresses) of currently contactable references.
 - 2.5. The period during which the project was performed, and if this is different, the period during which the tenderer's team members were contracted.
 - 2.6. Cost of works and/or contract value (making it clear in broad terms what this cost/value purchased, and to what extent (if any) this cost/value was part of a larger project budget or programme budget).

NO.	NAME OF PROJECT	NAME OF CLIENT.	CONTACT DETAILS OF CLIENT.	PERIOD OF PROJECT.	PROJECT VALUE	STAGE OF PROJECT
1						
2						
3						
4						
5						
6						
7						

Attach a separate page to address this issue (the above table is just for reference purposes).

Signed

Date

.....

Name

Position

.....

Enterprise name

.....

<p>The undersigned, who warrants that she/ he is duly authorised to do so on behalf of the enterprise, confirms that the content of this schedule that presented by the tenderer are within my personal knowledge and are to the best of my knowledge both true and correct.</p>
--

H

SCHEDULE OF TENDERER'S LITIGATION HISTORY

- The tenderer shall list below details of any litigation with which the tenderer (including its directors, shareholders or other senior members in previous companies) has been involved with any organ of state or state department within the last ten years. The details must include the year, the litigating parties, the subject matter of the dispute, the value of any award or estimated award if the litigation is current and in whose favour the award, if any, was made. The tenderer must specifically declare if any of the listed litigations relate to: (a) Breach of the CIDB Code of Conduct, (b) Occupational Health and Safety fatalities, or (c) Non-performance resulting in a JBCC Clause 29.0 termination.

Failure to disclose these details will be regarded as a material misrepresentation and shall lead to the immediate disqualification of the tenderer and potential restriction from state business.

NO.	NAME OF CLIENT.	OTHER LITIGATING PARTY	BRIEF DETAILS OF DISPUTE	PROJECT VALUE	DATE RESOLVED OR STATUS OF LITIGATION
1					
2					
3					
4					
5					

Signed

Date

.....

Name

Position

.....

Enterprise name

.....

I
Project Reference Forms – 1

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

NOTE: This returnable document must be completed by the person who was the Engineer/Project Manager on a project of similar value nature and complexity or higher that was completed successfully by the tenderer.

I, _____ (name and surname) of _____ (company name) declare

that I was the Project Manager on the following building construction project successfully executed by _____ (name of tenderer):

Project name: _____

Project location: _____

Construction period: _____ Completion date: _____

Contract value: _____

A. Please evaluate the performance of the Tenderer on the abovementioned project, on which you were the principal agent, by inserting "Yes" in the relevant box below:

Key Performance Indicators	Very Poor 1	Poor 2	Fair 3	Good 4	Excellent 5	Total
1. Project performance / time management / programming						
2. Quality of workmanship						
3. Resources: Personnel						
4. Resources: Plant						
5. Financial management / payment of subcontractors / cash flow, etc						
TOTAL						

B. Would you consider / recommend this tenderer again:

YES	NO

C. Any other comments: _____

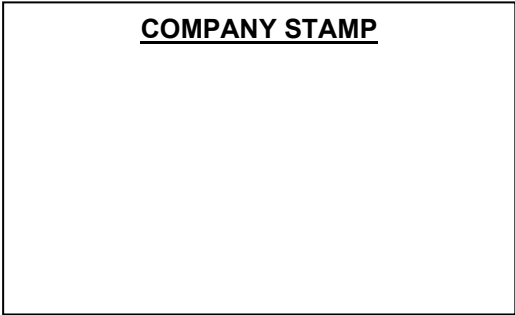
D. My contact details are:

Telephone: _____ Cellphone: _____ Fax: _____

E-mail: _____

Thus signed at _____ on this _____ day of _____ 2024.

Signature of principal agent



NOTE:

If reference cannot be verified due to the inability to get hold of the referee or failure on his/her part to respond to a written request to do so, that reference will not score any points. It is the responsibility of the tenderer to put referees who are reachable.

Name of Tenderer

Signature of Tenderer

Date

Project Reference Forms - 2

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

NOTE: This returnable document must be completed by the person who was the Engineer/Project Manager on a project of similar value nature and complexity or higher that was completed successfully by the tenderer.

I, _____ (name and surname) of _____ (company name) declare

that I was the Project Manager on the following building construction project successfully executed by _____ (name of tenderer):

Project name: _____

Project location: _____

Construction period: _____ Completion date: _____

Contract value: _____

A. Please evaluate the performance of the Tenderer on the abovementioned project, on which you were the principal agent, by inserting "Yes" in the relevant box below:

Key Performance Indicators	Very Poor 1	Poor 2	Fair 3	Good 4	Excellent 5	Total
1. Project performance / time management / programming						
2. Quality of workmanship						
3. Resources: Personnel						
4. Resources: Plant						
5. Financial management / payment of subcontractors / cash flow, etc.						
TOTAL						

B. Would you consider / recommend this tenderer again:

YES	NO

C. Any other comments: _____

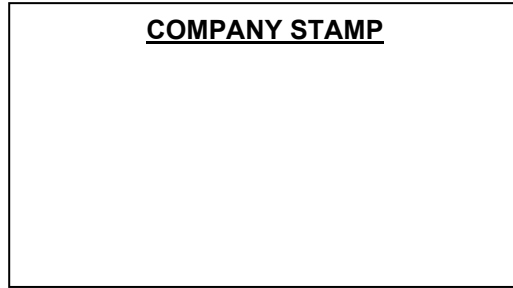
D. My contact details are:

Telephone: _____ Cell phone: _____ Fax: _____

E-mail: _____

Thus signed at _____ on this _____ day of _____ 2023.

Signature of principal agent



NOTE:

If reference cannot be verified due to the inability to get hold of the referee or failure on his/her part to respond to a written request to do so, that reference will not score any points. It is the responsibility of the tenderer to put referees who are reachable.

Name of Tenderer

Signature of Tenderer

Date

Project Reference Forms – 3

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

NOTE: This returnable document must be completed by the person who was the Engineer/Project Manager on a project of similar value nature and complexity or higher that was completed successfully by the tenderer.

I, _____ (name and surname) of _____ (company name) declare

that I was the Project Manager on the following building construction project successfully executed by _____ (name of tenderer):

Project name: _____

Project location: _____

Construction period: _____ Completion date: _____

Contract value: _____

A. Please evaluate the performance of the Tenderer on the abovementioned project, on which you were the principal agent, by inserting "Yes" in the relevant box below:

Key Performance Indicators	Very Poor 1	Poor 2	Fair 3	Good 4	Excellent 5	Total
1. Project performance / time management / programming						
2. Quality of workmanship						
3. Resources: Personnel						
4. Resources: Plant						
5. Financial management / payment of subcontractors / cash flow, etc.						
TOTAL						

B. Would you consider / recommend this tenderer again:

YES	NO

C. Any other comments: _____

D. My contact details are:

Telephone: _____ Cellphone: _____ Fax: _____

E-mail: _____

Thus signed at _____ on this _____ day of _____ 2023.

Signature of principal agent



NOTE:

If reference cannot be verified due to the inability to get hold of the referee or failure on his/her part to respond to a written request to do so, that reference will not score any points. It is the responsibility of the tenderer to put referees who are reachable.

Name of Tenderer

Signature of Tenderer

Date

J

VALID TAX CLEARANCE CERTIFICATE AND/OR A TAX COMPLIANCE STATUS (TCS) PIN

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

Tax Clearance Certificate and/or Tax Compliance Status (TCS) PIN for Tenderers

The tenderer is to affix to this page:

A valid Tax Clearance Certificate and/or Tax Compliance Status (TCS) Pin issued by the South African Revenue Services (SARS) in the name of the Tendering Entity indicating the Trading Name

Note: Failure to affix such a certificate will result in this tender not being further considered for the award of the contract

K
LETTER OF GOOD STANDING FROM COIDA

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

Copy of a letter of Good Standing issued by the Department of Labour, in accordance with the Compensation for Occupational Injuries and Diseases Act (COIDA). –must be valid at the time of close of tender and a valid certificate must be produced at the time of award if the certificate expires between close of tender and award

Tender offers will only be accepted if the tenderer is in good standing with the compensation fund. Failure to affix a valid Letter of Good Standing will result in the tender being declared non-responsive

L

OCCUPATIONAL HEALTH AND SAFETY OFFICER'S CERTIFICATE

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

The tenderer is to affix to this page: Occupational Health and Safety certificate

Note: Failure to affix such a certificate will result in this tender not being further considered for the award of the contract.

M

COMPLETION CERTIFICATES/LETTERS-PROJECTS COMPLETED BY THE TENDERER IN THE PAST 5 YEARS

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

The tenderer is to affix to this page the completion certificates corresponding to the projects listed under table in "G" for completed similar projects in the past 5 years.

Note: Failure to affix such letters will result in this tender not being further considered for the award of the contract.

N

COMPANY REGISTRATION DOCUMENTS (CIPC DOCUMENTS)

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

The tenderer is to affix to this page the CIPC company registration documents.

Note: Failure to affix such letters will result in this tender not being further considered for the award of the contract.

Q

CERTIFIED ID COPIES OF MEMBERS/DIRECTORS/SHAREHOLDERS OR OWNERS

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

The tenderer is to affix to this page the certified copies of members/directors/shareholders or owners' Identity document

Note: Failure to affix such letters will result in this tender not being further considered for the award of the contract.

P
SCHEDULE OF PLANT AND EQUIPMENT

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

<p>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.</p> <p>(a) Details of major equipment that is owned by and immediately available for this project</p>	
<u>Quantity (Owned or leased)</u>	<u>Description, size, capacity , etc</u>

<p>(b) Details of major equipment that will be hired or acquired for this contract if awarded</p>	
<u>Quantity hired</u>	<u>Description, size, capacity , etc</u>

Q

PROOF OF OFFICE ADDRESS

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

The tenderer is to affix to this page a valid municipal account or a valid lease agreement

Note: Failure to affix such letters will result in this tender not being further considered for the award of the contract.

R

LOCAL ECONOMIC DEVELOPMENT (LED) STRATEGY

Project title:	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Tender No:	SCMU3-P26/27-0413-HO

The tenderer is to affix to this page the following:

- **Local material sourcing plan**

Note: Failure to affix such letters will result in this tender not being further considered for the award of the contract.

PART C1.2: CONTRACT DATA

The Joint Building Contracts Committee® - NPC
CONTRACT DATA
For use by ORGANS OF STATE and other PUBLIC SECTOR BODIES
Principal Building Agreement
Edition 6.2 - May 2018

A PROJECT INFORMATION

A1.0 Works [1.1]

Project name	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
Reference number	
Works description	Refer to document C3 – Scope of Work

A2.0 Site [1.1]

Erf / stand number	Refer to document C4 – Site Information
Township / Suburb	Tarkastad, Eastern Cape.
Site address	Refer to document C4 – Site Information
Local authority	Enoch Mgijima Local Municipality

A3.0 Employer [1.1]

Official Name of Organ of State / Public Sector Body	Eastern Cape Department of Health		
Business registration number	N/A		
VAT/GST number	N/A		
Country	South Africa		
Employer's representative: Name	Ms. Noluthando Mjuluki		
E-mail	Noluthando.mjuluki@echealth.gov.za		
Mobile number		Telephone number	040 608 9501
Postal address	Dukumbana Building, Independence Avenue, P.O.Box X0038	Postal Code	5605
Physical address	Dukumbana Building, Independence Avenue, P.O.Box X0038	Postal Code	5605

A4.0 Principal Agent [1.1]

Name	MJT Consulting		
Legal entity of above	MJT Consulting	Contact person	Fang Lengoasa
Practice number	-	Telephone number	0833 521906
		Mobile number	083 3521 1906
Country	South Africa	E-mail	lengoaf@gmail.com
Postal address		Postal Code	5200
Physical address	62 Bonza Bay Road	Postal Code	5200

A5.0 Agent [1.1]

Discipline	Electrical Engineer		
Name	MJT Consulting		
Legal entity of above	MJT Consulting	Contact person	Fang Lengoasa
Practice number	-	Telephone number	0833 521906
		Mobile number	0833 521906
Country	South Africa	E-mail	lengoaf@gmail.com
Postal address		Postal Code	5200
Physical address	62 Bonza Bay Road	Postal Code	5200

B CONTRACT INFORMATION**B 1.0 Definitions [1.1]**

Bills of quantities: System/Method of measurement	Standard System of Measuring Building Work (latest edition) as amended by the General Preambles for Trades 2017 (ASAQS) and PW371-A
---	--

B 2.0 Law, regulations and notices [2.0]

Law applicable to the works , state country [2.1]	Republic of South Africa
---	---------------------------------

B 3.0 Offer and acceptance [3.0]

Currency applicable to this agreement [3.2]	South African Rand
--	---------------------------

B 4.0 Documents [5.0]

The original signed agreement is to be held by the principal agent [5.2], if not, indicate by whom	Employer
--	-----------------

Number of copies of construction information issued to the contractor at no cost [5.6]	Three (3)
--	------------------

Documents comprising the agreement	Page numbers
The JBCC® Principal Building Agreement, Edition 6.2 May 2018	1 to 30
The JBCC® Principal Building Agreement - Contract Data for Organs of State and other Public Sector Bodies, Edition 6.2 May 2018	1 to 18
The JBCC® General Preliminaries for use with the JBCC® Principal Building Agreement, Edition 6.2 May 2018	1 to 30

EMPLOYER TO INSERT DRAWING DETAILS ON THIS TABLE BELOW

Contract drawings – description	Number	Revision	Date
300 MVH Existing Network-A1	2522-MVH-E-T-300	00	04/03/2026
301 MVH Upgrade Network -A1	2522-MVH-E-T-301	00	04/03/2026
302 Single Line Diagram-A1	2522-MVH-E-T-302	00	04/03/2026
303 Low Voltage wireway-A1	2522-MVH-E-T-303	00	04/03/2026

B 5.0 Employer's Agents [6.0]

Authority is delegated to the following agents to issue contract instructions and perform duties for specific aspects of the works [6.2]
Principal Agent

Principal agent's and agents' interest or involvement in the works other than a professional interest [6.3]
None

B 6.0 Insurances [10.0]

Insurances by employer		Amount including tax	Deductible amount including tax
Yes / No:	No		
Contract works insurance:			
	New works [10.1.1] (contract sum or amount)		
or	Works with practical completion in sections [10.2] (contract sum or amount)		
or	Works with alterations and additions [10.3] (reinstatement value of existing structures with or including new works)		

	Direct contractors [10.1.1; 10.2] where applicable, to be included in the contract works insurance			
	Free issue [10.1.1; 10.2] where applicable, to be included in the contract works insurance			
	Escalation, professional fees and reinstatement costs if not included above			
Total of the above contract works insurance amount				
Supplementary insurance [10.1.2; 10.2]				
Public liability insurance [10.1.3; 10.2]				
Removal of lateral support insurance [10.1.4; 10.2]				
Other insurances [10.1.5]				
Yes/ No?	No	If yes, description 1		
Yes/ No?	No	If yes, description 2		

and/or

Insurances by Contractor			Amount including tax	Deductible amount including tax
Yes / No:	Yes			
	New works [10.1.1] (contract sum or amount)		N/A	N/A
or	Works with practical completion in sections [10.2] (contract sum or amount)		N/A	N/A
or	Works with alterations and additions [10.3] (reinstatement value of existing structures with or including new works)		To the minimum value of the contract sum + 10%	With a deductible not exceeding 5% of each and every claim
	Direct contractors [10.1.1; 10.2] where applicable, to be included in the contract works insurance		N/A	
	Free issue [10.1.1; 10.2] where applicable, to be included in the contract works insurance		N/A	
	Escalation, professional fees and reinstatement costs if not included above		N/A	
Total of the above contract works insurance amount			To the minimum value of the contract sum + 10%	
Supplementary insurance [10.1.2; 10.2]				With a deductible not exceeding 5% of each and every claim
Public liability insurance [10.1.3; 10.2]				
Removal of lateral support insurance [10.1.4; 10.2]				
Other insurances [10.1.5]				
Yes/ No?	No	If yes, description 1		
Hi Risk Insurance [10.1.5.1]				
Yes/ No?	No	If yes, description 2		

B 7.0 Obligations of the employer [12.1]

Existing premises will be in use and occupied [12.1.2]		Yes / No?	Yes
If yes, description	Live Health Facility		
Restriction of working hours [12.1.2]		Yes / No?	No
If yes, description			
Natural features and known services to be preserved by the contractor [12.1.3]		Yes / No?	No
If yes, description			
Restrictions to the site or areas that the contractor may not occupy [12.1.4]		Yes / No?	Yes
If yes, description	Work areas and restricted areas shall be defined at Site Handover		
Supply of free issue [12.1.10]		Yes / No?	No
If yes, description			

B 8.0 Nominated subcontractors [14.0]

Yes / No?	No	If yes, description of specialisation
		Specialisation 1
		Specialisation 2
		Specialisation 3
		Specialisation 4
		Specialisation 5
		Specialisation 6
		Specialisation 7
		Specialisation 8
		Specialisation 9

B 9.0 Selected subcontractors [15.0]

Yes / No?	No	If yes, description of specialisation
		Specialisation 1
		Specialisation 2
		Specialisation 3
		Specialization 4
		Specialization 5
		Specialisation 6
		Specialisation 7
		Specialisation 8
		Specialisation 9
		Specialisation 10

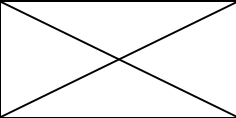
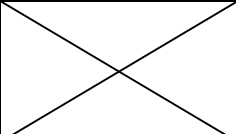
B 10.0 Direct contractors [16.0]

Yes / No?	No	If yes, description of extent of work
		Extent of work [12.1.11]
		Extent of work [12.1.11]
		Extent of work [12.1.11]
		Extent of work [12.1.11]
		Extent of work [12.1.11]

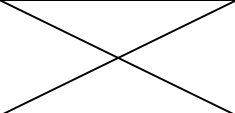
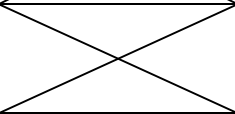

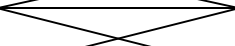
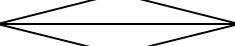
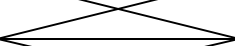
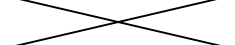
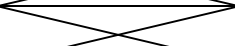
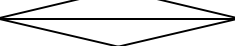
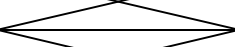
B 11.0 Description of sections [20.1]

Section 1	Construction of Low Voltage Infrastructure Upgrade
Section 2	N/A

B 12.0 Possession of site [12.1.5], practical completion [19.0; 20.0] and penalty [24.0]

Practical completion for the works as a Whole	Intended date of possession of the site Refer B17.0 [12.1.5; 12.2.22]	Period for inspection by the principal agent [19.3]	The date for practical completion shall be the period as indicated below from the date of possession of the site by the contractor [12.2.7; 24.1]	Penalty for late completion [24.1]
		working days	Period in months	Penalty amount per calendar day (excl. tax)
				R 0.11/R100 of Contract amount

or where **sections** are applicable: **(Applicable)**

Practical completion of a section of the works	Intended date of possession of the site Refer B17.0 [12.1.5; 12.2.22]	Period for inspection by the principal agent [19.3]	The date for practical completion shall be the period as indicated below from the date of possession of the site by the contractor [12.2.7; 24.1]	Penalty for late completion [24.1]
		Working days	Period in months	Penalty amount per calendar day (excl. tax)
Section 1		10 Working Days	2 Calendar Months	R 0.11/R100 of Contract amount for Section 1
Section 2				
Section 3				
Section 4				
Section 5				
Section 6				
Section 7				
Section 8				
Remainder of the				

Criteria to achieve practical completion not covered in the definition of practical completion
No further Criteria

B 13.0 Defects liability period [21.0]

Extended defects liability period: Refer B17.0 [21.13]	Yes / No?	Yes
If yes, description of applicable elements	All works	

B 14.0 Payments [25.0]

Date of month for issue of regular payment certificates [25.2]	30th		
Contract price adjustment / Cost fluctuations [25.3.4; 26.9.5]	Yes / No?	No	
If yes, method to calculate			
Employer shall pay the contractor within: [25.10]	Thirty (30) calendar days		

B 15.0 Dispute resolution [30.0]

Adjudication [30.6.1; 30.10] Name of nominating body	Refer to Part C1.3 Dispute Resolution Mechanism		
Applicable rules for adjudication [30.6.2]	Adjudication in accordance with the CIDB adjudication process		
Arbitration [30.7.4; 30.10]	Yes / No?	No	
If Yes, name of nominating body			
*If No, then dispute will be referred to litigation			

Applicable rules for arbitration [30.7.5]	N/A
---	-----

B 16.0 JBCC® General Preliminaries – selections

Provisional bills of quantities [B2.2]		Yes / No?	Yes
Availability of construction information – is the construction information complete? [B2.3]		Yes / No?	No
Previous work - dimensional accuracy - details of previous contract(s) [B3.1]	N/A		
Previous work - defects - details of previous contract(s) [B3.2]	N/A		
Inspection of adjoining properties - details [B3.3]	N/A		
Handover of site in stages - specific requirements [B4.1]	N/A		
Enclosure of the works - specific requirements [B4.2]	Hoarding to working areas.		
Geotechnical and other investigations - specific requirements [B4.3]	N/A		
Existing premises occupied - details [B4.5]	Yes		
Services - known - specific requirements [B4.6]	No		
Water [B8.1]	By contractor	Yes / No?	Yes
	By employer	Yes / No?	No
	By employer – metered	Yes / No?	No
Electricity [B8.2]	By contractor	Yes / No?	Yes
	By employer	Yes / No?	No
	By employer – metered	Yes / No?	No
Ablution and welfare facilities [B8.3]	By contractor	Yes / No?	Yes
	By employer	Yes / No?	No
Communication facilities - specific requirements [B8.4]	No specific requirements		
Protection of the works - specific requirements [B11.1]	No specific requirements		
Protection / isolation of existing works and works occupied in sections - specific requirements [B11.2]	No specific requirements		
Disturbance - specific requirements [B11.5]	No specific requirements		
Environmental disturbance - specific requirements [B11.6]	No specific requirements		

B 17.0 Changes made to JBCC® documentation

Reference may be made to other documents forming part of this **agreement**

1.1 Definitions

AGREEMENT: The completed Form of Offer and Acceptance, the completed **JBCC®** Principal Building Agreement and **JBCC® contract data for organs of state and other public sector bodies, the contract drawings, the priced document** and any other documents reduced to writing and signed by the authorised representatives of the **parties**

CONSTRUCTION PERIOD: The period commencing on the date of possession of the **site** by the **contractor** and ending on the date of **practical completion**

CONTRACT DATA FOR ORGANS OF STATE AND OTHER PUBLIC SECTOR BODIES: The document listing the Organs of State and other Public Sector Bodies' requirements and the project specific information

INTEREST: The interest rates applicable on this contract, whether specifically indicated in the relevant clauses or not, will be the rate as determined by the Minister of Finance from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No 1 of 1999), calculated as simple interest, in respect of debts owing to the State, and will be the rate as determined by the Minister of Justice and Constitutional Development from time to time 80(1)(b) of the Public Finance Management Act, 1999 (Act No 1 of 1999), calculated as simple interest, in respect of debts owing by the State

PRINCIPAL AGENT: The person or entity appointed by the **employer** and named in the **contract data for organs of state and other public sector bodies**. In the event of a principal agent not being appointed, then all the duties and obligations of a **principal agent** as detailed in the **agreement** shall be fulfilled by the employer's representative as named in the **contract data for organs of state and other public sector bodies**

3.0 Offer and Acceptance

Amend 3.3 to read as follows:

This **agreement** shall come into force on the date as stated on the Form of Offer and Acceptance and continue to be of force and effect until the end of the **latent defects** liability period [22.0] notwithstanding termination [29.0] or the certification of **final completion** [21.0] and final payment [25.0]

6.0 Employer's Agents

Add the following as 6.7:

In terms of the clauses listed hereunder, the **employer** has retained its authority and has not given a mandate to the **principal agent**. The **employer** shall sign all documents in relation to clauses 4.2, 14.1.2, 14.1.4, 14.4.1, 14.6, 23.1, 23.2, 23.3, 23.7, 23.8, 26.1, 26.7, 26.12 and 28.4

9.0 Indemnities

9.2.7: Add the following to the end of the first sentence: "... due to no fault of the **contractor**"

10.0 Insurances

Add the following as 10.1.5.1:

10.1.5.1.1 Damage to the works

The contractor shall, from the date of possession of the **site** until the date of the **certificate of practical completion**, bear the full risk of and hereby indemnifies and holds harmless the **employer** against any damage to and/or destruction of the **works** consequent upon a catastrophic ground movement as mentioned above. The **contractor** shall take such precautions and security measures and other steps for the protection of the **works** as he may deem necessary

When so instructed to do so by the **principal agent**, the **contractor** shall proceed immediately to remove and/or dispose of any debris arising from damage to or destruction of the **works** and to rebuild, restore, replace and/or repair the **works**, at the **contractor's** own costs

10.1.5.1.2 Injury to persons or loss of or damage to property

The **contractor** shall be liable for and hereby indemnifies and holds harmless the **employer** against any liability, loss, claim or proceeding arising at any time during the period of the contract whether arising in common law or by statute, consequent upon personal injuries to or the death of any person whomsoever resulting from, arising out of or caused by a catastrophic ground movement as mentioned above

The **contractor** shall be liable for and hereby indemnifies the **employer** against any and all liability, loss, claim or proceeding consequent upon loss of or damage to any moveable, or immovable property, or personal property, or property contiguous to the **site**, whether belonging to or under the control of the **employer** or any other body or person whomsoever arising out of or caused by a catastrophic ground movement, as mentioned above, which occurred during the period of the contract

10.1.5.1.3

It is the responsibility of the **contractor** to ensure that he has adequate insurance to cover his risk and liability as mentioned in 10.1.5.1.1 and 10.1.5.1.2. Without limiting the **contractor's** obligations in terms of the contract, the **contractor** shall, within twenty-one (21) **calendar days** of the date of possession of the site, but before commencement of the **works**, submit to the **employer** proof of such insurance policy, if requested to do so

10.1.5.1.4

The **employer** shall be entitled to recover any and all losses and/or damages of whatever nature suffered or incurred consequent upon the **contractor's** default of his obligations as set out in 10.1.5.1.1; 10.1.5.1.2 and 10.1.5.1.3. Such losses or damages may be recovered from the **contractor** or by deducting the same from any amounts still due under this contract or under any other contract presently or hereafter existing between the **employer** and the **contractor** and for this purpose all these contracts shall be considered one indivisible whole

11.0 Securities

Amend 11.10 to read as follows:

There shall be no lien or right of retention held by any **contractor** in respect of the works executed on **site**

12.0 Obligations of the Parties

Amend 12.1.5 to read as follows:

Give possession of the **site** to the **contractor** within ten (10) **working days** of the contractor complying with the terms of 12.2.22

12.2.2: Not applicable

Add the following as 12.2.22:

Within fifteen (15) **working days** of the date of the **agreement** submit to the **principal agent** an acceptable health and safety plan, required in terms of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993)

19.0 Practical Completion

19.5: Delete the words "subject to the **contractor's** lien or right of continuing possession of the **works** where this has not been waived"

21.0 Defects Liability Period and Final Completion

Add the following as 21.13:

The ninety (90) **calendar days** defects liability period for the **works** [21.1] is replaced with a period of three hundred and sixty-five (365) **calendar days** in respect of the listed applicable elements

25.0 Payment

25.7.5: Not applicable

25.10: Delete the words “and/or **compensatory interest**”

25.14.2: Not applicable

27.0 Recovery of Expense and/or Loss

27.1.5: Not applicable

29.0 Termination

Add the following after 29.1.3: or where ...

29.1.4: The **contractor's** estate has been sequestrated, liquidated or surrendered in terms of the insolvency laws in force within the Republic of South Africa

29.1.5: The **contractor** has engaged in corrupt or fraudulent practices in competing for or in executing the contract

C TENDERER'S SELECTIONS

C 1.0 Security [11.0]

Guarantee for construction: Select Option A or B		Option:	
Option A	Payment reduction of 10% of the value certified in the payment certificate		
Option B	Fixed construction guarantee of 5% of the contract sum and a payment reduction of 5% of the value certified in the payment certificate		
Guarantee for payment by employer [11.5.1; 11.10]		Not Applicable	
Advance payment, subject to a guarantee for advance payment [11.2.2; 11.3]		Not Applicable	

C 2.0 Contractor's annual holiday periods during the construction period

Year 1 contractor's annual holiday period	start date		end date	
Year 2 contractor's annual holiday period	start date		end date	
Year 3 contractor's annual holiday period	start date		end date	

C 3.0 Payment of preliminaries [25.0]

Contractor's selection: Select Option A or B		Option:	
Where the contractor does not select an option, Option A shall apply			

Payment methods

Option A	The preliminaries shall be paid in accordance with an amount prorated to the value of the works executed in the same ratio as the amount of the preliminaries to the contract sum , which contract sum shall exclude the amount of preliminaries . Contingency sum(s) and any provision for cost fluctuations shall be excluded for the calculation of the aforesaid ratio
Option B	The preliminaries shall be paid in accordance with an amount agreed by the principal agent and the contractor in terms of the priced document to identify an initial establishment charge, a time-related charge and a final dis-establishment charge. Payment of the time-related charge shall be assessed by the principal agent and adjusted from time to time as may be necessary to take into account the rate of progress of the works

Lump sum contract

Where the amount of **preliminaries** is not provided it shall be taken as 7.5% (seven and a half per cent) of the **contract sum**, excluding contingency sum(s) and any provision for cost fluctuations

C 4.0 Adjustment of preliminaries [26.9.4]

Contractor's selection: Select Option A or B	Option:	
---	----------------	--

Where the contractor does not select an option, Option A shall apply

Provision of particulars

The **contractor** shall provide the particulars for the purpose of the adjustment of **preliminaries** in terms of his selection. Where completion in sections **is** required, the **contractor** shall provide an apportionment of **preliminaries** per **section**

Option A	An allocation of the preliminaries amounts into Fixed, Value-related and Time-related amounts as defined for adjustment method Option A below, within fifteen (15) working days of the date of acceptance of the tender
Option B	A detailed breakdown of the preliminaries amounts within fifteen (15) working days of possession of the site. Such breakdown shall include, inter alia, the administrative and supervisory staff, the use of construction equipment , establishment and dis-establishment charges, insurances and guarantees, all in terms of the programme

Adjustment Methods

The amount of **preliminaries** shall be adjusted to take account of the effect which changes in time and/or value have on **preliminaries**. Such adjustment shall be based on the particulars provided by the **contractor** for this purpose in terms of Options A or B, shall preclude any further adjustment of the amount of **preliminaries** and shall apply notwithstanding the actual employment of resources by the **contractor** in the execution of the **works**

Option A	<p>The preliminaries shall be adjusted in accordance with the allocation of preliminaries amounts provided by the contractor, apportioned to sections where completion in sections is required</p> <p>Fixed - An amount which shall not be varied</p> <p>Value-related - An amount varied in proportion to the contract value as compared to the contract sum. Both the contract sum and the contract value shall exclude the amount of preliminaries, contingency sum(s) and any provision for cost fluctuations</p> <p>Time-related - An amount varied in proportion to the number of calendar days extension to the date of practical completion to which the contractor is entitled with an adjustment of the contract value [23.2; 23.3] as compared to the number of calendar days in the initial construction period [26.9.4]</p>
Option B	<p>The adjustment of preliminaries shall be based on the number of calendar days extension to the date of practical completion to which the contractor is entitled with an adjustment of the contract value [23.2; 23.3] as compared to the number of calendar days in the initial construction period [26.9.4]</p> <p>The adjustment shall take into account the resources as set out in the detailed breakdown of the preliminaries for the period of construction during which the delay occurred</p>

Failure to provide particulars within the period stated

Option A	<p>Where the allocation of preliminaries amounts for Option A is not provided, the following allocation of preliminaries amounts shall apply:</p> <p>Fixed - Ten per cent (10%) Value-related - Fifteen per cent (15%) Time-related - Seventy-five per cent (75%)</p> <p>Where the apportionment of the preliminaries per section is not provided, the categorized amounts shall be prorated to the cost of each section within the contract sum as determined by the principal agent</p>
Option B	Where the detailed breakdown of preliminaries amounts for Option B is not provided, Option A shall apply

Lump sum contract

Where the amount of **preliminaries** is not provided it shall be taken as 7.5% (seven and a half per cent) Of the **contract sum**, excluding contingency sum(s) and any provision for cost fluctuations

PART C1.3: DISPUTE RESOLUTION MECHANISM

C1.3 CIDB ADJUDICATOR'S AGREEMENT

This agreement is made on the day of between:
 (name of company / organization) of
 (address) and (name of company /
 organization) of
 (address) (the Parties) and (name) of
 (address) (the Adjudicator).

Disputes or differences may arise/have arisen* between the Parties under a Contract dated and known as
 and these disputes or differences shall be/have been* referred to adjudication in
 accordance with the CIDB Adjudication Procedure, (hereinafter called "the Procedure") and the Adjudicator may be or has been requested to
 act.

* Delete as necessary

IT IS NOW AGREED as follows:

- 1 The rights and obligations of the Adjudicator and the Parties shall be as set out in the Procedure.
- 2 The Adjudicator hereby accepts the appointment and agrees to conduct the adjudication in accordance with the Procedure.
- 3 The Parties bind themselves jointly and severally to pay the Adjudicator's fees and expenses in accordance with the Procedure as set out in the Contract Data.
- 4 The Parties and the Adjudicator shall at all times maintain the confidentiality of the adjudication and shall endeavour to ensure that anyone acting on their behalf or through them will do likewise, save with the consent of the other Parties which consent shall not be unreasonably refused.
- 5 The Adjudicator shall inform the Parties if he intends to destroy the documents which have been sent to him in relation to the adjudication and he shall retain documents for a further period at the request of either Party.

SIGNED by: _____
 Name: _____
 who warrants that he / she is duly
 authorized to sign for and on behalf of
 the first Party in the presence of

SIGNED by: _____
 Name: _____
 who warrants that he / she is duly
 authorized to sign for and on behalf of
 the second Party in the presence of

SIGNED by: _____
 Name: _____
 the Adjudicator in the presence of

Witness _____
 Name: _____
 Address: _____

Witness: _____
 Name _____
 Address: _____

Witness: _____
 Name: _____
 Address: _____

Date: _____

Date: _____

Date: _____

Contract Data

1	The Adjudicator shall be paid at the hourly rate of R. in respect of all time spent upon, or in connection with, the adjudication including time spent travelling.
2	The Adjudicator shall be reimbursed in respect of all disbursements properly made including, but not restricted to: (a) Printing, reproduction and purchase of documents, drawings, maps, records and photographs. (b) Telegrams, telex, faxes, and telephone calls. (c) Postage and similar delivery charges. (d) Travelling, hotel expenses and other similar disbursements. (e) Room charges. (f) Charges for legal or technical advice obtained in accordance with the Procedure.
3	The Adjudicator shall be paid an appointment fee of R. This fee shall become payable in equal amounts by each Party within days of the appointment of the Adjudicator, subject to an Invoice being provided. This fee will be deducted from the final statement of any sums which shall become payable under item 1 and/or item 2 of the Contract Data. If the final statement is less than the appointment fee the balance shall be refunded to the Parties.
4	The Adjudicator is/is not* currently registered for VAT.
5	Where the Adjudicator is registered for VAT it shall be charged additionally in accordance with the rates current at the date of invoice.
6	All payments, other than the appointment fee (item 3) shall become due in 30 days after receipt of invoice, thereafter interest shall be payable at 5% per annum above the Reserve Bank base rate for every day the amount remains outstanding.

* Delete as necessary

PROJECT SPECIFIC OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

**ISSUED IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 and
CONSTRUCTION REGULATIONS 2014**

EASTERN CAPE DEPARTMENT OF HEALTH

PROJECT TITLE	UPGRADING OF INTERNAL LV INSTALLATION AT MARTJE VENTER/TARKASTAD HOSPITAL, TARKASTAD
BID NO	SCMU3-P26/27-0413-HO
LOCATIO N	TARKASTAD- CHRIS HANI DISTRICT

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PROJECT SPECIFIC OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION
LIST OF ABBREVIATIONS

AIA	Approved Inspection Authority
BoQ	Bill of Quantities
CC	Compensation Commissioner
CHS	Construction Health and Safety
CHSA	Construction Health and Safety Agent
CHSO	Construction Health and Safety Officer
CR	Construction Regulations (Gazette 10113 of 07/02/2014)
ECDOH	Eastern Cape Department of Health
DMR	Driven Machinery Regulations
DoL	Department of Labour
FEMA	Federated Employers Mutual Association
GAR	General Administration Regulations
GSR	General Safety Regulations
HCSR	Hazardous Chemical Substances Regulations
HIRA	Hazard Identification Risk Assessment
H&S	Health and Safety
ER	Engineer's Representative
LI	Labour Intensive
OH	Occupational Health
OHS	Occupational Health and Safety
OHSA	Occupational Health and Safety Act No. 85 of 1993 (as amended)
OHSS	Occupational Health and Safety Specification
PA	Principal Agent
PSHSS	Project Specific Health and Safety Specification
PC	Principal Contractor
PPE	Personal Protective Equipment
SANS	South African National Standards (Authority)
SDS	Safety Data Sheet
SMME	Small, Micro, Medium Enterprise
SWP	Safe Work Procedure
PA	Principal Agent
PSP	Professional Service Provider

DEFINITIONS

The definitions used will be those set out in the Regulation Gazette No 84 of 2014 7 February 2014 with the following additions:

Client: Eastern Cape Department of Health

Client Agent: **Eastern Cape Department of Health Authorised Representative**

Designer: Means a competent person appointed by the Client as Agent to design, supervise and monitor construction on their behalf.

Hazard: Source of exposure to danger

Hazard Identification and Risk Assessment (HIRA) and Risk Control:

Health and Safety Specification – Upgrade of electrical supply to MARTJE Venter/ Tarkastad Hospital, Tarkastad.

Means a documented plan, which identifies hazards, assesses the risks and details the control measures and safe working procedures which are to be used to mitigate and control the occurrence of hazards and risks during construction or operation phases.

Health and Safety Agent:

Means any person who acts as a representative for the Client in managing the overall health and safety work as their responsible person.

Health and Safety Plan:

Means a documented plan which answers to the Site-specific Health and Safety Specification; including all the supporting documentation that indicate how the Principal Contractor or Contractor plans to manage H&S for the duration of the Contract.

Induction Training:

Means once off introductory training on general health and safety issues given to all employees and visitors to the site before commencement of work on site.

Principal Agent:

Means a competent person appointed by the Client to design, supervise and monitor the construction on their behalf.

Risk: Means the probability or likelihood that a hazard can result in injury or damage.

Regulation/s:

Shall mean the relevant regulation/s promulgated in terms of the Occupational Health and Safety Act, No 85 of 1993.

Site: Means the area in the possession of the Principal Contractor 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 Designer.

The Act: Means, unless the context indicates otherwise, the Occupational Health and Safety Act, No. 85 of 1993 and Regulations promulgated thereunder, as amended.

Workplace means any premises or place where a person performs work.

KEY REFERENCES

Occupational Health and Safety Act No. 85 of 1993 and Regulations (as amended)

Compensation for Injury and Occupational Diseases Act No. 100 of 1993 (as amended)

The GCC 3rd Edition 2015

Construction Specifications & Standards 6.0 for Southern Africa.

Hans Wegelin 6th Edition 2010 SANS Code 10400 SANS10085

Compensation for Occupational Injuries and Diseases Act No. 100 of 1993 (as amended)

1. PREAMBLE

The Construction Regulations No. 37305 of 7th February 2014 requires the Client to prepare a pre-construction Health and Safety Specification, with known and possible existing risks identified.

The Eastern Cape Department of Health has a responsibility to limit its risk by ensuring a zero tolerance and better practice approach to Contractors and those affiliated to a particular project. Thus a high premium is placed on the health and safety (H&S) of Eastern Cape Department of Health stakeholders, which include its employees, patients, professional service providers, public and its physical assets. The responsibilities that the Eastern Cape Department of Health and relevant stakeholders have toward its employees are captured in but not limited to this document. The responsibilities stem from both moral, civil and a variety of legal obligations. The Principal Contractor is to take due cognisance of the above statement.

Eastern Cape Department of Health, as the Client and where there is an appointed CHS Agent on its behalf, shall provide a project specific Health & Safety Specification (PSHSS) for the project and provide the Principal Contractor/s making a bid or appointed to perform construction work for the project, or parts thereof.

1.1 Purpose of the Project Specific Health and Safety Specification (PSHSS)

The PSHSS is a performance specification to ensure that the Client and any bodies that enter into formal agreements with the Client viz. Agents, Professional Service Consultants (Engineers, Quantity Surveyors and Architects), Principal Contractors and Contractors achieve an acceptable level of OHS performance. No advice, approval of any document required by the PSHSS, such as hazard identification and risk assessments, or any other form of communication from the Client shall be construed as acceptance by the Client of any obligation that absolves the Principal Contractor from achieving the required level of performance and compliance with legal requirements. Furthermore, there is no acceptance of liability by the Client, which may result from the Principal Contractor failing to comply with the PSHSS, i.e. the Principal Contractor remains responsible for achieving the required performance levels.

A Mandatory Agreement in terms of Section 37.2 of the OHSA will be signed between parties prior to any works commencing.

The PSHSS highlights the aspects to be implemented over and above the minimum requirements of current legislation. Requirements may be changed should new risks or issues are identified that could not have been foreseen during the design phase of the project, or during the construction phase. Any new legislation or standards (legislated or determined by Eastern Cape Department of Health that are promulgated or accepted during the contract will automatically be applied).

It should be noted that this OHSS in no way relieves the Contractor of any of his responsibilities set out in the Act and Regulations.

1.2 Implementation of the Project Specific Occupational Health and Safety Specifications (PSHSS)

The project specific H&S specification (PSHSS) forms an integral part of the Contract, and PCs are required to make it an integral part of their Contracts with Contractors and Suppliers. A PSHSS will be available for each level of Contract and Contractor and must be complied with.

This specification must be read in conjunction with the OHSA, Regulations (as amended) and any other standards relating to work being done and ensure compliance thereto.

The information relating to the scope of the project, the work etc. is detailed in the tender, are to be considered when developing the H&S plan and associated documentation. The summary of risks is included in Section 2 of the PSHSS. The OHSA S.37.2 Mandatory Agreement must be fully completed by the PC, supplied by the Client. These documents shall be deemed to form part of the returnable Contract Documents.

No work may commence without written approval of the H&S plan by the client or client's agent or the responsible person in Eastern Cape Department of Health as well as the receipt of acknowledgement for notification of construction work by the Department of Employment and Labour.

Should there be design changes, or changes in the scope of work, an amended PSHSS may be issued. Where amended PSHSS are issued, the PC will be required to ensure the resubmission of an amended H&S plan for approval. Further to this, the PC must ensure that similar information must be provided as it applies to the works to all their Contractors, within 5 working days following notification thereof. Such design changes.

The client or client's agent will visit the project as deemed necessary by the Designer to ensure compliance and limit risk. All activities on the site and all appropriate documentation will be monitored and reported on to the Client and the Designer.

Non-conformances will be issued, and penalties or work stoppage will be issued where appropriate. Communication between the client or client's agent and the PC will be through the Designer (PA) (or Client's responsible person) as determined at the commencement of the project.

a. Scope of work

Low Voltage Upgrades Scope of work

The scope of work entails the following:

- Install a 185mm² 4core armoured cable and associated 70mm² bare copper earth conductor from the new metering kiosk at the bottom of the 200kVa pole mounted transformer pole and terminate it on the existing DB inside the hospital. This shall include the excavation of a cable trench, installation of cable sleeves, back filling.
- Refurbish the existing DB-A equipping it with the switchgear as shown of the single line diagrams.
- Reroute supply to the generator to the new DB-A
- Connect DB-A to DB-B with an additional 70mm² 4core armoured cable and associated 50mm² bare copper earth conductor
- Install a 35mm² 4core armoured cable and associated 16mm² bare copper earth conductor from DB-A to new DB-Xray
- Provide a new DB-Xray complete with switchgear as shown in the single line diagrams
- Install a 35mm² 4core armoured cable and associated 16mm² bare copper earth conductor to a wall mounted 100A 4pole isolator
- Provide cable ladder and associated mounting accessories to support the cables
- Provide lighting and small power to the X-Ray room
- Dismantling and removal of redundant existing material as specified on the BOQ
- Testing, commissioning and issue a certificate of compliance
- Issuing of As-Build drawings and handover documentation

1.4. Requirements at Tender Stage

Tenderers are required to submit a project specific H&S plan with their Tender submission. The documentation submitted will be used to assess the competence of the tenderer, as required in the CRs, therefore the information submitted needs to be complete and as close as possible to the final product.

Adequate pricing for H&S is required, and the appropriate section in the BoQ is to be completed. Failure to do so could result in the Tender being regarded as non-responsive.

A project specific H&S Plan in response to this PSHSS will be subject to approval by the client or client's Agent. This must include all supporting documentation as required to verify the H&S system:

- A declaration to the effect that the Principal Contractor has the competence and necessary resources to carry out the work safely in compliance with the Occupational Health and Safety Act and its Regulations;
- A valid Letter of Good Standing;
- Detailed technical method statements for approval by the Engineer and appropriate risk assessments and safe work procedures for approval by the Client or Client's Agent for all high-risk items.

Further method statements are to be submitted prior to, and during the project where changes or new work is required, and the approval of the Designer/Client is required before work on that aspect or activity can commence.

The CHS Officer is to be included in production planning sessions/meetings to ensure that the appropriate risk assessments, safe work procedures and communication required are available and completed timeously. Penalties will be applied should this not be adhered to and deemed a serious offence.

2. GENERAL REQUIREMENTS

2.1 Summary of Risks identified during Design.

The intention of the summary of findings from the design baseline risk assessment is to highlight the residual risks identified during the design phase. The summary of risks provided is to point the contractor towards some risks he may not be aware of during tendering stage and while developing his formal risk assessments for the project.

The design risks and the management thereof should be included in the Principal Contractors (PC) risk assessments. Where there are other Contractors appointed to do work, the PC is to ensure that Contractors include such information in their risk assessments. The following risks are identified as applicable on this project, however they are not exhaustive and the contractor is required to prepare their own list as part of their preparation of their health and safety plan.

- Working on live site (Operational healthcare facility). Additional care will be required to prevent any injury to staff, patients and visitors and in general, efficient healthcare facility operation.
- High noise levels due to the use of power tools.
- Tripping on uneven floors, protrusions and openings
- Crane truck operation (transporting and offloading poles, transformer and associated accessories)- operating hoist/machinery.
- Working at heights (stringing overhead conductors)
- Ergonomic factors due to manual lifting by personnel
- Switching and energizing (electrocution)
- Deep Excavations
- Working in confined space
- Use of hand tools and portable equipment
- Work on or near live electrical installations.
- Tree felling and removal of vegetation
- Unknown services underground
- Waste generation on site
- Working on electrical installation
- Dust Production
- Falling objects
- Re-energizing conductors and equipment (risk of electric shock or flash over)
- Biological risks
- Environmental pollution.
- Poor communication:
- Inadequate competence of personnel.

3. OCCUPATIONAL HEALTH & SAFETY MANAGEMENT

3.1 Structure and Organization of H&S Responsibilities

3.1.1 Notification of Construction Work

Once's appointed, the Principal contractor must complete the notification of construction work form as stated in the Construction Regulations. Notification of Construction Work must obtain the clients' signature for submission to the Komani regional Office of the Department of Labour. Proof of receipt and acknowledgement from DOL should be kept on the file at all times.

3.1.2 HEALTH AND SAFETY PLAN FRAMEWORK

The H&S aspects related to the project outlined in the previous sections are to be taken into account when drawing up the H&S Plan. The PC is required to demonstrate competence by providing a H&S system that will address the requirements of the project.

3.2 Appointment of Competent Site Personnel

The CEO (OHSA S16.1) of the PC will take overall responsibility for the appointment of competent site staff for the duration of the project. Should the CEO not be personally involved in the project, the H&S responsibilities are to be delegated to the Site Agent (OHSA 16.2).

Knowledge and training in H&S is required, and certificates indicating H&S training as well as experience to be included in CVs.

All other legal appointments are to be made with relevance to the type of work required and kept current with the project programme. The construction team is to ensure the appointed CHS Officer is kept up to date with all planned activities, to ensure all H&S requirements are met.

All construction/technical method statements are to be generated by senior site personnel, and the appropriate risk assessments developed therefrom in conjunction with the CHS Officer.

The Occupational Health and Safety Plan shall include the following, but is not limited to the following key appointments:

3.2.1 Construction Supervision

Competent Full-Time Construction Manager (CR8.1) will be appointed to manage part or all of the works and have training and/or experience in the area of responsibility. All site supervisors must show evidence of appropriate training in H&S, and an understanding or training in areas of responsibility (i.e., risk assessments, method statements etc.).

Curriculum Vitae (CVs) are to be submitted for approval by the Designer (PA) and/or Client. The Supervisor will be held responsible for the safety of working teams and subordinates, housekeeping and stacking and storage of materials.

If the Construction Manager (CR8.1) changes throughout the project. The Principal Contractor must ensure to provide the proposed Construction Manager CV and certificates for approval and then update the Annexure 2 and ensure that the appointment letter as well as proof of competency is available in the Health and Safety File.

3.2.2 Construction Health and Safety Officer

The PC will employ at least one competent, **part-time CHS Officer** (CR8.5) for the duration of the contract.

The CHS Officer's CV is to be submitted for approval by the Client OR Client's Agent, at time of tender.

The PC is to ensure adequate resources are provided in order to undertake all responsibilities.

Qualifications shall include at least Grade 12, Diploma in H&S qualifications or similar, with exposure to civil engineering and/electrical that is appropriate given the level of project complexity preferably in an OHS capacity.

The Safety Officer should also have undergone training in the Act and Regulations. In the case of a contract where contractors are employed, the CHS Officer must have competence to evaluate the Contractors Health and Safety plans.

Proof of registration as a Construction Health and Safety Officer with SACPCMP must be supplied.

The CHS Officer/s will be held responsible for all H&S on the project.

- Senior site staff and supervision, Contractors are to follow systems, instructions etc. given by • the CHS Officer at all times; No new workers or Contractors may commence work without
- approval or following the H&S plan as submitted, and
- No inductions of Contractor staff until the H&S documentation is approved by the CHS Officer.
- The CHS Officer/s may not be removed or replaced without the approval of the client of client's Agent, nor may the site be left unattended for more than 1 day without adequate, competent cover.

A weekly report of all H&S activities and incidents is required by the end of the week, or at a date agreed to by the Client or client's Agent and the CHS Officer. An example of the weekly report is attached as an **Annexure C**.

The CHS Officer will be responsible for collating the H&S documentation at the close out of the project in electronic format. The PC is to ensure that all Contractors documentation follows the same requirements and closed out H&S documentation must be completed and be available with the close out of the main contract.

3.3 Health and Safety Representatives and H&S meetings

H&S Representatives representing workers and Contractors are to be appointed following the startup of the project, irrespective of the number of workers on site. The appointed H&S Representatives are to be actively involved with H&S and will assist the CHS Officer and site management in meeting legislative duties.

The CHS Officer shall further ensure that H&S is discussed at all internal production or progress meetings. Issues arising from the CHS Agent audits are to be discussed, as well as all H&S related issues.

Minutes are to be kept for all H&S interventions and meetings.

Failure to do so will be deemed to be a moderate offence.

3.4 Appointment of Competent Contractors

The Principal Contractor is to ensure compliance with the Client's minimum standards and all legislative requirements. The same H&S standards required of the PC are to be applied to all Contractors. An index of all Contractors and Suppliers is to be on file and kept always updated. The PC is to ensure there is sufficient funding for H&S compliance by each Contractor.

4. GENERAL RISK MANAGEMENT

4.1 Health Risks and Medical Surveillance

As some products to be used in the building work have not been identified, the PC is to ensure the CHS Officer and all supervision is responsible for ensuring the safe use of such products, and their inclusion into method statements and risk assessment. The appropriate SDSs are to be obtained for all products and used to develop the H&S documentation as they relate to the works.

Many of the processes may be labour intensive and ergonomic risks are to be noted. All workers (including Contractors) are to be included in the medical surveillance programme.

Workers will be exposed to biological risk, noise, dust, and physical risks from extended periods of work of a repetitive nature, materials specified and the general nature of the business.

All permanent workers (including those of Contractors) are required to be in possession of a medical certificate of fitness issued by an Occupational Medical Practitioner prior to commencing work.

It is recommended that the PC has a medical surveillance plan. Full medical records are not to be placed in the H&S file. A procedure for managing the medical records which require safekeeping for prescribed periods are to be addressed.

No employee/ contract worker will be allowed on site without a valid medical certificate of fitness. Failure to do so will be considered a serious offence.

5.1.1 General Environmental Conditions

Compliance with the Environmental Regulations (as amended), among others is required. Environmental monitoring of ventilation, lighting, presence of asbestos containing material (where necessary) and dusts may be deemed to be required by the Approved Inspection Authority used to measure the environment. Copies of the relevant reports and actions taken in respect of these are to be placed in the H&S file.

5.1.2 Noise and Dust Control and Risk

All plant from plant hire companies (suppliers) or that of the PC is to be compliant with the Noise Induced Hearing Loss Regulations. Plant identified that has not been tested and marked for noise emissions will result in having to be tested at the Contractors or PCs expense. Failure to do so within a reasonable time period will result in such plant being removed from site.

The PC must ensure to take note that the facility will be fully operational and take extra care and planning communicated to the hospital staff to ensure that noise and dust does not interfere with daily activities.

5.2 Emergency Procedures

An emergency plan and procedure that is appropriate to the risks is required prior to commencement on site. It is advised that the system should be simple and easy for any worker to follow. The plan may be adapted should new information or risks are identified.

The contractor will take into consideration the existing emergency plan and procedures of the existing facility. It must be noted that the Hospital Facility will be fully operational during construction works.

The procedure shall detail the response plan in relation to the works, and include at least (but are not limited to) the following key elements:

- Appointment of a competent emergency response coordinator.
- Fire;
- Public injury, Motor vehicle accidents;
- Falls from heights;
- Serious injury to workers (medical or work-related); and
- Any other major risks identified during risk assessments. Drills to be conducted bi-monthly for the below:
 - Fire drill.
 - Bomb threat.
 - Fall from Heights Rescue procedures.

The emergency plan is to ensure the inclusion of local service providers where possible. Such arrangements should be made with these persons prior to the commencement of the project.

- Local emergency telephone numbers must be displayed and made part of the emergency procedure.
- First aid
- Extra gloves Evacuation plans

The general principals of emergency management are to be applied as it applies to the hierarchy of control and management.

5.2.1 First Aiders and First Aid Equipment

At least one employee is to be appointed for the duration of the project as a first aider and must be trained to Level 3. First aiders shall be available and accessible on site at all times and be able to work as a team when responding to any emergency on the project.

Contractors are expected to ensure compliance and provide/manage their own first aiders and equipment. The number of First aiders will be determined by the complexity and exposed risks of the project, not numbers of workers.

Appropriately stocked first aid kits, as per the GAR requirements, are to be available at all times to assure continual availability and access on site.

First aiders shall be available and accessible on site at all times and be able to work as a team when responding to any emergency on the project. The contractor is to ensure that the first aider forms part of the rescue planning emergency situations when working at heights.

5.2.2 Fires and Emergency Management

Attention to emergency planning and procedures is very important. The full emergency plan must form part of the supporting documentation with the H&S Plan. The Client's approval of all emergency plans and procedures is required prior to commencement on site. It is advised that the system should be simple and easy for any worker to follow. The plan may be adapted should new information or risks are identified.

First aiders shall be available in each working team and be able to work as a team when responding to any emergency on the project.

The procedure shall detail the response plan in relation to the works, and include at least (but are not limited to) the following key elements: Appointment of a competent emergency response coordinator and wardens;

- Lists of first aiders, and
- Requirement in terms of identified risks:
 - Fire;
 - Explosions;
 - Falls from heights, and
 - Motor vehicle accidents.
 - Biological risks: e.g., disease outbreaks

The emergency plan is to ensure the inclusion of local service providers where possible. Such arrangements should be made with these persons prior to the commencement of the project.

The emergency plan is to include the risk of fire on site and related to any specific activities where gas, welding, cutting etc. occur.

Fire extinguishers will be appropriate for the risk and in sufficient numbers to deal with the type of fires that could occur. All mobile plants are to have appropriate, accessible fire extinguishers. Hot work permits are required for any such activities.

5.2.3 Incident Management and Compensation Claims

All incidents and accidents are to be investigated. All serious incidents involving any form of disabling injury or fatality are to be reported to the Designer (PA) /Client /CHS Agent immediately. This shall be confirmed in writing following the incident. Full details are to be included in each site meeting or when the Client visits site. A summary of incidents is to be included in the monthly report.

Any person who contracts an Occupational Disease will need to be reported to the Compensation Commissioner as an occupational disease where their work is to monitor and in contact with others. Such details are provided in the Compensation for Injuries and Diseases Act (COIDA).

Failure to comply with emergency provisions will be considered a serious offence, and the operation or project may be stopped if deemed inadequate for the work at the time of assessment or site inspection.

5.3 Personal Protective Equipment (PPE) and Clothing

The PC is to provide a procedure as an addendum to indicate how PPE is managed within the Company. The wearing of the identified SANS approved PPE. The PC shall ensure that all workers (Including Contractors) are issued with and shall wear:

- Hard hats;
- Protective footwear.
- Dust Masks
- Hand Gloves
- Fall arrest equipment
- Overalls with reflective strips that ensure worker visibility.
- Eye protection (if required)
- Hearing protection (when required)
- Reflective jackets for supervisors and visitors.
- Safety Harnesses (working on heights)
- Respiratory protection (minimum of FFP2), and
- Any other necessary PPE identified from SDSs and/or risk assessments.

Adequate quantities of PPE shall be available. This shall include the necessary PPE for visitors. The procedures for managing PPE are to be in a formal procedure submitted with the H&S plan for approval.

Any person (including Client, Designers (PA) & PSP'S etc.) found on site without the necessary PPE will be removed from site until the PPE is supplied and worn.

Failure to comply will result in penalties being applied.

5.4 Occupational Health and Safety Signage

On-site H&S signage is required. Signage shall be posted up at fixed or temporary working areas, or other potential risk areas/operations. These signs shall be in accordance with the requirements of the General Safety Regulations or SANS requirements as amended. Signage is to be noted on the site drawings indicating where fixed/temporary signage is required.

It should be noted that the Hospital Facility will be fully operational during construction activities and the contractor to ensure sufficient separation.

Temporary signage is to include (but not be limited to) the following:

- Report to site office/ 'Warning: Construction Site – Keep out' or similar;
- Site office
- hard hat area or other PPE requirements noted;
- First aid box positions (including vehicles); and Fire extinguishers.
- Assembly Area

Signs shall be posted at areas of work on site indicating that a construction site is being entered and that persons should take note of H&S requirements.

Note should be taken that "omnibus" signs indicating that the entire site requires PPE should not be used. Any areas where PPE is mandatory must be separately signed.

The Principal Contractor must ensure that members of the that need to access the hospital will not be able to gain access to the construction area. It should be noted that the Hospital will be fully operational, and the

construction area should be properly and securely barricaded at all times.

Failure to comply will result in penalties being applied.

5.5 Induction of Employees and Visitors, General H&S Training

A simple, formal induction programme is to be submitted as an addendum for approval with the H&S plan. Inductions must be carried out for all workers and visitors (including Client and PSP's) to the site.

Pre-task training is required to ensure workers are familiar with the risks and H&S measures of the work or tasks to be done. Such training is to be done at least daily. Records of inductions and pre-task training are to be kept in the H&S file.

Any person found on site without proof of induction in the H&S File will be removed from site until the proof is supplied and, a penalty issued per non-compliance.

5.6 Management of Plant and Equipment

Close control of plant and equipment is required, including that of Contractors. No handmade and damaged equipment to be used on site, control of all equipment and plant is required. It should be noted that control measures should be implemented especially between the working areas and should at all times be separated from the existing facilities employees' persons and vehicles.

Daily monitoring of all plant and equipment is required prior to commencing work. Full lists of hired and own plant are to be available at the Client or client's Agent audit. All daily inspection records are to be kept in the H&S file. Plant Hire and Haulage Contractors are to comply with the requirements where plant and equipment is brought onto site. Registers are not to be more than 1 week behind.

Only competent, fit plant operators are to be used and in possession of medical certificates of fitness. Any plant or slings used to lift plant or material require annual load testing by an AIA, and all certificates must have the testers LMI/E number. Operators are to be adequately trained and certified to operate mobile cranes or crane trucks. Certificates and registers are to be placed in the H&S file.

Movement of plant in closures and in confined working areas is to be closely monitored and managed by the supervisors. The blind spots of plant are to be taken into account and workers and Contractors protected accordingly. Failure to do so will be considered a serious offence

5.7 Working at heights.

The appointment of a Fall protection plan developer to be submitted for approval prior to appointment. A fall protection and rescue plan is to be available and supplied as an addendum to the H&S plan.

The Fall protection plan to be submitted for approval prior to working at heights. The fall protection plan must be appropriate for the project. Method statements, appropriate risk assessments, safe work procedures and training are to be available prior to work commencing.

When working at heights connecting the conductor a method statement to be approved prior to commencement that will include measures to protect the employees from the fall risk.

The focus for working at height shall include fall restraint systems where possible except during assembling or dismantling top components or where it is not deemed safe.

- The relevant SANS codes are to be applied as they apply to the works and the project, such as: SANS 10085
- SANS 10333 (parts 1-3)

Should part of the works be contracted out, competent Contractors are to be appointed and submit documentation according to the project requirements. The PC is to note if such work is to be contracted to specialists in the H&S Plan. The plan is to be developed and work managed by a competent person for the duration of the project. The following aspects must be included:

- The public or users of buildings are to be protected at all times by way of hoarding,
- barricading or fencing; Notices to be posted;
- Restrictions or stoppage when weather conditions are deemed hazardous;
- Permit system for working at heights;

- Prevention of falling tools or equipment;
- Link to emergency plan regarding rescue.

All workers are to be in possession of valid certificates of fitness that extend for the duration of the works. Note the requirements in the section relating to medical surveillance. Registers and all relevant documentation are to be placed in the H&S file.

Work will be stopped, and penalties applied to any work at heights that is not compliant.

5.8 Auditing

Frequency of external auditing by the Client or CHS Agent will be conducted on periods determined by the client to ensure that the contractors conform to the requirements of the Construction Regulations. The site will be inspected, and the documentation audited relative to the activities and H&S plan. The CHS Officer of the PC must accompany the Client, or the client or client's agent, on all audits and inspections.

The PC will ensure that all their Contractors are audited at a frequency determined by the Client or Client's Agent. Audit frequency may be increased if Contractors are not performing adequately. Audit results will be acted upon, and non-conformances and penalties issued where deemed appropriate. The Client may act or require further outcomes if non-compliances are noted, or unsafe acts are noted on site.

Compliance with legislative requirements and the systems provided by the PC to manage the H&S on site will be measured. Full compliance is required. Time limits for corrective actions will be set and must be adhered to.

Failure to address findings or non-conformances will be considered a serious offence.

5.9 Communication on Site

All H&S communication during the project between the Client and the PC will be done in writing, including the

issue and responses to non-conformances and H&S audit results.

Failure to address issues timeously will be considered a serious offence.

5.10 Care of Workers on Site: Access/Egress of Site / Welfare Facilities

Access

Contractor to ensure that Access control to be in place, hoardings erected to separate site from public. Extra hoarding to be in place to ensure the public and personnel are kept out of the construction site. The Hospital Facility will be fully operational, and the contractor must ensure no unauthorized entry by the public, patients as well as employees of the hospital at any time.

Welfare Facilities

Adequate toilets, clean, safe drinking water and decent shelter must be afforded workers at all times. Toilets will be within reasonable distance of workers, or placed with each working team in safe, with reasonable privacy. Existing facilities may not be shared with existing users of the facility.

5.11 Discipline, Alcohol and Substance Abuse

All employees (management included) are to follow instructions given in the interest of H&S. Disciplinary action is to be imposed on those who do not follow such instructions or company rules or policies. Contractor to always follow hospital safety rules not to interfere with hospital activities.

No person is allowed to work or access site if under the influence of alcohol or other substances that could impact on their own or others safety. The PC is to have a drug and alcohol policy available to manage such instances.

These requirements are applicable to any employee of any organization providing services on site. Penalties may also be applied by the Client or Client's agent.

The contractor will ensure to adhere to the hospitals rules and policies at all times.

5.12 Electrical Equipment

In addition to the requirements of the Electrical Machinery Regulations and the General Machinery Regulations any electrical distribution board used for construction work shall be fitted with suitable earth leakage protection.

Contractor to provide a Certificate of Compliance for all temporal distribution boards.

Leads must be properly and firmly connected. Plugs and sockets shall be in good and safe condition. All electrical apparatus, other than electrical hand tools, shall have a physical "lock out" system which will prevent any operation other than that authorized by a supervisor. A "lock out" sign shall be displayed when the apparatus is not in use.

Method statements and safe work procedures will be required for all work involving electrical apparatus.

5.13 Asbestos Management

Should the contractor identify any asbestos containing material, the client should be informed immediately to provide guidance.

Where asbestos containing material has been identified, the requirements of the asbestos Abatement Regulations would be applied.

Failure to do so will be considered a serious offence.

5.14 Barricading and Hoarding

It is the responsibility of the contractor to ensure to price correctly for barricading and hoarding as the construction site (each separate construction area) must be securely barricaded from the Hospital facilities to ensure that no public, hospital employees or patients can gain any access to the construction areas. Contractor to ensure that the barricading/ hoarding is maintained at all times as the hospital will be fully operational.

DANGER TAPE OR CANDY TAPE IS NOT PERMITTED TO BE USED ON SITE AS A MEANS OF DEMARCATION!

5.15 Traffic Management

The contractor to develop a comprehensive traffic management plan that includes: A site-specific traffic flow diagram. Identification of high-risk traffic areas or zones. Strategies to minimize disruptions to normal hospital operations.

Measures to control vehicle and pedestrian movement around the work area. Clear signage and demarcation of safe areas. Procedures for managing temporary road closures or detours. Provision for emergency vehicle access.

Plans for managing deliveries and contractor vehicles.

5.16 Temporary Works - Scaffolding, support work, formwork (Not applicable on this contractor)

The Principal Contractor shall ensure that the provisions of Regulation 12 of the Construction Regulations are adhered to.

These provisions must include but not be limited to the appointment of a competent supervisor; ensuring that all equipment used is examined for suitability before use; that all formwork and support work is inspected by a competent person immediately before, during and after placement of any imposed load and thereafter, daily until the formwork and support work has been removed. Signing-off will serve as confirmation that shuttering/formwork/support work has been erected as per the approved design and it is safe to be used for the intended purpose.

The appropriate competent persons are to be appointed to manage and monitor such works to the satisfaction of the Engineer and Client.

Records and registers are to be properly completed and kept in the H&S file.

Failure to do so will be considered a serious offence.

All scaffolding / temporary works support work must have design drawings that includes load bearing and approved by competent person.

5.17. Ladders and ladder work

The Principal Contractor shall appoint a competent person in writing to inspect all ladders weekly and record such findings in a register. Ladders are to extend one meter above a landing and must be secured at the top and have a secure, non-slip base. All ladders that do not comply with Health and Safety standards are to be removed from the site immediately.

5.18 Biological Hazards

It should be noted that while performing construction work at Tarkastad Hospital it is possible for construction workers to get into contact with biological risk. Coordination between contractor and hospital infection control shall be implemented to address any concerns relating to biological hazards. All workers entering the construction site must undergo training on the identification and handling of biological hazards prior to commencing work. Contractors shall apply appropriate health and safety measures including PPE and hygiene protocols as per the regulations for hazardous biological agents.

The baseline site HIRA should continue to acknowledge Viral Hazardous Biological diseases outbreak as a general Hazard. Should there be an outbreak the HBA Regulations will apply and this may require additional controls like HIRA, method statements that address transmission prevention planning, PPE and signage. All employees who have or will be identified to work in areas where they might be in direct contact with body fluids, those employees are required to be vaccinated against Hepatitis A and B virus.

5.19 Site works and excavations.

A competent person is to be appointed in writing to supervise the Site Works and Excavations. A method statement on procedures relating to the diversion of existing services and the maintenance of services to the existing facilities is to be agreed between the Contractor and the Principal Agent prior to the commencement of the work where applicable. The Contractor is to ensure Risk Assessments & Safe Working procedures have been communicated to the workers before any work is commenced.

Excavations should preferably not be open beyond what can be closed daily. Where excavations need to remain open, all excavations are to be properly protected. Adequate stakes with 1m high demarcation and berms/spoil are required to be a safe distance from the edge of the angle of repose.

Candy tape may not be used to demarcate excavations. Cognizance is required of the surrounding area and increased levels of protection are required where work is in communities, near schools and clinics.

Work will be stopped, and penalties applied to any work in excavations that is not compliant.

5.20 Safety Rules with respect to work to Health Care Facilities

All persons on the premises shall obey the ECDoh & facilities' Health and Safety rules, procedures and practices.

All work shall be carried out within normal working hours except certain essential works which may need to be carried out after hours or over weekends.

Arrangements for such work to be agreed in advance between the Contractor and the facility.

Emergency / Firefighting equipment belonging to the premises is not to be interfered with.

Emergency Exits and Escape Routes, including Temporary Escapes Routes are not to be obstructed.

No persons shall carry out or initiate an unsafe / unhygienic act or operation whilst on the premises.

Workers are not to interfere with the duties of the hospital, its staff, patients or visitors.

The Contractor shall maintain good housekeeping standards in the areas being worked on throughout the duration of the contract.

The health facility reserves the right to search any person entering or leaving the health facility premises.

All workers must wear proper identification labels at all times – The Contractor will be asked to remove persons without identification from the premises.

The Contractor will not be permitted to use any tools or equipment belonging to the health facility.

The Contractor is to ensure that noise is kept to a minimum so as not to unduly interfere with the functioning of the adjacent facilities.

The Contractor is to ensure that dust from the works is properly contained so as not to cause problems with the normal functioning of the hospital facility activities.

6 HEALTH AND SAFETY FILE

The documentation submitted and approved following the awarding of the contract will be used to form the H&S file. The H&S file is required to be laid out in a logical manner, and documentation filed within the file is to be easily accessible.

The following completed information shall be included (but not be limited to) as part of the index:

- The PSHSS;
- The H&S plan and approval by the client;
- The Traffic Management and Approval by client
- Appointment by Client;
- Mandatory agreement with Client;
- Construction Work Permit from the Department of Employment and Labour
- A record of all working drawings, calculations and design where applicable;
- Detailed list of Contractors with contact details, appointments, Mandatories etc;
- H&S specifications issued;
- Record of Competencies (CVs) and appointments;
- Training Records;
- Permits;
- Method statements;
- Risk assessments;
- Safe work procedures
- Emergency and injury management;
- Safety data sheets;
- Medical surveillance records;
- Registers;
- Records of audits, minutes etc.
- Plant lists;
- Temporary electrical installations;
- Employee records (who is on site)

7. NON-CONFORMANCES

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 H&S Plan; neither the PC nor any other Contractor shall have a claim for extension of time or any other compensation.

The following constitute examples of the types of non-conformances that will attract penalties:

Minor: Penalty: R50/count	Medium: Penalty: R500/count and a non- conformance	Severe Penalty: R5000/count, a non- conformance and/or activity stoppage
Non-use of PPE supplied	Toilets not supplied or regularly serviced; lack of drinking water	Contractors working without Health and Safety Plan approval
Non-completion of registers for plant and equipment on site	Contractors not audited	Workers transported in contravention of the OHS plan or legal requirements
Lack of H&S signage at work areas	Working without training or the appropriate, approved H&S method statements	Invalid Letters of Good Standing
Tools and equipment identified in poor condition during inspections	Legal non-conformances identified during the previous audit and not addressed within the agreed time frame	Non-compliance with traffic accommodation requirements: layout or physical conditions
	No monthly OHS report at site meeting to report on	Any serious breach of legal requirements
	No certificates of fitness for workers as required	
	Working without approved method statements	

7.1 Failure to Comply with Provisions

Failure or refusal on the part of the PC or their Contractors to take the necessary steps to ensure the safety of workers and the general public in accordance with these specifications or as required by statutory authorities or ordered by the engineer, shall be sufficient cause for the engineer to apply penalties as follows:

- (i) A penalty as shown in the Table above shall be deducted for each and every occurrence of non-compliance with any of the requirements of the PSHSS.
- (ii) In addition, a time-related penalty of R500, 00 per hour over and above the fixed penalty may be deducted for non-compliance to rectify any non-conformance within the allowable time after a site instruction to this effect has been given by the Designer. The site instruction shall state the agreed time, which shall be the time in hours for reinstatement of the defects. Should the Contractor fail to adhere to this instruction, the time-related penalty shall be applied from the time the instruction was given.

8 MEASUREMENT AND PAYMENT

The payment items for Occupational Health & Safety are contained in the Bill of Quantities. The same rules are applicable in respect of the pricing of these items as for every other payment item. Attention is drawn to the Pricing Instructions in this document.

Item and Unit

C.01 Preparation of Contractor’s Project Specific Health and Safety Plan. (Lump Sum (L.S))

The rate for this item must cover all expenses incurred in preparing the Contractor’s project specific Health and Safety Plan as required by the Client’s project specific Health and Safety Specification in this document.

C.02 Principal Contractor’s initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations. (Lump Sum (L.S))

The full amount will be paid in one instalment only when the Client’s Agent has verified and approved the following:

- (a) The Principal Contractor has notified the Provincial Director of the Department of Labour in writing of the project, Annexure A to the Regulations.
- (b) The Principal Contractor has made the required initial Appointments of Employees and Contractors.
- (c) The Client has approved the Principal Contractor's project Health and Safety Plan.
- (d) The Principal Contractor has set up his Health and Safety File.

C.03 Principal Contractor's time related obligations in respect of the occupational Health and Safety Act and Construction Regulations. (Month (Mth))

The amount shall represent full compensation for that part of the Principal Contractor's general obligations in terms of the Occupational Health and Safety Act and Regulations which are mainly a function of time. Payment will be made when the Client's Agent has verified the Principle Contractor's compliance as part of the audit. This will include the updating and administration of the Health and Safety file.

C.04 Provision of Personal Protective Equipment (PPE) as listed in the Bill of Quantities. (Number (No))

The rates for these items shall include for the procurement, delivery, storage, distribution and all other actions required for the supply of PPE to the employees of the Principle Contractor, full or part time, requiring them. Sub-Contractors are responsible for their own costs in this regard. Any items of PPE not included on the list will be paid for only after the Engineer has agreed to their acquisition.

Items listed will include, among others which may be noted, are hard hats, reflective vests, reflective bibs, high visibility overalls, protective foot wear, fall arrestor harness and tethers, gloves, ear muffs, earplugs and dust masks of appropriate type. Normal items such as standard overalls, waterproof clothing, gum boots and standard workshop safety equipment such as welding masks and goggles will not be paid for.

Payment will be based on the issues register for PPE as kept by the Construction Health and Safety Officer, backed up by paid invoices if requested.

C.05 Provision of part-time or Full Time Construction Health and Safety Officer, Construction Manager, Assistant Manager, Construction Supervisor

The Tender sum shall include for the cost of a Construction Health and Safety Officer, Construction Manager, Construction Supervisor on a fulltime basis, the amount tendered will be prorated according to the amount of time spent on the project.

C.06 Costs of Medical Surveillance (Unit (No))

This item shall cover all costs in involved in the obtaining of baseline medical examinations of temporary labour, including operators for mobile plant as contemplated in CR 21(d) (ii); for temporary workers and workers exposed to noises at or above the limits given in the Noise-induced Hearing Loss regulations, as stipulated.

Workers in the permanent employ of the Contractor will only be paid for if their certificates require updating.

C.06 a) Initial (baseline) medical examinations, including audiometric and lung function testing.

C.07 Induction Training (Unit (No))

This item shall cover all costs incurred for the health and safety inductions as set out on Regulation 7 of the Construction regulations and the proof of induction required. Payment will be made on the figures contained in the induction section of the Health and Safety File.

C.08 Provision of First Aid Boxes. (Unit (No))

The rate for this item shall cover all costs incurred in the provision and maintaining of first aid boxes as outlined in Paragraph 7 above.

C.09) Establishment of noise levels (Unit (No))

a) This item shall cover all costs involved in the establishment of noise zones, including any workshops, in terms of Regulation 9 of the Noise-induced Hearing Loss Regulations. Where a zone has previously been established for a particular item of plant within the last two years, the test need not be repeated but must be kept valid for the duration of the Contract.

C.10 Submission of the Health and Safety File. (Lump Sum)

Expenditure under this item shall be made in accordance with the general conditions of contract.

This amount will be paid only once the Principal Contractor has met all his obligations in respect of the Occupational Health

and Safety Act and the Construction Regulations and has submitted his Health and Safety File complete as envisaged on this specification to the Client's satisfaction. This must be done prior to the issue of a Certificate of Completion

Tenderers are to note that a large portion of the works associated with this bill section are required over existing roads ways and at extreme heights (ground level to top of roof approximately 9m). The contractor shall include for all required OHS items as per the included OHS plan including any scaffolding that may be required when pricing this bill section.

ANNEXURE A

Acknowledgement of the H&S Specification by Principal Contractor

Construction Health & Safety Specification

Issued in terms of the Occupational Health and Safety Act, 1993

Construction Regulations, 2014

I, _____ representing _____
_____ Principal Contractor have satisfied me with the content of this Construction
Occupational Health and Safety Specification and shall ensure that the Principal Contractor, all contractors and
sub-contractors and all employees on site comply with it.

Signature of Principal Contractor

Date

Signature of Client

Date

This document must be signed and returned to the Client or Client's Agent.

ANNEXURE B: CLOSE OUT REQUIREMENTS

The H&S files for the Principal Contractors and all Contractors require closure and handover to the Client at the completion of the project. The following list is an example of what should be included but is not exhaustive. The OHS Agent or the Client may require further information at the time of completion and the Principal Contractor is to ensure that all instructions are met. Documentation would include all records from the start of the project. Daily or monthly plant inspection records are not required unless they are related to an accident. All records to be in electronic format and submitted to the OHS agent for approval in adequately formatted lists and folders. Layout should be logical and in the same order as in the site files.

Health and Safety close out file requirements include:

- a) Client H&S Specification
- b) Principal Contractor's OHS Plan(s)
- c) Principal Contractors Policies
- d) Organograms
- e) Legal Appointments
- f) List of all employees employed on a permanent or contractual basis over the duration of the contract.
- g) Notification of construction with the Department of Employment and Labour of commencement of work
- h) Letter of Good Standing
- i) Full files for all Contractors as well as their
 - close out reports
 - List of Contractors
 - All employees employed on a permanent or contractual basis over the duration of the contract.
 - Letters of Approval of Contractors
 - Mandatary Agreements
 - Letters of Good Standing
 - Appointments
- j) Incident Records
- k) Non- Conformance records
- l) Agent's Audits
- m) Method Statements
- n) Risk assessments
- o) Safe work procedures
- p) Medical surveillance certificates of fitness. Medical records are to be kept according to the OH&S Act as amended.
- q) All drawings for temporary structures (suspended beams/scaffolds etc.)
- r) All operating manuals for any systems that require on-going maintenance.
- s) Copies of test results, policies and procedures for environmental monitoring (silica, noise, dusts etc.)

Defect and Liability Period

The H&S files are to be kept 'live' for the defect and liability period by the Principal Contractor, including those of their Contractors. Any work required during the defect and liability period will require an assessment of the H&S file by the OCHS Agent prior to any work commencing.

A copy drawing records for the as-builts are to be placed on file by the Designers once complete.

ANNEXURE C

HEALTH AND SAFETY SITE INSPECTION NON-CONFORMANCE NO		
AGENT:		PROJECT:
Consultant:		Date and time:
Client		Area:
Contractor:		
ASPECTS NOTED:	COMMENTS:	COMPLETION REQUIRED BY (DATE):
	•	
	•	
	•	
	•	
	•	
PHOTOGRAPHIC EVIDENCE (if available):		
OTHER:		
The following penalties are to be applied:		
Signature of Designer		
Signature of CHS Officer/Site Agent		
Signature: of CHS Agent		

ANNEXURE D

(To be submitted by the end of the first week of each month and be available with each audit)

CONTRACT NUMBER:		PROJECT NAME:	CONTRACT DETAILS:
1	GENERAL ACTIVITIES FOR THE MONTH (detail each area of work)		
2	NUMBER OF WORKERS (permanent and local, contractors)		
3	TRAINING DONE (supplier, no of people, type)		
4	INCIDENTS / ACCIDENT (list number and details, attach reports)		
6	NON-CONFORMANCES (closed out or active)		
7	CONTRACTORS (list, approval status)		
8	AUDITS COMPLETED (internal and external)		
9	CRITICAL ISSUES		
10	GENERAL		

Health and Safety Officer: _____ Signature: _____ Date: _____

Construction Manager: _____ Signature: _____ Date _____

LEGEND	
CR	Construction Regulations
CHSO	Construction Health and Safety Officer
GSR	General Safety Regulations
N-IH I Regs	Noise Induced Hearing Loss Regulations
HBA Regulations	Hazardous Biological Regulations
HIRA	Hazard Identification and Risk Assessment
Db	Decibels
H&S	Health and Safety
PPE	Personal Protective Equipment
PA	Principal Agent
PSHSS	Project Specific Health and Safety Specification

PART C2
PRICING DATA

PART C2.1: PRICING INSTRUCTIONS

C2.1 Pricing Instructions

- 1 The agreement is based on the JBCC Edition 6.2 of 2018 with amendments from JBCC Edition 4.1, prepared by the Joint Building Contracts Committee. The additions, deletions and alterations to the JBCC Principal Building Agreement as well as the contract specific variables are as stated in the Contract Data. Only the headings and clause numbers for which allowance must be made in the Bills of Quantities are recited.
- 3 Preliminary and general requirements are based on the [preliminaries for the use of JBCC Edition 6.2– May 2018](#). Only the headings and clause numbers for which allowance must be made in the Bills of Quantities are recited.
- 4 It will be assumed that prices included in the Bills of Quantities are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders. (Refer to www.stanza.org.za or www.iso.org for information on standards).
- 5 The drawings listed in the Scope of Works used for the setting up of these Bills of Quantities are kept by the Principal Agent or Engineer and can be viewed at any time during office hours up until the completion of the works.
- 6 Reference to any particular trademark, name, patent, design, type, specific origin or producer is purely to establish a standard for requirements. Products or articles of an equivalent standard may be substituted.
- 7 The bills of quantities forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, The Standard Conditions of Tender, Conditions of Contract, Specifications, Drawings, The document “Construction Works: Specifications: General Specification (PW371-A) Edition 2.0” is obtainable on the Department’s website (<http://www.publicworks.gov.za/> under “Consultants Guidelines”), and shall be read in conjunction with the **bills of quantities** / lump sum document and be referred to for the full descriptions of work to be done and materials to be used. The document “Construction Works: Specifications: Particular Specification (PW371-B) Edition 2.0” is issued together with the drawings and shall be read in conjunction with the drawings and the **bills of quantities** / lump sum document
- 8 Where any item is not relevant to this specific contract, such item is marked N/A (signifying “not applicable”)
- 9 The Contract Data and the standard form of contract referenced therein must be studied for the full extent and meaning of each and every clause set out in Section 1 (Preliminaries) of the Bills of Quantities
- 10 The Bills of Quantities is not intended for the ordering of materials. Any ordering of materials, based on the Bills of Quantities, is at the Contractor’s risk.
- 11 The amount of the Preliminaries to be included in each monthly payment certificate shall be assessed as an amount prorated to the value of the work duly executed in the same ratio as the preliminaries bears to the total of prices excluding any contingency sum, the amount for the Preliminaries and any amount in respect of contract price adjustment provided for in the contract.
- 12 Where the initial contract period is extended, the monthly charge shall be calculated on the basis as set out in 11 but taking into account the revised period for completing the works.
- 13 The amount or items of the Preliminaries shall be adjusted to take account of the theoretical financial effect which changes in time or value (or both) have on this section. Such adjustments shall be based on adjustments in the following categories as recorded in the Bills of Quantities:
 - a) an amount which is not to be varied, namely Fixed (F)
 - b) an amount which is to be varied in proportion to the contract value, namely Value Related (V); and
 - c) an amount which is to be varied in proportion to the contract period as compared to the initial construction period excluding revisions to the construction period for which no adjustment to the contractor is not entitled to in terms of the contract, namely Time Related (T).
- 14 Where no provision is made in the Bills of Quantities to indicate which of the three categories in 13 apply or where no selection is made, the adjustments shall be based on the following breakdown:
 - a) 10 percent is Fixed
 - b) 15 percent is Value Related
 - c) 75 percent is Time Related

- 15 The adjustment of the Preliminaries shall apply notwithstanding the actual employment of resources in the execution of the works. The contract value used for the adjustment of the Preliminaries shall exclude any contingency sum, the amount for the Preliminaries and any amount in respect of contract price adjustment provided for in the contract. Adjustments in respect of any staged or sectional completion shall be prorated to the value of each section.
- 16 The tender price must include Value Added Tax (VAT). All rates, provisional sums, etc. in the bills of quantities must however be net (exclusive of VAT) with VAT calculated and added to the Total Value thereof in the Final Summary.
17. The Contractor shall adhere to “The national minimum wage determined by the Minister in accordance with the National Minimum Wage Act (NMWA)”, and yearly pronounced increases for duration of contract.

PART C2.3: BILLS OF QUANTITIES

(LV UPGRADE BOQ)			CONTRACT		
ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>ELECTRICAL INSTALLATION</u>				
	NOTE: Tenderers are advised to study the General Preambles for Trades 2017 published by ASAS before pricing the bill				
	Note: The "Construction works: specifications: General Specifications (PW371-A) Edition 2.0" and "Construction				
	works: Specifications: General Specification (PW371-B) Edition 2.0" obtainable on the public works website				
	: http://www.publicworks.gov.za/under "Forms & documents: Consultant's Guidelines" ; Item 2.2.1 and 2.2.2 or				
	from the department project manager/leader, should be read in support and extend the abbreviated bills of quantities				
	quantities descriptions by inter alia referring to construction standards				
	<u>SUPPLEMENTARY PREAMBLES</u>				
	<u>Distribution boards etc</u>				
	Rates for distribution boards etc are to include for busbars, jumpers, neutral bars, internal wiring and connectins,				
	circuit legend cards, identification markers, labels, space for future equipment and working drawings, unless otherwise stated.				
	<u>Switches, Sockets Outlets etc</u>				
	Rates for switches, socket outlets, etc are to include for screwing to outlet boxes, connecting up and cover plates				
	<u>Light fittings</u>				
	Rates for light fittings are to include for hanging, fixing and connecting and for lamps of the type and wattage specified				
	<u>Drawings</u>				
	Allow for 3 sets of operating and maintenance manuals and as-built drawings as per the specification.				
	Allow for submission of 1 set of shop drawing where specified				
	BILL NO 1				
	LOW TENSION DISTRIBUTION				
	WORK GROUPS: Unless otherwise stated the work group for this				
	DISTRIBUTION BOARDS				
	The supply, installation and commissioning of complete distribution				
	boards, including all busbars, jumpers, neutral bars, switchgear, time switches, internal wiring and connections, circuit				
	labelling, identification markers, labels, legend cards etc. as specified and shown on the attached drawings for DB				

	SCHEMATICS:				
1	Refurbish the existing DB-A in accordance with schematic drawing 2522-MVH-E-T-302	No	1		
2	Install a new surface mounted SDB-Autoclave as per the schematic drawing 2522-MVH-E-T-302	No	1		
3	Install a new surface mounted SDB-Xray inside the xray room as per the schematic drawing 2522-MVH-E-T-302	No	1		
	CABLES				
	To supply, deliver and install XLPE Insulated, PVC Bedded, Galvanised Steel Wire Armour, PVC sheath copper cable				
	(Cables are installed in sleeves or trenches measured elsewhere.				
	Termination of cables, including glands, shrouds, lugs and connections (installation included)				
	600/1000V/ XLPE/PVC/SWA/PVC copper cable laid in trenches, pulled in				
	cable sleeves or horizontal cable trays (with sleeves, trays, trenching and backfilling measured elsewhere). Allowance shall be made for snaking, glands and for making off.				
4	185mm ² 4-Core	m	70		
5	70mm ² 4-Core	m	50		
6	35mm ² 4-Core	m	70		
	CABLE TERMINATIONS				
	Termination for 600/1000 V PVC/PVC/SWA/PVC copper cables including connection of conductors, cable lugs, captive gland, shrouds, etc				
7	185mm ² 4-Core	No	2		
8	70mm ² 4-Core	No	2		
9	35mm ² 4-Core	No	2		
	EARTHING				
	Supply and install bare stranded copper earth conductor laid with the main cable in trenches or sleeve pipes or cable trays				
	strapped to cables with plastic strappings at 2m centres/intervals (cables measured elsewhere)				
10	70mm ² Conductor	m	70		
11	50mm ² Conductor	m	50		
12	16mm ² Conductor	m	70		
	EARTH CONDUCTOR TERMINATION				
	Termination for bare and PVC insulated copper conductors including connection of conductors, cable lugs, captive glands, shrouds, etc				
13	70mm ² Conductor	No	2		
14	50mm ² Conductor	No	2		
15	16mm ² Conductor	No	2		
	CABLE LADDERS				
	Galvanised heavy duty cable ladder				
16	150mm Wide cable ladder	m	70		
17	Install hot-dip galvanized steel or aluminum (specifically 5005 alloy) cover on the exterior portion				

	of the cable ladder as it climbs the wall nearest to the metering kiosk into the ceiling void	m	3		
	SLEEVES				
	Unplasticised polyvinyl chloride (UPVC) sleeve piping including short lengths , elbows and jointing, laid in trench, including galvanised mild steel				
	draw wire (trench backfilling measured elsewhere)				
18	110mm Diameter sleeves	m	15		
	EXCAVATIONS, ETC.				
	Excavation in earth not exceeding 1m deep for cable trenches including risk of collaps of excavations, keeping excavations				
	free from water, setting aside excavated material for re-use later in refilling of the trenches.				
19	Cable or sleeve trenches not exceeding 1m deep and 0.45m wide	m ³	10		
20	Extra over excavations in 'earth' for cable or sleeve trenches in 'soft rock'	m ³	5		
21	Extra over excavations in 'earth' for cable or sleeve trenches in 'rock'	m ³	5		
22	Selected and approved material from the excavation, in backfilling in trenches , to specified density	m ³	5		
23	Extra over excavations for carting away surplus material to dumping site to be located by the contractor	m ³	8		
24	Dig up, disconnect and re-route existing cables	Item	1		
	SUNDRIES				
25	Cable warning tape placed 200mm below final ground level in excavations	m	15		
26	Concrete cable slabs placed 150mm above cables in excavations	m	15		
27	All notices and substation safety equipment (e.g first aid kit, pair off rubber gloves and	Item	1		
	notices on door and inside the room with the health and safety act 1993				
	Properly secure the cover with heavy-duty clamps or bolts. Use "ventilated" cover to reduce wind loading and water pooling.				
	WIRING CHANNELS				
	Note:				
	The rates for wiring channels shall include for hangers, splices, jointing, drilling, full length cover plates, bends, kits, etc				
28	100mm Wide heavy duty welded mesh cable tray for LV cabling	m	120		
	Galvanised steel channel complete with galvanised cover mounted to brickwork, concrete, steel, wood, roof members, etc				
	Galvanised steel channel complete with galvanised cover suspended from trusses or concrete slab with and				
	including hangers				
29	P9000 Channel for power wiring	m	10		
	Galvanised steel channel complete with galvanised cover and stainless steel cable clips at 1500mm intervals				
	surface mounted to brickwork, concrete, steel,etc.				
	Extra over for:				
30	P9000 End cap	No	6		
31	P9000 90 Degree bend	No	4		
	CONDUCTORS				
	PVC insulated stranded copper conductor drawn into wireways. Included are bobbins, cleats, clips and binding wire,				
	and allowance for additional lengths at connections				
32	2,5mm ²	m	200		
33	4mm ²	m	100		
	Bare stranded copper earth conductor drawn into wireways. Included are bobbins, cleats, clips and binding wire				
	and allowance for additional lengths at connections				

34	2,5mm ²	m	100		
35	4mm ²	m	50		
	Isolators including final connection to fittings				
36	100A 4 Pole isolator surface mounted	No	1		
	EXISTING INSTALLATION STRIPPING				
	The rates shall include for the disposal of the items to a site chosen by the contractor				
	Distribution boards				
37	Remove existing x-ray connection from existing DB-B	No	1		
	Small Power				
38	Remove existing light switches, switched socket inn the existing X-ray room	Item	4		
	outlets, PVC insulated wiring on existing walls				
39	Remove existing supply cable and meter box on the wall outside the main building	Item	1		
	PROVISIONAL SUMS				
40	Provide lighting and small power inside the x-ray room (the wiring is measured elsewhere)				
	SUNDRIES				
	Testing and commissioning				
41	Allow for testing, balancing and commissioning of the complete electrical	Item	1		
42	installation				
43	Allow for the re-routing of the existing generator mains supply to DB-A	Item	1		
44	Allow for the issuing of the COCs	Item	1		
45	Allow for 3 sets of Operating and Maintenance Manuals	Item	1		
46	Allow for issuing of As-Build drawings and handover Documentation	Item	1		
	MAINTENANCE PERIOD				
47	Allow for a 12-month defects liability period	Item	1		
	TOTAL: Before Vat				
	Add 15% Vat				
			15%		
	TOTAL				

PART C3: SCOPE OF WORK

C3.1 SCOPE OF WORK

The following scope of work shall be undertaken to ensure that the objectives of this project are achieved:

Low Voltage Upgrades Scope of work

The scope of work entails the following:

- Install a 185mm² 4core armoured cable and associated 70mm² bare copper earth conductor from the new metering kiosk at the bottom of the 200kVa pole mounted transformer pole and terminate it on the existing DB inside the hospital. This shall include the excavation of a cable trench, installation of cable sleeves, back filling.
- Refurbish the existing DB-A equipping it with the switchgear as shown of the single line diagrams.
- Reroute supply to the generator to the new DB-A
- Connect DB-A to DB-B with an additional 70mm² 4core armoured cable and associated 50mm² bare copper earth conductor
- Install a 35mm² 4core armoured cable and associated 16mm² bare copper earth conductor from DB-A to new DB-Xray
- Provide a new DB-Xray complete with switchgear as shown in the single line diagrams
- Install a 35mm² 4core armoured cable and associated 16mm² bare copper earth conductor to a wall mounted 100A 4pole isolator
- Provide cable ladder and associated mounting accessories to support the cables
- Provide lighting and small power to the X-Ray room
- Dismantling and removal of redundant existing material as specified on the BOQ
- Testing, commissioning and issue a certificate of compliance
- Issuing of As-Build drawings and handover documentation

Note:

- **It must be stressed that the contractor is not expected to affect or deviate from the design without prior approval from the engineer responsible for this design.**
- **The contractor shall investigate existing services and engage the local authority before construction commence.**

PART C4: SITE INFORMATION

C4.1 THE SITE



Figure 1: The location of Martjie Venter Hospital in Tarkastad in the Eastern Cape.

Martjie Venter is in Tarkastad town about 78km from Cradock. The GIS coordinates for this hospital are 32° 0'34.60"S, 26°15'29.33"E

C4.2 WORK AREA

Employer shall make available a work site, free of charge, to the Contractor for the duration of the Contract. The location of the site will be pointed out by the electrical engineer during the site clarification meeting. The Contractor shall submit a site layout plan indicating the proposed working areas, storage, stock piling area, amongst others before for approval by the Project Manager before establishing on site.

C4.3 ACCESS

The site is accessible however the tenderers are to familiarise themselves with the site to determine routes for site access, restrictions and proximity to existing structures.

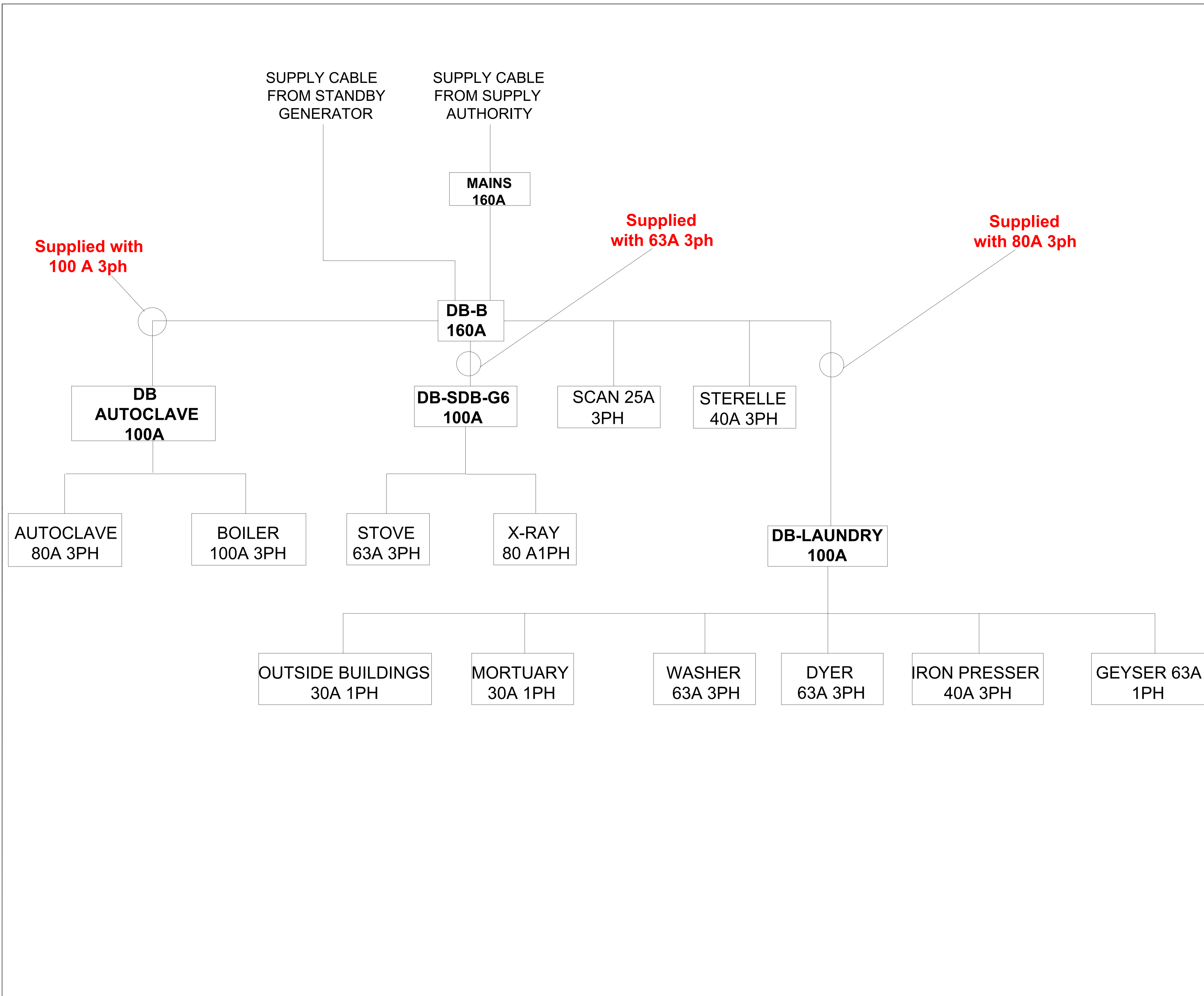
C4.4 GENERAL

Existing Services

The absence of as-built documentation makes very difficult to know where the existing services running underground. As a result of this situation, the tenderer should ensure they investigate the extend of the existing services such as water pipes underground, electric cables to ensure damage avoidance during construction. This exercise shall be carried out at construction planning stage and the findings discussed with the electrical engineer.

ANNEXURE 1: DETAILED DESIGN DRAWINGS

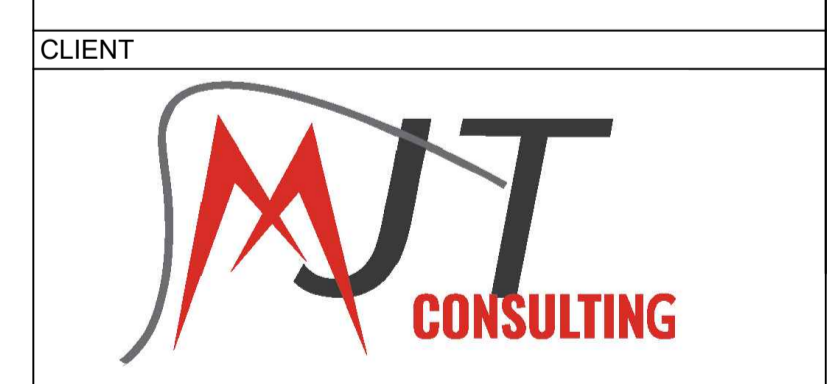
No	Drawing Title	Drawing Number	Rev
1	300 MVH Existing Network-A1	2522-MVH-E-T-300	00
2	301 MVH Upgrade Network -A1	2522-MVH-E-T-301	00
3	302 Single Line Diagram-A1	2522-MVH-E-T-302	00
4	303 Low Voltage wireway-A1	2522-MVH-E-T-303	00



GENERAL NOTES:

1. ELECTRICAL INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH SANS 10142-1: 2003 (SOUTH AFRICAN NATIONAL STANDARD - THE WIRING OF PREMISES, PART 1: LOW VOLTAGE INSTALLATIONS)

NO.	DATE	REVISION	DRAWN
00	04-03-26	FOR TENDER	S.M.

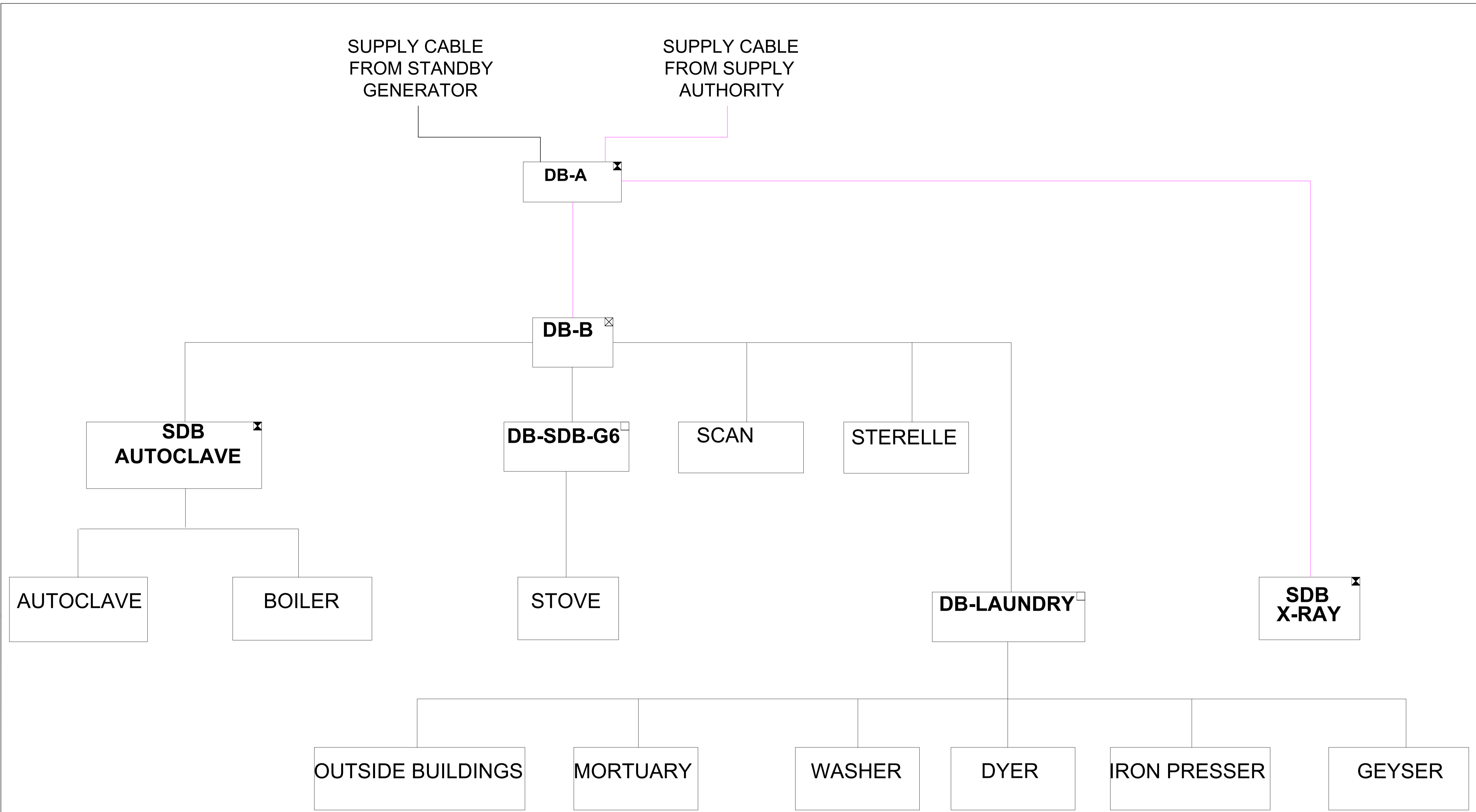


ELECTRICAL ENGINEER			
SIGNATURE	DATE	SHEET SIZE	
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S.M.	04-03-26		
M.N.	04-03-26		




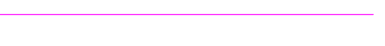

PROJECT
MARTJIE VENTER HOSPITAL :
SUPPLY UPGRADE

DRAWING TITLE
SCHEMATIC BLOCK DIAGRAM:
EXISTING ELECTRICAL NETWORK

PROJECT NUMBER	DISCIPLINE	DRAWING NUMBER	STATUS	REV.
2522	ELECTRICAL	2522-MVH-E-T-300	T	00



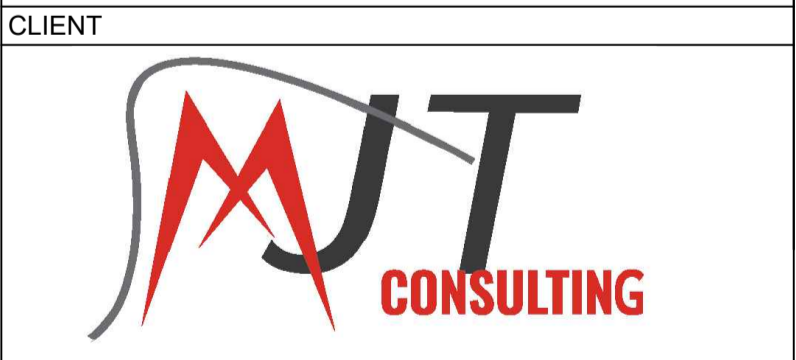
LEGEND

DB 	NEW DISTRIBUTION BOARD
DB 	REFURBISHED DISTRIBUTION BOARD
DB 	EXISTING DISTRIBUTION BOARD
	NEW LOW VOLTAGE CABLE
	EXISTING LOW VOLTAGE CABLE

GENERAL NOTES:

- ELECTRICAL INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH SANS 10142-1: 2003 (SOUTH AFRICAN NATIONAL STANDARD - THE WIRING OF PREMISES, PART 1: LOW VOLTAGE INSTALLATIONS)

NO.	DATE	REVISION	DRAWN
00	04-03-26	FOR TENDER	S.M

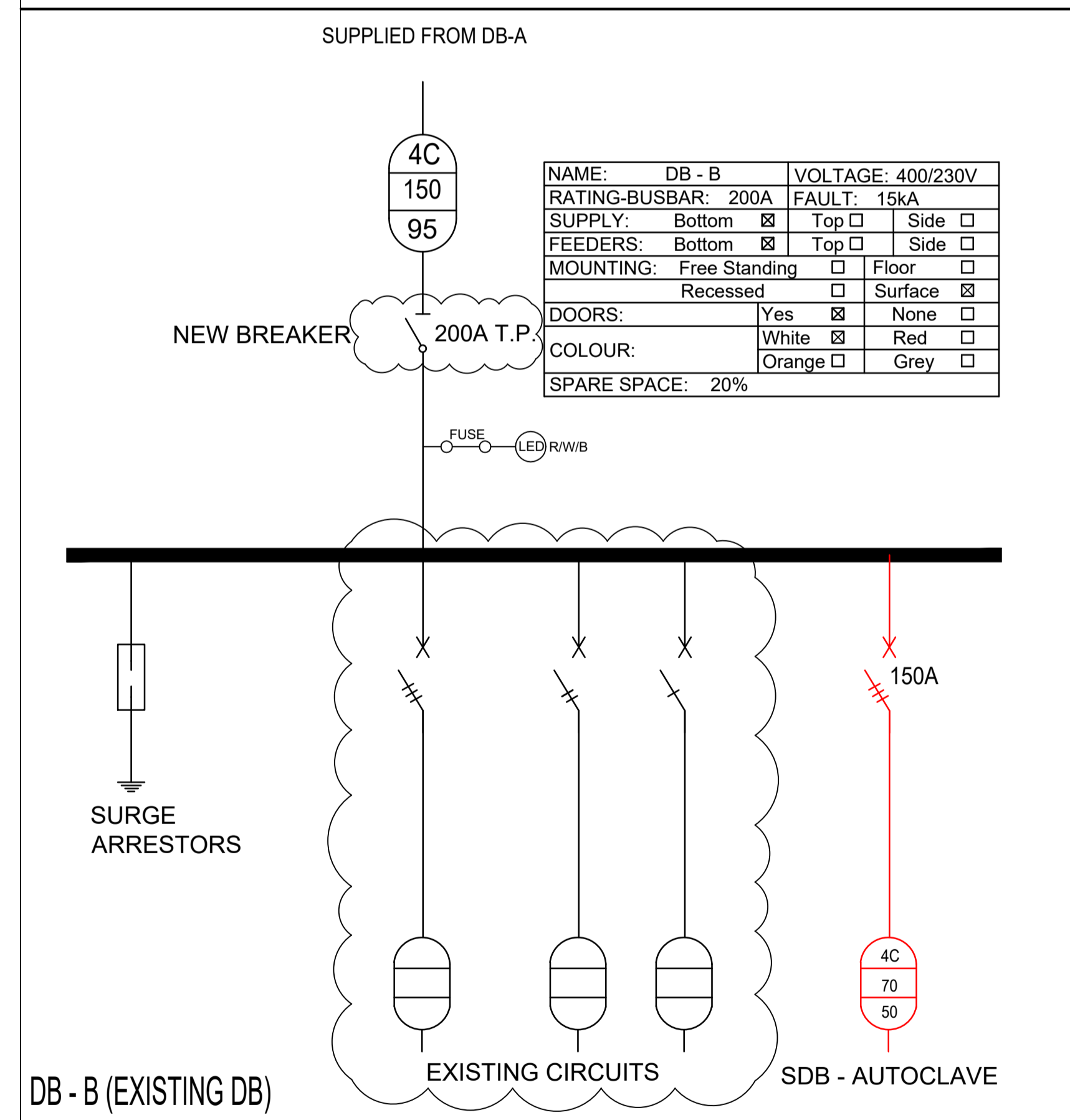
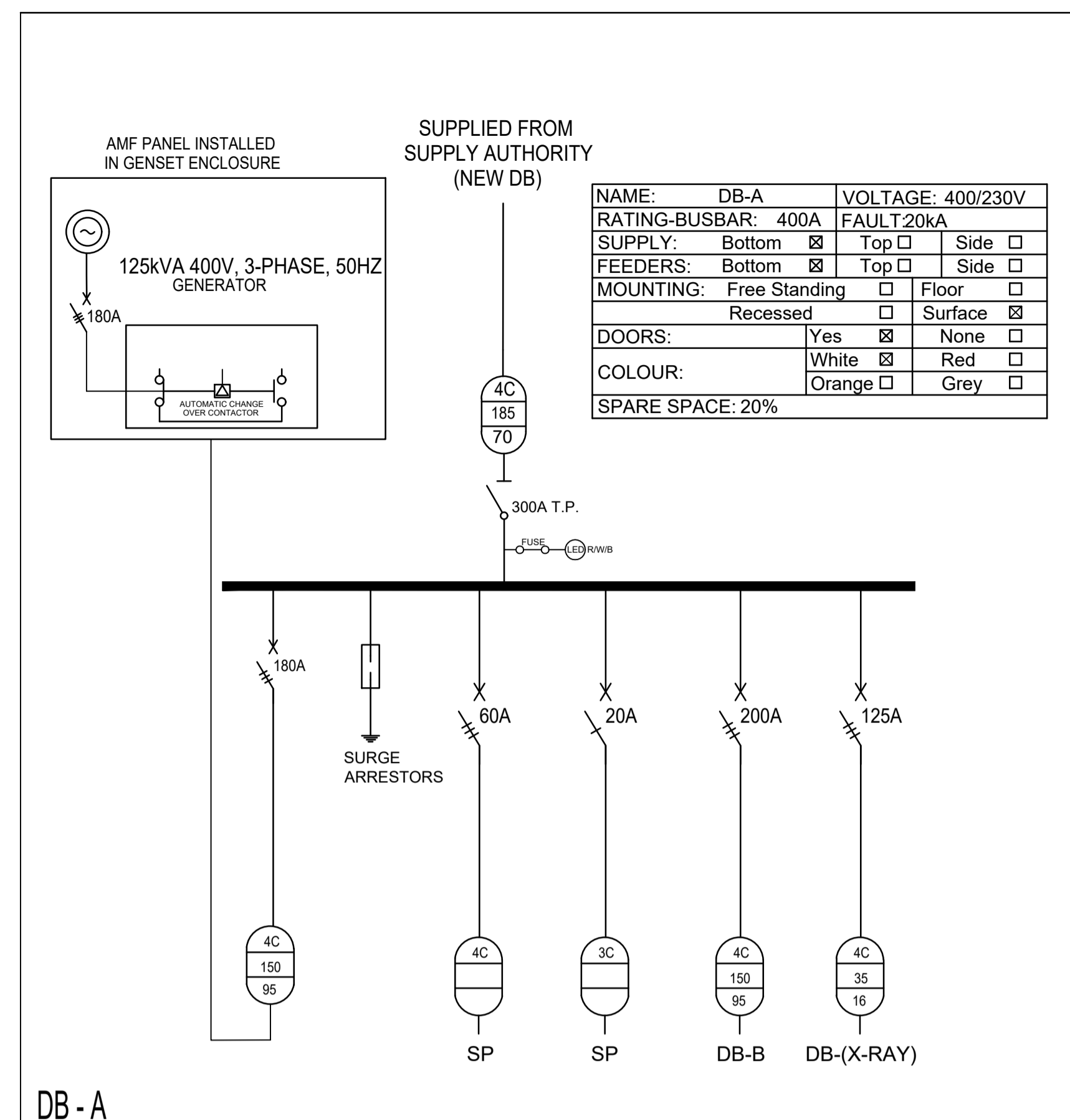
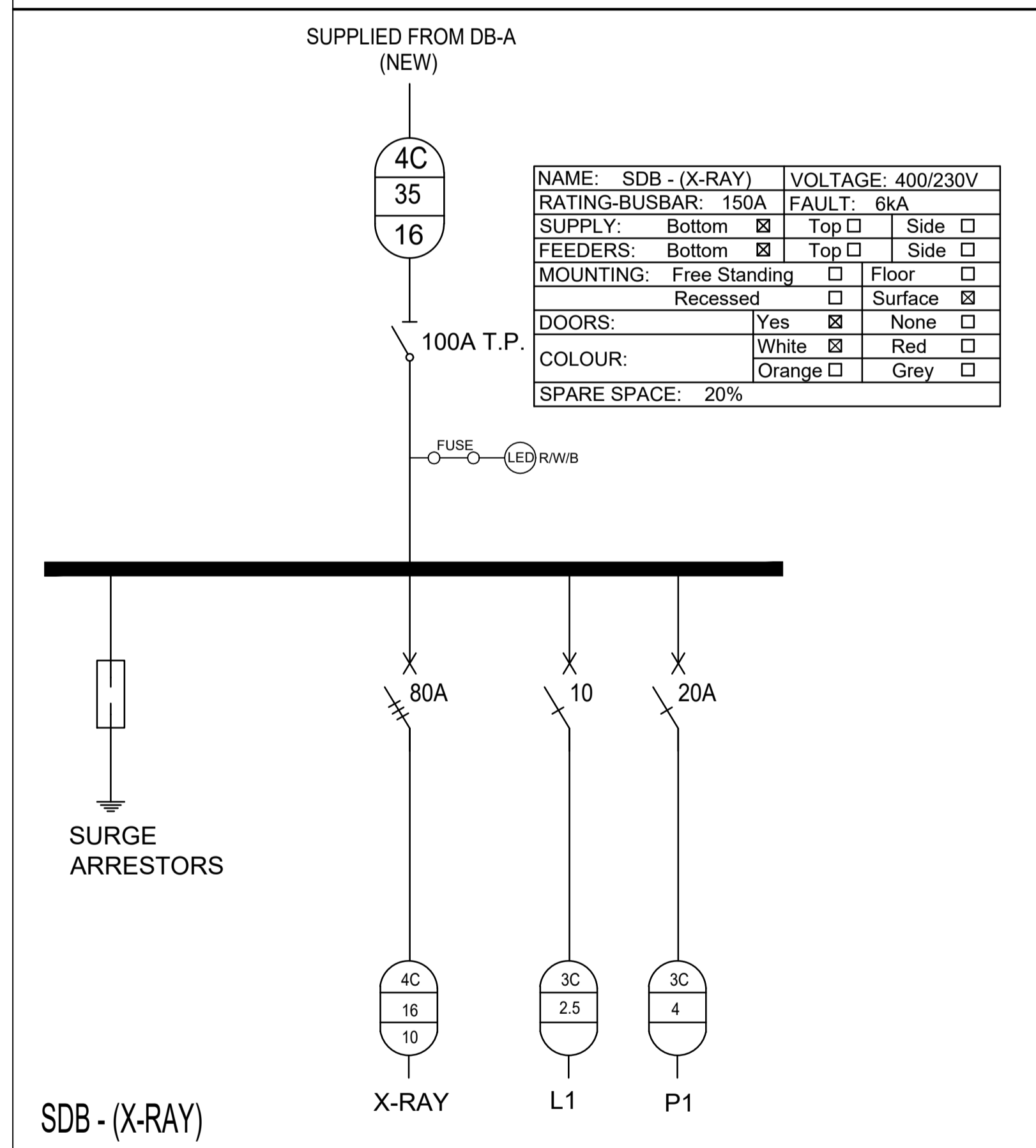
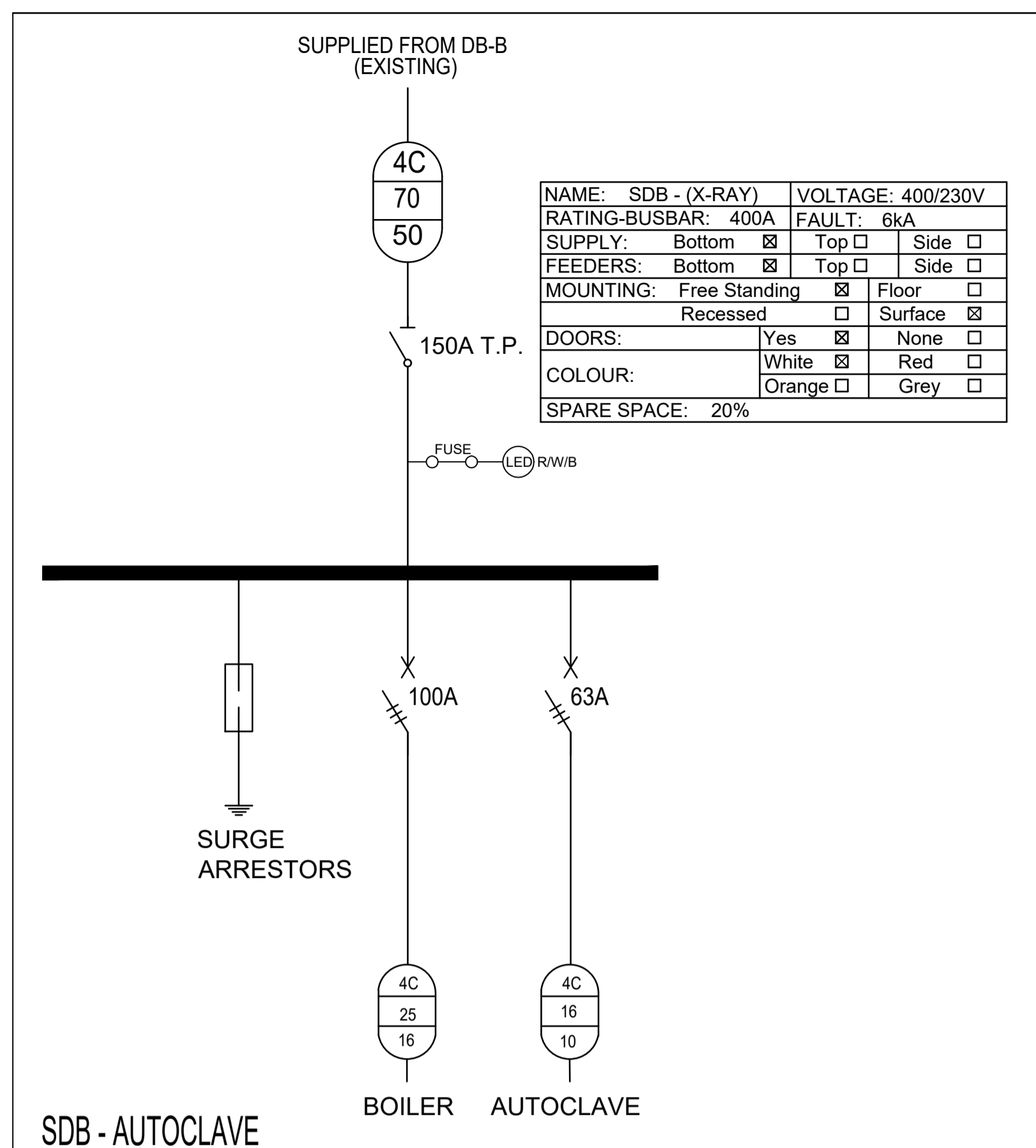


ELECTRICAL ENGINEER			
SIGNATURE	DATE	SCALE	SHEET SIZE
S.M.	04-03-26	N.T.S	A1
DRAWN	S.M.	04-03-26	STATUS LEGEND I = INFORMATION T = TENDER C = CONSTRUCTION AB = AS BUILT
VERIFIED	M.N.	04-03-26	
VALIDATED	-	-	

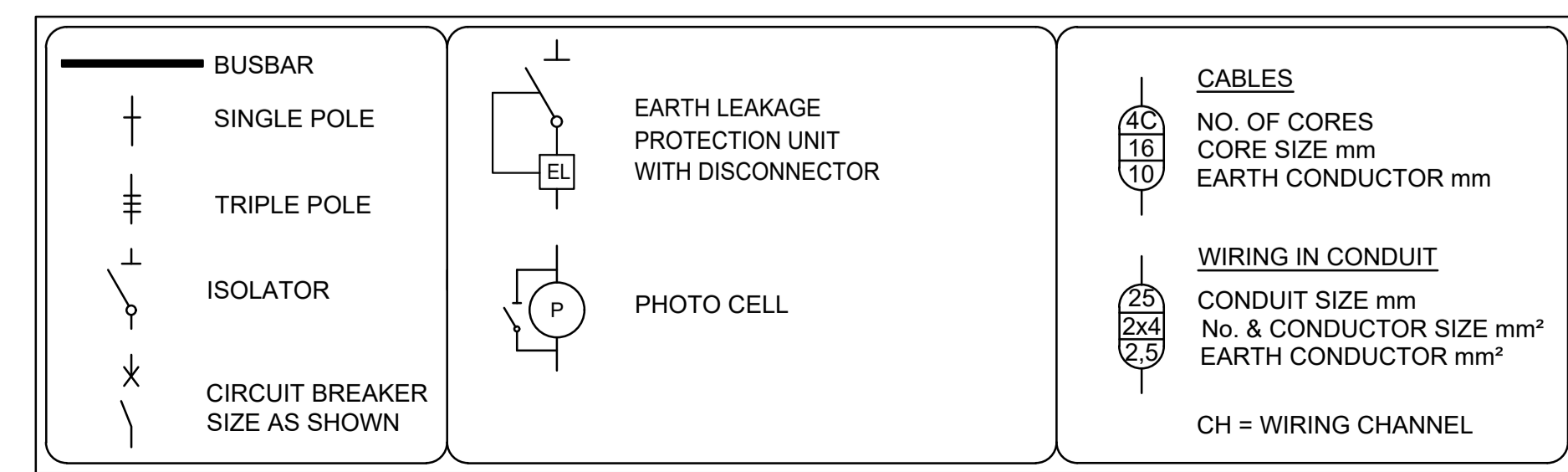
PROJECT
MARTJIE VENTER HOSPITAL :
SUPPLY UPGRADE

DRAWING TITLE
SCHEMATIC BLOCK DIAGRAM:
NEW ELECTRICAL NETWORK

PROJECT NUMBER	DISCIPLINE	DRAWING NUMBER	STATUS	REV.
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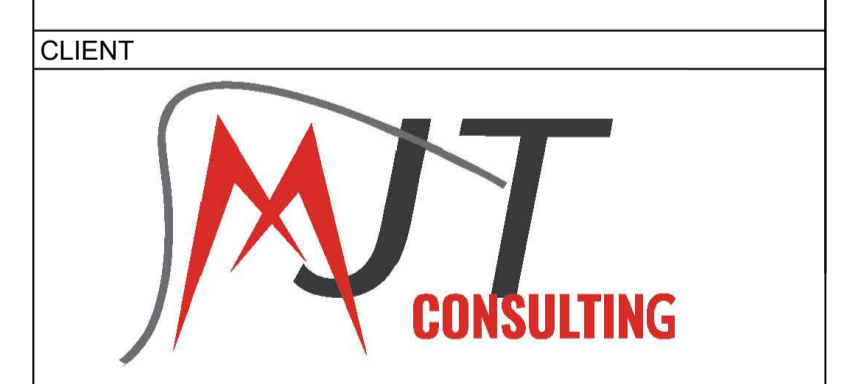
LEGEND



GENERAL NOTES:

- ELECTRICAL INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH SANS 10142-1: 2003 (SOUTH AFRICAN NATIONAL STANDARD - THE WIRING OF PREMISES, PART 1: LOW VOLTAGE INSTALLATIONS)

NO.	DATE	REVISION	DRAWN
00	04-03-26	FOR TENDER	S.M

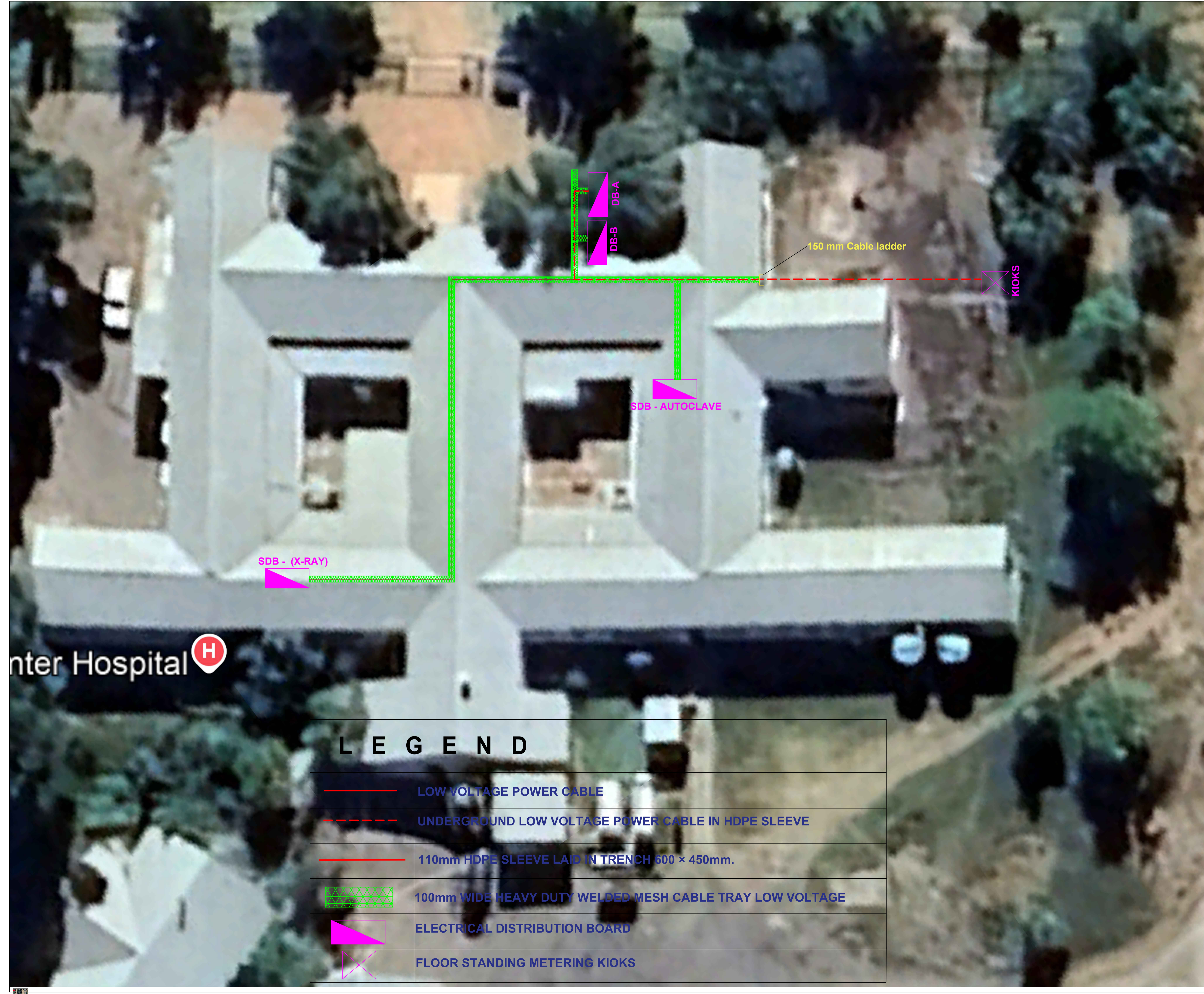


ELECTRICAL ENGINEER			
SIGNATURE	DATE	SHEET SIZE	A1
DESIGNED S.M.	04-03-26	SCALE	N.T.S
DRAWN S.M.	04-03-26	STATUS LEGEND	
VERIFIED M.N.	04-03-26	I	INFORMATION
VALIDATED		T	TENDER
		C	CONSTRUCTION
		AB	AS BUILT

PROJECT
MARTJIE VENTER HOSPITAL :
SUPPLY UPGRADE

DRAWING TITLE
SINGLE LINE DIAGRAM:
SDB - (X-RAY), SDB - AUTOCLAVE & DB - A

PROJECT NUMBER	DISCIPLINE	DRAWING NUMBER	STATUS/REV.
2522	ELECTRICAL	2522-MVH-E-T-302	T 00



GENERAL NOTES:

- ELECTRICAL INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH SANS 10142-1: 2003 (SOUTH AFRICAN NATIONAL STANDARD - THE WIRING OF PREMISES, PART 1: LOW VOLTAGE INSTALLATIONS)

NO.	DATE	REVISION	DRAWN
00	04-03-26	FOR TENDER	S.M

nter Hospital 

L E G E N D	
	LOW VOLTAGE POWER CABLE
	UNDERGROUND LOW VOLTAGE POWER CABLE IN HDPE SLEEVE
	110mm HDPE SLEEVE LAID IN TRENCH 500 × 450mm.
	100mm WIDE HEAVY DUTY WELDED MESH CABLE TRAY LOW VOLTAGE
	ELECTRICAL DISTRIBUTION BOARD
	FLOOR STANDING METERING KIOKS



ELECTRICAL ENGINEER			
SIGNATURE	DATE	SHEET SIZE	
S.M.	04-03-26	A1	
DESIGNED	SCALE	N.T.S	
S.M.	04-03-26		
DRAWN	STATUS LEGEND		
S.M.	04-03-26	I = INFORMATION	
VERIFIED	M.N.	T = TENDER	
		C = CONSTRUCTION	
VALIDATED	-	AB = AS BUILT	

PROJECT
MARTJIE VENTER HOSPITAL :
SUPPLY UPGRADE

DRAWING TITLE
LOW VOLTAGE CABLE ROUTE:

PROJECT NUMBER	DISCIPLINE	DRAWING NUMBER	STATUS	REV.
2522	ELECTRICAL	2522-MVH-E-T-303	T	00

ANNEXURE 2 : SPECIFICATIONS

LOW VOLTAGE INSTALLATION UPGRADES SPECIFICATIONS

PART 1: ELECTRICAL WORKS SPECIFICATION

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1.0 Purpose

1.1 This Specification is intended to set out the general technical and procedural requirements for the installation of electrical lighting, power and ancillary services within and around premises largely as contemplated in The Code of Practice for the Wiring of Premises, South African Bureau of Standards SANS 10142-1:2003 (hereinafter called the Wiring Code, or SANS 10142-1:2003). Where the installation falls outside the scope of the Wiring Code, those portions of the installation (e.g.: MV switchgear and cabling, power transformers, and so forth) shall be covered in one or more supplementary specifications appended hereto).

1.2 This Specification shall be read in conjunction with the Contractual Conditions, Schedules, Bills of Quantities and Drawings.

1.3 Clause separations and headings are given for guidance only and the Work may not necessarily be limited to any particular section(s) of this Specification and the project Documentation must be read as a whole.

2.0 Scope

2.1 This Specification covers the supply, delivery, off-loading, storage, installation, testing, commissioning and handing over in full working order, complete in all respects of lighting, power and ancillary services as outlined in this Specification and/or shown on the drawing(s). Unless specifically stated otherwise, any reference in the Documentation (see clause 3.1.2) to any material or service being provided, fixed, rendered etc, shall mean that such provision falls under the Contractor's contractual obligations.

2.2 The detailed scope of work entails:

From the new metering point to new DB – A (new) inside the hospital building, install 185mm², 4-core armoured cable and associated 120mm² bare copper earth conductor from the metering kiosk across the tarred road.

Refurbish DB - B (existing) and equipping it with the switchgear as shown on the single line diagrams and measured on the bills of quantities.

Reroute existing generator supply cable from DB – B to the to the new DB – A.

Connect DB - A to DB - B with 150mm², 4 core armoured cable and associated 95mm², bare copper earth conductor

Provide a new SDB - Autoclave complete with switchgear as shown in the single line diagrams

Install a 70mm², 4 core armoured cable and associated 16mm², bare copper earth conductor from DB – B to new DB - Autoclave

Provide a new SDB-Xray complete with switchgear as shown in the single line diagrams

Install a 35mm² 4core armoured cable and associated 35mm² bare copper earth conductor to a wall mounted 100A 4pole isolator.

The works also include the excavation of a cable trenches, installation of cable sleeves, back filling, and reinstating the tarred road surface and affected concrete hospital driveway.

Provision of cable ladders and associated mounting accessories to support the cables

Provision of lighting and small power to the X-Ray room

Testing, commissioning and issue a certificate of compliance.

2.3 The service/s installation/s shall comprise, but shall not be limited to: all notifications and applications to Authorities, including payment of fees, distribution boards, cables, bus-bars, wireways, wiring, controls, accessories, luminaires and lamps, earthing, static and lightning protection/bonding, facilities for other services, fixings and building-in, earthworks, painting, special power supplies, data services, fire alarms, access and intruder control, communication, TV and radio services, working and record drawings, maintenance manuals etc and all other things to form a complete and proper installation to the extent as contemplated in the Documentation.

2.4 The Tenderer shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the Works and of his rates and prices contained in the various schedules and that his offer shall cover all his obligations under the Contract for the full and proper completion of the Works.

3.0 Definitions

3.1 In addition to the definitions contained in Part 3 of the Wiring Code, the following shall apply:-

'Document' and 'Documentation' shall mean the complete set of contract Documents including any relevant government department's specifications and conditions (where applicable), this Specification, schedules, bills, drawings and any variation orders or site instructions issued in terms of the Contract.

3.1.2 'Contractor' or 'Electrical Contractor' shall mean the person, partnership, company or firm appointed to undertake the electrical and or ancillary installation hereinafter called the electrical installation or Works in terms of this Contract. In this Document, 'Contractor' shall have the same meaning as nominated, selected or domestic sub-contractor where the electrical installation is in any form a sub contract to the Main Contract. For clarity, the builder or

principal contractor shall be referred to as the 'Main Contractor'. The Contractor shall also be fully responsible under the contract for any of his sub-contractors, agents, assigns, suppliers etc.

3.1.3 'Tenderer' shall mean the person, partnership, company or firm who makes a bid to carry out the Works. The successful Tenderer will normally become the Contractor upon official award of the contract and the completion of contractual Documentation when all obligations under this Contract shall become the Contractor's liability.

4.0 Site Visit

In instances where there may be no mandatory formal Tenderers' site visit, Tenderers nevertheless are advised to visit the Site of the Works, prior to the submission of any tender, to ascertain site conditions, accessibility, available facilities etc. No claim on the grounds of want of knowledge in these respects, or any others, will be entertained.

5.0 Compliance with Regulations

5.1 The installation shall comply with the latest versions of the following standards and regulations except where more stringent requirements are laid down in the contract Documentation in which event the latter shall take precedence:-

The Code of Practice for the Wiring of Premises, SANS 10142-1:2003.

The latest issues of all SANS Standards and Codes of Practice (hereinafter called SANS standard/s) or, if such standards do not exist, then the latest versions of the appropriate international standard as issued by the British Standards Institute (BS) and/or the International Electrotechnical Commission (IEC).

The Occupational Health and Safety Act 1993 (Act 85 of 1993), (OHSA) and the Construction Regulations R1010 dated 18 July 2003.

The bye-laws and regulations of the Local Municipality and Authorities who are responsible for the area in which the Works are situated

Telkom regulations and specifications

5.2 The Contractor shall issue all notices and pay all the required fees in respect of the installation to the authorities, and shall indemnify the Employer, Main Contractor and Engineer from all losses, claims, costs or expenditure which may arise as a result of the Contractor's failure to comply with these requirements and the regulations of any relevant Authority.

5.3 It shall be assumed that the Contractor is conversant with the requirements outlined in 5.2. Should any requirements, by-laws or regulation, which contradicts the requirements of this Document, apply or become applicable during the course of the Works, such requirements, by-law or regulation shall overrule this Document and the Contractor shall immediately inform the Engineer of such a contradiction. Under no circumstances shall the Contractor carry out any variations to the installation in terms of such contradictions without obtaining the written permission to do so from the Engineer.

6.0 Standards and Quality of Work

6.1 As the Wiring Code lays down strict requirements for complying with SANS standards, a compulsory specification published in a government gazette, or otherwise approved in terms of the Wiring Code, no detailed list of Standards will be scheduled herein. However, portions of the Works falling outside the scope of the Wiring Code shall comply fully with the latest versions of the applicable standards and codes issued by the SANS or, in the absence of such standard, with an acceptable international standard. Any reference to a particular standard may be given for guidance/clarification only; this shall not relieve the Contractor from complying with all relevant standards in their entirety.

6.2 All components shall be new and of the best available quality and of the class most suitable for the purpose and environment for which they are intended. The whole installation shall be extremely reliable and all parts shall be of such material as will ensure that they are capable of withstanding variations in temperature and humidity arising under working conditions without distortion or deterioration or setting up of undue strain on any part.

Any particular make or model of equipment referred to in the Documentation is for guidance purposes only in setting standards/types/performances required; equipment that is equal or superior in all respects, and to the approval of the Engineer, may be offered by Tenderers. No reference to any particular make of any equipment shall be construed as that equipment having been selected by the Engineer or Client and the Contractor shall be fully responsible for the guarantee and performance of such equipment.

Only equipment and materials with a proven track record in similar applications will be considered.

6.3 Equipment and components of a similar class, such as wiring accessories, switch disconnecter units etc, shall be of the same make, pattern, and where applicable, colour, throughout.

6.4 The Work shall comply with the requirements of the Documentation, but where it may become necessary to carry out the Work in a different manner; the Contractor shall first obtain the approval of the Engineer in writing.

In cases where items offered by Tenderers are not in accordance with the contract Documentation, the deviation/s must be fully detailed, irrespective of whether a special form is included for this purpose or not, and such details shall accompany the tender submission in the form of a covering letter, or on the form provided. Merely stating 'as (manufacturer's name / item)', or submission of manufacturer's pamphlets etc. is not acceptable, will not be considered part of any offer and will be ignored. Where no details are submitted, in a covering letter, or on a form provided, the offer shall be deemed to comply fully with the Works Documentation and the successful Tenderer/Contractor shall be liable for performance strictly in accordance with all specifications and conditions.

6.5 The complete Work shall be carried out by qualified, highly trained, skilled and competent operatives to the highest standard of workmanship. The minimum requirement is that a permanent on-site electrician whether working alone or leading the Contractor's workforce, and who must be an 'A' Grade artisan as determined by the Department of Labour, is to be the appointed artisan who shall be responsible for the day to day installation work.

An adequate number of workmen shall be employed at all times to ensure satisfactory progress of the Works in accordance with the overall pace of the project and/or in harmony with any Works programme set by the Architect, Main Contractor or Engineer, etc.

The Contractor shall liaise and cooperate with any other contractor(s) whose work is related to, close to or build into with the Works as detailed herein and shall coordinate the Work to avoid fouling, unsatisfactory setting out etc. Any failure by other contractors to collaborate with the Contractor herein shall be immediately reported in writing to the Engineer and Main Contractor.

The Work shall at all times and for the full duration of the Contract, be carried out under the management and supervision of a skilled and competent representative of the Contractor who will be authorised to receive and carry out instructions on behalf of the Contractor and to attend site meetings.

7.0 Rejection of Inferior Work and Materials

All inferior work or work containing inferior material shall be rejected by the Engineer whereupon the Contractor shall immediately remove and rectify the faulty work as necessary and bear all costs in connection therewith.

8.0 Drawings and Samples

8.1 Tenderers may be required to submit for approval, comment or records samples of materials, apparatus or components, and also drawings, schematic diagrams or technical details, including calculations, upon which their design and/or offer is based before any contract is awarded. Such details may also be called for during the course of the Contract prior to installation. Any approvals given or comments made shall be on the generality of the scheme and shall not relieve the Contractor of his responsibility to ensure full compliance with all performance and regulatory criteria.

NOTE: A request for submission of samples or drawings does not imply that the Tenderer's quotation will necessarily be accepted.

8.2 Drawings shall be clearly marked "WORKING DRAWINGS FOR APPROVAL", or as otherwise applicable. Samples shall remain on site until completion and taking over of the Works or, with the Engineer's approval, the samples may be embodied within the installation.

8.3 All expenses in connection with the supply and return of the drawings and samples shall be borne by the Tenderer/Contractor.

9.0 Guarantee

9.1 All equipment supplied and all work performed shall be guaranteed against defective operation, poor design (where designed by the Contractor, or in components / assemblies with inherently poor design), and unacceptable / faulty workmanship, all as determined by the Engineer, for a period of 12 months after commissioning, handover and Client acceptance.

Any faults found during the guarantee period shall be timeously repaired or replaced by the Contractor, including peripheral damage/disturbance (e.g.: wall finishes etc damaged during the course of repairs), at his own expense, excluding mis-use and abuse by others and fair wear and tear. Discharge type lamps shall be included in the 12 month guarantee period; however, incandescent lamps shall carry a 3 month guarantee.

The Contractor is required to carry out any remedial work under the guarantee at times and in a manner which will cause the least disruption to the Client's, or other occupant's, operations.

9.2 The Contractor shall ensure that he has access to sufficient spare components for all equipment readily available to forestall any delays in repairing the installation.

10.0 Operating and Maintenance Details

Two complete sets of technical manuals complete with spares schedules, as-fitted layout drawings, schematic wiring diagrams and operating and general maintenance information, bound in hard-cover ring binders shall be prepared by the Contractor and delivered to the Client at or before final handover. A full 'As-Built' set of drawings shall also be submitted to the Engineer for record purposes.

The main and individual distribution board (DB) single line diagrams shall be brought up to 'As-Built' status and copies placed in the technical manual. A further copy of the main single line diagram shall be mounted in a glass-fronted frame and hung in a suitable position in the main LV room. Copies of the distribution board diagrams shall be folded (or reduced) to A4 size and placed in an A4 sized perspex fronted frame or document pocket in the applicable DB. Such frames or pockets shall be fabricated from 1,2mm pre-galvanised steel and spot welded to the DB (usually to the inside of the DB door).

This documentation shall be submitted to the Engineer for comment and approval prior to handing over to the Client. It is therefore advisable to submit the details in draft format so that any amendments/corrections can be easily incorporated.

11.0 Inspection and Testing of Works

11.1 The Contractor shall attend upon the Engineer as reasonably required for Work inspection. Normally, inspection of Work in progress will take place on the same day as the general site meeting, or such other times as the Engineer may reasonably require. Handing-over inspections will be done at the completion of the Contractor's testing, issuing of the Certificate of Compliance by the Contractor's accredited person, livening the installation by the Supply Authority, commissioning of the installation and upon making a written request for the Engineer to carry out an initial handover inspection.

Where the installation is to be switched on and taken over in portions, the Certificate of Compliance shall be limited to that particular part of the Work. New Certificates of Compliance shall be completed for remaining phases of the project as applicable and the Supply Authority's permission formally obtained to switch electricity to those areas.

The Contractor shall, prior to requesting the Engineer to undertake an initial handover inspection, do a full, complete and proper inspection of his Work to ensure that everything is absolutely complete and in accordance with the Documentation. Following this inspection, and rectification of any faults in parts of the installation that may be required, the Contractor shall make a written request to the Engineer for a handover inspection. Any faults still found in the installation shall be listed by the Engineer and handed to the Contractor who shall attend to all faults within a reasonable period as decided by the Engineer except that this period will in no circumstance exceed 14 days. Once all listed faults have been rectified, the Contractor shall again request the Engineer in writing to carry out a final handover inspection.

Upon the successful completion of a handover inspection and the issuing of a handover certificate by the Engineer, the responsibility for the security of the installation, or part thereof, shall be deemed to be with the Client.

Under no circumstances will any inspection by the Engineer and/or, if appointed, the Electrical Clerk of Works of Resident Engineer, relieve the Contractor of his obligations in terms of the Documentation.

11.2 On completion of the installation, or such part thereof as may be determined by the Engineer, the Contractor shall carry out installation testing and inspection in accordance with Part 8 of SANS 10142-1:2003 and/or any other relevant Standard.

The result of these tests, duly certified by the Contractor, shall be submitted to the Engineer in the form of a typed test-result certificate. No testing for acceptance purposes will be carried out by the Engineer until this is received.

Upon receipt of the test certificate, the Engineer will arrange to carry out acceptance tests and to witness commissioning procedures, including load-balance, phase rotation, bonding and labelling checks. If any faults are found in the installation, a list of those immediately noticed will be handed to the Contractor by the Engineer. The Contractor shall forthwith rectify such faults and issue a further test certificate endorsed "RE-TEST" with all reasonable despatch whereupon the Engineer will carry out further check-tests.

Any list of faults issued by the Engineer shall not be regarded as final, but given only for the assistance of the Contractor who will be bound to exercise all necessary diligence in their rectification and to check for any other faults and to rectify same.

The Contractor shall supply all necessary testing instruments for carrying out tests, including, but not limited to: insulation tester, earth loop-impedance tester, clip-on ammeter (e.g.: for load-balance testing), earth-leakage tester, etc. Where there is reason to doubt the accuracy of the instruments, the Contractor shall arrange for tests to check their accuracy.

11.3 Where cast-in conduit is installed, the Contractor shall thoroughly check his layout, fastness etc, well before any concrete is poured. The Engineer shall be informed by the Contractor in writing that he is ready for a check-inspection, giving the Engineer not less than 48 hour notice (usually by telefax and or email). A qualified operative of the Contractor shall stand by at all times when concrete is being poured so that any conduits or boxes that may become loose, displaced etc can be refixed.

11.4 If it is necessary for the Engineer, his agents or assigns, to spend extraordinary time in respect of checking, testing, inspection or any other matter due to the Contractor's default or unsatisfactory attendance all costs of the Engineer in obtaining remedy shall be for the Contractor's account. For example, if the Contractor failed to carry out his own prior testing in a reasonable and diligent manner, or to check cast-in conduits properly before calling the Engineer to undertake a check-inspection, thus necessitating further visits and/or extra time incurred, costs of the Engineer will be charged to the Contractor. These costs will be deducted from the Contractor's claims, or shall be claimed by submission of an account. Engineer's claims for wasted time, including disbursements, shall be based on the applicable Department of Public Works Rates for Reimbursable Expenses.

12.0 Technical and Installation Requirements

12.1 Main Electrical Supply

In instances where the incoming main supply from the Supply Authority is at low voltage (LV), requirements of the Supply Authority with regard to method of incomer connection, earthing, testing/approval of main circuit breaker etc, must be strictly adhered to.

The Supply Authority's requirements for their metering must be complied with and all facilities, space, bus-bar links for current transformers (CTs), etc, as the case may be, shall be in accordance with their requirements. The Contractor shall be deemed to have made all allowances for the Supply Authority's requirements in their tender submission.

12.2 MV Equipment and Cabling

Medium voltage (MV) equipment falls outside the scope of this building services specification. Where required, MV cables, MV switchgear and power transformers etc. shall be specified in a supplementary specification and/or drawings.

12.3 Miscellaneous Equipment and Installations

Miscellaneous items such as diesel generators, uninterruptable power supplies (UPSs), overhead lines etc. which fall outside the scope of this building services specification shall be specified in a supplementary specification and/or drawings.

Distribution Boards

General

Distribution Boards (DBs) shall be of the type as detailed in the single line diagrams, the Detailed Specification and, where applicable, the equipment schedules. Unless otherwise indicated, distribution boards shall be provided with prefitted space/s for a minimum 20% extra switchgear, subject to a minimum of one space for each class of circuit breaker, combination fuse switch (CFS), contactor etc, viz.: 3-pole, single pole etc, as the case may be.

DBs shall comply fully with SANS 1765.

Enclosures

Distribution boards for internal applications shall be constructed from folded pre-galvanised 2mm mild steel sheet suitably welded, bolted and braced to form a rigid construction and finished with an epoxy coating after fabrication. DBs for external applications shall be similar to internal DBs, but shall be fabricated from 2mm 3CR12, plus a suitable epoxy finish. Boards for special applications may be made from polished 2mm 316 stainless steel, fibreglass etc; these will be more fully described in the Detailed Specification where applicable.

ii) All equipment, except door mounted instruments, indicators and so forth, shall be mounted behind removable fascia plates with only the switchgear operating handles protruding.

iii) Normally, free standing boards shall not exceed 2,3m in height with operating handles, push-buttons etc not exceeding 1,8m from the floor nor lower than 600mm above floor level (subject to any equipment part not being lower than 300mm from the floor).

Cabinet type boards used mostly for LV distribution shall be 'Form 1' degree of separation to IEC 439 while cubicle boards used mostly for Motor Control Centres (MCCs) shall be 'Form 4'.

v) The Contractor is to check all access routes for distribution boards. Where necessary, DBs are to be made in sections to allow access into their final position.

Protection

All boards shall be rendered moisture and vermin proof and shall be adequately ventilated. Unless otherwise specified, free standing and wall mounted DBs in a normal internal environment shall be protected to IP43. DBs in certain factories may have to have a higher degree of protection which will be stated in the supplementary Specification or single line diagrams. The complete DB and its components shall be suitable for coastal conditions.

Bus-Bars

The bus-bars shall be of high conductivity 99,9% pure copper of adequate cross section for the current and short circuit rating, mounted on edge (not flat). Multiple/laminated bars shall be appropriately derated as necessary and shall be spaced by a distance equal to the bar thickness. Bars shall be supported on resin type insulators suitable for mechanical stresses due to prospective fault currents and otherwise so arranged and braced as to obviate distortion under short circuit conditions. The material used for bracing, shielding etc must be tested and approved by SANS and shall be completely non-hygroscopic and non-tracking.

Bus-bar current ratings for both phase and neutral shall be based on an internal temperature of 40°C with a maximum bar temperature rise of 60°C.

As a guide, the following current densities should not be exceeded for single bars:

100 Amps and below	: 3,50A/mm ²
101 - 300 Amps	: 2,65A/mm ²
301 - 1000 Amps	: 1,85A/mm ²
1001 Amps and above	: 1,20A/mm ²

iv) In addition to the current rating, the bars shall be sized to accommodate the prospective fault rating and the cross sectional area of the bars shall be the greater of the calculated sizes. Sizing for fault levels shall be based on the following:

$$a = 8, 2 \times I_{sc} \times \sqrt{t}, \text{ where:}$$

a = minimum cross section in mm²

I_{sc} = prospective short circuit current in kA

t = maximum time in seconds to clear fault, subject to a minimum of 0,2s

v) An earth bus-bar shall be installed at a convenient position, usually near the bottom, along the entire length of DBs with an incomer size of 200 Amps or more, or they may be of shorter but adequate length for smaller DBs. Earthbars need not be supported on insulators. The cross sectional area of the earthbars shall be equal or greater than half the cross sectional area of the incomer feeder cable. Earth terminal strips with screw connections may be used for boards with a maximum incomer size of 100 Amps.

vi) Teed-off neutral bars are to have the same cross sectional area as the sub-feeder phase bars and shall be mounted in a suitable position adjacent to the switchgear, which they serve. The outgoing connections must match the sequence of the switchgear to which they relate. Neutral terminal strips with screw connections may be used for boards with a maximum incomer/sub-feeder size of 100 Amps. These requirements shall also apply to smaller DBs where such neutral bars are also the main neutral bars.

vii) A separate neutral bar shall be installed for circuits protected by adjacent single phase earth leakage breakers connected to the same phase.

Gland Plates

Bottom entry boards shall be provided with minimum 2mm galvanised steel gland plates installed across the full width of each DB section at a minimum height of 300mm above the level of the bottom of the DB. Sufficient clearance for the bending of cable cores shall be provided between the lowest terminals of any equipment.

ii) Where single core cables are to be terminated, 10mm non-hygroscopic Delaron or similar material shall be used for the gland plate. Alternatively, gland plates for single core cables shall be made from 4mm thick aluminium.

Doors

Where called for, doors shall be fabricated from the same material as the main enclosure and shall be provided with closed-cell silicon gasketing to obtain the level of protection required (Refer also to 12.17.6). The doors shall be provided with catches, square-key turnbuckles, lockable catches or cylinder locks and handles, as specified in the Detailed Specification and/or drawings. All DB keys, where provided, shall be the same for all DBs on the particular project.

Paintwork

i) Pre-galvanised sheet metal shall be cold galvanised at all exposed edges and welded surfaces, degreased, bonderised, etch-primed and then finished with baked epoxy enamel or powder coatings per SANS 51274, as applicable and to paint manufacturer's recommendations to achieve a dry film thickness (DFT) of 70 microns.

ii) 3CR12 panels shall be pickled, passivated and etch-primed before being finished, similarly to pre-galvanised sheet steel boards, with baked epoxy enamel or powder coatings to achieve a DFT of 70 microns.

iii) Colour finishes shall be as follows:

Normal Supply LV Distribution Boards: Light Orange, colour B26 of SANS 1091

The standby power sections of DBs shall be Signal Red, colour A11 of SANS 1091

Uninterruptable Power Supply (UPS) DBs, or such sections within composite boards shall be Dark Violet, colour F06 of SANS 1091

Small domestic and shop type DBs, and boards in open kitchen areas shall be finished white, colour G80 to SANS 1091 (unless the latter is of bright stainless steel)

iv) A minimum of 1 litre of touch-up paint for each colour shall be provided.

Switchgear

i) MCCBs, MCBs and switch-disconnectors shall be of the same make throughout. Similarly, CFS units shall be metalclad type and are to be of the same make throughout. Current ratings must be clearly indicated on the front of the units.

ii) A suitably braced chassis for the mounting of moulded case type switchgear, including DIN type rails etc, shall be firmly secured to the frame of the switchboard. Large switchgear, such as ACBs, shall be secured directly to the framework using suitable structural/bracing members.

iii) MCCBs switch disconnectors and CFS units with a rating of 150 Amps and above shall be connected to the main bus-bars with bus-bar links. PVC insulated cable, neatly installed, shall generally be used for switchgear below 150 A. This latter requirement shall not preclude the use of small-section feeder bus-bar arrangements where available. Where long runs of PVC insulated cable are run within the DB, they shall be neatly laced together, or shall be installed in purpose made slotted PVC trunking. The smallest cable size for DB wiring shall be 2,5mm².

iv) Where necessary, stub bus-bars shall be fitted to the outgoing side of MCCBs and CFS units and the supply side of switch disconnector incomers to allow for lug connections to the cable cores.

v) Incoming circuit breakers and bus-coupler breakers rated 800 Amps and above shall be of the withdrawable type air circuit breakers (ACBs) or large frame MCCBs, as specified.

vi) Castell, or similar interlocks shall be provided for all main DBs which have bus-couplers. Alternatively, where detailed in the single line diagrams and/or Detailed Specification, the bus-coupler shall comprise a shuttered cradle only (no circuit breaker fitted) to match the incomer circuit breaker cradles. In the latter instance, bus-coupling will be effected by racking out the appropriate incomer ACB/MCCB, fitting it into the bus-coupler cradle and engaging the 'ON' position.

vii) Where MCCBs and ACBs have been set to a lower rating (e.g. 400A MCCB set to 350A etc.), the setting arrangements shall be sealed off and rendered tamper-proof after adjustment.

viii) Where instrument fuses or fused switchgear is used, spare fuses shall be housed in a small compartment built into the applicable board. 20% of each size of fuse, subject to a minimum of three, shall be provided and shall be mounted in stainless steel 'Terry' type clips inside the compartment. A label inside the spare fuse compartment shall indicate all part numbers for reordering. The outside of the compartment shall be labelled as follows:

SPARE FUSES

THE FUSES ARE USED TO CONTROL DANGEROUS PROSPECTIVE FAULT CURRENTS – DO NOT BRIDGE OUT UNDER ANY CIRCUMSTANCES

Reorder and replace any used-up fuses immediately

ix) Where fault limiting is employed, fuses or fault-limiter MCCBs shall be selected to limit down-stream faults to levels no higher than indicated in the single line diagrams or implied in the design.

Surge Arrestors

Surge arrestors, which comply with SANS 61643-1, may be installed in each distribution board. These shall be fitted at the load side of main incomers to each phase and the neutral.

Timeswitches

Timeswitches shall be suitable for single-phase operation at a minimum rating of 15 Amps. They shall be of the programmable electronic type complete with a minimum 24-hour back-up rechargeable battery. The battery shall be a locally available type and shall be arranged for easy removal and replacement. The characteristics of the timeswitch shall suit the requirements of the circuit as dictated by details in the single line diagrams (e.g.: day omitting etc). Solar type timeswitches shall be used for all outside lighting circuits unless photocells are employed for control purposes.

ii) A manual by-pass switch, mounted in the DB fascia, or as otherwise indicated, shall be provided to permit the circuit to be switched 'on' or 'off' manually for one switching cycle without affecting any other settings.

Contactors

Contactors shall be DP or TP electromagnetically operated air break, low noise type suitable for the rated supply voltage, circuit current and prospective fault level current.

ii) Contactors for general lighting and power shall be AC1 category while AC3 category shall be used for motor starting.

iii) Where auxiliary contacts are not specified to be fitted initially, the contactor shall have provision for adding these contacts. Auxiliary contacts shall be rated at 6 Amps, 250V AC. Auxiliary contacts characteristics such as 'make-before-break', 'late break' etc must be inherent in the design and shall not be adapted from standard contacts.

iv) All contactors shall have the following features:

Easily replaceable coil

Permanent air-gap in the magnetic circuit

Clearly marked main and auxiliary terminals

Provision for easy inspection and changing of contacts

v) Contactors shall be electrically and mechanically interlocked for changeover arrangements and electrically interlocked only for star-delta starters.

Instruments and Controls

i) Instruments, indicators and controls shall be provided as indicated in the single line diagrams. Where the components are to be actuated from the front of the DB door, they shall be rated to the appropriate IP level (e.g.: IP43). In instances where meters and the like are required, and where these cannot be protected to the level specified by themselves, suitably protection-rated impact resistant glass windows shall be provided in the door through which to view the dials and the instrument/s mounted in the inner fascia.

Doors in which instruments are installed shall be provided with a flexible woven copper earth link across the hinge side. Insulating shrouds or other suitable barriers shall be installed to prevent accidental contact with door mounted instrument terminals.

Fuses for the protection of instruments shall be of the HRC cartridge type mounted behind the DB fascia. All control fuses shall be clearly labelled.

iv) Push-buttons for protection ratings of IP65/66 shall be provided with rubber 'boots' for enhanced protection. Any exposed rubber shall be further protected (e.g.: with silicon covers) where used in food factories containing sugars and

other carbohydrates which may give rise to attack from bacteriological action when fine particles collect on or near the rubber.

v) Only LED type indicator lamps shall be used. A set of spare LEDs (20% of each type, subject to a minimum of three) shall be supplied. These may be housed in the spare fuse compartment where provided, and the labelling suitably modified. Alternatively, the LEDs shall be housed in a small labelled compartment similarly to HRC fuses as aforementioned

vi) Unless otherwise specified, ammeters, voltmeters, frequency meters and running-hour meters shall have a minimum dial size of 96mm x 96mm with anti-static impact resistant clear faces. Instruments shall be screened against magnetic interference.

vii) Voltmeters shall be of the moving iron type with class 1.5 accuracy as per IEC 51. A zero adjustment screw shall be provided. Voltmeters shall be scaled 0 - 250V or 0 - 500V as appropriate. Selector switches used in conjunction with a single voltmeter shall be of the cam-actuated or wiping air-break type. The switch shall be labelled with the 'OFF' position and other positions as specified (e.g.: 'N - R' for neutral to red phase, 'R - Y' for red to yellow phase etc.)

viii) Ammeters shall have a moving iron element to indicate instantaneous values. Direct reading ammeters may be used up to 60 Amps. Current Transformer (CT) operated ammeters of 60 Amps and above shall be 5 Amps full scale, calibrated to read actual primary currents. The CT ratio shall be indicated on the faceplate.

ix) Unless otherwise stated, ammeters shall be of the Maximum Demand (MD) reading type. The mean value over a fifteen minute period shall be indicated by a red pointer driven by a bimetal spiral element. Full load current shall be indicated with a distinctive line on the dial. The scale should indicate at least 25% over full-load rating.

x) Instrumentation and control (I&C) wiring shall be segregated into LV and ELV wiring and installed in separate slotted plastic trunking within the main casing of the board. I&C wiring shall also be kept separate from power wiring. The smallest ELV conductor shall be 1mm². Conductors connecting to components on hinged panels shall be shrouded in spiral plastic 'loom-former' and fixed on both sides of the hinge. A loop shall be formed in the wiring so that the loom produces a twisting motion away from the door jamb when it is closed.

Consumption Meters

KWh meters shall be Direct on Line (DOL) type up to 80 Amp rating and CT operated above this amperage. Meters shall be calibrated for the specific application to obviate the use of multiplication factors.

ii) Consumption meters shall have cyclometer dials with six digit readout, the last digit indicating one-tenth of a unit.

iii) Facilities for a security seal shall be provided on the fixing screws of the terminal cover.

Current Transformers

Current transformers shall be epoxy resin encapsulated and comply with the requirements of SANS 60044-1 and IEC 185. Unless otherwise stated, the secondary current of CTs shall be 5 Amps and all instruments, meters etc shall be selected accordingly. The rated burden shall not be less than 10VA.

ii) The following accuracy classes shall be adhered to:

	Application	Primary Current	Class
Indication	A11	5	
	Protection	A11	3
	Metering	Up to 250A	1
	Metering	250 - 600A	0,5
	Metering	600 - 800A	0,2
	Metering	800A +	0,1

Power Factor Correction

i) Where called for, power factor correction (PFC) capacitors shall be housed in a separate section of the DB, segregated from other sections by a metal barrier, and designed for extra ventilation. The PFC section shall have low-level vermin proofed inlet louvres and the top shall have a 12mm diamond mesh 'roof' with a solid flat section spaced at least 50mm above the mesh. Whilst the construction, paintwork etc, shall be similar to the DB casing, the level of protection shall be IP21.

PFC capacitors shall be protected and controlled by HRC fuses and contactors specially designed for PFC applications. Switchgear shall be rated 70% higher than the normal current rating of the capacitor, e.g.: for a 60kVAr capacitor, the rating of the protective fuses would be 150 Amps in a 400V system.

Where metalised plastic film capacitors are used, the board construction shall be such as to limit the temperature rise, with all capacitors switched-in, to 35°C above ambient. If necessary a fan, complete with switchgear, controls and failure alarm, shall be employed. This equipment will not normally be indicated in the single-line diagram/s and the Contractor shall make due allowance as necessary.

iv) PFC controllers shall be electronic type giving 6 or 12 steps of control as specified. Digital indication of the power factor shall be built in, as well as 'auto, manual, off' controls and LED pilot lights indicating PFC steps.

v) The separate capacitor section of the DB shall have a 'double skin' metal separating barrier with a 12mm air gap for all PFC loads of 250kVAr and above.

vi) A discharge resistance system shall be provided for each capacitor to ensure effective discharge within 60 seconds after switch-off. A suitable barrier, complete with warning notice, shall be installed for all capacitor banks.

Anti-Condense Heaters

Where specified, 'black-heat' anti-condense heaters shall be fitted in the bottom sections of DBs in areas of high humidity or dampness. The heaters shall be fitted behind suitable screening to obviate accidental contact with persons or wiring. Anti-condense heaters shall be protected by dedicated MCBs or fuses and shall be sized to prevent condensation without giving rise to excessive temperature levels inside the DB housing.

Labels

i) Before installation, the Contractor shall submit a fully detailed proposed labelling schedule to the Engineer for comment and approval.

ii) Engraved plastic 'Ivory' or 'Traffolyte' type sandwiched labels shall be used for all labelling on DBs, control panels etc. Main labels on the outside of panels, and labels for individual components, switchgear etc shall be fixed to the panel or fascia face with brass bolts, nuts and washers. Labels for small grouped items such as a row of single pole MCBs may be securely fixed into slotted label holders. In the latter cases, the labels would normally identify the circuit number only and a typewritten legend card installed to the fascia front, or inside the DB door in a card holder, used to identify the circuit function.

iii) Normal informative labels shall have black lettering on a white background while warning labels shall have white lettering on a red background.

iv) Lettering sizes for labels shall generally be as follows:

Outdoor Panels, Minisubs etc: 50mm
Indoor Panels (main labels): 15mm
Bus-bar sections and sub-compartments: 10mm
Individual switchgear, indicators etc: 5mm

v) Substations, minisubs, kiosks, transformer room & switchgear rooms, shall be provided with notices as required by the Occupational Health and Safety Act.

Testing

Unless otherwise specified, the Contractor shall make all arrangements and provide all instruments for inspection and testing by the Engineer of distribution boards at the manufacturer's premises. The Contractor shall give the Engineer at least 5 working days notice of any impending test/s.

ii) The tests shall comprise, but shall not be limited to:

Visual inspection, label checks etc
Polarity checks
500V Megohm meter insulation resistance test
Injection tests for CTs etc
Function tests for all equipment, control and interlocking circuits, indicators, earth leakage relays etc

iii) In addition, these tests will be spot-checked at Site when phase rotation checks and installation commissioning will be carried out.

iv) After successful completion of tests, the Contractor shall provide the Engineer with duplicate test certificates for all DBs.

v) Extra time, travelling etc expended by the Engineer in repeating tests due to any failure shall be claimed from the Contractor in accordance with clause 11.4 herein.

Free Standing Distribution Boards

In addition to the general requirements contained in clause 12.4.1, free standing DBs shall be as follows:

Distribution boards shall have a 'U' channel baseframe designed to support all equipment and to span cable trenches etc.

General power supply boards shall be of the cabinet type with sections no wider than 1,5m.

Cubicle boards for the control of motors shall be of a modular cubicle design. The disconnecter for each cubicle shall be operated from the front and it shall not be possible to open the particular cubicle without switching off the disconnecter.

Unless otherwise stated, free standing boards shall be of the front access, bottom and/or top entry type as dictated by installation requirements and/or stated in the single line diagrams. Where called for, rear panels shall be removable and shall be secured to the frame by means of square key turnbuckles.

Where specified, boards shall be extensible to the left or right, as called for. This shall be accomplished by the installation of removable bus-bar cover plates in the side panels.

Upon completion of cabling into the distribution board, the Contractor shall ensure that the board is rendered totally vermin proof, especially at the bottom of the board around the incoming cables.

Distribution boards for external applications shall be fabricated from 2mm 3CR12 corrosion resistant steel sheets. External DBs shall be fitted with gasketed doors and shall be protected to IP55. These boards shall have sloped overhanging roofs for rain protection.

Where boards exceed 2m in width, they shall be provided with suitable lifting bales to facilitate off-loading, emplacement etc using a crane or similar. Where no facilities are available at Site for off-loading heavy DBs, the Contractor is to ensure that the boards are delivered using a crane-lorry, or shall make such other arrangements as required.

Surface Mounted Distribution boards

In addition to the general requirements contained in clause 12.4.1, surface mounted boards shall be as follows:

Unless otherwise indicated, all DBs shall be provided with flush mounting doors secured with catch/es, lock/s etc, as specified.

Except where otherwise specified, DBs shall be installed so that the top of the board lines up with the top of door frames. Where no such reference line exists the tops of boards shall be at a height of 2m above finished floor level. The maximum permissible height of any switchgear handle, push-button, meter or instrument face shall be 1,8m.

Suitable heavy duty lugs for securing the board to a vertical surface shall be provided.

Boards for external applications shall be fabricated from 2mm 3CR12 corrosion resistant sheet steel and shall be protected to IP55. A sloped roof shall be provided for rain protection. All cables entering or leaving externally mounted DBs shall do so at the bottom only.

Flush Mounted Distribution Boards

In addition to the general requirements contained in clause 12.4.1, flush mounted boards shall be as follows:

Unless otherwise indicated, all DBs shall be provided with adjustable overlapping architraves and flush mounted doors complete with catch/es or lock/s as specified.

Except where otherwise specified, DBs shall be installed so that the top of the board lines up with the top of door frames. Where no such reference line exists the tops of boards shall be at a height of 2m above finished floor level. The maximum permissible height of any switchgear handle, push-button, meter or instrument face shall be 1,8m.

The built-in tray may be fabricated from 1,6mm pre-galvanised steel without any further paint finish except for cold galvanising at exposed edges, weld joints etc.

Small domestic type DBs may have the front panel and door made from 1,6mm pre-galvanised sheet steel. Such boards shall not exceed 500mm x 500mm and the framework shall be finished as per clause 12.4.1 h).

Where called for, 'semi-recessed' boards shall be provided with a 35 to 50mm deep overlapping architrave surround into which the door/s and inner fascia are recessed. The portion of the architrave perpendicular to the wall shall be suitable for the future termination of surface conduits into the DB.

DBs for fitting into 115mm single brick walls shall be provided with suitable 'keying' strips of expanded metal spot welded to the sides of the tray for building into the brick courses. In addition, expanded metal shall be spot-welded to the rear of the bonding trays to act as 'keying' for plaster etc. This mesh shall overlap the tray by 75mm on all sides to obviate cracks in plaster.

At least two 20mm diameter spare conduits shall be installed from each DB into the ceiling void where applicable.

Layout Drawings for Approval

The Contractor shall timeously obtain detailed/dimensioned proposed layout drawings of distribution boards, including schematic wiring diagrams, bus-bar sizes, component details etc, from the board manufacturer prior to fabrication. The Contractor shall check all details, correct them where necessary and submit two sets to the Engineer for approval. No distribution board is to be fabricated until the Engineer's formal approval has been given.

Cablework

General

The Contractor shall be responsible for all main, sub-main and final circuit cablework.

Cable Types

Only the following types of cables shall be used for LV work:-

PVC Insulated, Armoured Copper Cables (PVC/SWA/PVC)

Polyvinylchloride insulated, armoured, copper cable shall be 600/1000V grade in accordance with SANS 1507, comprising PVC insulated stranded copper conductors with PVC bedding, galvanised steel wire armouring and PVC sheathing overall.

Mains voltage cables shall be at least 2,5mm² and no larger than 185mm² for ease of handling. Parallel cables of equal size shall be utilized where the current demand is greater than that rated for 185mm² cables.

Control cables shall be at least 1,5mm² unless otherwise specified.

PVC Insulated, Armoured Aluminium Cables (PVC/SWA/PVC) and PVCATAPVC Cable)

Polyvinylchloride insulated, armoured, aluminium cable shall be 600/1000V grade in accordance with SANS 1507 comprising PVC insulated solid aluminium conductors with PVC bedding, galvanised steel wire or aluminium tape armouring and PVC sheathing overall.

The cables shall be at least 16mm² and no larger than 120mm². Parallel cables shall be utilized where necessary.

Aluminium cables shall be used only when specifically specified.

PVC Insulated, Non-Armoured Cables (PVC/PVC)

Polyvinylchloride insulated non-armoured cable shall be 600/1000V grade in accordance with SANS 1507, comprising PVC insulated stranded copper conductors with PVC sheathing overall.

PVC/PVC mains cables shall only be used for trefoil configured applications.

For ease of handling the core size shall be limited to 240mm² except in special circumstances where space, routing etc. may allow for larger sizes.

Trefoil cables shall comprise 3 sets of three single core cables (R, Y & B), and one set of two cables for the neutral.

XLPE Insulated Cables

Where called for Cross-Linked Polyethylene (XLPE) insulated cables shall be used. These are similar to the specifications for the foregoing PVC insulated cables a), b) and c) except that the initial insulation shall be XLPE, thereafter PVC bedding and sheathing shall be used.

The Contractor must ensure early ordering of these cables as they are usually only made upon request and to a minimum quantity. For ease of identification, the Contractor shall insure that the manufacturer embosses the outer sheath: "XLPE insulated".

Flame Retardant and Halogen Reduced/Free Cables

Where called for in the Detailed Specification, low halogen (LH), halogen free (Non-halogenated, low smoke and fume, flame retardant - or "NHLSFR") or flame retardant (FR) PVC cables to SANS 1507 and BS6724 (latest issues) shall be used.

Cable Terminations

Cable Glands

Cable glands shall be used for armoured multi-core cables and are to be of the electroplated brass or bronze compression type and shall be matched to the type of cable used and shall be suitable for waterproof, flameproof or general installations, as required. PVC or neoprene shrouds and plated earthing washers shall be used in all instances.

Single Core Terminations

Termination of single core PVC/PVC cables in distribution boards, transformer cable boxes, etc. shall be undertaken by securely clamping the cables onto a fixed section of galvanised "Unistrut" type channel, or galvanised angle-iron, using nylon cable straps and then taking the individual cores through bushed holes in the non-ferrous gland plate, thence to the termination point. Alternatively, with the Engineer's approval, a treated hardwood cleat arrangement may be employed.

Cable Joints

- i) Because of the relatively short runs of cable utilized in industrial general lighting and power services, through-joints shall only be used in exceptional circumstances and only with written permission from the Engineer.
- ii) Where a tee-off is required in indoor circuit cabling, this shall be effected using a suitable cable junction box, as Pratley, or equal and approved. Such junction boxes shall be of the weatherproof type, complete with integral compression glands and DIN rail-mounted terminals of appropriate rating.
- iii) Joints in power cables shall only be allowed a) where the cable runs exceed a standard drum length, or, b) with the express permission of the Engineer in writing

Conductor Lugs

- i) Lugs for the termination of conductors onto busbars and equipment are to be of the compression type and of the correct size and type for the application.
- ii) For cables of size up to 16mm², the locking type of handplier crimpers may be used. Above this size, the hydraulic type must be employed.
- iii) Where aluminium lugs, used for aluminium conductors, are bolted to a dissimilar metal (e.g. copper, tinned copper, etc.), suitable bonding compound shall be used to obviate the possibility of electrolytic action.
- iv) Shaped lugs shall be used in conjunction with shaped cable cores.

Handling of Cable Drums

- a) Drums of cable shall be delivered to Site with seals intact and shall be off-loaded and stored in an approved manner. Any drums, which show signs of damage or mishandling, shall at the Engineer's option, be replaced with fresh undamaged stocks. The Contractor shall bear all costs of replacing such unacceptable cables.
- b) Cable drums shall be supported on an axle and support jacks when the cable is unreeled. The arrow on the drum flanges showing the direction of rotation shall be observed. Rolling of drums along the ground will not be permitted.
- c) Empty cable drums shall be stored in a tidy and safe manner prior to their removal from the Work Site. The Contractor shall be responsible for the removal and disposal of all empty drums at intervals dictated by Work progress, or upon instruction by the Engineer or the Main Contractor.

Installation of Cables

Surface (Direct)

Where cables are run along horizontal or vertical building surfaces, structural steel members, in vertical ducts, etc., they shall be secured with approved means of fixing such as saddles, cleats, etc.

All cable runs shall be vertical or horizontal, or run parallel to building or structural members and shall at all times present a neat appearance.

b) Cable Trays

i) Where a sheet steel cable tray is required, this shall consist of approved galvanised sheet-metal perforated medium duty tray supported with approved substantial brackets or hangers at suitable intervals to reduce sag to a maximum of 10mm. Where necessary to achieve this, the run of cable tray shall be reinforced along its length with angle iron or similar stiffening members, or shall be of the heavy duty type.

ii) When wire mesh trays are required, these shall be of heavy duty hot-dipped galvanised type, or stainless steel, left bright as required. Mesh trays shall be installed in a similar manner to perforated tray.

iii) All cable tray accessories such as bends, tees, etc., shall be as supplied by the tray manufacturer and made-up components will not normally be allowed.

iv) Trays shall be installed vertically or opening-up horizontally as specified. Brackets and hangers shall be constructed to permit the easy removal of any cable from the tray. Flat horizontal runs of tray suspended from slabs shall be installed at least 200mm clear of the soffit. Trays crossing under beams shall be spaced off the beam soffit to allow the removal of the largest cable(s) in the group.

v) Earth continuity shall be maintained throughout the complete run of cable tray.

c) Cable Ladder-Rack

i) Where ladder-rack is called for, this shall consist of 2,0mm thick galvanised steel with side sections of 75mm and cross-rungs every 350 – 400mm.

ii) Only manufacturer's accessories shall be used for ladder-rack.

iii) Ladder-rack shall be installed in the same manner as cable trays (Refer to 12.5.5 (b)).

iv) Where specified, cable trays and racks shall be finished in a light orange epoxy coating, colour B26, or other colour appropriate to the service, to SANS 1091, all as clause 12.4.1 h).

Epoxy coating damaged or removed during installation shall be made good.

d) Cable Installation on Racks and Trays

i) Racks and trays shall be sized to afford at least 20% spare space. Control cables may be installed touching, but not bunched. Power cables shall be laid-up spaced apart not less than the diameter of the largest adjacent cable, unless otherwise specified.

ii) Cables shall be fixed to racks and trays using stainless steel cable strap and buckles fixed every 500mm, or fixing-rung intervals for edge-on rack / tray installations and at 1000mm or every second fixing-rung interval for cables laid flat and also where installed vertically.

iii) Different classes of services (e.g. power and instrumentation) shall not be installed on the same rack or tray.

e) Common Earthing for Racks and Trays

i) Cables for final circuits installed on racks and trays shall, unless otherwise specified, be provided with an integral earth core or shall have a separate bare earth conductor per cable, or as indicated in the circuit diagram.

ii) Multiple runs of heavy power feeder cables may share a common earth conductor comprising bare copper tape of at least 70mm² run along mesh type trays or ladder rack. (Perforated cable tray would normally carry light circuitry only and common earthing would not apply).

iii) Earth tapes are to be fixed and bonded at regular intervals and the final earth connection shall comprise an appropriately sized bare copper earth-wire tail bonded to the common tape earth using a compression lug and high tensile bolt and nut arrangement.

f) Underground Cable

i) Unless otherwise specified, cables installed earth trenches shall be buried at a depth of 750mm; multiple runs of cables shall be laid 150mm apart throughout the run.

ii) Cables shall be drawn along the trench using rollers corner rollers, snatch blocks and skid plates as necessary.

iii) Unless stated to the contrary, the Contractor shall carry out all excavations of cable trenching, including bedding, topping, backfilling and compaction, generally in accordance with SANS 1200 LC and SANS 1200 DA. Differing soil-type classifications shall be as specified in the bills of quantities.

The Contractor shall allow for all necessary removal of vegetation, roots and tree branches, hazard protection, drainage, including pumping, watching, lighting, barriers, disposal of spoil and vegetation, supply of fill, levelling of subsidence and 10mm thick temporary steel plates to allow vehicles of 3 tonnes maximum axle load and pedestrians to pass over excavations where these cross roads, driveways etc.

v) Where applicable, the Contractor shall comply fully with Traffic Ordinances, the Mines and Works Act 1956 (Act 27 of 1956) and all other requirements at or near public roads, bridges, buildings and other structures.

vi) No excavations shall be backfilled until the Engineer has the opportunity to inspect cables and has given permission to backfill.

The floor of the trench shall be free of stones and sharp projections. A 75mm layer of –6 fines sifted soil or no-sharps sand shall be applied (bedding), onto which the cables shall be laid. A further layer of the same material shall be laid to a depth of at least 75mm above the top of the cable(s).

Dampened soil free from fibrous matter, rocks and large stones shall be backfilled on top of the cable(s) (or cable sleeve(s)), as follows:-

Two 150mm hand-rammed layers to 93 % AASHO compaction

Thereafter, well compacted power-rammed layers of not more than 150mm, to 93 % AASHO compaction.

The backfill shall be raised by approximately 50mm above the normal surface level to allow for settlement. Such raised surfaces shall be periodically levelled, as necessary, and finally levelled not less than 90 days after backfilling. Grassed surfaces shall be made good. Others will make good paved or concrete surfaces etc.

ix) Cable trenches may be hand or machine excavated and shall be of such a width as to afford a minimum of 150mm clearance between the cable(s) and the trench walls. Excavation within 600mm of other services shall only be done by hand.

x) Unsuitable soil and filthy material encountered during the execution of the Works shall not be deposited on the surface of any road or footpath, but shall immediately be carted away to a dumping site.

xi) The Contractor shall take all necessary steps to avoid the pollution of streams, drainage systems etc. by excavated soil and its dust.

xii) Where required, concrete protective cable tiles shall be installed 300mm over the tops of cables. These shall cover the full width of the layer of cables within the trench. Concrete cable protective tiles shall be of the interlocking type approximately 900mm long by 150mm wide with a suitable inscription on the upper side such as "Danger Electric Cables" or similar.

xiii) Where unsleeved cables cross other services, they shall be taken at least 500mm under such service. Interlocking concrete cable tiles shall be laid 300mm above the cables and shall extend 900mm each side of the crossing point.

g) Cable Markers and Tape

i) Cable markers shall be provided for all underground cable routes. Such markers shall be provided at each point of entry to any building, at either side of any road to rail crossing, at any change of direction of the cable, at intervals not exceeding 30m along any straight runs and over cable joints. Cable markers shall be made of concrete and cast in the form of a truncated pyramid, approximately 250mm high, 100mm square at the top and 150mm square at the base. The markers shall be provided with brass plates complete with direction arrows and suitably inscribed.

ii) Yellow 0,1mm thick cable marker tape with the words "Danger Electric Cable" printed continuously and depicting a skull and cross-bones, shall be laid at a depth of 300mm below the finished surface level and immediately above all cables and sleeve pipes. Should a roadway or paved area base layer exceed 300mm, the tape shall be laid immediately below the base.

h) Cable Sleeves

i) Cables sleeves shall be provided wherever required or indicated on drawings and also for all cables entering or leaving any building, crossing a road or other services. Such sleeves shall be supplied and installed by the Contractor unless otherwise required. In all cases the Contractor shall ensure that all sleeves are installed in good time, in correct positions, and in the proper manner.

ii) Where no details are given, the sleeves shall be of generous size and made of substantial material, which may be galvanised steel, ceramic, pitch fibre, high impact uPVC, corrugated high-density polyethylene (HDPE), etc., capable of withstanding any stresses to which they may be submitted, e.g. road compacting. Care shall be taken to ensure the easy passage of cable through the sleeves by providing large radius bends where necessary.

iii) NB: For health reasons, the use of pipes containing asbestos is strictly forbidden.

iv) The ends of all sleeves shall be sealed with non-hardening watertight compound after the installation of cables. All sleeves intended for future use shall likewise be sealed.

i) Earthworks by Others

Where trenches, sleeves etc. are provided by another contractor e.g., civils, the Contractor shall liaise and co-ordinate with such other party regarding general advices, sleeve positions, radii etc. Moreover, the Contractor shall stand by and ensure correct backfilling and the positioning of marker tape.

j) Cable Identification

A non-corrosive strap with the cable number, or circuit number, stamped or embossed upon it shall be provided at each end of the cable (and at joints, in cases where these are permitted).

Bus-Bar Feeders

General

Bus-bar feeder systems shall comply with SANS 1195 or shall be authorised by SANS, and shall consist of metalclad copper bus-bars for voltages not greater than 1000V.

b) Bus-bar feeder systems shall be used for the following:

Indoor and outdoor connections from transformer LV terminals to main LV switchboards

Horizontal indoor power distribution to workshop and factory machinery etc

Indoor lateral and vertical-riser feeders for distribution boards and MCCs

c) All bends, accessories, take-off units, bus-bar sections/modules and so forth shall be a standard or pre-engineered component by the bus-bar trunking manufacturer; no site fabricated items will be allowed without the express permission of the Engineer in writing.

Construction Details

Enclosures

i) Bus-bar systems for indoor use shall be enclosed in hot-dipped or pre-galvanised sheet metal casings finished in epoxy coating similarly to distribution boards. (See clause 12.4.1 (h)). Alternatively the casing shall be of extruded aluminium. The bus-bar trunking shall be vermin proof, adequately ventilated and protected to IP30.

ii) Outdoor, non-ventilated casings shall be constructed from 3CR12 corrosion resistant steel, finished as for indoor trunking, or alternatively, shall be of extruded aluminium, and protected to IP54 or better.

iii) In all instances, metal enclosures shall be of adequate gauge and strength to withstand rough usage and the mechanical stresses of prospective fault conditions.

iv) The casings shall be provided with heavy duty fixing lugs or similar suitable for M10 bolts or studding supports.

v) Sections of bus-bar trunking shall be joined in an approved manner maintaining mechanical strength and protection levels.

Bus-Bars:

i) Bus-bars shall be of high conductivity 99,9% pure copper of adequate section for the maximum current and short-circuit rating. Unless otherwise specified, the bars shall be mounted edge-wise (long side vertical).

ii) The bars shall be supported in the casing by substantial high dielectric, non-tracking, and non-hygroscopic members at sufficient intervals to allow for mechanical stresses due to prospective fault conditions.

iii) Joints in bus-bars shall overlap by a minimum length equal to twice the bar width. Contact surfaces shall be tinned using non-acid based flux, and bolted together with high-tensile cadmium plated bolts, nuts and spring washers.

iv) As well as sizing for current rating, the bars shall be sized to accommodate the prospective fault level rating in accordance with clause 12.4.1 e), whichever size is the higher.

v) Where installed, neutral bars shall be the same cross section as phase bars.

vi) An earthbar shall be installed along the entire length of the bus-bar trunking and shall be sized in accordance with IEC 439.

Bends

Horizontal (flat) bends in the trunking system shall house bus-bars bent at the correct angle with the supports and casings made to suit, while vertical internal or external bends shall have the bars bolted together at the correct angle. Alternatively, bus-bar bends may be of the flexible laminated type.

Take-Off and Feeder Points

i) Take-off points shall be pre-engineered and located to specific requirements by the bus-bar trunking manufacturer in the case of power feeders for distribution boards in risers etc, or shall comprise shrouded plug-in arrangements at regular intervals for machine shops etc.

The take-off unit shall consist of a suitably rated MCCB with contacts to satisfy the requirements for a switch-disconnector, housed in a sheet steel or polycarbonate enclosure arranged for bolting directly to the bus-bar trunking in the case of tap-off type units, or permanently fixed in the case of pre-engineered take-offs.

iii) Feeder end boxes shall be suitable for terminating feeder cables or feeder bus-bars, as applicable.

Expansion Joints

Expansion joints to allow for thermal expansion and contraction for a temperature range of between 0°C and 90°C in the bus-bars and 0°C and 45°C in the enclosure shall be provided at intervals per manufacturer's recommendation, but in any event, not exceeding every 10 metres. The full rating of all current carrying parts shall be maintained through the joint as well as casing integrity and level of protection.

Fire Barriers

Fire compartmentation shall be maintained at wall and floor penetrations of bus-bar trunking by the use of 4-hour rated fire barriers installed centre with the applicable partition wall or floor slab. The Contractor shall ensure that the main contractor is timeously informed of the need to make good around such penetrations; this information shall be put in writing with a copy to the Engineer.

Installation and Testing

Installation

Bus-bar trunking shall be fixed directly to walls or other structural members or shall be suspended on galvanised studding, supported on channels, angle iron etc as dictated by installation conditions and requirements, and as may be specified in the Detailed Specification or drawings.

Testing

Completed bus-bar systems shall be subjected to a test voltage of 2,5kV rms for one minute in accordance with SANS 1195.

Fabrication Drawings

a) Where it is necessary to have bus-bar trunking prefabricated prior to delivery to Site, the Contractor shall liaise with all relevant parties to have fabrication drawings prepared (usually by the bus-bar trunking manufacturer), viz.: transformer supplier, main and sub-main LV board supplier, etc as the case may be.

b) The Contractor shall check all drawing details, including on-site dimensions, coordination with other services etc, rectify where necessary and submit to the Engineer for approval. The Engineer will approve the general layout of the system only. The Contractor shall be fully responsible for the correctness of all dimensions etc.

12.7 Tubular Conduit Wireways

12.7.1 Types and Applications

Screwed Conduit

Heavy gauge screwed welded (HGSW) steel conduit and associated fittings shall be to SANS 1065-1 and shall be black enamelled or hot-dipped galvanised as specified. No conduit of less than 20mm diameter shall be used.

HGSW conduit shall be used for all general applications run either surface on walls, ceilings, on machinery etc, or else installed flush in walls, cast into concrete slabs etc.

Plain End Conduit

Plain end (non-screwed) steel conduit shall be to SANS 1065-1 with a minimum wall thickness of 0,9mm. Only hot-dipped galvanised conduit of 20mm diameter minimum size will be permitted.

Plain end conduit shall be used for all general applications, except heavy industrial environments or flameproof installations, run surface on walls and ceilings, or else installed flush in walls, cast into concrete slabs etc.

Non-Metallic Conduit

Plastic conduit shall be to SANS 950. No conduit smaller than 20mm diameter shall be used.

Plastic conduit shall be used for general applications, except any industrial or flameproof installation or any surface installation on walls, machinery etc. Non-metallic conduit shall be run surface only on ceilings or in ceiling voids, chased into walls, cast into concrete slabs etc.

Flexible Conduit

Flexible conduit shall be of the orange PVC covered spiral metal type, as Kopex, Adaptaflex or equal, with an internal diameter of at least 15mm. Flexible conduit connectors shall be of the gland or screw-in type manufactured from either brass or mild steel plated with zinc or cadmium.

Flexible conduit shall be used to form the final connection to equipment that has to be moved frequently to enable adjustments to be made, for the connection of motors or any other vibrating equipment, for the connection of thermostats and sensors on equipment, for stove and similar appliance connections etc.

12.7.2 General Installation Details

Insofar as relevant conduit types apply as per clause 12.7.1, the following general installation details shall apply:

No manufactured bends less than 32mm diameter or any inspection elbows or tees are to be used.

Open ends of conduits for future extensions and conduit and accessory boxes shall, during the building process, be temporarily plugged to prevent the ingress of moisture, rubble etc.

Where conduit crosses an expansion joint in a building or structure, the following method shall be used:

An adaptable box shall be installed at a suitable position within 2m of the expansion joint and a draw box and a conduit sleeve one size larger than the circuit conduit shall be installed from the draw box to the edge of the expansion joint on the draw box side

The circuit conduit shall pass across the joint and through the sleeve and project 30-35mm inside the box where the end shall be bushed

For metallic conduits, an earth clip shall be secured to the circuit conduit end in the draw box and this shall be bonded to the box with a minimum 2,5mm² jumper

In addition, for metallic conduits, an earth wire shall be installed between the fitting outlet boxes either side of the expansion joint

Adjacent multiple runs of conduits which are to cross expansion joints should preferably be taken via one large adaptable box, across the expansion joint, into a second large adaptable/draw box.

All accessory boxes for switches and socket outlets etc shall be made of pressed galvanised steel and are to be provided with earth studs.

No portion of the conduit installation may be installed closer than 150mm to any other service, including gas, water etc. No wireway carrying mains voltage cables shall be installed closer than 150mm to any communications/data wireway or cable etc, except in the case of multi-service power skirting or similar.

'Unwired' conduits for other services shall be provided with rustless steel draw wires.

Where necessary, draw boxes shall be installed to facilitate the easy drawing-in of wiring and/or to avoid pulling wires through more than two right angled bends or the aggregate thereof. Adjacent multiple runs of conduit, which requires draw boxes should preferably be taken via one large draw-box. Where possible, draw boxes are to be installed at inconspicuous positions away from general view.

25% spare conduits, subject to a minimum of two, shall be installed from wall mounting distribution boards into the ceiling void for possible future additions. A coupling with a temporary plug shall be fitted to the ends of spare conduits.

12.7.3 Flush Conduit Installations

Insofar as the relevant conduit types apply as per clause 12.7.1, the following installation details shall apply to flush conduit installations:

Where conduits are chased into brick walls or similar they shall be adequately secured with crampets or other approved devices driven into the wall fabric and shall further be secured at strategic points by mortar. The clearance between the finished wall surface and the conduit shall be not less than 12mm. Only power tool chasing machines shall be used for making chases. (E.g.: angle grinders).

Accessory boxes shall be fixed square and mortared in. Concrete surfaces, columns and face brick surfaces shall not be chased without the written permission of the Engineer in each case.

The building contractor will make good all normal chasing and cutting away except that the Contractor shall be held responsible for the cost of work done by the building contractor due to faulty setting out, redundant chases or late installation of conduits and accessories.

Conduits installed within concrete slabs, beams, columns or walls shall be firmly fixed in position before the concrete is cast. Adequate fixings and/or spacer blocks shall be employed to prevent conduits 'creeping' to the surface. Conduit must not be fixed longitudinally together with reinforcement rods.

The general disposition of conduits within the slabs shall be agreed upon before installation between the Engineer, structural engineer and the Contractor. Furthermore, where such conduits occur in large concentrations, or where large diameter conduits (32mm dia. or larger) are installed, the Contractor shall obtain the approval of the Engineer for the positioning of such conduits. Generally, however, conduits shall be installed in the middle or neutral axis of the slab thickness and extension boxes or extension rings shall be provided for as necessary.

Where conduit runs occur in groups or in large concentrations (e.g. near distribution boards, draw-boxes or in similar situations), they shall be fixed with a clearance between adjacent conduits of not less than one conduit diameter to permit adequate penetration of concrete.

Conduit may be installed in surface beds provided that the conduits are clear of contact with ground and are completely encased in mass concrete.

Conduits may only be installed directly into floor screeds where a cover of at least 40mm can be affected. For clearances of 20-40mm, "chicken wire" shall be used as a cover over the conduit to act as a screed binder. For clearance less than

20mm, the conduit may be chased into the slab, provided the written permission of the Engineer is obtained in each case.

Conduit crossings in screed shall be avoided as far as possible. Where this is unavoidable, one conduit may be set under the other one and chased into the slab, provided the written permission of the Engineer is obtained in each case.

Conduits shall be firmly fixed to slabs intended to receive screed by means of half saddles or similar.

Conduit boxes, draw-boxes etc. installed on shuttering decks or wall shutters shall be suitably sealed against the ingress of moisture and vibrated concrete with dampened paper rammed in them, and shall be securely fixed to the shuttering by means of lashing with galvanized steel wire (except in the case of off-shutter ceilings) or else by temporarily fixing the box to the shuttering by screws through the shuttering into the fixing lugs of the box. It is of the utmost importance that fixing screws or lashings be released immediately the concrete has been allowed to set and before the shuttering is struck.

Where fibreglass or other pre-formed plastic shuttering is used by the builder, equipment shall be fixed to the reinforcement steel only and the equipment/box shall be arranged to press firmly against the shuttering. No holes shall be made in the shuttering.

The Contractor shall stand by when concrete is being poured in order to rectify any defects that may occur such as loose boxes or displaced upright conduits (See also item 11.3).

All conduit boxes and accessory boxes shall be finished flush with the finished plaster work and the Contractor shall cooperate with the building contractor to this end. Where necessary, extension plates or rings shall be fitted to meet this requirement.

Surface Conduit Installations

Insofar as the relevant conduit types apply as per clause 12.7.1, the following details shall apply to surface conduit installations:

Conduit run surface on walls, floors, ceilings, or in accessible ceiling voids, etc. shall be installed in a neat manner running generally with the building lines. The conduits shall be vertically plumb and horizontally level as applicable.

Bends in multiple runs of conduit shall have following bends. Other right angle bends shall be standard machine made. In all instances the installation shall present a neat and workmanlike appearance.

Evenly spaced spacer bar saddles shall effect fixing of tubing. Light gauge saddles may be used for general internal installation while heavy base saddles are to be used for external installations and industrial applications.

Galvanized conduit shall be used for all surface installations, as follows: -

In damp or external areas
Within 50 km of the coast
In kitchens, laundries and boiler rooms
Where exposed to humidity, such as plenum chambers
In buildings where animals are housed, e.g.: kennels, cattle/sheep pens etc.

Unless otherwise specified, all surface mounted metallic conduits and accessories shall be painted after installation. Conduits shall be cleaned, degreased and de-rusted and finished with 2-coats of brush-applied enamel paint. Galvanised steel shall be bristle-scrubbed with solvent detergent complying with SANS 1344 and rinsed with clean water to achieve a water-break free surface prior to painting.

For industrial installations, the following colours shall be used:

SERVICE	COLOUR	SANS 1091 REF.
Electrical	Light Orange	B26
Instrumentation	Light Blue	
Fire Alarms	Red	A11
Communications and Data	White	G80

For non-industrial installations, the colours shall be specified in the Detailed Specification.

12.7.5 Steel Conduit

Insofar as the relevant conduit types apply as per clause 12.7.1, the following installation details shall apply to steel conduit installations;

HGSW conduit shall be cut square and clean before threading. Threads shall be made using suitable conduit thread dies and the liberal application of cutting grease or similar. The length of thread shall be such as to permit conduits to be firmly butted together in couplings and hard against the shoulders of threaded conduit box spouts. The ends of all cut lengths of conduit shall be reamed free from burrs and any loose swarf shall be removed from inside the conduit. Running joints in conduit shall be securely locked with a conduit lock nut.

Terminations into non-threaded equipment and accessories shall be mechanically secure and electrically continuous. Terminations may be threaded and locknuttred on both sides of the termination point together with a brass female bush. Alternatively terminations shall be made with couplings and brass male bushes. All mating faces are to be thoroughly cleaned of paint, couplings being filed flat and free from unevenness at the mating face. All conduits shall be earth bonded at distribution boards using copper tape and wire.

Exposed threads of screwed conduit and damaged paint or galvanised surfaces shall be painted with red-lead or zinc rich paint to prevent rust.

Couplings and box entries of plain-ended conduit in cast-in situations shall be taped up with adhesive PVC tape to prevent the ingress of moisture or vibrated concrete.

All bends and sets shall be undertaken using bending apparatus suited for the purpose. Plain-end conduit bends shall be made with benders recommended by the conduit manufacturer.

Any damaged conduit resulting from incorrect bending methods shall be completely removed and replaced, including any wiring installed, all at the Contractor's expense.

Mechanical and electrical continuity shall be maintained throughout all steel conduit installations.

Only HGSW conduit shall be used for ;-

- Flameproof installations
- Load-bearing situations
- Suspension pendants
- Damp or exterior surface areas

12.7.6 Non-metallic Conduit

The following installation details shall apply to non-metallic conduit as outlined in 12.7.1 c):-

Unless otherwise specified, only steel accessory boxes shall be used in conjunction with plastic conduit installations.

Hand bending, using a bending spring, may be used for conduits up to and including 25mm diameter. Above this size, the appropriate manufactured bend/accessory must be used.

Tubing is to be out square and clean using a fire-toothed hacksaw, and all burrs and loose material removed. The correct adhesive is to be used on clean and dry surfaces with all excess adhesive being wiped off after fitting together.

Plastic conduit and accessories are not to be used for mechanical load-bearing, luminaires support etc, nor are they to be used where they could be subject to temperatures below -10°C or above 70°C.

12.7.7 Flexible Conduit

The following installation details shall apply to flexible conduit as outlined in 12.7.1 d):-

In installations where the equipment has to be moved frequently to enable adjustment during normal operation, for the connection of motors or any other vibrating equipment, for the connection of thermostats and sensors on equipment, for stove connections and where otherwise required by the Engineer, flexible conduit shall be used for the final connection to the equipment.

Flexible conduit shall preferably be connected to the final connection point from a local draw-box. The flexible conduit may be connected directly to the end of a conduit if an existing draw-box is available within 2m of the junction and if the flexible conduit can easily be rewired.

Flexible conduit shall be metal-reinforced plastic conduit (Kopex, Adaptaflex or equal) orange PVC-covered spiral metal conduit with an internal diameter of at least 15mm, unless approved to the contrary.

Connectors for coupling to the flexible conduit shall be of the gland or screw-in type, manufactured of either brass or mild steel plated with either zinc or cadmium.

12.8 Trunking Wireways

12.8.1 Scope

This section describes the following types of wiring trunking:-

- Standard wiring trunking
- Lighting channel
- Power skirting, dado and bench-top trunking
- Underfloor trunking

12.8.2 Standard Wiring Trunking

Wiring trunking and accessories shall be fabricated from folded or cold-rolled sheet steel. The trunking manufacturer shall supply all bends, tees, stop-ends etc. No accessory shall be made up where a manufactured accessory is available.

Any made up accessories shall be neatly fabricated and shall be brazed or strongly pop-riveted at joining edges.

Accessories and sections of trunking shall be coupled with coupling pieces and earth bonded together with copper bonding links. In addition, the links shall be bonded to the trunking main earth or largest circuit earth wire with a jumper of at least 2,5mm².

The maximum number of circuit and earth wires that may be installed into any trunking shall be such that the total overall cross-sectional area of the wiring including the insulation does not exceed 45% of the free area of the trunking.

With the exception of underfloor trunking and loosely filled "opening-up" trunking, wiring retainers shall be installed every metre of run and at other positions as required.

The trunking shall be installed in a neat and workmanlike manner on ceilings, walls, plant machinery etc., as indicated in the drawings.

All standard trunking used in industrial applications shall be finished in the colour code appropriate to the service (refer to 12.7.4 (e)).

Where channel passes through a "fire-wall" the channel lid shall be cut 100mm either side of the penetration and the wall entry around the channel shall be sealed by the building contractor. The Contractor shall supply and install suitable fire-barriers inside the channel. These shall consist of intumescent or other approved fire resistant material, as supplied by PH Protection Plaster Systems (Pty) Ltd of Johannesburg, Pyro-Cote cc of Durban, or equal and approved and installed in accordance with the supplier's recommendations.

12.8.3 Lighting Channel

a) General

Lighting channel and accessories shall be “Cabstrut” or equal and approved, and shall be manufactured from cold-rolled steel sheet and galvanized. For industrial installations and elsewhere as specified the channel shall be epoxy coated light orange (colour ref. B26 according to SANS 1091).

Unless otherwise required the dimensions of the channel shall be 41,3mm x 41,3mm.

Lighting fittings or pendant drop conduits shall be fixed directly to “opening-down” channel using special connecting nipples as supplied by the channel manufacturer. Alternatively, fittings may be fixed to the solid underside of channel installed “opening-up” using bushed entries and screws, nuts and washers. Self-tapping screws shall not be used.

Conduit connections to wiring channels shall be terminated directly into the channel using a screwed and bushed entry. Alternatively, where channels are fixed surface directly to a soffit, entry may be effected from a flush conduit box through a bushed hole in the back of the channel.

b) Surface Installations

i) Self supporting lighting channel shall be manufactured from cold-rolled steel of thickness at least 2,5mm, and shall be fixed in such a manner that the maximum deflection recommended by the channel manufacturer is not exceeded with all wiring and fittings installed.

Fixings shall be by stirrups supported from structural members via threaded steel rod of at least 10mm diameter, or 20mm diameter conduit. Alternative or additional supports shall be effected by girder clamps etc. Cartridge pin fixings shall not be permitted without the prior written approval of the Engineer.

Where required, channel installed directly to a soffit shall be fixed at intervals not exceeding 1m subject to a minimum of two substantial fixings to every accessory or section of channel. Channel fixed in this fashion may be not less than 1,6mm thick.

Clip-in lidding of plastic or of zinc-coated metal, as specified, shall be installed over all faces of the channel left open after the installation of fittings etc.

c) Flush Installation

i) Lighting channel installed flush, either in or forming an integral part of a suspended ceiling shall be manufactured from minimum cold-rolled or folded sheet steel of thickness not less than 1,6mm.

Where the channel is cast into concrete, fastening straps shall be provided every 600mm as supplied by the manufacturer of the channel. The channel shall be firmly fixed to the shuttering by galvanized steel wire lashing or by screws fixed through the concrete insert lugs. The channel shall be suitably sealed against the ingress of vibrated concrete by the use of dampened paper or expanded polystyrene inserts.

Where the ceiling finish is “off-shutter”, narrow clip-in plastic or metal lid shall be used. This shall be grey for non-painted ceilings and white for painted ceilings. Wire lashings may not be used for fixing channels to shuttering in “off-shutter” areas.

Where plaster finish is to be applied, the plaster shall be taken up to the edges of the channel. Overlapping metal lidding finished white shall be used, fixed over the opening by means of special extension screws into fixing nuts installed in the channel.

For suspended-ceiling lighting channels, the channels will be supplied and installed by the ceiling erector, unless otherwise specified.

White plastic clip-in lidding shall be used for all suspended-ceiling lighting channels. The Contractor shall supply and fit the lidding unless otherwise specified.

In the case of mullion partitioning the mullion may be utilized as a wiring channel where specified. For other types of partitioning, conduit switch-drops shall be used. Any entry into the lighting channel shall be suitably bushed to obviate abrasion of wiring.

12.8.4 Power Skirting and Dado Height Trunking

a) General

i) Power skirting and dado height trunking shall, unless otherwise specified, be formed from folded and welded pre-galvanized sheet steel of thickness not less than 1,2mm, to form two or three equal compartments designed for power services, socket outlets etc., (upper compartment) and communications/data services (lower compartment(s)). The power skirting shall be finished in baked enamel of colour(s) as stated in the Detailed Specification. The paintwork shall be in accordance with 12.4.1 (h) with due account being taken of the pre-galvanizing. The trunking shall be 150-225mm high x 50-55mm deep with fixed partitions to divide it into two or three compartments. The compartments shall each be provided with separate removable covers.

Where a building module is applicable, the power compartment shall have provision for 16 A switched socket outlets at the module interval, or where the module interval exceeds 2m, twice every module interval. Socket outlet positions shall be centred between the window mullion or column modules. At the mullion or column position, a permanently fixed 250mm wide cover shall be provided across all compartments to permit the erection of partitions etc., without interfering with accessibility into the power skirting.

Socket outlets shall be 16 A 3-pin and shall be attached to a fixing grid or mounting bracket in the trunking body. The cover shall be pre-punched to accept the socket outlet and shall be fixed both to the trunking body and socket outlet fixing grid. Wiring terminals shall be of the recessed type, or alternatively fitted with an insulated cover, to prevent accidental contact with bare earth wiring that may be installed or disturbed while adjacent circuits are alive.

Where the trunking is a non-modular type, the punched socket outlet cover shall normally be 250mm long. Where it is of the modular type, the power section cover between the over-lapping covers shall be in one piece. Irrespective of whether socket outlets are indicated or not, full facilities including blanked off pre-punched covers shall be provided at the spacings specified herein.

Unless otherwise required, provisions for telephone and data outlets shall comprise a blank plate, or plates, mounted in line with socket outlets.

b) Installation

i) Power skirting shall, unless otherwise required, be installed surface against the wall at finished floor level. Where vinyl tiles or other fixed finish is to be laid, the power skirting shall be laid on top of the tiles. Where carpeting is specified, the power skirting shall be installed onto the screed before the installation of carpets.

Dado trunking shall be installed surface on the wall at 900mm above finished floor level (to underside), or as otherwise specified.

Fixings, suitable for the particular application, shall be provided at intervals not exceeding 1m. Subject to a minimum of two substantial fixings to each accessory or section of trunking.

Conduit entry into power skirting installed along brick or concrete walling shall be effected via a bushed entry from a conduit box or standard 100mm x 50mm switch box mounted in the wall behind the respective compartment.

Conduit entry into power skirting installed along sheet metal curtain walling or similar shall be effected via a bushed entry from a conduit box, or similar, mounted in the floor under the power skirting. Wiring to the upper compartment(s) shall pass through a short conduit link within the lower communication(s) compartment(s). The conduit links shall be installed towards the back of the lower compartment(s) to afford adequate space for wiring to pass.

The trunking main earth wire immediately adjacent to the socket outlet positions including the socket outlet earth jumper shall be suitably sleeved at the tee-off to prevent accidental contact with live terminals.

All covers shall be adequately bonded to earth either through the fixing screws or a separate earth wire jumper fixed to an earthing stud brazed, at the manufacturer's works, to the lid. Where necessary, power skirting covers shall be specially ordered to include earthing studs.

c) Bench-Top Trunking

Where called for, bench-top socket outlet trunking shall be installed along bench tops etc, in workshops and laboratories. The general construction, socket outlet mounting and installation procedure shall be similar to power skirting or dado trunking. A detail of compartments, sizes etc, and shall be as detailed in the drawings or specified in the Detailed Specification.

12.8.5 Underfloor Trunking

a) General

i) Several types of underfloor trunking are available and in the main, the choice depends upon certain structural restraints as floor type, screed thickness etc. Therefore the exact type to be used will be specified in the Detailed Specification or drawings.

Unless otherwise specified, the trunking shall be manufactured from pre-galvanized folded sheet steel and shall be single, double or triple compartment as specified.

Pre-formed outlets, suitably blanked off, shall be provided at intervals to suit the particular application.

Flush floor level junction boxes shall have a removable trafficable cover and shall be designed to accept a portion of the floor tile, carpet or similar. The Contractor must liaise with the Main Contractor to determine the thickness of the floor finish.

Multi-channel junction boxes shall be so designed that the compartmentalisation is continued through these accessories.

Socket outlets, telephone outlets and data outlets shall be provided where required in surface floor level pedestals or recessed floor boxes as specified. Suitable barriers shall be included to segregate different classes of services.

b) Installation

i) Trunking designed to be fully built into the screed shall be fixed to the slab surface by suitable straps or clips. A topping of at least 50mm of screed cover the trunking shall be applied. Where a cover of less than 50mm, but exceeding 25mm occurs, expanded metal shall be applied over the trunking to act as a screed binder. Where less than 25mm of screed topping occurs, the trunking shall be installed into the concrete slab to achieve at least the minimum cover. The written permission of the Engineer shall be obtained in each case.

Trunking designed to be set flush with the screed surface shall be installed straight and level on mortar bedding on the slab. The trunking shall be slightly dove-tailed in section or shall have other suitable means to ensure that the trunking will remain firmly fixed into the screed.

The Contractor shall obtain the screed finish datum line from the building contractor for levelling trunking and junction boxes.

12.9 General Wiring

12.9.1 General Applications

a) For general applications, 600/1000 V PVC insulated single core stranded copper conductors shall be used. In situations where high ambient temperatures are likely to be encountered, such as the enclosures of certain types of incandescent lighting fittings, ceiling voids of metal roofed buildings, etc., silicon or butyl insulated single core stranded conductor cables shall be used. All wiring cables shall bear the appropriate SABS or SANS mark and shall be delivered to Site with seals intact.

b) No cable of size smaller than 2,5mm² shall be used. The current carrying capacity of wiring shall comply with the requirements of SANS 10142-1:2003, particular regard being given to volt drop limitation and to derating due to bunching of cables and ambient temperatures.

12.9.2 Installation

a) Wiring within conduit shall be by means of the looping-in system. Joints will only be permitted in special circumstances and where accessible, subject to the approval of the Engineer in writing. Wires shall not be allowed to become twisted or tangled within the conduit when drawing in, and lubricating agents shall not be used.

b) Where earth conductors are looped between terminals of equipment, the conductor shall either remain unbroken in the terminal, or shall be twisted together and ferruled or soldered to ensure that earth continuity is maintained when the conductors are removed from the terminal(s).

c) Unless otherwise indicated in the drawings, no more than one circuit shall be run in one conduit.

d) Vertical runs of wiring shall be provided with a suitable stress relieving arrangement at intervals not exceeding 15m.

e) Within wiring trunkings, each separate circuit of wiring shall be neatly strapped or laced together and shall be so disposed as to afford easy removal. Adhesive insulating tape or similar shall not be used for binding of circuit wires.

12.9.3 Wire Markers

All wires in industrial installations, and where otherwise specified, are to be provided with closed-sleeve markers at each feeder termination point, including each leg of looped wires. The markers shall indicate the relevant distribution board and circuit number, e.g.: "DB-AP/P9" etc.

12.10 General Earthing

12.10.1 General

The installation shall be effectively earthed in accordance with the requirements of SANS 10142-1:2003 and the local supply authority. All metallic hot and cold water pipes and waste pipes shall be bonded with copper tape clamped by means of a brass bolt and nut and earthed. Metal roofs, gutters, and downpipes shall be bonded together and earthed.

12.10.2 Earth Continuity Conductors

a) Separate bare copper earth continuity conductors shall be run with all multi-core cables (where no earth core is incorporated), and green/yellow PVC insulated earth conductors, or bare earthwires, as specified, shall be installed with all mains circuits, sub-circuits and final circuits wired with PVC insulated conductors in conduit or trunking wireways.

b) Only one earth conductor is required per group of conductors run in one wireway provided that such earth conductor is not less than half the cross sectional area of the largest conductor in the group (subject to a minimum area of 2,5mm²), and provided the earthing complies with the requirements of SANS 10142-1:2003. Teed off connections shall be undertaken using crimped tee-ferrules, or shall be soldered. Under no circumstances shall the common earth be broken.

c) Where practicable, common earth continuity conductors shall be run as a "ring main".

12.11 Luminaires

12.11.1 General

a) Luminaires shall, unless otherwise specified, be supplied by the Contractor in accordance with the Luminaire Schedule. All luminaires shall bear the SABS "S" safety mark and, where applicable, the SABS "A" approved performance mark.

b) Class A2 electronic ballasts supplied with luminaires must bear a SABS, IEC or VDE mark. Any other alternative ballasts may be submitted for approval. Preferred ballasts are:

Tridonic
Vossloh Schwabe
Philips

NOTE: No-name brands and brands of dubious quality and origin are not acceptable.

c) All luminaires shall be fitted with the appropriate lamps.

i) Unless otherwise specified, fluorescent lamps shall be "cool white", colour temperature 4300°K with a minimum colour rendering index (Ra) of 64.

ii) Dichroic lamps shall be of the sealed type. Open reflectors will not be permitted.

iii) Unless otherwise agreed in writing by the Engineer, only the following makes of lamps will be permitted:-

Osram
Sylvania
Philips
GEC

c) Linear tubular fluorescent lamps shall have bi-pin end cap arrangements. The lamp holders shall be of the telescopic spring-loaded type.

d) Lenses

i) Prismatic, opal and clear lenses shall be manufactured from UV stabilised high-impact acrylic material for general luminaires.

- ii) Where specified, luminaires, floodlights and lanterns shall be fitted with clear glass or clear tempered glass lenses as required.
- iii) All tungsten halogen fittings shall be complete with glass lenses.

- e) Streetlight and area lighting post-top lanterns shall be in accordance with the Detailed Specification and/or drawings.

Lantern ballasts shall have tappings for 95% and 100% of the nominal voltage, unless otherwise specified.

- f) For ease of maintenance, luminaires and lamps in the following classes shall be from one single manufacturer / supplier per class;

- i) Fluorescent luminaires and general incandescent fittings.

Indoor decorative / display luminaires (downlighters, decorative spotlights etc.)

Outdoor lanterns, bollards and floodlights

Industrial high-bay luminaires

- v) Operating theatre fittings
- vi) Medical examination lamps
- vii) Dark Room lights
- viii) Other specialised luminaires as specified (E.g.: stage lighting etc.).

12.11.2 Installation of Luminaires

- a) General

Where possible, all luminaire outlets shall terminate in standard round boxes to which the fitting shall be fixed in addition to other fixings that may be required. Where conduit is run in roof spaces, or where conduits are cast into screeds and not directly into the slab, back-entry conduit boxes are to be used which shall be so installed as to be flush with the finished ceiling.

- b) Mounting

- i) Fluorescent fittings shall be fixed to one conduit box in the centre with two further independent fixings either side, one sixth of the fitting length from each end of the fitting. Fittings of 300mm or wider shall be fixed with two pairs of fixings.

- ii) Where fluorescent fittings are fixed in continuous rows, wiring may be carried out from one outlet and then wired through the channels of the fittings. The entry from one channel to another shall be suitable bushed and the internal wiring shall be clipped to the insides of the channels.

- iii) Corrosion proof and explosion proof type fluorescent luminaires shall be fixed using external stirrups or brackets. The wiring entry must be made via the gland entry arrangement using suitable multicore wiring (e.g. "Cabtyre", PVC/PVC etc.) routed from an adjacent conduit box or Pratley type box, as appropriate. Under no circumstances shall the body of the fitting be pierced for any reason whatsoever.

- iv) In surface installations to incandescent bulkhead type fittings, the conduit shall not enter the fitting directly but shall terminate in an adjacent conduit box; one outgoing way of the conduit box being terminated in the fitting. A fixed porcelain or plastic terminal block within the conduit box and heat resisting wire, (e.g. silicon insulated), shall form the final connection to the fitting. Alternatively, the whole circuit wiring shall be heat resistant (See clause 12.9 1(a)).

- v) Where luminaires are mounted onto conduit boxes in external or potentially damp situations, a suitable neoprene gasket seal or other approved means shall be used at the junction of the fitting and the conduit box.

- vi) The mounting positions of the luminaires shall be verified on Site with the Engineer before installation commences. Fittings will normally be mounted in an even or symmetrical pattern in relation to the particular area having due consideration for architectural features, beams, ceiling tiles, etc.

vii) Where fluorescent fittings are specified to be suspended on pendants the Contractor shall provide at least two pendants for each fitting, such pendants consisting of 20mm diameter conduit finished in white enamel for commercial and domestic installations and electrical standard light orange for industrial installations.

The wiring to the fitting shall be taken through one of these pendants. The pendants shall be secured to the outlet box or fixing surface by means of domelids. Where the length of the pendants exceeds 0,6m. Domelids shall be of the swivel type. The domelids shall be painted to match the pendants.

viii) Luminaires shall not be mounted directly to ceiling boards and suitable wooden inserts are to be supplied and installed by the Contractor for this purpose. Alternatively, fixings may be made into brandering where convenient.

ix) Heavy industrial high-bay luminaires, floodlights etc, shall be fixed to substantial steel brackets or "Cabstrut" type channel or as indicated in the drawings or Detailed Specification.

x) Where specified, luminaires shall be fed via a 5 Amp socket outlet mounted close to the fitting. The Contractor is advised to procure luminaires with suitable 3-core flexible cords with rubber clad plug-tops attached, as necessary.

c) Mounting Facilities

Where no facilities exist for supporting fittings, the Contractor shall supply and install brackets, hangers, angle irons, wooden battens inside ceiling space or other means as approved by the Engineer.

d) Fixings

Fixings direct to conduit boxes shall consist of cadmium plated or sheradised steel screws screwed into the conduit box fixing lugs. Extra independent fixings into concrete or brick shall consist of suitable fibre or plastic fixing plugs and steel or brass wood screws. Wooden fixing plugs shall not be used. Fixings for fittings over 10kg in mass shall be of the self-drill anchor or expanding bolt-type. Fixings into hollow blocks etc, shall consist of steel screws secured into the hollow cavity with a spring loaded toggle-nut or other approved cavity fixing device.

Cartridge pin fixings shall not be used unless the prior approval of the Engineer is obtained in writing.

Refer also to clause 12.17 (Fixings and supports).

12.11.3 Poles and Masts

a) Street lighting and area-lighting poles and masts shall be supplied in accordance with the Detailed Specification and/or drawings.

b) All poles, masts, outreach arms etc. shall comply fully with all relevant SANS Specifications and Codes of Practice and shall be manufactured from:

Galvanised Steel
Self-Coloured fibre-glass
Aluminium,

As detailed.

c) Poles and masts shall be suitable for fixing to a concrete surface (this method being restricted to post-top lanterns of no more than 4m height), or burying the "root" in soil.

Where buried, each pole must be provided with a suitable base-plate complete with drain hole. Baseplates shall be secured with a minimum of 2 off 20mm dia. hook bolts.

d) Spigots shall be provided to suit the specified lantern. Particular care shall be taken to establish the exact diameter and length of the spigot or spigots required such that the luminaire fits neatly up against the shoulder formed between the pole and the spigots. Care shall be taken to avoid damage to the spigots during transport, storage and erection.

e) Galvanised poles shall be provided with a "corrosion collar" which must extend at least 150mm below and above finished ground level.

Unless otherwise stated, galvanised poles will not require painting.

f) After galvanising, poles shall be stacked and transported in such a way as to minimise mechanical damage to the zinc coating. In particular, 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 the formation of white rust. Poles shall be carefully handled at all times and shall not be dragged along the ground in such a way that the coating may be damaged.

Notwithstanding the foregoing, any small areas of the galvanised coating which have become damaged shall be repaired by shot blasting and zinc spraying to a nominal thickness of not less than 0,1mm. Care shall be taken to ensure that all loose flakes of coating around the area to be repaired are removed prior to zinc spraying. Any signs of substantial damage to the galvanised coating, as determined by the Engineer, will result in the pole being rejected.

h) Poles and masts shall be provided with suitable cable entries and access openings with fixing chassis suitable for the connection of cables and the installation of MCBs. Access openings shall be provided with a cover plate of the same material as the pole. Covers shall be provided with suitable gaskets and means of fixing to the approval of the Engineer.

i) Unless otherwise specified no cable glands or gland plates are required for the termination of PVC/SWA/PVC cables. The cable shall be brought up to a convenient position adjacent to the lower section of the access opening. The outer PVC sheath shall be stripped back and the steel wire armouring pulled away from around the cables, twisted into compact tails and bonded together by means of an adequately sized line tap.

A separate earth conductor shall be taken from this line tap to the earth stud in the pole base compartment. Phase and neutral conductors shall be jointed using shrouded line taps and the cables neatly secured to the bottom of the fixing chassis by means of saddles.

j) Poles shall be planted in the positions indicated on the drawings. They shall be planted absolutely plumb with the outreach, where applicable, at right angles to the roadway edge. The root depth shall be as recommended by the manufacturer.

Should any pole position coincide with trees, building canopies, driveway entrances, overhead conductors or other obstacles, an alternative position is to be confirmed with the Engineer before excavation of the pole hole.

Poles shall be carefully aligned with each other to form straight lines or smooth curves generally following the alignment of the associated roads. The planting depth shall be carefully controlled to ensure that all luminaires will be at the same height above the level of the roadway, parking area etc.

k) Care shall be taken when backfilling around the pole to ensure that compaction is even all around the pole and is to the requirements specified in sub-clause 12.5.5 f) viii). Where poles are to be planted in fill material, on ramps, etc., one pocket of dry cement shall be mixed with the backfill material before commencing backfilling and compaction. Subject to the prior approval of the Engineer, this technique shall also be applied wherever it is considered necessary to stabilise the pole due to unsuitable soils, etc. Where the Contractor feels that this situation exists, he must advise the Engineer immediately and obtain a decision.

l) Where poles are to be anchored into rock, the base of the pole shall have a reinforced concrete block cast around it. The dimensions of this block shall be approximately 1,25m x 1,25m x 0,5m and the bottom face shall be reinforced by R10 bars at 250mm centres in both horizontal axes. A Y20 bar shall be grouted into the rock for a distance of 300mm. The grouted end shall be straight while the end located in the concrete shall be provided with a hook around the reinforcing bars. Alternatively, 20mm "Rawplug" or similar duplex studs may be used in place of grouted bars.

12.12 Lighting Switches

12.12.1 General

Switches shall be of 15-20 A rating and shall comply with the requirements of SANS 60669-2-1. No switch shall be used to control more than 2000 W of incandescent, or 1500 W of discharge and fluorescent lighting.

All switch boxes shall be fitted with an earth stud.

12.12.2 Switch Types and Installation

a) Flush Switches

Flush switches with pressed steel or plastic overlapping coverplates shall be mounted into pressed steel rust-proofed boxes installed flush in the building fabric. The switch boxes shall be installed square and shall be flush with the wall finish. Boxes chased into walls shall be fixed square and mortared in position prior to plaster or other finish being applied.

b) Surface Switches

Surface switches shall be of the metal-clad type. Protected dollies shall be used for all industrial applications. The switch plate and box shall have a suitable rust resistant enamel finish.

c) Architrave Switches

i) Architrave switches shall be used in partitioning mullions as required.

ii) Unless otherwise specified, tapped holes for screws and outlet openings will be provided by others. The Contractor shall co-ordinate fully with the contractor providing the holes with regard to positions and switch screw templates. Fixing screws shall be provided by the Contractor.

iii) Wiring to architrave switches may be run within the hollow mullion or other hollow metal structural members of the partitioning, but shall be run in conduit from the lighting outlet, terminating with a bush at the point when wiring enters the hollow mullion.

iv) Where the wiring for lighting circuits is run in a ceiling channel which is situated directly over the hollow mullion or other wire carrying member, then the wiring to switches may be taken directly into the latter without the use of conduit or lead-in tubes. Under no circumstances shall the wire pass over sharp edges and suitable provisions shall be made to shield the wiring accordingly.

d) Watertight Switches

i) Watertight switches shall be used for all external applications and in potentially damp areas.

ii) Watertight switches shall have cast alloy or UV stabilised high-impact plastic enclosures.

iii) The minimum protection rating shall be IP55.

12.12.3 Mounting Heights

a) Unless otherwise specified, switches shall generally be mounted at 1,4m above finished floor level to the underside of the switch.

b) Where switches are located on walls near a change of wall finish, e.g. on tilted, face brick, or wood panelled dadoes, they shall be positioned so that the coverplates fall completely within one or other of the surfaces, but not on the junction line of the different finishes. The Contractor shall liaise with the relevant other trades to ensure that switches on surfaces present a neat appearance.

c) Switches in locations meant for persons in wheelchairs (paraplegic toilets etc.) shall be mounted at 1,1m above finished floor level to underside.

12.12.4 Dimmers

a) Standard Dimmers

i) Dimmer units suitable for controlling 220/230 V incandescent and fluorescent luminaires shall be of the integral controller/dimmer unit type suitable for mounting in a standard switchbox, or else in a suitable box supplied with the unit. The units shall be rated at 250 V and sized according to the load.

ii) Dimmer units used in conjunction with 12 V dichroic luminaire transformers shall be of the induction type.

iii) All dimmers shall be provided with a mains on-off switch and a dimmer control knob. Multi-lever switches may be utilized where there is a combination of dimmed and non-dimmed circuits fed from the same position.

iii) The correct pre-heat transformers and lamps shall be used for all dimmable fluorescent luminaires, in accordance with the supplier's details. Alternatively units suitable for use with electronic fluorescent ballasts shall be used where electronic ballasts are employed.

iv) Dimmers shall be noise-free and fully suppressed for radio and fluorescent ballast interference.

b) Remote Dimmers

Dimmers for loads larger than 1200 W are to be of the two-part type, i.e. with a local controller and a remote dimmer.

12.12.5 Photo-electric Controls

Where specified photocells shall be used to switch external lighting installations. 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 proof ultra violet stabilised cover. The operating level shall be factory preset to switch on at approximately 50 lux and off an approximately 100 lux. The response time after sudden changes in light level shall be not less than 15 seconds.

Integral protection against voltage surges shall be provided.

Photocells shall be positioned in such a way that they will not be affected by spill-light from the external lighting installation or by vehicle headlamps.

12.12.6 Labelling

All switches in industrial applications, and elsewhere as specified shall be provided with a Traffolyte label screwed to the wall, or other fixed member, immediately adjacent to the switch. The label designation shall indicate the distribution board and circuit and outlet number, e.g.: "DB-AB/L4.3".

12.13 Bell Pushes

Bell pushes shall be 250 V rating, even where used for low voltage bell installations. In all other respects the requirements for lighting switches given in 12.12 shall apply to bell pushes. Bell pushes shall be mounted in separate boxes to switches or other components.

12.14 Socket Outlets and Plug Tops

12.14.1 16 A Switched Socket Outlets (SSOs)

- a) 16 Amp SSOs shall be 250 V rating; shuttered 2 pin and earth type complying with the requirements of SANS 164-1.
- b) Outlets on circuits rated up to 20 A shall be of the normally switched type whilst outlets on 25-32 A circuits shall be provided with a class F0 SP MCB, or where especially detailed, a DP MCB. The ratings shall be 16A unless otherwise specified.
- c) Both single and twin flush wall mounting SSOs shall be housed in 100 x 100 x 50mm accessory boxes. Surface single-outlet sockets shall be housed in 83 x 119 x 50mm galvanised steel boxes. SSOs for mounting in power skirting, bench-top trunking, hospital bed-head channels etc. shall be mounted on cradles suitable for such applications. Unless otherwise required, flush wall mounting outlets shall have pressed steel coverplates finished white or ivory. Surface outlets shall be of the industrial protected-dolly type with grey pressed steel coverplates.
- d) Where SSOs complying with SANS 164-1 are to be used in exposed areas, they shall be housed in a York S15 weatherproof enclosure or equal and approved.

12.14.2 Non-Standard Socket Outlets

a) Data/Electronic Equipment Outlets

- i) Dedicated 16 Amp SSOs shall be similar in construction to normal SSOs but shall have flattened earth pins in the 10 o'clock or 12 o'clock position as specified. The earth socket shall be isolated from the chassis of the unit to allow for the connection of 'clean' earths.

Unless otherwise specified, the socket outlet plate shall be of a distinctive colouring (usually red, or as specified in the Detailed Specification). Alternatively the socket pin shrouds and switch dolly shall be of the selected colour; the latter instances usually being applied to outlets in power skirting or hospital bed-head channel etc.

- ii) Where specially called for, dedicated SSOs are to be of the British Standard square pin, 13 Amp type. Similarly to 12.4.2 (a) (i), the earth socket shall be isolated from the chassis of the unit.

Wall mounting 13 Amp SSOs shall be suitable for mounting in a standard 100 x 100 x 50mm accessory box. Surface and power skirting mounted units shall generally be as detailed for 16A SSOs (12.14.1(c)).

iii) 16 A dedicated plug tops, colour-matched to the respective plate or shrouds, and 13 A plug tops in ivory or white plastic, complete with 5 A cartridge fuses, at the rate of 60 % of all relevant outlets shall be provided and handed to the Client at Works handover.

b) Luminaire Outlets

Where required luminaires shall be fed via a locally mounted 5A SP, N + E non-switched socket-outlet. In these instances, the luminaires shall be fitted with 3m of 3-core flex and a rubber-clad 5A plug-top.

12.14.3 220/240 V Plug-Tops

When required to be supplied by the Contractor, 13 A plug-tops shall be white or ivory plastic. 16 A plug tops shall be white or ivory plastic for general office areas and rubber clad type for workshops, production areas, etc. or colour coded plastic for dedicated types

When wired, a small loop shall be made in the earth core of the flex within the plug top so that in the event of undue stress upon the equipment flex, the earth connection will tend to remain intact even if the feed wires are pulled loose.

12.14.4 3-Phase Socket Outlets

a) Existing Installations

420 V 3-Phase socket outlets for use in existing factories etc. shall generally match the units already installed, unless otherwise specified.

b) New Installations

i) Generally multi-phase sockets shall be BICC Marachel type DS 16/30A or 32/50A TP + N + E wall mounting decontactors, or equal and approved, or as otherwise specified.

Each decontactor or similar shall be supplied with a plug unit which shall be handed to the Client upon Works completion and handover. 16 A units shall be fed with cable not exceeding 6mm² and 32 A units with cable not exceeding 10mm².

12.14.5 Mounting Heights

Unless otherwise required SSOs shall be mounted at the following heights from finished floor/surface level to the bottom of the outlet.

Flush outlets, generally	:	0,3 m
Garages, factories and workshops	:	1,4m (SP & TP units)
Kitchens and tea rooms	:	1,0m
Above work surfaces (Kitchens and Offices)	:	0,2m (SP only)

12.14.6 Labelling

Socket outlet labelling shall be as for switches, refer 12.12.5.

12.15 Miscellaneous Power Connections

12.15.1 Geysers

Domestic-type geysers will be supplied, installed and connected to water services by others. The Contractor shall undertake all electrical connections.

For wall mounted geysers, flush supply conduit shall terminate in a flush round box conveniently close to the electrical entry to the water heater. A surface type metal clad or polycarbonate encased 30 A DP switch disconnecter shall be superimposed over the conduit box and the final connection shall be made using surface galvanised conduit, painted after installation.

Where geysers are installed in concealed positions such as roof voids, the final connection from the local switch disconnecter may comprise PVC covered flexible steel conduit.

Unless otherwise indicated in the single line diagrams, wiring for geyser circuits not exceeding 4 kW single-phase shall be carried out with conductors and earthwire at least 2,5mm² each.

Connections to calorifiers and large type geysers shall be as specified.

12.15.2 Kitchen Equipment

a) Domestic Stoves

Domestic stoves will be supplied and placed in position by others.

The Contractor shall provide a suitable electrical supply and final connection. A feed shall be taken to a flush mounted 60 A DP switch-disconnector positioned 300mm to one side of the stove and at a height determined by work surface, kitchen cupboards etc. From the switch-disconnector, flush conduit shall be taken to a point 450mm above floor level, and centred to the rear of the stove, terminating in a round conduit box. The final connection shall be carried out using a superimposing spout-entry conduit box and PVC covered flexible conduit for permanently connected units and via a 'stove connector' socket for plug-in units.

b) General Kitchen Equipment

i) Canteen kitchen equipment such as stoves, fryers etc. shall be connected up by the Contractor.

Unless otherwise specified, equipment shall be fed via a local polycarbonate encased switch-disconnector mounted at 1400mm on the wall behind the appliance. The switch-disconnector shall be single-phase DP, or 3-phase 4-pole as required. The final connection shall be taken from the switch-disconnector using flush conduit offset out of the wall at 450mm above floor level. Water-tight PVC covered flexible steel conduit shall connect directly to the end of the wall conduit and shall then connect to the particular item of equipment.

Where no wall exists, a stainless steel pedestal and switch-disconnector arrangement shall be supplied, as detailed in the Work drawings.

12.15.3 Air Conditioning Units

Console, ceiling and wall-mounting air conditioners (ACs) will be supplied and installed by specialist contractors.

The Contractor will undertake electrical and control connections to the extent outlined in the drawings.

Unless otherwise specified, AC units shall be fed via a locally mounted 30 A DP switch-disconnector unit and the final connection shall comprise the 3-core flex supplied with the AC unit taken via a cord-outlet arrangement mounted on the switch-disconnector faceplate.

12.15.4 Fans

a) General

Where fans are required to be supplied by the Contractor, they shall be supplied complete with all necessary accessories as applicable, such as mounting brackets, diaphragm plates, wire guards where fan blades are liable to be touched by hand, weatherproof louvres where fans are mounted on an outside wall, etc.

Fans and all accessories supplied therewith, shall be bolted, screwed or secured to walls and other surfaces as required.

Holes in walls or windows will be provided by the building contractor to details to be supplied by the Contractor.

b) Connection to Lift Motor Room Fans

i) Where a lift motor room fan connection is required, the Contractor shall, in addition to the fan, also provide and install a "close-on-rise" 20A rating thermostat, having room temperature range, which shall be mounted near the fan unless otherwise indicated.

ii) The wiring to the fan shall be taken from a SP MCB on the distribution board through a clearly labelled local 15/20A switch disconnect and through the thermostat to the fan motor terminals.

Final connections to the fan shall be carried out in flexible conduit.

c) Connection to Small Extract Fans

Where a small extract fan, such as is used in domestic kitchens toilets, etc., is specified, and when no facilities exist on the fan for conduit entry, connections may be made to the fan terminals by means of 3-core plastic-covered or “cabtyre” flexible cord, taken from a cord-outlet 15/20A switch disconnecter unit in close proximity to the fan.

12.15.5 Plant and Motor Connections

a) General

Due to the many types of plant and/or motors that the Contractor may be called upon to connect up, specific details will be as described in the drawings or Detailed Specification.

b) Plant Supplies

i) Generally the Contractor will be called upon to supply and install an incoming feeder cable to a motor control panel (MCC), or similar, supplied by others.

ii) The Contractor shall liaise and co-operate with the plant vendor/contractor regarding program, correct location, testing – including phase rotation check, and switch-on.

iii) Where the Contractor has any doubt regarding electrical and safety aspects of plant controls and equipment by others, he shall have the right to refuse to live up the system until the receipt of an indemnity from the Engineer.

c) Motor Connections

i) Unless otherwise specified motors and associated machinery will be supplied and fixed by others. The Contractor will be required to provide an electrical supply and to connect the means of disconnection, starting and to the motor terminals and accessible to the machine operator where applicable.

Unless specified as being supplied by others, the Contractor shall supply and install a padlockable, local switch disconnecter for each motor. A suitable starter (which will be provided with the motor) shall be fixed and connected by the Contractor.

Switch-disconnectors shall, unless otherwise specified, be wall mounted adjacent to the motor, or onto a suitable floor mounting pedestal or onto the framework of the machine or equipment. The switch disconnecter shall be within 2,0m of the motor terminals.

Unit starters shall, where possible, be mounted adjacent to the switch disconnecter provided that this position will afford easy control of the machine by the operator.

The final connection to a motor shall comprise a multi-core armoured cable with a neatly strapped loop of slack at least 800mm long to allow adjustments to be made to the motor and/or its mountings. The multi-core cable shall contain an extra core for earthing purposes. The entry into the motor terminal box should preferably be from below/or alternatively from the side, but never from above.

The Contractor shall ensure the correct rotation of the motor and the settings of the starter in co-operation with the representative of the supplier of the motor.

12.15.6 Labelling

All cables, cores, switch-disconnectors and other items of control equipment shall be labelled. Labels for controls shall be affixed to a non-removable member or wall, adjacent to the item.

Refer to items 12.9.3 and 12.12.5 for general requirements.

12.16 Provisions for Ancillary Services

12.16.1 General

Where provision only for telephones and other systems of communication, fire defence, security, aerial, computer data or other services are specified, the Contractor shall supply and install all necessary conduit, wiring channel, cable tray, boards, outlet boxes, sleeves etc., as detailed.

12.16.2 Junction Boards

Where called for, junction boards for telephone and data services shall be supplied as specified. The boards are to be similar in construction and finish to flush, surface or semi-flush distribution boards, as required (See clause 12.4).

Boards shall generally be 100 – 115 mm deep with an internal 15 mm softwood backing. Doors shall be secured with square-key turnbuckles and provision for padlocking. Main distribution frames (MDFs) shall generally be similar to normal junction boards but are to be 150 mm deep.

12.16.3 Cable Sleeves

a) Unless otherwise specified or indicated on the drawings, the Contractor shall supply and install all sleeves for telephone and other service cables of sizes and in positions as detailed.

b) Where sleeves are specified to be supplied and installed by others, the Contractor shall be responsible for ensuring that such sleeves are installed in good time and in their correct positions. Suitable rustless draw wires are shall be provided in all sleeves.

12.16.4 Conduit

All conduit for telephones and other services shall be provided and installed to the same requirements as for the electrical installation, and shall be fitted with rustless draw wires. Colour coding for industrial project and other installations where specified shall be in accordance with 12.7.4 (e).

Each class of service shall be kept entirely segregated from any other service.

12.16.5 Outlets

a) Unless otherwise specified all outlets for telephones and other services shall consist of standard 100 x 50mm flush type pressed steel boxes generally mounted a height of 0,3m from finished floor level to bottom of box.

b) Where switch sockets or other outlets are mounted in the same room at nominally the same height above floor, care shall be taken to ensure that the undersides of all such outlets are accurately lined up.

12.16.6 Coverplates

The Contractor shall supply and fit metal or plastic coverplates of the same material and finish to match flush switches and switched socket coverplates. A blank cradle shall be fitted in the outlet box to which the coverplate shall be screwed, allowing for proper alignment of the coverplate. Nickel or chromium plated screws shall be used to secure all blank coverplates.

12.16.7 Co-operation

The Contractor shall co-operate with the suppliers and installers of other services in providing all information required, and shall assist such other installers in the event of difficulties which they may experience with drawing in of their cables into conduit or channel provided by the Contractor and where such difficulty arises because of want of knowledge of location, blockages broken draw-wires etc.

12.17 Fixings and Supports

General

The Contractor shall be responsible for all fixings in connection with his installation, including: brackets, suspensions, clamps, bolts, screws etc, and all accessories and fixing devices to effect a substantial and proper means of fixing equipment, components, wireways, cables etc.

All items shall be selected to fully suit the application, due cognisance being taken of:

Weight of equipment and fixing media ('pullout strength')
Temperature and humidity
Effect of corrosive and damp environments
Weathering, UV degradation etc
Electrolytic effects

The following details shall apply to all fixings irrespective of the various categories in which they are described.

12.17.2 Concrete and Brickwork

Wall Plugs

Fixings into concrete and brick surfaces for equipment with a maximum mass of 10kg may be undertaken with plastic or fibre 'wall-plugs'. Under no circumstances shall wooden inserts be used.

A masonry drill of the correct size shall be used, in conjunction with a suitable hammer drill or similar, to make holes into the brick or concrete fabric; fixings into mortar joints will not be allowed. The fixing plug length must match the threaded portion of the fixing screw; undersized plugs will not be allowed.

Round or cheese headed screws of the correct diameter to match the respective plug shall be used throughout.

Anchor Bolts

Fixings into concrete and brick surfaces for equipment with a mass exceeding 10kg, or where the fixing holes are 10mm or larger, shall be undertaken using expanding anchor bolts, or by means of bolts cast into concrete.

For expanding anchor fixings, holes shall be made similarly to wall-plug holes (see 12.17.2 a) ii)).

Channel Fixings

Where brackets, cable-rack support arms etc are to be fixed, the Contractor shall supply and install Cabstrut, or equal and approved, galvanised channel supports and associated clamps, cantilever arms and so forth. Surface channels for the support of various brackets, pendant studding etc shall be fixed into concrete ceilings or brick/concrete walls using anchor bolts.

In instances where cast-in support channels are to be used, the Contractor shall liaise with the building/civil contractor to ensure that inserts are installed timeously on to shuttering and that all openings are protected from the ingress of vibrated concrete.

Unless otherwise detailed in the Detailed Specification and/or drawings, the Contractor shall submit particulars, including sketch drawings, of proposed fixings to the Engineer for approval prior to installation. Such proposals shall be accompanied by design calculations of loadings and fixing spacings.

d) Cartridge Fixings

Shot or cartridge fixings, using fixing guns, percussion charges and fixing pins in accordance with the relevant manufacturer's recommended methods, shall only be used with the express written permission of the Engineer. Where used, the Contractor shall comply fully with the requirements of the Occupational Health and Safety Regulations and shall ensure that warning signs are placed at all entrances where such work is in progress.

12.17.3 Hollow Partitions, Hollow Blocks and Ceiling Boards

Fixings shall not be made using gypsum, fibre or similar ceiling boards or ceiling tiles as the supporting medium.

For ceiling boards, the component shall be installed to a substantially fixed conduit box. In the case of linear fluorescent luminaires or other large components, further fixings shall be made into the support brandlering. Where there is no brandlering conveniently located, the Contractor shall supply and install independently fixed wooden inserts.

Surface fixed items mounted to ceiling tiles within support tees shall be fixed similarly to the foregoing except that, with written permission of the Engineer, supplementary fixings may be made into the ceiling tee lips using approved self-tapping screws.

Fixings into hollow partitioning material, or hollow building blocks, shall be done by means of spring-loaded 'toggle' fixings, or, where suitable, compression type cavity fixing devices may be used.

12.17.4 Fixings on Steelwork

Support brackets, hangers etc shall be fabricated from galvanised angle iron or channel iron, or shall be made up using Cabstrut or equal channel and associated accessories to suit the application.

Brackets etc shall be fixed to the structural steelwork using purpose made galvanised beam clamps, Caddy clips or similar. Welding to structural steelwork may only be carried out with the written permission of the Engineer.

12.17.5 Painting

All exposed steel shall be cold galvanised.

Where specified, supports etc shall be primed and painted using an epoxy finish, colour: light orange, SANS 1091, ref. B26. Refer to clause 12.4.1 (h) for details of painting.

12.17.6 Adhesives

Under no circumstance will any adhesive material be used for any fixing with the single exception of the fixing of door gaskets.

The adhesive for use with gaskets shall be applied as per manufacturer's specifications, or self adhesive gasketing material shall be used. The adhesive shall be of the silicone based type suitable for use under extreme weathering and temperature ranges between -40°C and +70°C.

12.18 Earthing and Lightning Protection

12.18.1 General

In instances where soil resistivity surveys have been carried out to determine the design of the earth electrode system/s, Tenderers shall submit their price in accordance with the Tender Documentation, including the bills of quantities where applicable.

Where no resistivity survey has been conducted prior to calling for tenders, prices shall be based upon a provisional design and, where applicable, a provisional bill of quantities. The final design will be based upon a subsequent soil resistivity survey.

All earthing and lightning protection surveys, installations and testing must be carried out by a recognised specialist. Unless the Tenderer is also the earthing specialist other Tenderers (e.g.: electrical contractors) must submit full details of their proposed specialist sub contractor.

This section does not include switchyard earthing. Where necessary a supplementary specification: "Standard Specification for Substation Earthing" will be issued.

12.18.2 Earth Resistance Testing

Soil resistivity tests shall be carried out at the proposed location of the electrode/s and following ground levelling by the civil/building contractor, where applicable.

The Contractor must give at least 48 hours notice of impending tests to the Engineer to allow him to attend and witness them at his option.

The tests must be carried out in accordance with SANS 10199 using a recognised method (e.g.: Wenner method) with a four terminal null balance 'megger' tester. A meter calibration certificate proving calibration within the last six months undertaken by a recognised testing authority must be submitted to the Engineer prior to carrying out earth readings. If there is any reason to suspect the accuracy of any instrument, the Engineer may call for confirmation testing at the Contractor's expense.

The result of tests, including a specification for the electrode design, shall be submitted to the Engineer within seven days. The test results in tabulated and graphical form shall be accompanied by a copy of the meter test certificate.

The following maximum resistances shall apply:

Transformers

Up to 500kVA	5 Ohms
500 - 800kVA	3 Ohms
800 - 1000kVA	2 Ohms
Above 1000kVA	1 Ohm

Lightning Protection

SANS 10313, category A structures: 30 Ohms overall, subject to a maximum of 200 Ohms for any single electrode (or per SANS 10313, whichever is the lower reading).

SANS 10313, category B & C structures: 50 Ohms overall, subject to a maximum of 200 Ohms for any single electrode (or per SANS 10313, whichever is the lower reading).

Plant Bonding – Hazardous Areas

Where specified to be bonded, the electrode reading for tanks, silos etc must not exceed 7 Ohms with the electrode disconnected from any other electrode system (See also item 12.18.6).

12.18.3 Earth Electrode

The earth electrode shall consist of earth rods, bare copper wire, copper tape etc, or a combination of these, as specified in the drawings.

Earth rods shall nominally be 1500mm long, 16mm diameter extensible type steel cored, copper jacketed where the copper cladding is at least 250 microns thick molecularly bonded to the steel rod, as 'Cadweld', or equal and approved.

Mains earthing conductors ('trench earths') shall consist of 70mm² bare copper cable while conductors for lightning protection and static bonding shall be 50mm².

Trench earth conductors, as well as the tops of earth rods shall be not less than 600mm below finished ground level.

Earth rods shall be driven into the soil utilising a purpose made driving head in conjunction with a mechanical hammer. In hard ground and in rock, the rods shall be installed into pre-drilled holes made with an earth-drilling rig. Whilst loose soil or a soil slurry may be used to back-fill holes in hard soil, carbonaceous conductive aggregate, such as 'Marconite' or equal and approved, shall be used for holes bored in rock.

Rods longer than the nominal 1500mm shall be coupled using an external sleeve arrangement and the liberal application of silicon or hydrocarbon grease. Rods must butt against one another inside the coupling; gaps will not be allowed.

Rods, tapes and cable conductor in highly corrosive soils shall be of stainless steel, or as otherwise specified.

Joints in copper cable electrodes shall only be effected using an exothermic welding process as 'Cadweld', or equal and approved.

Lightning protection trench earths shall not be run directly in soil under pathways. In these instances the conductor shall be run in 75mm diameter uPVC sleeving which shall be laid under the path and at least 1000mm clear of its edges.

12.18.4 Mains Earthing

The earth electrode resistance for mains earthing of transformers, switchgear etc. shall be in accordance with 12.18.2 (e) (i)

A main earthing bar of high conductivity copper, at least 50mm x 6mm in section and 500mm long, (or as otherwise specified in the Detailed Specification and/or drawings) installed in the transformer room facing the LV side of the transformer/s shall be provided. This shall be mounted onto insulators at 500mm above finished floor level. The bar shall be pre-drilled with 12 No. M12 diameter holes for the connecting of earth leads.

The earth electrode cable/s and all earth bonding leads shall be connected to the bar by means of brass or stainless steel bolts, nuts, washers and lock-washers. Earth cable terminations shall comprise hydraulically crimped tinned lugs. The point of origin of each conductor must be clearly indicated by means of an embossed or punched metal tag attached to the conductor near its lug or connection point.

The following points shall be bonded to the earth bar with 70mm² conductor, or as otherwise specified:

- Transformer star points (*)
- LV switchboard neutral bar (*)
- LV switchboard earth bar (*)
- MV switchgear

(*): Subject to the earth conductor being not less than half the cross sectional area of the of the relevant phase conductor between the transformer and the LV switchboard.

Minisubs shall be earthed in a similar fashion to main substations except that the earthing bar in the LV compartment shall take the place of the separate main earth bar.

12.18.5 Lightning Protection

Besides earth resistance testing, the Contractor shall arrange for the design of the lightning protection system, including air terminals, roof bonding, down conductors etc to be carried out by a reputable specialist. The Engineer will provide

suitable drawings to the Contractor for this purpose either as transparencies or as DXF Computer Assisted Drafting (CAD) files.

Following submission of the design to the Engineer for comment (modification where necessary) and approval, the Contractor shall submit the final design to the SANS for approval. Transparencies of the SANS approved drawing/s shall be submitted by the Contractor to the Engineer for record purposes prior to, or simultaneously with, the start of the installation.

Air terminals may be of various designs. As a general guide, the following basic requirements shall be complied with:

All conductor material shall be electrical grade aluminium alloy in accordance with the requirements of BSS 1476/H/E9 or American Standards Specification 6063. Conductors shall be installed in such a way that no part of the system shall come into contact with concrete or plaster.

Circular conductors shall have a minimum cross sectional area of 50mm². Flat conductors shall be 20mm x 3mm minimum.

Joints in circular conductors shall be done using a hydraulic crimping machine. Flat conductors shall be joined with either two bolts, or else two aluminium rivets of 6mm diameter.

Bonding to extraneous metallic surfaces shall be done by bolting or riveting.

Conductors must be mounted into aluminium alloy guides which in turn are seated on a suitable barrier material (plastic or similar) and which allow free longitudinal movement of the conductor.

Straight horizontal runs of conductor shall be provided with expansion loops every 30m or less.

Electrically continuous metal roofs shall be used as the air termination. Where flat metallic roofs may be surrounded by non metallic parapet walls, conductors are to be installed on top of the wall and bonded to the metal roof sheeting at intervals not exceeding 20 metres.

Non metallic roofing supported by steel trusses and purlins which are electrically continuous may be treated as for a complete metal construction.

Where required 12mm diameter x 500mm long finials shall be installed at the outer corners of buildings of 15m to 30m in height and in addition at intervals of no more than 30m along exposed parapet walls. The finials, in turn must be bonded to the peripheral conductors.

Tall structures, as defined in SANS 10313, shall, where required, have 12mm diameter x 1000mm long finials. These shall be installed at an angle of 30° out from the structure and bonded to the peripheral air terminal system, all as required by the Code of Practice.

Down conductors shall consist of aluminium alloy run surface down the outside of buildings, or, where suitable, shall comprise structural steel columns, or reinforcement steel in reinforced concrete columns all as described in the Detailed Specification and/or installation drawings and in accordance with the Contractor's SANS approved design.

Down conductor spacing shall not exceed $30 - 0,4h$ metres, where h = the maximum height of the structure. However the minimum separating distance need not be less than 10 metres except for tall slim structures (like chimney stacks) where a minimum of two down conductors must be installed.

Large expanses of external metal wall cladding as well as external metal staircases, ductwork etc shall be bonded to ensure vertical electrical continuity and to the lightning protection system at their upper and lower extremities.

Aluminium based down conductors shall terminate at 500mm above ground level where they shall be bonded to the earth electrode system. Under no circumstances shall aluminium conductor come into contact with the ground.

The Contractor must liaise closely with the building contractor to ensure the timeous placement of cast-in threaded bonding sockets at the tops and bottoms of reinforced concrete columns.

Test points shall be provided where specified. These shall be either mounted near the base of the down conductor in the lower part of the wall or else contained in a small cast iron inspection chamber installed in the ground, all as detailed in the installation drawing/s and/or Detailed Specification.

12.18.6 Static Bonding

Static bonding of operating theatres, explosives magazines, petrochem installations, electronic workshops and the like fall outside the scope of this general specification and, where required, will be specified in supplementary specifications or the Detailed Specification.

12.18.7 Testing and Maintenance Manuals

Upon completion of the earthing installation, testing in accordance with the relevant SANS specification/s shall be carried out by the Contractor and the results submitted to the Engineer. The Contractor shall also supply maintenance manuals, including as-fitted and SANS approved record drawings, test certificates etc, all as outlined in clause 10.0.

SCHEDULER OF EQUIPMENT

ITEM	DESCRIPTION	MANUFACTURER	MODEL /CATALOGUE No.
1.	Distribution boards		
2.	Circuit breakers 1P, 2P, 3P		
3.	Contactors 1P, 2P, 3P		
4.	Earth leakage relays		
5.	Daylight sensitive switch		
6.	Surface all weather isolators		
7.	Watertight rotary switch with and without night light switch contact.		
8.	16A power skirting mounted socket outlets		
9.	16A flush switched socket outlets		
10.	16A surface switched socket outlets		
11.	5A unswitched socket outlets		
12.	XLPE PVC SWA PVC cable		
13.	Heavy duty metal cable ladders		
14.	Heavy duty metal cable trays		
15.	Cable sleeves and accessories		
Note	All equipment shall have a 12 month warrantee & the contractor takes responsibility for latent defects, which is common law protection.		

ANNEXURE 3: Calculation of Penalties

a) CALCULATION OF PENALTIES

CALCULATION OF PENALTY PER DAY (EXCLUDING VAT)

CONTRACT PERIOD	RATE PER R100 OF ESTIMATE
1 month	27.5 cents
1.5 months	22 cents
2 months	16.5 cents
2.5 months	13.5 cents
3 months	11 cents
3.5 months	9.5 cents
4 months	8.5 cents
4.5 months	7.5 cents
5 months	6.25 cents
6 months	5.75 cents
7 months	4.75 cents
8 months	4 cents
9 months	3.75 cents
10 months	3.5 cents
11 months	3 cents
12 months	2.75 cents
14 months	2.5 cents
15 months	2.25 cents
16 months	2 cents
18 months	1.75 cents
20 months	1.5 cents
21 months	1.5 cents
24 months	1.25 cents
30 months	1 cent
36 months	1 cent
42 months	1 cent

b) PENALTY PER DAY ROUNDED OFF AS FOLLOWS:

R0	-	R500	nearest	R5
R501	-	R1 000	nearest	R10
R1 001	-	R5 000	nearest	R50
R5 001	-	and above	nearest	R100

EXAMPLE

Estimated contract value = 51 976 884 (excluding VAT)

Contract period = 15 months

$$R51\,976\,884 \times \frac{0.0225}{100}$$

$$= R11\,694.80/\text{day}$$

Therefore rounded off to the nearest R100.00 = R11 700.00/day

c) PENALTIES ON CONTRACTS IN PHASES

Penalties must be calculated proportionally on the estimated value of each phase.