VOLUME 3 OF 3

public works & infrastructure
Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

Kimberley: DCS: Tswelopele Prison: Facilities Management contract: Building related, electrical and mechanical services.

TENDER NO. : KIM10/2022
REFERENCE NO. : 19/2/4/2/2/2327/486

CONSISTING OF THREE VOLUMES

VOLUME 1 – TENDERING PROCEDURES
VOLUME 2 – RETURNABLE DOCUMENTS
VOLUME 3 – THE CONTRACT (THIS DOCUMENT)

Client
Department of Public Works & Infrastructure
Old Magistrate Court Building, 21-23 Market Street,
KIMBERLEY, 8300

Quantity Surveyors
SRSQS Quantity Surveyors (Pty) Ltd
11 Kleurselmot Sreet, Sunset Manor
Pescodia
KIMBERLEY, 8309

Electrical & Mechanical Engineers
Mekan Engineering Services
13 Constantia Street, Rolydene
KIMBERLEY, 8300

NAME OF BIDDER: .....

November 2022

C1.2 Contract Data

DPW-05: (EC) CONTRACT DATA - (GCC (2010) 2nd EDITION: 2010)

Project title:	Kimberley DCS: New Generation Correctional: Tswelopele Prison: Facilities Management Contract: Building Related, Electrical and Mechanical Services

Tender / Quotation no:	KIM10/2022	**WCS no:**		**Reference no:**	19/2/4/2/2/2327/486

	PART 1: DATA PROVIDED BY THE EMPLOYER
	CONDITIONS OF CONTRACT
	The General Conditions of Contract for Construction Works, Second Edition, 2010, published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685, is applicable to this Contract and is obtainable from www.saice.org.za Bidders to note that materials procured for the works should be from South African manufactures and suppliers. Imported materials shall only be considered under exceptional circumstances, based on compelling technical justifications, and subject to the approval by the NDPWI.

CONTRACT SPECIFIC DATA	
The following contract specific data, referring to the General Conditions of Contract for Construction Works, Second Edition, 2010, are applicable to this Contract:	
CLAUSES	**COMPULSORY DATA**
1.1.1.8	Amend Clause 1.1.1.8 to include the word "rights" to read as follows: "Contract Data" means the specific data which, together with these General Conditions of Contract, collectively describe the rights, risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract.
1.1.1.13	Amend Clause 1.1.1.13 as follows, clarify when the defects liability period starts: "Defects Liability Period" means the period stated in the Contract Data, commencing on the date indicated on the Certificate of Completion or Certificates of Completion in the event of more than one Certificate of Completion is issued for different parts of the Works, during which the Contractor has both the right and the obligation to make good defects in the materials, Plant and workmanship covered by the Contract.
	Defects liability period is: **12 months**.
1.1.1.14 & 5.14.7	The time for achieving Practical Completion of the whole of the works is: ***36 Months*** measured from the Commencement Date. The time thus stated includes special non-working days and the year-end break.
	or, if Practical Completion in portions is required, The times for achieving Practical Completion for the portions as set out in the Scope of Works are *mutatis mutandi*: For portion 1 within ***12 months*** For portion 2 within ***24 Months*** For portion 3 within

	For portion 4 within ***insert description as may be applicable*** *(followed by further portions as required)*
	The time for achieving Practical Completion of the whole of the Works is: ***36 Months*, measured from the Commencement Date. The time thus stated includes special non-working days and the year-end break.**
1.1.1.15	The name of the Employer is: **The Government of the Republic of South Africa in its Department of Public Works and Infrastructure.**
1.1.1.16	The name of the Engineer is: ***MEKAN ENGINEERING SERVICES (PTY) LTD***
1.1.1.26	The Pricing Strategy is a: **Re-measurement Contract**.
1.1.1.31	Not applicable to this Contract.
1.1.1.35	Insert the definition of "Value of Works" as Clause 1.1.1.35: "Value of Works" means the value of the Works certified by the Engineer as having been satisfactorily executed and shall include the value of the works done, the value of the materials and/or plant and Contract Price Adjustments.
1.2.1.2	**Employer's address:** Physical Address: ***21 Market Square, Old Magistrates Buildin*** ***Kimberley*** ***8300*** Postal Address: ***Private Bag X 5002*** ***Kimberley*** ***8301*** Facsimile: Telephone: ***053 838 5356***
	Engineer's address: Physical Address: ***13 Constantia Street,Royldene*** ***Kimberley*** ***8301*** Postal Address: ***13 Constantia Street, Royldene*** ***Kimberley*** ***8301*** Facsimile: Telephone: ***053 832 4837***
1.3.4	Not applicable to this Contract.

1.3.5	Replace Clause 1.3.5 with the following provisions: (a) The Employer will become the owner of the information, documents, advice, recommendation and reports collected, furnished and/or compiled by the Contractor during the course of, and for the purposes of executing this Contract, all of which will be handed over to the Employer on request, but in any event on the termination and/or cancellation of this Contract for whatever reason. The Contractor relinquishes its retention or any other rights thereon to which it may be entitled. (b) The copyright of all documents, recommendations and reports compiled by the Contractor during the course of and for the purposes of finalizing the Works will vest in the Employer, and may not be reproduced or distributed or made available to any person outside the Employer's service, or to any institution in any way, without the prior written consent of the Employer. The Employer shall have the right to use such material for any other purpose without the approval of information or payment to the Contractor. (c) The copyright of all electronic aids, software programmes etc. prepared or developed in terms of the Contract shall vest in the Employer, who shall have the right to use such material for any other purpose without the approval of, information or payment to the Contractor. (d) In case of the Contractor providing documents, electronic aids, software programs or like material to the Employer, the development of which has not been at the expense of the Employer, copyright shall not vest in the Employer. The Contractor shall be required to indicate to which documents, electronic aids, software programs or like material this provision applies. (e) The Contractor hereby indemnifies the Employer against any action, claim, damages or legal cost that may be instituted against the Employer on the grounds of an alleged infringement of any copyright, patents or any other intellectual property right in connection with the Works outlined in this Contract. (f) All information, documents, recommendations, programs and reports collected or compiled must be regarded as confidential and may not be communicated or made available to any person outside the Employer's service and may not be published either during the currency of this Contract or after termination thereof without the prior written consent of the Employer.
3.1.3	1. The Engineer's authority to act and/or to execute functions or duties or to issue instructions are expressly **excluded** in respect of the following: (a) Appointment of nominated Sub-contractors – clause 4.4.3; (b) Granting of an extension of time and/or ruling on claims associated with claims for extension of time – clauses 5.12.3, 10.1.5; (c) Acceleration of the rate of progress and determination of the cost for payment of such acceleration – clause 5.12.4; (d) Rulings on claims and disputes – clauses 10.1.5, 10.2.3 and 10.3.3; (e) Suspension of the Works – clause 5.11.1; (f) Final Payment Certificate – clause 6.10.9; (g) Issuing of *mora* notices to the Contractor – clauses 9.1.1, 9.1.2.1 and 9.2.1; (h) Cancellation of the contract between the Employer and Contractor – clauses 9.1.1, 9.1.2.1 and 9.2.1.

	2. In order to be legally binding and have legal bearing and consequence, any ruling in respect of the above matters (a) to (h) must be on an official document, signed and issued by the Employer to the Contractor. 3. The Contractor must submit claims, demands, notices, notifications, updated particulars and reports in writing, as well as any other supporting documentation pertaining thereto, in respect of any of the above listed matters (a) to (h), to the Engineer within the time periods and in the format(s) as determined in the relevant clauses of the Conditions of Contract. Failing to deliver such to the Engineer timeous and in the correct format will invalidate any claim and the consequences of such failure will *mutatis mutandis* be as stated in clause 10.1.4. 4. Clauses 6.10.9 and 10.1.5 shall be amended as follows to indicate the limitation on the Engineer's authority in respect thereof: **Clause 6.10.9 – Amend to read as follows:** Within 14 days of the date of final approval as stated in the Final Approval Certificate, the Contractor shall deliver to the Engineer a final statement claiming final settlement of all moneys due to him (save in respect of matters in dispute, in terms of Clauses 10.3 to 10.11; and not yet resolved). The Employer shall within 14 days issue to the Contractor a Final Payment Certificate the amount of which shall be paid to the Contractor within 28 days of the date of such certificate, after which no further payments shall be due to the Contractor (save in respect of matters in dispute, in terms of Clauses 10.3 to 10.11 and not yet resolved). **Clause 10.1.5 – Amend to read as follows:** Unless otherwise provided in the Contract, the Employer shall, within 28 days after the Contractor has delivered his claim in terms of Clause 10.1.1 as read with Clause 10.1.2, deliver to the Contractor his written and adequately reasoned ruling on the claim (referring specifically to this Clause). The amount thereof, if any, allowed by the Employer shall be included to the credit of the Contractor in the next payment certificate. 5. Insert the following under 3.1.3: Provided that, notwithstanding any provisions to the contrary in the Contract, the Employer shall have the right to reverse and, should it deem it necessary, to amend any certificate, instruction, decision or valuation of the Engineer and to issue a new one, and such certificate instruction, decisions or valuations shall for the purposes of the Contract be deemed to be issued by the Engineer, provided that the Contractor shall be remunerated in the normal manner for work executed in good faith in terms of an instruction issued by the Engineer and which has subsequently been rescinded.
3.2.2.1	Amend Clause 3.2.2.1 to insert the word "Plant" to read as follows: Observe the execution of the Works, examine and test material, Plant and workmanship, and receive from the Contractor such information as he shall reasonably require.
3.2.3.2	Amend Clause 3.2.3.2 to insert the word "Plant" to reads as follows: Notwithstanding any authority assigned to him in terms of Clauses 3.2.2 and 3.2.4, failure by the Engineer's Representative to disapprove of any work, workmanship, Plant or materials shall not prejudice the power of the Engineer thereafter to disapprove thereof and exercise any of his powers in terms of the Contract in respect of thereof.
4.8.2.1	Amend Clause 4.8.2.1 to include the word "person", as follows: Makes available to the Employer, or to any such contractor, person or authority, any roads or ways for the maintenance of which the Contractor is responsible, or

4.8.2.2	Amend Clause 4.8.2.2 to include "Employer" and "contractors", as follows: Provides any other facility or service of whatsoever nature to the Employer or to any of the said contractors, persons or authorities,
5.3.1	The documentation required before commencement with Works execution are: Health and Safety Plan (Refer to Clause 4.3) Initial programme (Refer to Clause 5.6) Security (Refer to Clause 6.2) Insurance (Refer to Clause 8.6)
5.3.2	The time to submit the documentation required before commencement with Works execution is: **21 days.**
5.4.2	The access to, and possession of, the Site referred to in Clause 5.4.1 shall be ***"not exlcusive"*** to the Contractor. In the event of access to, and possession of, the Site is not exclusive to the Contractor, the following limitations apply: ***The Tswelopele Correctional Service will be functional.***
5.8.1	The non-working days are: **Saturdays and Sundays**
	The special non-working days are: **(1) Public Holidays;** **(2) The year-end break commencing on 16 December until the Sunday preceding the first working Monday of January of the succeeding year.**
5.9.1	Amend Clause 5.9.1 as follows: On the Commencement Date, the Engineer shall deliver to the Contractor three (3) copies, at no cost to the Contractor, of the drawings and any instructions required for the commencement of the Works. The cost of any additional copies of such drawings and/or instructions, as may be required by the Contractor, will be for the account of the Contractor.
5.13.1	The penalty for failing to complete the Works is: **R*3 474.28* per day**
	or, if completion in portions is required, The penalty for failing to complete portion 1 of the Works is: **R *Not Applicable* per day**. The penalty for failing to complete portion 2 of the Works is: **R*Not Applicable* per day**. The penalty for failing to complete portion 3 of the Works is: **R*Not Applicable* per day**. The penalty for failing to complete portion 4 of the Works is: **R*Not Applicable* per day**. *Followed by further portions as required.* The penalty for failing to complete the whole of the works is: **R*Not Applicable* per day**.

5.14.1	Amend the second paragraph of Clause 5.14.1 as follows: When the Works are about to reach the said stage, the Contractor shall, in writing, request a Certificate of Practical Completion and the Engineer shall, within 14 days after receiving such request, issue to the Contractor a written list setting out the work to be completed to justify Practical Completion. Should the Engineer not issue such a list within the 14 days, the Contractor shall notify the Employer accordingly. Should the Employer not issue such a list within 7 days of receipt of such notice, Practical Completion shall be deemed to have been achieved on the 14th day after the contractor requested the Certificate of Practical Completion.
5.16.1	Amend Clause 5.16.1 to delete the proviso in the third paragraph of this clause.
5.16.2	Amend Clause 5.16.2 as follows: No certificate other than the Final Approval Certificate referred to in Clause 5.16.1 shall be deemed to constitute approval of the Works or shall be taken as an admission of the due performance of the Contract or any part thereof, nor of the accuracy of any claim made by the Contractor, nor shall any other certificate exclude or prejudice any of the powers of the Engineer and/or the Employer.
5.16.3	The latent defect period for all works is: **5 years**.
6.2.1	The type of security for the due performance of the Contract, as selected by the Contractor in the Contract Data, must be delivered to the Employer.
6.2.3	Amend Clause 6.2.3 as follows: If the Contractor has selected a performance guarantee as security, he shall ensure that it remains valid and enforceable as required in terms of the Contract.
6.5.1.2.3	The percentage allowance to cover overhead charges is: **33%, except on material cost where the percentage allowance is 10%.**
6.8.2	Contract Price Adjustment (CPA) will be applicable: ***Yes***. If CPA is indicated as 'Yes" above the value of payment certificates is to be adjusted by a Contract Price Adjustment Factor: The value of the certificates issued shall be adjusted in accordance with the Contract Price Adjustment Schedule with the following values: The value of "x" is 0.15. The values of the coefficients are: a = 0.25. (Labour) b = 0.3 (Contractor's equipment) c = 0.3 (Material) d = 0.15 (Fuel) The values of the coefficients for "Repair and Maintenance Project" (RAMP) contracts are: a = 0.35 (Labour) b = 0.20 (Contractor's equipment) c = 0.35 (Material) d = 0.10 (Fuel)

6.8.2	The urban area nearest the Site is ***Kimberley***. *(Select urban area from Statistical News Release, P0141, Table 7.1.)* The applicable industry for the Producer Price Index for materials is ***Construction***. *(Select the applicable industry from Statistical News Release, P01421, Table 11.)* The area for the Producer Price Index for fuel is ***Kimberley***. *(Select the area from Statistical News Release, P01421, Table 12.)* The base month is ***November 2022***. *(The month prior to the closing of the tender.)*
6.8.3	Price adjustments for variations in the costs of special materials are not allowed.
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is: **85 %**.
6.10.3	The limit of retention money is dependent on the security to be provided by the Contractor in terms of Clause 6.2.1.
6.10.5	Replace Clause 6.10.5 with the following: In respect of contracts up to R2 million and in respect of contracts above R2 million where the Contractor elects a security by means of a 10% retention, 50% of the retention shall be released to the Contractor when the Engineer issues the Certificate of Completion in terms of clause 5.14.4. The remaining 50% of the retention shall be released in accordance with the provisions of the conditions of contract and will become due and payable when the Contractor becomes entitled, in terms of Clause 5.16.1, to receive the Final Approval Certificate. In respect of contracts above R2 million, where the Contractor elects a security by means of a cash deposit or fixed guarantee of 5% of the Contract Sum (excl. VAT) and a 5% retention of the Value of the Works (excl. VAT), the cash deposit or fixed guarantee, whichever is applicable, shall be refunded to the Contractor or return to the guarantor, respectively, when the Engineer issues the Certificate of Completion in terms of Clause 5.14.4. The 5% retention of the Value of the Works (excl. VAT) shall become due and payable when the Contractor becomes entitled, in terms of Clause 5.16.1, to receive the Final Approval Certificate. In respect of contracts above R2 million, where the Contractor elects a security by means of a cash deposit or a variable guarantee of 10% of the Contract Sum (excl. VAT), the cash deposit or the variable guarantee, whichever is applicable, will be reduced to 5% of the Value of the Works (excl. VAT) when the Engineer issues the Certificate of Completion in terms of Clause 5.14.4. The balance of the cash deposit shall become due and payable or the variable guarantee shall expire when the Contractor becomes entitled in terms of Clause 5.16.1 to receive the Final Approval Certificate.
7.9.1	Insert the following at the end of Clause 7.9.1: Provided that, should the Contractor on demand not pay the amount of such costs to the Employer, such amount may be determined and deducted by the Employer from any amount due to or that may become due to the Contractor under this or any other previous or subsequent contract between the Contractor and the Employer.
8.2.2.1	Insert the following as a second paragraph to Clause 8.2.2.1: The Contractor shall at all times proceed immediately to remove or dispose of any debris arising from damage to or destruction of the Works and to rebuild, restore, replace and/or repair the Works, failing which the Employer may cause same to be done and recover the reasonable costs associated therewith from the Contractor.

8.4.3	Insert a new Clause 8.4.3 as follows: The Contractor shall on receiving a written instruction from the Engineer immediately proceed at his own cost to remove or dispose of any debris and to rebuild, restore, replace and/or repair such property and to execute the Works.
8.6.1.1.1	Amend Clause 8.6.1.1.1 to read as follows: Contract Sum plus 10%.
8.6.1.1.2	The value of Plant and materials supplied by the Employer to be included in the insurance sum is: **Nil**
8.6.1.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is: **Nil**
8.6.1.3	Amend Clause 8.6.1.3 to delete reference to limit of indemnity, to read as follows: Liability insurance that covers the Contractor against liability for the death of, or injury to any person, or loss of, or damage to any property (other than property while it is insured in terms of Clause 8.6.1.1) arising from or in the course of the fulfillment of the Contract, from the Commencement Date to the date of the end of the Defects Liability Period, if there is one, or otherwise to the issue of the Certificate of Completion.
8.6.1.5	1. **Public liability insurance** to be effect by the Contractor to a minimum value of: ☒ R5 million **or** ☐ R ***insert amount in figures (and in words)*** With a deductible not exceeding 5% of each and every claim. 2. **Support insurance** is to be effected by the Contractor to a minimum value of: R ***insert amount in figures (and in words)*** With a deductible not exceeding 5% of each and every claim.
8.6.5	Amend Clause 8.6.5 as follows: Save as otherwise provided in the Contract Data, the insurances referred to in Clause 8.6.1 shall be effected with an insurance company registered in the Republic of South Africa. The Contractor shall submit the insurance policy to the Employer for approval, if so requested.
8.6.7	Amend Clause 8.6.7 as follows: If the Contractor fails to effect and keep in force any of the insurances referred to in Clause 8.6.1, the Employer may cancel the Contract in terms of Clause 9.2.
8.6.8	Insert a new Clause 8.6.8 in provide for high risk insurance for projects executed on areas classified as "High Risk Areas". **HIGH RISK INSURANCE** In the event of the project being executed in a geological area classified as a "High Risk Area", that is an area which is subject to highly unstable subsurface conditions that might result in catastrophic ground movement evident by sinkhole or doline formation the following will apply:

8.6.8	(1) **Damage to the Works** The Contractor shall, from the date of Commencement of the Works until the date of the Certificate of 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 Engineer, 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. (2) **Injury to Persons or Loss of or damage to Properties** The Contractor shall be liable for and hereby indemnifies and holds harmless the Employer against any liability, loss, claim or proceeding arising during the Contract Period 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 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 Contract Period. (3) It is the responsibility of the Contractor to ensure that he has adequate insurance to cover his risk and liability as mentioned in Clauses 8.6.8(1) and 8.6.8 (2) above. Without limiting his obligations in terms of the Contract, the Contractor shall, within 21 days of the Commencement Date and before Commencement of the Works, submit to the Employer proof of such insurance policy, if requested to do so. (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 Clauses 8.6.8 (1), 8.6.8 (2) and 8.6.8 (3). Provided that, should the Contractor on demand not pay the amount of such costs to the Employer, such amount may be determined and deducted by the Employer from any amount due to or that may become due to the Contractor under this or any other existing or subsequent contract between the Contractor and the Employer.
9.1.4	Amend Clause 9.1.4 as follows: In the circumstances referred to in Clauses 9.1.1, 9.1.2 or 9.1.3 (provided that the circumstances in 9.1.3 is not due to the fault of the Contractor, his employees, contractors or agents), and whether or not the Contract is terminated under the provisions of this Clause, the Contractor shall be entitled to payment of any increased cost of or incidental to the execution of the Works which is specifically attributable to, or consequent upon the circumstances defined in Clauses 9.1.1, 9.1.2 or 9.1.3;
9.1.5	Amend Clause 9.1.5 as follows: If the Contract is terminated on any account in terms of this Clause (provided that the circumstances in 9.1.3 is not due to the fault of the Contractor, his employees, contractors or agents) , the Contractor shall be paid by the Employer (insofar as such amounts or items have not already been covered by payments on account made to the Contractor) for all measured work executed prior to the date of termination, the amount (without retention), payable in terms of the Contract and, in addition:
9.1.6	This Clause is not applicable to this Contract.

9.2.1.3.8	Insert a new Clause 9.2.1.3.8 as follows: Has failed to effect and keep in force any of the insurances referred to in Clause 8.6.1,
9.2.4	Insert a new Clause 9.2.4 as follows, to provide for unilateral termination by the Employer: The Employer shall be entitled at any time to unilaterally terminate or cancel this Contract or any part thereof. Save for the following, the Contractor shall not be entitled to claim any other amounts whatsoever in respect of such termination or cancellation of this Contract. The Employer shall be obliged to pay the Contractor as damages and/or loss of profit the lesser of: 9.2.4.1 An amount not exceeding 10% of the Contract Sum; 9.2.4.2 10% of the value of incomplete work; or 9.2.4.3 The Contractor's actual damage or loss as determined by the Employer after receipt of evidence substantiating any such damage or loss.
9.3.2.2	Amend Clause 9.3.2.2 as follows to delete the proviso on lien: The ownership of Plant and unused materials brought onto the Site by the Contractor, and for which the Employer has not made any payment, shall revest to the Contractor and he shall, with all reasonable dispatch, remove from the Site such Plant, materials and all Construction Equipment and Temporary Works.
9.3.3	Insert the following at the end of Clause 9.3.3 After cancellation of the Contract by the Contractor, the Contractor, when requested by the Employer to do so, shall not be entitled to refuse to withdraw from the Works on the grounds of any lien or a right of retention or on the grounds of any other right whatsoever.
10.1.3.1	Amend Clause 10.1.3.1 as follows to insert the word "Plant": All facts and circumstances relating to the claims shall be investigated as and when they occur or arise. For this purpose, the Contractor shall deliver to the Engineer, records in a form approved by the Engineer, of all the facts and circumstances which the Contractor considers relevant and wishes to rely upon in support of his claims, including details of all Construction Equipment, labour, Plant and materials relevant to each claim. Such records shall be submitted promptly after the occurrence of the event giving rise to the claim.
10.1.6	Insert a new Clause 10.1.6 as follows: If the Employer fails to give his ruling within the period referred to in Clause 10.1.5 he shall be deemed to have given a ruling dismissing the claim.
10.2.1	Amend Clause 10.2.1 as follows: In respect of any matter arising out of or in connection with the Contract, which is not required to be dealt with in terms of Clause 10.1 or which does not require the decision or ruling of the Employer, the Contractor or the Employer shall have the right to deliver a written dissatisfaction claim to the Engineer. This written claim shall be supported by particulars and substantiated.
10.2.2	Amend Clause 10.2.2 as follows: If, in respect of any matter arising out of or in connection with the Contract, which is not required to be dealt with in terms of Clause 10.1 or which does not require the decision or ruling of the Employer, the Contractor or the Employer fails to submit a claim within 28 days after the cause of dissatisfaction, he shall have no further right to raise any dissatisfaction on such matter.

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10.3.2	Amend Clause 10.3.2 as follows to replace "adjudication" with "court": If either party shall have given notice in compliance with Clause 10.3.1, the dispute shall be referred to court proceedings in terms of Clause 10.8, unless amicable settlement is contemplated.
10.3.3	Replace "Engineer" with "Employer".
10.4.2	Amend Clause 10.4.2 as follows to provide for submission to court: If the other party rejects the invitation to amicable settlement in writing or does not respond in writing to the invitation with 14 days, or amicable settlement is unsuccessful, either party may submit the dispute to court.
10.4.4	Amend Clause 10.4.4 to delete reference to "adjudication" and "arbitration" to read as follows: Save for reference to any portion of any settlement or decision which has been agreed to be final and binding on the parties, no reference shall be made by or on behalf or either party in any subsequent court proceedings, to any outcome of an amicable settlement, or to the fact that any particular evidence was given, or to any submission, statement or admission made in the course of the amicable settlement.
10.5 10.6 & 10.7	The entire provisions of these Clauses are not applicable to this Contract.
10.10.3	Amend Clause 10.10.3 as follows to reword and remove reference to "arbitrator": The court shall have full power to open up, review and revise any ruling, decision, order, instruction, certificate or valuation of the Engineer and Employer and neither party shall be limited in such proceedings before such court to the evidence or arguments put before the Engineer or Employer for the purpose of obtaining his ruling.

CONTRACT PARTICIPATION GOAL TARGETS AND CIDB B.U.I.L.D. PROGRAMME

The contractor shall achieve in the performance of the contract the following Contract Participation Goals (CPGs) as described in PG-01.2 (EC): Scope of Work and PG-02.2 (EC): Pricing Assumptions and in accordance with the feasibility study, which forms part of the specifications in the CPG Section of the Specification of this contract.

(a)	Minimum 30% mandatory Subcontracting to SMMEs in accordance with the Preferential Procurement Policy Framework Act, 2000: Preferential Procurement Regulations, 2017 as published in the Government Gazette Notice No. 40553 of 20 January 2017 – Condition of Tender.	***Applicable***
(b)	Minimum Targeted Local Manufacturers of Material Contract Participation Goal, in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.	***Not applicable***
(c)	Minimum Targeted Local Building Material Suppliers Contract Participation Goal in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.	***Not applicable***

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(d)	Minimum Targeted Local Labour Skills Development Contract Participation Goal in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.	***Not applicable***
(e)	cidb BUILD Programme: Minimum Targeted Enterprise Development Contract Participation Goal in accordance with the cidb Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts, No 36190 Government Gazette, 25 February 2013, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.	***Not applicable***
(f)	cidb BUILD Programme: Minimum Targeted Contract Skills Development Goal in accordance with the cidb Standard for Developing Skills through Infrastructure Contracts as published in the Government Gazette Notice No. 43495 of 3 July 2020, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.	***Not applicable***
(g)	DPWI National Youth Service training and development programme (NYS) – Condition of Contract.	***Applicable***
(h)	Labour Intensive Works – Condition of Contract.	***Not applicable***
(i)		***Select***
(j)		***Select***

	PART 2: DATA PROVIDED BY THE BIDDER
1.1.1.9	The name of the Bidder is: _____
1.2.1.2	The address of the Bidder is: Postal address: _____ _____ _____ **Postal Code:** _____ Tel: _____ Fax: _____ TAX / VAT Registration No: _____ Physical address: _____ _____ _____ **Postal Code:** _____ E-mail address: _____
6.2.1	The security to be provided by the Contractor shall be one of the following: (a) Cash deposit of 10 % of the Contact Sum (excl. VAT) ☐ **YES** or ☐ **NO** (b) Variable performance guarantee of 10 % of the Contract Sum (excl. VAT) ☐ **YES** or ☐ **NO** (c) Retention of 10 % of the value of the Works (excl. VAT) ☐ **YES** or ☐ **NO** (d) Cash deposit of 5 % of the Contract Sum (excl. VAT) plus retention of 5 % of the value of the Works (excl. VAT) ☐ **YES** or ☐ **NO** (e) Performance guarantee of 5 % of the Contract Sum (excl. VAT) plus retention of 5 % of the value of the Works (excl. VAT) ☐ **YES** or ☐ **NO** ***NB: Guarantees submitted must be issued by either an insurance company duly registered in terms of the Insurance Act [Long-Term Insurance Act, 1998 (Act 52 of 1998) or Short-Term Insurance Act, 1998 (Act 53 of 1998)] or by a bank duly registered in terms of the Banks Act, 1990 (Act 94 of 1990) on the pro-forma referred to above. No alterations or amendments of the wording of the pro-forma will be accepted.***

C1.3 Form of Guarantee

Department
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

DPW-10.2 (EC): VARIABLE CONSTRUCTION GUARANTEE (GCC (2010) 2nd EDITION: 2010)

Director-General
Department of Public Works and Infrastructure
Government of the Republic of South Africa

FOR ATTENTION

To: Regional Manager
Private Bag ***X 5002***
Kimberley
8300

Sir,

VARIABLE CONSTRUCTION GUARANTEE FOR THE EXECUTION OF A CONTRACT IN TERMS OF GCC (2010) 2nd EDITION 2010

1. With reference to the contract between _____

_____ (hereinafter referred to as the **"contractor"**) and the Government of the Republic of South Africa in its Department of Public Works and Infrastructure (hereinafter referred to as the **"employer"**), Contract/Tender No: ***KIM10/2022***, for the ***Kimberley DCS: New Generation Correctional: Tswelopele Prison: Facilities Management Contract: Building Related, Electrical and Mechanical Services*** (hereinafter referred to as the **"contract"**) for the sum of R , ( ), (hereinafter referred to as the **"contract sum"**).

I / We, _____

in my/our capacity as _____ and hereby

representing _____ (hereinafter referred to as the **"guarantor"**) advise that the **guarantor** holds at the **employer's** disposal the sum of R , ( ) being 10% of the **contract sum** (excluding VAT), for the due fulfilment of the **contract**.

2. I / We advise that the **guarantor's** liability in terms of this guarantee shall be as follows:

   (a) From and including the date on which this guarantee is issued and up to and including the day before the date on which the last **certificate of completion** of works is issued, the **guarantor** will be liable in terms of this guarantee to the maximum amount of 10% of the **contract sum** (excluding VAT);

   (b) The **guarantor's** liability shall reduce to 5 % of the **value of the works** (excluding VAT) as determined at the date of the last **certificate of completion** of works, subject to such amount not exceeding 10% of the **contract sum** (excluding VAT);

   (c) This guarantee shall expire on the date of the last **final approval certificate**.

3. The **guarantor** hereby renounces the benefits of the exceptions *non numeratae pecunia; non causa debiti; excussionis et divisionis;* and *de duobus vel pluribus reis debendi* which could be pleaded against the enforcement of this guarantee, with the meaning and effect whereof I/we declare myself/ourselves to be conversant, and undertake to pay the **employer** the amount guaranteed on receipt of a written demand from the **employer** to do so, stating that (in the **employer's** opinion and sole discretion):

   (a) the **contractor** has failed or neglected to comply with the terms and/or conditions of the **contract**; or

Tender no:KIM10/2022

(b) the **contractor**'s estate is sequestrated, liquidated or surrendered in terms of the insolvency laws in force within the Republic of South Africa.

4. Subject to the above, but without in any way detracting from the **employer**'s rights to adopt any of the procedures provided for in the **contract**, the said demand can be made by the **employer** at any stage prior to the expiry of this guarantee.
5. The amount paid by the **guarantor** in terms of this guarantee may be retained by the **employer** on condition that upon issue of the last **final approval certificate**, the **employer** shall account to the **guarantor** showing how this amount has been expended and refund any balance due to the **guarantor**.
6. The **employer** shall have the absolute right to arrange his affairs with the **contractor** in any manner which the **employer** deems fit and the **guarantor** shall not have the right to claim his release on account of any conduct alleged to be prejudicial to the **guarantor**. Without derogating from the aforegoing, any compromise, extension of the construction period, indulgence, release or variation of the **contractor**'s obligation shall not affect the validity of this guarantee.
7. The **guarantor** reserves the right to withdraw from this guarantee at any time by depositing the guaranteed amount with the **employer**, whereupon the **guarantor**'s liability ceases.
8. This guarantee is neither negotiable nor transferable, and
   (a) must be surrendered to the **guarantor** at the time when the **employer** accounts to the **guarantor** in terms of clause 5 above, or
   (b) shall lapse in accordance with clause 2 (c) above.
9. This guarantee shall not be interpreted as extending the **guarantor**'s liability to anything more than payment of the amount guaranteed.

SIGNED AT _____ **ON THIS** _____ **DAY OF** _____ **20**_____

AS WITNESS

1. _____

2. _____

By and on behalf of

_____

_____

_____

(insert the name and physical address of the guarantor)

NAME: _____

CAPACITY: _____
(duly authorised thereto by resolution attached marked Annexure A)

DATE: _____

A. **No alterations and/or additions of the wording of this form will be accepted.**

B. **The physical address of the guarantor must be clearly indicated and will be regarded as the guarantor's *domicilium citandi et executandi*, for all purposes arising from this guarantee.**

C. **This GUARANTEE must be returned to:** _____

DPW-10.4 (EC): FIXED CONSTRUCTION GUARANTEE GCC (2010) 2nd EDITION: 2010

Director-General
Department of Public Works and Infrastructure
Government of the Republic of South Africa

FOR ATTENTION

To: Regional Manager
Private Bag ***X 5002***
Kimberley
8300

Sir,

FIXED CONSTRUCTION GUARANTEE FOR THE EXECUTION OF A CONTRACT IN TERMS OF GCC 2ND EDITION 2010

1. With reference to the contract between _____

_____ (hereinafter referred to as the "**contractor**") and the Government of the Republic of South Africa in its Department of Public Works and Infrastructure (hereinafter referred to as the "**employer**"), Contract/Tender No: ***KIM 10/2022***, for the ***Kimberley DCS: New Generation Correctional: Tswelopele Prison: Facilities Management Contract: Building Related, Electrical and Mechanical Services*** (hereinafter referred to as the "**contract**"), for the sum of R , ( ), (hereinafter referred to as the "**contract sum**").

I / We, _____

in my/our capacity as _____and hereby

representing _____ (hereinafter referred to as the "**guarantor**") advise that the **guarantor** holds at the **employer**'s disposal the sum of R , ( )
being 5% of the **contract sum** (excluding VAT), for the due fulfillment of the **contract**.

2. The **guarantor** hereby renounces the benefits of the exceptions *non numeratae pecunia; non causa debiti; excussionis et divisionis;* and *de duobus vel pluribus reis debendi* which could be pleaded against the enforcement of this guarantee, with the meaning and effect whereof I/we declare myself/ourselves to be conversant, and undertake to pay the **employer** the amount guaranteed on receipt of a written demand from the **employer** to do so, stating that (in the **employer**'s opinion and sole discretion):

   (a) the **contractor** has failed or neglected to comply with the terms and/or conditions of the **contract**; or
   (b) the **contractor**'s estate is sequestrated; liquidated or surrendered in terms of the insolvency laws in force within the Republic of South Africa.

3. Subject to the above, but without in any way detracting from the **employer**'s rights to adopt any of the procedures provided for in the **contract**, the said demand can be made by the **employer** at any stage prior to the expiry of this guarantee.

4. The amount paid by the **guarantor** in terms of this guarantee may be retained by the **employer** on condition that upon the issue of the last **final approval certificate**, the **employer** shall account to the **guarantor** showing how this amount has been expended and refund any balance due to the **guarantor**.

Tender No: ***KIM10/2022***

5. The **employer** shall have the absolute right to arrange his affairs with the **contractor** in any manner which the **employer** deems fit and the **guarantor** shall not have the right to claim his release on account of any conduct alleged to be prejudicial to the **guarantor**. Without derogating from the aforegoing, any compromise, extension of the construction period, indulgence, release or variation of the **contractor**'s obligation shall not affect the validity of this guarantee.

6. The **guarantor** reserves the right to withdraw from this guarantee at any time by depositing the guaranteed amount with the **employer**, whereupon the **guarantor**'s liability ceases.

7. This guarantee is neither negotiable nor transferable, and

   (a) must be surrendered to the **guarantor** at the time when the **employer** accounts to the **guarantor** in terms of clause 4 above, or

   (b) shall lapse on the date of the last **certificate of completion** of works.

8. This guarantee shall not be interpreted as extending the **guarantor**'s liability to anything more than the payment of the amount guaranteed.

SIGNED AT _____ **ON THIS** _____ **DAY OF** _____ **20**____.

AS WITNESS

1. _____

2. _____

By and on behalf of _____

_____

_____
(insert the name and physical address of the guarantor)

NAME: _____

CAPACITY: _____
(duly authorised thereto by resolution attached marked Annexure A)

DATE: _____

A. No alterations and/or additions of the wording of this form will be accepted.

B. The physical address of the guarantor must be clearly indicated and will be regarded as the guarantor's *domicilium citandi et executandi,* for all purposes arising from this guarantee.

C. This GUARANTEE must be returned to: _____

_____

_____

Part C2: Pricing Data

C2.1 Pricing Instructions

PG-02.1 (EC) PRICING ASSUMPTIONS – GCC (2010) 2nd Edition 2010

Project title:	***Kimberley DCS: New Generation Correctional: Tswelopele Prison: Facilities Management Contract: Building Related, Electrical and Mechanical Services***		
Tender / Quotation no:	***KIM10/2022***	**Reference no:**	***19/2/4/2/2/2327/486***

C2.1 Pricing Assumptions

C2.1.1 GENERAL

The Bill of Quantities forms part of the Contract Documents and must be read and priced in conjunction with all the other documents comprising the Contract Documents, which include the Conditions of Tender, Conditions of Contract, the Specifications (including the Project Specification) and the Drawings.

C2.1.2 DESCRIPTION OF ITEMS IN THE SCHEDULE

The Bill of Quantities has been drawn up generally in accordance with Civil Engineering Quantities 1990 issued by the SA Institution of Civil Engineers.

The short descriptions of the items in the Bill of Quantities are for identification purposes only and the measurement and payment clause of the Standardized Specifications and the Particular Specifications, read together with the relevant clauses of the Project Specification and directives on the drawings, set out what ancillary or associated work and activities are included in the rates for the operations specified.

C2.1.3 QUANTITIES REFLECTED IN THE SCHEDULE

The quantities given in the Bill of Quantities are estimates only, and subject to remeasuring during the execution of the work. The Contractor shall obtain the Engineer's detailed instructions for all work before ordering any materials or executing work or making arrangements for it.

The Works as finally completed in accordance with the Contract shall be measured and paid for as specified in the Bill of Quantities and in accordance with the General and Special Conditions of Contract, the Specifications and Project Specifications and the Drawings. Unless otherwise stated, items are measured net in accordance with the Drawings, and no allowance has been made for waste.

The validity of the contract will in no way be affected by differences between the quantities in the Bill of Quantities and the quantities finally certified for payment.

C2.1.4 PROVISIONAL SUMS

Where Provisional sums or Prime Cost sums are provided for items in the Bill of Quantities, payment for the work done under such items will be made in accordance with Clause 45 of the General Conditions of Contract 2004. The Employer reserves the right, during the execution of the works, to adjust the stated amounts upwards or downwards according to the work actually done under the item, or the item may be omitted altogether, without affecting the validity of the Contract.

The Tenderer shall not under any circumstances whatsoever delete or amend any of the sums inserted in the "Amount" column of the Bill of Quantities and in the Summary of the Bill of Quantities unless ordered or authorized in writing by the Employer before closure of tenders. Unauthorized changes made by the Tenderer to provisional items in the Bill of Quantities, or to the provisional percentages and sums in the Summary of the Bill of Quantities will lead to the disqualification of the Tenderer.

C2.1.5 PRICING OF THE BILL OF QUANTITIES

The **bills of quantities / lump sum document** forms part of and must be read and priced in conjunction with all the other documents forming part of the **contract documents**, the Standard Conditions of Tender, Conditions of Contract, Specifications, Drawings and all other relevant documentation.

The prices and rates to be inserted by the Tenderer in the Bill of Quantities shall be the full inclusive prices to be paid by the Employer for the work described under the several items, and shall include full compensation for all cost and expenses that may be required in and for the completion and maintenance during the defects liability period of all the work described and as shown on the drawings as well as all overheads, profits, incidentals and the cost of all general risks, liabilities and obligations set forth or implied in the documents on which the Tender is based.

Each item shall be priced and extended to the "Total' column by the Tenderer, with the exception of the items for which only rates are required, or items which already have Prime Cost or Provisional Sums affixed thereto. If the Contractor omits to price any items in the Bill of Quantities, then these items will be considered to have a nil rate or price.

The Tenderer is required to check the Bills of Quantities and the numbers of the pages and should any be found to be missing or in duplicate, or should any of the typing be indistinct, or any doubt of obscurity arise as to the meaning of any description or particulars of any item, or if this Tender Enquiry contains any obvious errors, then the Tenderer must immediately inform the Principal Agent and have them rectified or explained in writing as the case may be. No liability whatsoever will be admitted by reason of the Contractor having failed to comply with the foregoing instruction.

No alterations, erasures, omissions or additions is to be made in the text and/or conditions of these Bills of Quantities. Should any such alterations, amendments, note/s or addition be made, the same will not be recognized, but reading of these Bills of Quantities as originally prepared by the Quantity Surveyor will be adhered to.

The contractor is cautioned that the use of any quantities appearing in these Bills of Quantities for the purpose of ordering material, it is done at own risk and no liability whatsoever will be admitted by the Employer or Quantity Surveyor for the correctness of such Quantities. Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.

The prices and rates to be inserted by the Tenderer in the Bills of Quantities shall be the full inclusive prices to be paid by the Employer for the work described. Such prices and rates shall cover all costs and expenses that may be required in and for the execution of the work described, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the documents on which the tender is based, as well as overhead charges and profit. Market related prices shall be inserted as these will be used as a basis for assessment of payment for additional work that may have to be carried out. The Employer reserves the right to balance the Bill rates where deemed necessary within the Tendered Amount.

A price or rate is to be entered against each item in the Bills of Quantities, whether the quantities are stated or not. An item against which no rate is/are entered, or if anything other than a rate or a nil rate (for example, a zero, a dash or the word "included" or abbreviations thereof) is entered against an item, it will also be regarded as a nil rate having been entered against that item, i.e. that there is no charge for that item. The Tenderer may be requested to clarify nil rates, or items regarded as having nil rates; and the Employer may also perform a risk analysis with regard to the reasonableness of such rates.

Should the full intent and meaning of any description not be clear, the bidder shall, before submission of his tender, call for a written directive from the principal agent, failing which it shall be assumed that the contractor has allowed in his pricing for materials and workmanship in terms of National Best Practice.

All items for which terminology such as "inclusive" or "not applicable" have been added by the Tenderer will be regarded as having a nil rate which shall be valid irrespective of any change in quantities during the execution of the Contract.

The Tenderer shall fill in rates for all items where the words "rate only' appear in the "Total" column. "Rate Only" items have been included where:

(a) variations of specified components in the make-up of a pay item may be expected; and
(b) no work under the item is foreseen at tender stage but the possibility that such work may be required is not excluded.

For 'Rate Only" items no quantities are given in the "Quantity" column but the quoted rate shall apply in the event of work under this item being required. The Tenderer shall however note that in terms of the Tender Data the Tenderer may be asked to reconsider any such rates which the Employer may regard as unbalanced.

Descriptions in the Bills of Quantities are abbreviated and comply generally with those in the "PW 371" and the principles contained in the latest version of the SANS 1200 in South Africa. It is the intention that the abbreviated descriptions be fully described when read with the applicable measuring system and the relevant preambles and/or specifications. However, should the full intent and meaning of any description not be clear, the bidder shall, before submission of his tender, call for a written directive from the principal agent, failing which it shall be assumed that the contractor has allowed in his pricing for materials and workmanship in terms of National Best Practice.

The price quoted against each item of this Bills of Quantities shall cover the full inclusive cost of the complete work to which it refers, as described in the Conditions of Contract and Specifications and as shown on the Drawings and shall allow for labour, material, transporting, loading, storage, supervision, commissioning, wastage, as well as the builders profit and attendance.

The Tenderer must ensure that he fully completes all columns of the Bill of Quantities including the Final Summary. The fully priced bill of quantities must be submitted with the tender or The Final Summary and the Section Summary pages MUST be returned with the tender document as indicated the PA-03 Notice and Invitation to Tender / PA-04 Notice and Invitation for quotation.

The tenderers are to ensure that they have read and understood the project specifications included in C3: Scope of Work. All the information provided in the Scope of Works form part of the work and must be included in the rates.

"The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and to have satisfied himself before submitting his tender (as far as is practicable) as to:

(a) the form and nature of the Site and its surroundings, including subsurface conditions,

(b) the hydrological and climatic conditions,

(c) the extent and nature of work and materials necessary for the execution and completion of the Works,
(d) the means of access to the Site and the accommodation he may require

and, in general, shall be deemed to have obtained all information (as far as is practicable) as to risks, contingencies and all other circumstances which may influence or affect his Tender"

C2.1.6 VALUE ADDED TAX

The **contract sum** must include for Value Added Tax (VAT). All rates, provisional sums, etc. in the **bills of quantities / lump sum document** shall be in Rands and cents and shall include all levies and taxes (other than VAT). VAT will be added in the summary of the Bill of Quantities. The rates must however be net (exclusive of VAT) with VAT calculated and added to the total value thereof in the Final Summary.
All rates and amounts quoted in the Bill of Quantities

C2.1.7 CORRECTION OF ENTRIES

Incorrect entries shall not be erased or obliterated with correction fluid but must be crossed out neatly. The correct figures must be entered above or adjacent to the deleted entry, and the alteration must be initialled by the Tenderer.

C2.1.8 ARITHMETICAL ERRORS

Arithmetical errors found in the Bill of Quantities as a result of faulty multiplication of addition, will be corrected by the Engineer at the tender evaluation stage, as set out in the Tender Data.

C2.1.9 CONTRACT DOCUMENTS

The Tenderers are advised to examine the bills of quantities, drawings and specifications including all other contract documents and make themselves thoroughly acquainted with the nature and requirements of the work, as no claim for extra payment in this regard will be entertained. Should any parts of the drawings not be clearly intelligible to the Tender, he must, before submitting his tender, obtain clarification from the Principal Agent.

C2.1.10 UNITS OF MEASUREMENT

The units of measurement described in the Bill of Quantities are metric units for which the standard international abbreviations are used. Non-standard abbreviations which may appear in the Bill of Quantities are as follows:

No.	=	Number
%	=	Percent
Sum	=	Lump sum
PCsum	=	Prime cost sum
Prov sum	=	Provisional sum
m^3.km	=	Cubic metre - kilometre
Km-pas	=	kilometre - pass
m^2.pass	=	square metre – pass

C2.1.11 TRADE NAMES

Tenderers attention is drawn to the fact that wherever trade names or references to any catalogue have been made in these Bills of Quantities, it is purely to establish a standard for the required material. If use is made of any other equally approved material in lieu of the prescribed trade name or catalogue, the necessary price adjustments will be made.

C2.1.12 CONTRACT DOCUMENTS

The Tenderers are advised to examine the bills of quantities, drawings and specifications including all other contract documents and make themselves thoroughly acquainted with the nature and requirements of the work, as no claim for extra payment in this regard will be entertained. Should any parts of the drawings not be clearly intelligible to the Tender, he must, before submitting his tender, obtain clarification from the Principal Agent.

C2.1.13 PAYMENTS

Interim valuations and payments will be prepared on a monthly basis, all in terms of the conditions of contract.

The contractor is to note that no payment will be made for materials stored off site and in the case of materials being stored on site, payment will only be made for such materials on condition that they have not been delivered to the site prematurely, a tax invoice and proof of payment (ownership) is submitted by the Contractor.

C2.1.14 ACCOMMODATION ON SITE

It is imperative to note that no living quarters for construction workers on site will not be permitted for the full duration of the contract unless otherwise stated in the contract data or permission be granted by the Employer.

C2.1.15 LOCAL MATERIAL UTILISATION REPORT (LOCAL CONTENT)

Bidders to note that materials procured for the works should be from South African manufactures and suppliers. Imported materials shall only be considered under exceptional circumstances, based on compelling technical justifications, and subject to the approval by the NDPWI.

The contractor shall achieve in the performance of this contract the prescribed local content deliverables as listed in PA36 and annexures C thereto in the respective designated sectors as published by Department Trade Industry and Competition (DTIC). The Service Provider shall submit an accumulative monthly report to the Employer's representative indicating the percentage targets achieved which must be reconciled upon completion of the project and to form part of the final account.

The contractor shall be responsible for record keeping, documenting and submission of monthly local material utilization report with supporting documentation to the Employer's representative within 7 working days of the beginning of the successive month, in terms of DTI&C designated industry/sector/sub-sector schedule as per the PA36 and Annexures C attached to the tender document. The final percentage achievement to be reconciled upon completion of the project and form part of the final account.

C2.1.16 CONTRACT PARTICIPATION GOALS

The contractor shall achieve in the performance of this contract the following Contract Participation Goals (CPGs) as indicated below:

Provision for pricing of compliance with the achieving the CPGs is made in the Contract Participation Goal Section of the Bills of Quantities and it is explicitly pointed out that all requirements in respect of the aforementioned are deemed to be priced thereunder and no additional claims in this regard shall be entertained

Monthly progressive reports to be submitted to the Employer's representative indicating the percentage targets achieved which must be reconciled upon completion of the project and to form part of the final account.

C2.1.16.1 Minimum 30% Sub-contracting Contract Participation Goal

MINIMUM 30% MANDATORY SUBCONTRACTING TO SMMES: IMPLEMENTATION OF PREFERENCIAL PROCUREMENT RGULATIONS 2017

30% Mandatory subcontracting is *appliacble* to this project.

Provision is made within the Contract Participation Goal section in the Bill of Quantities for thirty percent (30%) subcontracting to SMMEs in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.1. The contractor shall price his Profit and Attendance, all inclusive of associated costs to the contractor for implementation. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.2 MINIMUM TARGETED LOCAL BUILDING MATERIAL MANUFACTURERS CONTRACT PARTICIPATION GOAL

The Minimum Targeted Local Building Material Manufacturers CPG is *not appliacble* to this project.

Provision is made within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Local Building Material Manufacturers CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.2. The contractor shall price his Profit and Attendance, all inclusive of associated costs to the contractor for implementation. Allowance must be

made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.3 MINIMUM TARGETED LOCAL BUILDING MATERIAL SUPPLIERS CONTRACT PARTICIPATION GOAL

The Minimum Targeted Local Building Material Suppliers CPG is *not applicable*to this project.

Provision is made within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Local Building Material Suppliers CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.3. The contractor shall price his Profit and Attendance, all inclusive of associated costs to the contractor for implementation. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.4 MINIMUM TARGETED LOCAL LABOUR SKILLS DEVELOPMENT CONTRACT PARTICIPATION GOAL

The Minimum Targeted Local Labour Skills Development CPG is *not applicable*to this project.

Provision is made within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Local Labour Skills Development CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.4. The contractor shall price his Profit and Attendance, all inclusive of associated costs to the contractor for implementation. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.5 CIDB BUILD PROGRAMME: MINIMUM TARGETED ENTERPRISE DEVELOPMENT: CONTRACT PARTICIPATION GOALS (CPG)

The Minimum Targeted Enterprise Development CPG is *not applicable*to this project.

A provisional amount has been allowed for within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Enterprise Development CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.5. The provisional amount allowed is for the appointment of training coordinator, mentor, training service providers and training of the beneficiary enterprises.

The contractor shall price his Profit and Attendance, all inclusive of associated costs to the contractor for implementation. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

The contractor shall complete a separate bill of quantities upon the award of the project and identification of the respective beneficiaries and the appointment of the training coordinator, mentor, training service providers of which the cost will be offset against the provisional amount allowed in the Bills of Quantities.

C2.1.16.6 CIDB BUILD PROGRAMME: MINIMUM TARGETED TARGETED CONTRACT SKILLS DEVELOPMENT GOALS (CSDG)

The Minimum Targeted Contract Skills Development CPG is *not appliacble* to this project.

A provisional amount has been allowed for within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Skills Development CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.6. The provisional amount allowed is for:

- stipends payable to the beneficiaries
- appointment of training coordinator
- appointment of mentor (where applicable)
- appointment of training service providers
- other additional costs as per table 3 of the Standard

The contractor shall price his Profit and Attendance (all inclusive of associated costs to the contractor for implementation and reporting), based on the provisional amount in the Contract Participation Goal section in the Bill of Quantities. The contractor shall complete a separate bill of quantities upon the award of the project and identification of the respective beneficiaries. The CPG value to be achieved will be based on the actual contract amount which will be offset against the provisional amount allowed for within the Contract Participation Goal section in the Bill of Quantities.

Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

Payment

The contractor shall upon the appointment of beneficiaries, provide a breakdown of all the associated costs. The contractor shall provide a payment schedule as to how the CPG costs will be claimed against for inclusion in the monthly payment certificates.

(a) Payment to the contractor to accommodate Part/Full Occupational qualification and Trade qualifications;

Should the contractor select Part/Full Occupational qualification and Trade qualifications learners, then the employer shall make provision for payment to the contractor as indicated in Table 3 of the Standard.

The contract skills participation goal, expressed in Rand, shall not be less than the contract amount multiplied by a percentage (%) factor given in Table 2 in the Standard for the applicable class of construction works. Should the contractor select Part/Full Occupational qualification and Trade qualifications learners, then the employer shall make provision for payment to the contractor as indicated in Table 3 of the Standard.

No provision for an additional payment item for the payment of the supervisor and/or mentors for the provision of training as provided for in the Contract Participation Goal section in the Bill of Quantities for the training of part/full time occupational learners and/or trade qualification learners. The associated cost is deemed to be included in general supervision on site.

The contractor shall complete a separate bill of quantities upon award, indicating the type and number of beneficiaries as well as the associated Notional Cost of Training to be provided, on which payment will be based.

(b) Payment to the contractor to accommodate Work Integrated Learners and Candidates for professional registration;

Should the contractor select Work Integrated Learners and/or Candidates for professional registration, then the employer shall make provision for payment to the contractor as indicated in Table 3 of the Standard.

Provisional amounts have been included in the Contract Participation Goal section in the Bill of Quantities for the training of Work Integrated Learners and Candidates for professional registration. The contractor shall price his Profit and Attendance (all inclusive of associated costs to the contractor for implementation and reporting), based on the provisional amount in the Contract Participation Goal section in the Bill of Quantities.

The contractor shall complete a separate bill of quantities upon award, indicating the type and number of beneficiaries as well as the associated Notional Cost of Training to be provided, on which payment will be based.

The CPG value to be achieved will be based on the contract amount as defined by the Standard, which will be offset against the provisional amount allowed for within the Contract Participation Goal section in the Bill of Quantities.

The contractor shall apportion the cost of accommodating work integrated learners (P1 and P2 learners) and candidates for professional registration by using Table 3 in the Standard and this cost will be used to determine the Rand value and will be used in determining the contract participation goal in the Bills of Quantities.

Table 3: Notional Cost of Training; Headcount
Source: cidb Standard for Skills Development

Type of Training Opportunity	Provision for stipends (Unemployed learners only)	Provisions for mentorship	Provisions for additional costs*	Total costs	
				Unemployed learners	Employed learners
Method 1					
Occupational qualification	R7 000	R0	R9 000	R16 000	R9 000
Method 2					
TVET College graduates	R14 000	R0	R9 000	R23 000	N/A
Apprenticeship	R14 000	R0	R12 000	R26 000	R12 000
Method 3					
P1 and P2 learners	R24 000	R20 000	R4 500	R48 500	N/A
Method 4					
Candidates with a 3 year diploma	R37 000	R20 000	R4 500	R61 500	R20 000
Candidates with 4 year qualification	R47 000	R20 000	R4 500	R71 500	R20 000

Note: the required CPG will be recalculated based on the awarded tender amount and "Contract amount" once the beneficiaries have been appointed and actual costs are known. The notional cost of providing training opportunities will increase by CPI on an annual basis based on April CPI. Should the rates increase after bid award or during construction the rates will be adjusted as a remeasuarble item.

Example: Training Target Calculation for a R65,7m GB contract

Contract amount	R65 700 000
Contract duration	12 Months
CSDG	0,50%
Minimum CSDG target	0,50% x R65 700 000 = R328 500 (Minimum requirement)

Table 4: Notional cost recalculation upon appointment of beneficiaries

Skills Types	Number of learners	Notional Cost / Learner / Quarter	Notional cost/learner/year	Total Notional Cost over 12 months Contract
Method 2: Workplace learning opportunities, with unemployed TVET graduates	1	R23 000	R92 000	R92 000
Method 3: Candidacy for an unemployed learner with a 3-year qualification	1	R61 500	R246 000	R246 000
Total	2			R338 000

C2.1.16.7 NATIONAL YOUTH SERVICE TRAINING AND DEVELOPMENT PROGRAMME

The National Youth Service Training and Development Programme is *not appliacble* to this project.

The programme shall be implemented in terms of the Implementation of the National Youth Service Programme under the Expanded Public Works (EPWP) and shall be priced in the CPG section of the Bills of Quantities.

Provision has been made within the Contract Participation Goal section in the Bill of Quantities for the National Youth Service Training and Development Programme CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.7. The contractor to price all elements of this section and allowance must be made for submitting monthly reports in the prescribed manner as per examples of reports bound in the specification document.

C2.1.16.8 LABOUR-INTENSIVE WORKS

Labour Intensive Works is *not applicable* to this project

Where labour intensive work is specified in the Bill of Qualities and indicated by "LI" the contractor must price for and include in rates. Contractors are expected to use their initiative to identify additional activities that can be done labour-intensively to comply with the set minimum labour intensity target. Allowance must be made for submitting monthly reports illustrating the value of the works executed under Labour Intensive Works.

C2.2 Submission of Accrual Reports

The Contractor shall submit accrual reports to the client representative at the end of March and September each year for the duration of the Service Contract period from the date of appointment up to and including project closeout. This is to ensure that PMTE complies with the accounting framework GRAP, which requires that PMTE disclose all its accruals as at the end of each reporting date. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

Part C3: Scope of Work

PG-01.1 (EC) SCOPE OF WORKS – (GCC (2010) 2nd EDITION: 2010)

Project title:	***Kimberley DCS: New Generation Correctional: Tswelopele Prison: Facilities Management Contract: Building Related, Electrical and Mechanical Services***		
Tender no:	***KIM10/2022***	**Reference no:**	***19/2/4/2/2/2327/486***

C3. Scope of Works

CONTENTS

Kimberley DCS: New Generation Correctional: Tswelopele Prison: Facilities Management Contract: Building Related, Electrical and Mechanical Services

Tswelopele Prison is located at Cnr Nobengula Street & Schmidtsdrift Road, Kimberley, 8301

NOTE: This is an example only. Compiler / Designer to provide the applicable contents.

B: AMENDMENTS TO THE PARTICULAR SPECIFICATIONS

Not applicable

C3.3 PARTICULAR SPECIFICATIONS

See attached Electrical & Mechanical Specifications.

C3.4 STANDARD SPECIFICATIONS:

The standard specifications on which this contract is based are the **South African Bureau of Standards Standardized Specifications for Civil Engineering Construction SABS 1200.** *(Note to compiler. "SABS" has been changed to "SANS"; the SABS 1200 specifications are due to be replaced in the foreseeable future by SANS 2100)*

Although not bound in nor issued with this Document, the following Sections of the Standardized Specifications of SABS 1200 shall form part of this Contract:

See attached Electrical & Mechanical Specifications.

3.5 PROJECT SPECIFICATIONS:

Status

The Project Specification, consisting of two parts, forms an integral part of the contract and supplements the Standard Specifications.

Part1 A contains a general description of the works, the site and the requirements to be met.

Part B contains variations, amendments and additions to the Standardized Specifications and, if applicable, the Particular Specifications.

In the event of any discrepancy between a part or parts of the Standardised of Particular Specifications and the Project Specification, the Project Specification shall take precedence. In the event of a discrepancy between the specifications, (including the Project Specifications) and the drawings and / or the Bill of Quantities, the discrepancy shall be resolved by the Engineer before the execution of the work under the relevant item.

3.5.1 GENERAL

PS-1 PROJECT DESCRIPTION:

See attached Electrical & Mechanical Specifications.

3.5.2 AMENDMENTS TO THE STANDARD AND PARTICULAR SPECIFICATION:

Not Applicable

C3.5.3 PARTICULAR SPECIFICATIONS:

See attached Electrical and Mechanical Specifications

C3.6 STANDARD MINIMUM REQUIREMENTS

In terms of section 5(2) of the Construction Industry Development Board Act, 2000 (Act no. 38 of 2000) (the Act), the Construction Industry Development Board is empowered to establish and promote best practice standards, Standard Requirements and Guidelines which includes the following but not limited to:

C3.61 cidb Best Practice: Green Building Certification, No. 34158 Government Gazette, 1 April 2011

C3.6.2 cidb Standard for Developing Skills through Infrastructure Contracts, No. 36760 Government Gazette, 23 August 2013

C3.6.3 cidb Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts, No 36190 Government Gazette, 25 February 2013

C3.6.4 Preferential Procurement Policy Framework Act, 2000: Preferential Procurement Regulations, 2017, No. 40553 Government Gazette, 20 January 2017

C3.6.5 cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts, No. 41237 Government Gazette,10 November 2017

C3.6.6 cidb Standard for Minimum Requirements for Engaging Contractors and Sub-Contractors on Construction Works Contracts, No. 41237 Government Gazette, 10 November 2017

C3.6.7 cidb Standard for Minimum Requirements for Engaging Contractors and Sub- Contractors on Construction Works Contracts, No. 42021 Government Gazette, 9 November 2018

C3.6.8 cidb Standard for Developing Skills through Infrastructure Contracts, No. 43495 Government Gazette, 3 July 2020

C3.7 CONTRACT PARTICIPATION GOALS AND CIDB BUILD PROGRAMME

The contractor shall achieve in the performance of the contract the following Contract Participation Goals (CPGs) as indicated below. Provision for pricing of compliance with the achieving the CPGs is

made in the Contract Participation Goal Section of the Bills of Quantities and it is explicitly pointed out that all requirements in respect of the aforementioned are deemed to be priced thereunder and no additional claims in this regard shall be entertained:

C3.7.1 Minimum Thirty Percent (30%) Mandatory Sub-contracting Contract Participation Goal

MINIMUM THIRTY PERCENT (30%) MANDATORY SUBCONTRACTING TO SMMES: IMPLEMENTATION OF PREFERENCIAL PROCUREMENT RGULATIONS 2017

30% Mandatory subcontracting is *applicable* to this project.

It is the requirement of the employer that the contractor enhances the use of local Small, Micro and Medium Enterprises (SMME's) in executing this contract, irrespective whether the 30% Participation Goal is applicable or not.

The thirty percent (30%) mandatory Sub-contracting shall be achieved in the execution of the contract. in terms of in accordance with the Preferential Procurement Policy Framework Act, 2000: Preferential Procurement Regulations, 2017 as published in the Government Gazette Notice No. 40553 of 20 January 2017.

(a) SMME's involvement of at least **30% (Thirty Percent)** of the tender amount at the time of tender to be sourced from within **100 kilometerskm** radius of the project site with the intention to maximize use of local SMMEs within **Frances Baard Municipal District, Kimberely,Northern Cape**,

Bidders are cautioned not to under-price items earmarked to be executed by SMMEs as adjustment to too low rates will not be entertained by the Employer.

Bidders to sub-contract a minimum of thirty percent (30%) of the tender amount including VAT at the time of tender (All inclusive, Including VAT). to any one or more of the following categories:

a. An EME or QSE
b. An EME or QSE which is at least 51% owned by black people
c. An EME or QSE which is at least 51% owned by black people who are youth
d. An EME or QSE which is at least 51% owned by black people who are women
e. An EME or QSE which is at least 51% owned by black people with disabilities
f. An EME or QSE which is at least 51% owned by black people living in rural or underdeveloped areas or townships
g. A co-operative which is at least 51% owned by black people
h. An EME or QSE which is at least 51% owned by black people who are Military veterans
i. More than one of the categories referred to in paragraphs (a) to (h).

Bidders to refer to the CSD for a list of prospective sub-contractors provided with the tender. The bidder to refer to the CSD website should the list provided be insufficient.

Bidders must ensure that the sub-contractors conform to the following:

a. Possess relevant accreditation where applicable;
b. Be registered with relevant bodies (CIDB, various Councils, etc.) where applicable;
c. Possess necessary capabilities to deliver the sub-contracted work;
d. Meet the requirements in terms of the stipulated designated groups; and
e. Geographical located at the place where the project will be delivered. Geographical location must be determined using the following criteria:
   - Relevant Ward. If not available;
   - Relevant neighbouring Wards. If not available;
   - Relevant Local Municipality. If not available;
   - Relevant District Municipality. If not available;
   - Relevant Metro. If not available;
   - Relevant Province. If not available;
   - Relevant Neighbouring Province. And If not available;
   - Anywhere within the borders of South Africa .

It is the bidder's responsibility to source alternative SMMEs should the parties with whom agreements were entered into at the time of tendering either no longer exist or do not perform or render work of an acceptable standard, subject to the approval by the Employer. Failure to achieve the **minimum thirty percent (30%)** SMME participation based on the tender amount including VAT, will result in a **30% (Thirty Percentage)** penalty on the amount of work on which there is no compliance (Excluding VAT), unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

C3.7.2 Minimum Targeted Local Material Manufacturer Contract Participation Goal

The Minimum Targeted Local Building Material Manufacturers CPG is *not applicable* to this project.

It is the requirement of the employer that the contractor enhances the use of local Small, Micro and Medium Enterprise Local Material Manufacturers (SMME's) in executing this contract, irrespective whether a minimum percentage Participation Goals is applicable or not.

The Minimum Targeted Local Manufacturers of Material Contract Participation Goal, in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020.

A Targeted Local Material Manufacturer is a targeted enterprise that operates or maintains a factory or establishment that produces on its premises materials or goods required by the principal contractor for the performance of the contract.
Note: Adapted from SANS 10845-7:2015, definition 2.13

Preference shall be given to the Targeted Local Material Manufacturer where feasible in **Frances Baard Municipal District, Kimberley,Northern Cape**, and provided that:

(a) Such materials comply in all respects with the specific requirements of PW371 and SANS specifications,
(b) The non-availability of such materials shall not adversely affect the desired progress of the specific works,
(c) The use of such suppliers shall not constitute grounds for any claim for increased cost in respect thereof,
(d) Materials of at least **Not applicable** of the total value of materials purchased excluding VAT to be sourced from within **Not applicable** radius of the project site,
(e) Material of at least **Not applicable** of the total value of materials purchased excluding VAT to be sourced from within **Not applicable km** radius of the project site.

Failure to achieve the minimum **Not applicable** Targeted Local Material Manufacturer participation expressed as a percentage of the original tender amount, excluding allowances and VAT, will result in a **Not applicable** penalty of the prorate targeted value of materials not complied with unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

C3.7.3 Minimum Targeted-Local Building Material Suppliers Contract Participation Goal

The Minimum Targeted Local Building Material Suppliers CPG is *not applicable* to this project.

It is the requirement of the employer that the contractor enhances the use of local Small, Micro and Medium Enterprise Local Material Suppliers (SMME's) in executing this contract, irrespective whether a minimum percentage Participation Goals is applicable or not.

The Minimum Targeted Local Manufacturers of Material Contract Participation Goal shall be achieved in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.

A targeted supplier is a targeted enterprise that

a) owns, operates or maintains a store, warehouse or other establishment in which goods are bought, kept in stock and regularly sold to wholesalers, retailers or the public in the usual course of business; and

b) engages, as its principal business and in its own name, in the purchase and sale of goods.

Note: Adapted from SANS 10845-7:2015, definition 2.14

Preference shall be given to the local material suppliers where feasible in the **Not applicable**, and provided that:

(a) Such materials comply in all respects with the specific requirements of PW371 and SANS specifications,

(b) The none availability of such materials shall not adversely affect the desired progress of the specific works,

(c) The use of such suppliers shall not constitute grounds for any claim for increased cost in respect thereof,

(d) Materials of at least **Not applicable** of the total value of materials purchased excluding VAT to be sourced from within **Not applicable** of the project site,

(e) Material of at least **Not Applicable** of the total value of materials purchased excluding VAT to be sourced from within **Not Applicable** of the project site.

Failure to achieve the minimum **Not Applicable** Targeted Local Material Manufacturer participation expressed as a percentage of the original tender amount, excluding allowances and VAT, will result in a **Not Applicable** penalty of the prorate targeted value of materials not complied with, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

C3.7.4 Minimum Targeted Local Labour Skills Development Contract Participation Goal

The Minimum Targeted Local Labour Skills Development CPG is *Not Applicable* to this project.

It is the requirement of the employer that the contractor enhances the use of local labour in executing this contract. This is required to be done through the use of both traditional building techniques and labour-intensive construction techniques careful and considered construction planning and implemented in the project irrespective whether a minimum percentage Participation Goal is applicable or not.

The Minimum Targeted Local Skills Development Contract Participation Goal shall be achieved in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.

Targeted labour: individuals who:

a) are employed by the principal contractor, sub-contractor or targeted enterprises in the performance of the contract;
b) are defined as the target group in the targeting data; and
c) permanently reside in the target area or who are recognized as being residents of the target area on the basis of identification and association with and recognition by the residents of the target area.

Adapted from SANS 10845-7:2015, definition 2.12

Targeting of labour by skills categories is only permissible within categories of semi-skilled and unskilled labour.

Contract participation goals for semi-skilled and unskilled labour shall be limited to on-the-job training to targeted labour to enable such labour to master the basic work techniques required to undertake the work in accordance with the requirements of the contract and in a manner that does not compromise worker health and safety. In the case of targeted labour, the certification of records shall be in accordance with SANS 10845-8.

Beneficiaries will be sourced from the **Not Applicable** for the full duration of the Construction Period, employed by either the principal contractor, sub-contractors or targeted enterprises. The total number of working days to complete the Works amount to **Not Applicable** working days. The minimum CPG participation for Targeted Local Labour Skills Development is **Not Applicable**, expressed as a percentage of the total number of working days required to complete the Works. The contractor shall attain or exceed the CPG in the performance of the contract. Failure to achieve the minimum Targeted Local Labour Skills Development CPG will result in a payment reduction of **R5 000** (Excluding VAT), per working day which training has not been provided to the workforce in attendance, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

C3.7.5 CIDB BUILD PROGRAMME: Minimum Targeted Enterprise Development Contract Participation Goal

The Minimum Targeted Enterprise Development CPG is *Not Applicable* to this project.

The aim of this best practice standard for indirect targeting for enterprise development in accordance with the Standard for Indirect Targeting for Enterprise Development (published in Government Gazette 36190 of 25 February 2013), as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract. is to promote enterprise development by providing for a minimum contract participation goal (CPG) of **five percent (5%)** of the contract amount as defined in the Standard (Tender amount, excluding allowances and VAT on selected contracts to be undertaken by joint-venture partners or to be sub-contracted to developing contractors that are also to be beneficiaries of enterprise development support from the main contractor.

The lead partner or main contractor shall dedicate a **minimum five percent (5%)** of the tender value at the time of award, excluding allowances and VAT, to provide developmental support to targeted subcontractor or joint venture partner applicable to contracts in Grades 7 to 9, General Building and Civil Engineering contracts. Preference will be given to Not Applicable Enterprises.

The contractor shall attain or exceed the enterprise development goal in the performance of the contract. Failing to achieve the Participation Goal will result in A) a thirty percent (30%) penalty of the value not achieved, excluding VAT, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

C3.7.5.1 Criteria

The main or lead partner of the successful bidder shall:

(a) There must be a needs analysis for indirect targeting and development or skill standard and should be development in at least any two developmental areas namely;

- Administrative and cost control systems
- construction management systems and plans
- planning, tendering and programming
- business; technical; procurement skills
- legal compliance
- credit rating/history; financial loan capacity/history
- contractual knowledge

(b) The above needs analysis shall be mutually agreed upon between contractor and targeted enterprise

(c) The contractor shall appoint an enterprise development coordinator to:

- perform needs analysis on the targeted enterprise to identify developmental goals
- develop a project specific enterprise development plan to improve the targeted enterprise/s performance in the identified developmental areas
- provide internal mentorship support to improve the targeted enterprise/s performance
- monitor and submit to the employer's representative a monthly enterprise development report thereby reporting on the progress of the agreed development areas with the targeted enterprise/s
- submit a project completion report to the Employer's representative for each targeted enterprise.

C3.7.5.2 Management

The contractor shall provide a competent person/s to provide internal mentorship to the Targeted Enterprise/s in the two agreed developmental areas.

C3.7.5.3 Competence Criteria for an Enterprise Development Co-ordinator

The enterprise development co-ordinator shall have the following competencies:

- Minimum experience of 5 years in the construction industry at Managerial level as a Site Agent, Contracts Manager, Site Manager, Construction Manager, Business Development Manager or Enterprise Development Manager.
- Minimum experience of 2 years in training and development in Building or Construction; and
- National Diploma or B Degree in the Built Environment or Business Management

C3.7.5.4 Format of Communications

The contractor shall submit to the Employer's Representative:

- *Project interim reports* in the specified format **(ED105P)** detailing interim values of the CPG that was achieved together with an assessment of the enterprise development support provided should be tabled and discussed at least monthly at progress meetings between employer's representative and the contractor;
- *Project completion report* in the specified format **(ED101P)** to the Employer's Representative for acceptance within 15 days of achieving practical completion. The report shall include the value of the CPG that was certified in accordance with the contract, cidb registration numbers of each

and every targeted enterprise, and the value of the subcontracted works or of the joint venture entered into; and the participation parameter

- *Enterprise development declaration (**ED104P**).*

C3.7.5.5 The Key Personal

The contractor shall appoint an Enterprise Development Co-ordinator and a competent person/s to provide internal mentorship.

C3.7.5.6 Management Meetings

The contractor shall report to the Employer's Representative on the implementation and progress of the targeted enterprise development and CPG at monthly progress site meetings.

C3.7.5.7 Forms for contract administration

The contractor shall submit to the Employer's Representative the following proformas:

- Form ED 105P Project Interim Report
- Form ED 104P Enterprise Development Declaration
- Form ED 101P Project Completion Report

C3.7.5.8 Records

The contractor shall:

- keep records of the targeted enterprise development
- keep records of the payments made to the targeted enterprises in relation to the CPG.
- ensure all the documentation required in terms of the Standard is provided with each monthly progress payment certificate and according to a prescribed format where applicable.

C3.7.5.9 Payment Certificates

The contractor shall:

- achieve the measurable CPG and providing enterprise development support to the targeted enterprise/s as per the Standard.
- submit payment certificates to the Employer Representative at intervals determined in the Contract.

C3.7.5.10 Compliance requirements

Non-compliance with the Best Practice Project Assessment Scheme

The wording of regulation 27A of the cidb regulations makes provision for the Board to enforce the cidb code of conduct in the event of clients being found to be in breach of the best practice project assessment scheme.

- Not including the requirements of the cidb standards in the conditions of tender
- Not registering the award of contract on the cidb Register of Projects (RoP)
- Not reporting practical completion on the cidb Register of Projects (RoP)

3.7.6 **CIDB BUILD PROGRAMME: Minimum Targeted Contract Skills Development Goal (CSDG)**

The Minimum Targeted Contract Skills Development CPG is *not applicable* to this project.

The contractor shall achieve or exceed in the performance of the contract the Contract Skills Development Goal (CSDG) established in the Standard for Developing Skills through Infrastructure Contracts (published in Government Gazette No 43495 of 3 July 2020, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.

Failing to achieve the targeted Contract Skills Development Goal will result in A) a **thirty percent (30%)** penalty of the value of the portion not achieved, excluding VAT, and B) the issuing of completion certificates only after the completion certificate of achieving the skills development goal, counter-signed by the relevant individuals has been submitted, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The contractor shall apportion the learners in the different construction activities based on the scope of work. The cost of accommodating learners will be determined by using Table 3 in the Standard and this cost will be used to determine the value in Rand and will be added to the provision for training as provided for in the Preliminary and General section in the Bill of Quantities/Pricing schedules/Activity schedule.

C3.7.6.1 Methodology

The contractor shall achieve the measurable contract skills development goal by providing opportunities to learners requiring structured workplace learning using one or a combination of any of the following in relation to work directly related to the contract or order:

Method 1: structured workplace learning opportunities for learners towards the attainment of a part or a full occupational qualification;

Method 2: structured workplace learning opportunities for apprentices or other artisan learners towards the attainment of a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012) subject to at least sixty percent (60%) of the artisan learners being holders of public TVET college qualifications;

Method 3: work integrated learning opportunities for University of Technology or Comprehensive University students completing their national diplomas;

Method 4: structured workplace learning opportunities for candidates towards registration in a professional category by a statutory council listed in Table 1 above.

The contract skills participation goals, expressed in Rand, shall not be less than the contract amount multiplied by a percentage (%) factor given in Table 2 in the Standard for the applicable class of construction works.

Table 2: Contracting skills development goals for different classes of engineering and construction works contracts

Class of construction works as identified in terms of Regulation 25 (3) of the Construction Industry Regulations 2004		**Construction skills development goal (CSDG) (%)**
Designation	**Description**	
CE	Civil Engineering	0.25
CE and GB	Civil engineering and General Building	0.375
EE	Electrical Engineering works (buildings)	0.25
EP	Electrical Engineering works (infrastructure)	0.25
GB	General Building	0.5
ME	Mechanical Engineering works	0.25
SB	Specialist	0.25

The contractor shall apportion the learners in the different construction activities based on the scope of work. The cost of accommodating learners will be determined by using Table 3 in the Standard and this cost will be used to determine the value in Rand and will be added to the provision for training as provided for in the Preliminary and General section in the Bill of Quantities/Pricing schedules/Activity schedule.

Table 3: Notional Cost of Training per Headcount

Source: cidb Standard for Skills Development

Type of Training Opportunity	Provision for stipends (Unemployed learners only)	Provisions for mentorship	Provisions for additional costs*	Total costs	
				Unemployed learners	Employed learners
Method 1					
Occupational qualification	R7 000	R0	R9 000	R16 000	R9 000
Method 2					
TVET College graduates	R14 000	R0	R9 000	R23 000	N/A
Apprenticeship	R14 000	R0	R12 000	R26 000	R12 000
Method 3					
P1 and P2 learners	R24 000	R20 000	R4 500	R48 500	N/A
Method 4					
Candidates with a 3 year diploma	R37 000	R20 000	R4 500	R61 500	R20 000
Candidates with 4 year qualification	R47 000	R20 000	R4 500	R71 500	R20 000

Note: the required CPG will be recalculated based on the awarded tender amount and "Contract amount" once the beneficiaries have been appointed and actual costs are known. The notional cost of providing training opportunities will increase by CPI on an annual basis based on April CPI. Should the rates increase after bid award or during construction the rates will be adjusted as a remeasuarble item.

(a) (a) The successful contractor may employ part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (Not applicable) directly or through a Skills Development Agency (SDA), (A1 - List of cidb accredited SDAs).

(b) The successful contractor must employ at least sixty percent (60%) of the learners from an FET / TVET college should the contractor select to have part/full occupational qualification learners and trade qualification learners contributing to the CSDG.

(c) The successful contractor shall employ at least **Not applicable** from eligible part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (Not applicable) in the employment of the employer.

(d) The successful contractor shall ensure that no single method shall contribute more than seventy five percent (75%) of the CSDG for the contract.

(e) The successful contractor may only place thirty three percent (33%) employed employees or that of his subcontractors contributing to the CSDG.

(f) The contractor shall employ at least sixty percent (60%) of the learners from a Public FET / TVET college should the contractor select to have trade qualification learners (Method 2) contributing to the CSDG.

(g) One of the objectives of the project is to train **Not applicable** Occupational qualifications, trade qualification, work integrated learners – P1 and P2 learners, professional candidates. (Not applicable)

C3.7.6.2 Management

(a) The successful contractor must keep site records regarding the part/full occupational qualification learners', trade qualification learners', work integrated learners' or candidates' (delete that which is not applicable) progress, site attendance, hours worked and other relevant information as required by the Standard.

(b) The successful contractor shall provide the required number of appropriately qualified mentors to the maximum number of part/full occupational qualification learners, trade qualification learners, work integrated learners in the proportion as specified in the Standard.

(c) The successful contractor shall provide a supervisor to manage the training of the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates. (not applicable)

(d) The successful contractor shall submit to the employer's representative a baseline training plan in the specified format (Pro-forma A2) for the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates (not applicable)within 30 days of start of the contract.

(e) The successful contractor shall submit to the employer's representative project interim report in the specified format (Pro-forma A3) on the progress of each of part/full occupational qualification learner, trade qualification learner, work integrated learner, candidate (not applicable) every three months.

(f) The successful contractor shall submit to the employer's representative the names and particulars in the specified format (Pro-forma A4) of the supervisor, mentors for the part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (not applicable) within 30 days of start of the contract.

(g) The successful contractor shall keep a daily record of all the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates on site and their daily activities and shall be made available to the employer's representative on request.

(h) The successful contractor shall submit to the employer's representative the reports on the progress and status of the part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (not applicable) with the monthly invoice for the payment certificate.

(i) The successful contractor shall have health and safety inductions for all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (not applicable).

(j) The successful contractor shall conduct entry and exit medical tests of all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (not applicable).

(k) The successful contractor shall provide personal protective equipment (PPE) to all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (not applicable) at the start of their employment on site.

(l) Based on the agreed skills methods the contractor may employ part/full Occupational Qualification Learners and /or Trade Qualification Learners and/or Work Integrated Learners and/or Candidates (not applicable) directly or through a Skills Development Agency (SDA), training provider or skills development facilitator (Form A1 - List of cidb accredited SDAs). The contractor shall ensure that no more than one Method shall be applied to any individual concurrently in the calculation of the CSDG for the contract.

C3.7.7 NATIONAL YOUTH SERVICE TRAINING AND DEVELOPMENT PROGRAMME (NYS)

The National Youth Service Training and Development Programme is *not applicable* to this project.

The programme shall be implemented in terms of the Implementation of the National Youth Service Programme under the Expanded Public Works (EPWP) and shall be priced in the CPG section of the Bills of Quantities. Monthly reports are to be submitted to the Employer's Representative.

Failure by the contractors to achieve the specified number to be trained in the NYS section of the CPG section within the Bills of quantities will result in a payment reduction as per bill of quantities per person, excluding VAT unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

C3.7.8 LABOUR-INTENSIVE WORKS

Labour Intensive Works is *not applicable* to this project.

Where labour intensive work is specified in the Bill of Qualities and indicated by "LI" the contractor must price for and include in rates. Contractors are expected to use their initiative to identify additional activities that can be done labour-intensively to comply with the set minimum labour intensity target. Allowance must be made for submitting monthly reports illustrating the value of the works executed under Labour Intensive Works.

Failure by the contractor to achieve the specified value of the Labour Intensive Participation Goal as stipulated within the Bills of quantities will result in a thirty percent (30%) penalty of the value of the works not done by means of labour intensive methods, excluding VAT, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

Employer's objectives:
The employer's objectives are to deliver public infrastructure using labour-intensive methods in accordance with EPWP Guidelines.

Labour-intensive works:
Labour-intensive works shall be constructed/maintained using local workers who are temporarily employed in terms of the scope of work. A **thirty percent (30%)** penalty of the value of the works will be imposed on items where unauthorised use of plant was used to carry out work which was to be done labour-intensively.

Labour-intensive competencies of supervisory and management staff:
Contractors shall only engage supervisory and management staff in labour-intensive works that have completed the skills programme including Foremen/ Supervisors at NQF level 4 "National Certificate: Supervision of Civil Engineering Construction Processes" and Site Agent/ Manager at NQF level 5 "Manage Labour-Intensive Construction Processes" or equivalent QCTO qualifications (See Appendix C) at NQF outlined in Table 1

C3.7.8.1 GENERIC LABOUR-INTENSIVE SPECIFICATION

Contractors are referred to the Guidelines for the Implementation of Labour-intensive Infrastructure Projects under the Expanded Publics Works Programme (EPWP) for the generic labour-intensive specification applicable to the contract.

This specification establishes general requirements for activities which are to be executed by hand involving the following:

- trenches having a depth of less than 1.5 metres
- stormwater drainage
- roads
- sidewalks and non-motorised transport infrastructure

- water and sanitation

Precedence

Where this specification is in conflict with any other standard or specification referred to in the Scope of Works to this Contract, the requirements of this specification shall prevail

.

Hand excavateable material

Hand excavateable material is:

a) granular materials:

i) whose consistency when profiled may in terms of table 2 be classified as very loose, loose, medium dense, or dense; or

ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 15 blows of a dynamic cone penetrometer is required to penetrate 100mm;

b) cohesive materials:

i) whose consistency when profiled may in terms of table 2 be classified as very soft, soft, firm, stiff and stiff / very stiff; or

ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 8 blows of a dynamic cone penetrometer is required to penetrate 100mm;

Note

1) A boulder is material with a particle size greater than 200mm, a cobble and gravel is material between 60 and 200mm.

2) A dynamic cone penetrometer is an instrument used to measure the in-situ shear resistance of a soil comprising a drop weight of approximately 10 kg which falls through a height of 400mm and drives a cone having a maximum diameter of 20mm (cone angle of 60° with respect to the horizontal) into the material being used.

Table 2: Consistency of materials when profiled

GRANULAR MATERIALS		COHESIVE MATERIALS	
CONSISTENCY	**DESCRIPTION**	**CONSISTENCY**	**DESCRIPTION**
Very loose	Crumbles very easily when scraped with a geological pick.	Very soft	Geological pick head can easily be pushed in as far as the shaft of the handle.
Loose	Small resistance to penetration by sharp end of a geological pick.	Soft	Easily dented by thumb; sharp end of a geological pick can be pushed in 30-40 mm; can be moulded by fingers with some pressure.
Medium dense	Considerable resistance to penetration by sharp end of a geological pick.	Firm	Indented by thumb with effort; sharp end of geological pick can be pushed in up to 10 mm; very difficult to mould with fingers; can just be penetrated with an ordinary hand spade.
Dense	Very high resistance to penetration by the sharp end of a geological pick; requires many blows for excavation.	Stiff	Can be indented by thumb-nail; slight indentation produced by pushing geological pick point into soil; cannot be moulded by fingers.
Very dense	High resistance to repeated blows of a geological pick.	Very stiff	Indented by thumb-nail with difficulty; slight indentation produced by blow of a geological pick point.

Trench excavation
All hand excavateable material in trenches having a depth of less than 1,5 metres shall be excavated by hand.

Compaction of backfilling to trenches (areas not subject to traffic)
Backfilling to trenches shall be placed in layers of thickness (before compaction) not exceeding 100mm. Each layer shall be compacted using hand stampers;
a) to ninety percent (90%) Mod AASHTO;
b) such that in excess of 5 blows of a dynamic come penetrometer (DCP) is required to penetrate 100 mm of the backfill, provided that backfill does not comprise more than ten (10%) gravel of size less than 10mm and contains no isolated boulders, or
c) such that the density of the compacted trench backfill is not less than that of the surrounding undisturbed soil when tested comparatively with a DCP.

Excavation
All excavateable material including topsoil classified as hand excavateable shall be excavated by hand. Harder material may be loosened by mechanical means prior to excavation by hand. Any material which presents the possibility of danger or injury to workers shall not be excavated by hand.

Clearing and grubbing
Grass and bushes shall be cleared by hand.

Shaping
All shaping shall be undertaken by hand.

Loading
All loading shall be done by hand. Haulage equipment should be selected in a manner that allows loading by hand to the greatest extent possible.

Haul
Excavation material shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150m.

Offloading
All material, however transported, is to be off-loaded by hand, unless tipper-trucks are utilised for haulage.

Spreading
All material shall be spread by hand.

Compaction
Small areas may be compacted by hand provided that the specified compaction is achieved. Appropriate rollers should be used where higher (than can be achieved by hand) levels of compaction are required or for large areas.

Grassing
All grassing shall be undertaking by sprigging, sodding, or seeding by hand.

Stone pitching and rubble concrete masonry
All stone required for stone pitching and rubble concrete masonry, whether grouted or dry, must to be collected, loaded, off loaded and placed by hand.
Sand and stone shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150m.
Grout shall be mixed and placed by hand.

Manufactured Elements
Elements manufactured or supplied by the Contractor, such as manhole rings and cover slabs, precast concrete planks and pipes, masonry units and edge beams shall not individually, have a mass of more than 320kg. Where the mass of an element exceeds 55 kg, consideration should be given to the size of the element relative to its total mass related to the number of workers who would be needed to lift such mass

C3.8 Submission of Accrual Reports

The Contractor shall submit accrual reports to the client representative at the end of March and September each year for the duration of the Service Contract period from the date of appointment up to and including project closeout. This is to ensure that PMTE complies with the accounting framework GRAP, which requires that PMTE disclose all its accruals as at the end of each reporting date.

C.3.9 Submission of Monthly Local Material Utilisation Report (Local Content)

The contractors shall be responsible for record keeping, documenting and submission of monthly local material utilization report with supporting documentation to the Employer's representative within 7 working days of the beginning of the successive month, in terms of DTI&C designated industry/sector/sub-sector schedule as per the PA36 and Annexures C attached to the tender document. The final percentage achievement to be reconciled upon completion of the project and form part of the final account.

Failure by the contractors to achieve the specified percentage of local content per designated industry/sector/sub-sector as listed will result in a thirty percent thirty percent (30%) penalty of the value not achieved, excluding VAT, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control. Allowance must be made for submitting monthly reports illustrating the value of local material utilisation report.

Examples of calculating CPGs and related penalties

CPGs values are based on the Tender Amount at the time of the award. Determining the actual values is based either on the Tender Amount including allowances and Vat or the Tender Amount at the time of award excluding allowances and VAT, where Allowances include the following:

- Provisional amounts
- CPG allowances
- Nominated and/or selected subcontractors
- Contract price adjustment (Not provided for within the B of Q by NDPWI)
- Contingency amounts (Not provided for within the B of Q by NDPWI)

CPG values in the CPG Bill of Quantities Section will be recalculated based on the "Tender Amount" or the "Contract Amount" which ever applicable and the provisional amounts adjusted accordingly. Sanctions (penalties) are applicable to all CPGs where the contractor fails to achieve the minimum specified requirements, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control. No penalties will be applied should the CPG value, based on the original "Tender Amount" or the "Contract Amount", has been achieved.

1.1. 30% SMME mandatory subcontracting CPG

When applicable, a minimum of 30% of the total tender amount at the time of award, including all allowances and VAT are to be subcontracted to SMMEs.

CPG calculation example:
"Tender Amount" = R150 mil
CPG 30% subcontracting value = R45 Mil

Calculation of penalty:
Percentage penalty applicable = 5% as specified in the Scope of Works (PG01.1)
CPG Achieved = R30 Mil (R15 Mil shortfall)
Penalty = R15 Mil x 5% = R750 000 Excl. VAT

1.2 Targeted Local Building Material Manufacturers CPG

When applicable, the CPG is expressed as a percentage of the "Contract Amount", i.e. the Tender Amount at the time of award excluding allowances and VAT.

CPG calculation example:
"Tender Amount" = R150 Mil all inclusive of allowances and VAT
"Contract Amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)
CPG to be achieved = 5% as specified in the Scope of Works (PG01.1)
CPG target value = R130 Mil x 5% = R 6,5 Mil (Value of material to be purchased from local manufacturers, excluding VAT)

Calculation of penalty:
Percentage penalty applicable = 10% as specified in the Scope of Works (PG01.1)
CPG target value = R6,5 Mil excluding VAT
CPG Achieved = R5,5 Mil (R1 Mil shortfall) excluding VAT
Penalty = R1 Mil x 10% = R100 000 excluding VAT

1.3 Targeted Local Building Material Suppliers CPG

When applicable, the CPG is expressed as a percentage of the "Contract Amount", i.e. the Tender Amount at the time of award excluding allowances and VAT.

CPG calculation example:
"Tender Amount" = R150 Mil all inclusive of allowances and VAT
"Contract Amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)

CPG to be achieved = 5% as specified in the Scope of Works (PG01.1)
CPG target value = R130 Mil x 5% = R 6,5 Mil (Value of material to be purchased from local suppliers, excluding VAT)

Calculation of penalty:
Percentage penalty applicable = 20% as specified in the Scope of Works (PG01.1)
CPG target value = R6,5 Mil excluding VAT
CPG Achieved = R5,5 Mil (R1 Mil shortfall) excluding VAT
Penalty = R1 Mil x 20% = R200 000 excluding VAT

1.4 Targeted Local Labour Skills Development CPG

When applicable, the CPG is expressed as a percentage of the total number working days required to complete the Works.

CPG calculation example:
"Tender Amount" = R150 Mil all inclusive of allowances and VAT
"Contract amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)
Number of working days required to complete the Works based on the construction period = 600 days
CPG percentage participation to be achieved = 30% as specified in the Scope of Works (PG01.1)
Required number of working days training to be provided = 180 days (600 x 30%)

Calculation of penalty:
Payment reduction = R 5 000 per day for not providing training as specified in the Scope of Works (PG01.1)
CPG = 600 working days x 30% = 180 working days training to be provided
CPG Achieved = 160 days (20 days shortfall where no training was provided)
Penalty = 20 days x R5 000 payment reduction per day= R100 000 excluding VAT

1.5 National Youth Service Programme (NYS) CPG

When applicable, a separate NYS Bill of Quantities will be included in the tender documentation will indicate the number of beneficiaries to be trained.

Calculation of penalty:
Payment reduction per person not trained as stipulated in the NYS Bill of Quantities = R 2 500 per person.
Total number of NYS Beneficiaries as stipulated in the NYS Bill of Quantities = 25
Total Number of NYS beneficiaries trained = 20 (shortfall of 5 beneficiaries)
Penalty = 5 x R2 500 = R12 500 Excl. VAT

1.6 Labour Intensive Works CPG

When applicable, the work to be done by way of Labour intensive methods are specified in the Bills of Quantities with a "LI".

CPG calculation example:
"Tender Amount" = R150 Mil all inclusive of allowances and VAT
"Contract Amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)
CPG value = R10 Mil (Total value of labour-intensive works specified in the Bills of Quantities)

Calculation of penalty:
CPG value = R10 Mil
Percentage penalty applicable = 30% as specified in the PG01.1 Scope of Work
CPG Achieved = 9 Mil (R1 Mil shortfall)
Penalty = R1 Mil x 30% = R300 000 Excl. VAT

1.7 Cidb BUILD Programme: Enterprise Development

When applicable, the Enterprise Development CPG expressed as a percentage of the "Contract amount" = Tender amount at the time of award excluding allowances and VAT. Failure to achieve the minimum Targeted Local Labour Skills Development CPG will result in a payment reduction of an amount specified in the Scope of Works (PG01.1) per working day where training was not provided.

The monetary value of training to be provided is stipulated in the CPG BoQ section. The number of beneficiaries to be trained is dependent on the "Contract Amount" as well the number of beneficiaries appointed which will generally resort under the Grade 1 and 2 cidb categories. The provisional amount will therefore be adjusted in terms of the "contract Amount", the number of beneficiaries to be trained and the actual cost for providing the training.

Part 1: Calculation of 5% CPG example:
"Tender Amount" = R150 Mil all inclusive of allowances and VAT
"Contract Amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)
CPG percentage participation to be achieved = 5% as specified in the Scope of Works (PG01.1)
CPG value = R6,5 Mil (Value of work to be subcontracted to emerging enterprises)

Calculation of penalty
Percentage penalty applicable = 30% as specified in the Scope of Works (PG01.1)
CPG Minimum 5% = R6,5 Mil
Achieved = R5,5 Mil (Only subcontracted work to the value of R5,5 Mil, i.e. R1 Mil shortfall)
Penalty = R1 Mil x 30% = R300 000 Excl. VAT

Part 2: Calculations in terms of training to be done:
The number of enterprises to be developed is subject to the contract amount and the apportionment of the work as per Example 1 below.
Number of enterprises to be trained = 6 x 1 GB subcontractors
Total cost for training = R 1 660 000

Calculation of penalty
Total number of enterprises to be trained = 6
Total number trained = 4 (2 Shortfall)
Training cost per beneficiary = R1 660 000 / 6 = R 276 666,67 per beneficiary
Penalty = R 276 666,67 x 2 x 30% = R166 000 Excl. VAT

B of Q Item	Description	Unit	Rate	Quantity	Amount (R)
5	**Enterprise Development**				
5.1	Enterprise Development of Targeted Enterprise or JV partners				
5.1.1	Appointment of training co-ordinator	Per Quarter	45 000	8	360 000
5.1.2	Appointment of Mentor /Training Service provider	Per Quarter	135 000	8	1 080 000
5.1.3	Needs Analysis and Enterprise Development Plan per Targeted Enterprise	No.	5 000	6	30 000
5.1.4	Monitoring and Interim reporting per targeted enterprise	Per Quarter	20 000	8	160 000
5.1.5	Project Completion report per Targeted Enterprise	No.	5 000	6	30 000
	Provisional Sum to be carried over to CPG bill of quantities				**1 660 000**
	"Contract amount" Tender amount excl. allowances and VAT.	130 000 000			
	CPG Monetary value (5%) to be subcontracted to beneficiaries for training	6 500 000			
	No of enterprises based on the CPG value	6	Grade 1 / 2 GB/CE,ETC.		
	Contract period (months)	24			

Note: Rates to be determined by PQS and adjusted to accepted quotation amounts

1.8 Cidb BUILD Programme: Skills Development (Principal contractor including subcontractors and consultants)

When applicable, the contract skills development participation goals, expressed in Rand, shall be no less than the "contract amount" multiplied by a percentage (%) factor for the applicable class of construction works.

The monetary value of training to be provided is stipulated in the CPG BoQ section. The number of beneficiaries to be trained is dependent on the "Contract Amount" as well the number of beneficiaries appointed which will generally resort under the Grade 1 and 2 cidb categories. The provisional amount will therefore be adjusted in terms of the "Contract Amount", the number of beneficiaries to be trained from

which *Method* and the actual cost for providing the training.

CPG Calculation

Table 2: Contracting skills development goals for different classes of engineering and construction works contracts

Source: cidb Standard for Developing Skills through Infrastructure Contracts as published in the Government Gazette Notice No. 43495 of 3 July 2020 (Page 7)

Class of construction works as identified in terms of Regulation 25 (3) of the Construction Industry Regulations 2004		**Construction skills development goal (CSDG) (%)**
Designation	**Description**	
CE	Civil Engineering	0.25
CE and GB	Civil engineering and General Building	0.375
EE	Electrical Engineering works (buildings)	0.25
EP	Electrical Engineering works (infrastructure)	0.25
GB	General Building	0.5
ME	Mechanical Engineering works	0.25
SB	Specialist	0.25

"Contract amount" = Tender amount at the time of award excluding allowances and expenses, and VAT

Contractor CPG:

CPG calculation
"Contract amount" x factor from Table 3 above.

CPG calculation example:
"Tender Amount" = R150 Mil for GB, all inclusive of allowances and VAT
"Contract Amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)
Factor for GB = 0,5% (as per Table 2 above)
CPG in R value = R130 Mil x 0,5% = R650 000 i.e. total cost of training to amount to R650 000

Calculation of penalty:
Percentage penalty applicable = 30% as specified in the Scope of Works (PG01.1)
CPG value = R650 000
Achieved = R550 000 = R100 000 Shortfall
Penalty = R100 000 x 30% = R30 000 Excl. VAT

Calculations based on "Contract Amount" after bid award and after bid award and appointment of beneficiaries

Actual CPG training requirement value after award upon selecting method/s of training and appointment of beneficiaries = R676 000 (Table 4 below) and the provisional amount allowed for to be adjusted accordingly. The new monetary value of training required will then form the basis for determining penalties applicable. No penalties will be applied should the CPG value, based on the "Contract Amount" be achieved.

Table 4: Notional cost recalculation upon appointment of beneficiaries.

Source: cidb Standard for Developing Skills through Infrastructure Contracts as published in the Government Gazette Notice No. 43495 of 3 July 2020 (Page 10)

Skills Types	**Number of learners**	**Notional Cost / Learner / Quarter**	**Notional cost / learner / year**	**Total Notional Cost over 12 months Contract**
Method 2: Workplace learning opportunities, with unemployed TVET graduates	2	R23 000	R92 000	R184 000
Method 3: Candidacy for an unemployed learner with a 3-year qualification	2	R61 500	R246 000	R492 000
Total	4			R676 000

Note: the required CPG will be recalculated based on the awarded Tender amount and "Contract Amount" once the beneficiaries have been appointed and actual costs are known

Note: The notional cost of providing training opportunities will increase by CPI on an annual basis based on April CPI as published by Stats SA. The rates will be adjusted as an adjustment to the provisional amounts should the rates increase after bid award or during the construction period

OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

public works
& infrastructure
Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

OCCUPATIONAL HEALTH AND SAFETY

FOR

CONSTRUCTION PROJECT:

REPAIR AND RENOVATIONS

AT

TSWELOPELE PRISON

MANAGED ON BEHALF OF

THE DEPARTMENT OF
PUBLIC WORKS

PRINCIPAL CONTRACTOR RECEIPT

Received by:

Name:

Signature: *Date:*

Capacity:

OHS MANAGEMENT: WENDY MBOLEKWA

CONTENTS

1. PREAMBLE

In terms of Construction Regulation 4(1)(a) of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), and 5(1) construction regulation of 2014, the Department of Public Works, as the Client and/or its Agent on its behalf, shall be responsible to prepare Health & Safety Specifications for any intended construction project and provide any Principal Contractor who is making a bid or appointed to perform construction work for the Client and/or its Agent on its behalf with the same.

The Client's further duties are as described in The Act and the Regulations made there-under. The Principal Contractor shall be responsible for the Health & Safety Policy for the site in terms of Section 7 of the Act and in line with Construction Regulation 5 as well as the Health and Safety Plan for the project.

2. SCOPE OF HEALTH AND SAFETY SPECIFICATION DOCUMENT

These Specifications should be read in conjunction with the Act, the Construction Regulations and all other Regulations and Safety Standards which were or will be promulgated under the Act or incorporated into the Act and be in force or come into force during the effective duration of the project.
The stipulations in this specification, as well as those contained in all other documentation pertaining to the project, including contract documentation and technical specifications shall not be interpreted, in any way whatsoever, to countermand or nullify any stipulation of the Act, Regulations and Safety Standards which are promulgated under, or incorporated into the Act.

2.1 APPLICATIONS AND INTERPRETATION

This document is to be read and understood in conjunction with the following, inter- alia:

- *Occupational Health and Safety Act 85 of 1993 (OHS Act).*
- *All regulations published in terms of the OHS Act.*
- *Construction Regulations, 2014*
- *SABS codes referred to by the OHS Act.*
- *Contract Documents*
- *Basic Conditions of Employment Act (Act 75 of 1997)*
- *National Environmental Management Act 107 of 1998 and all Regulations*
- *Compensation for Occupational Injuries and Diseases (COID) Act No. 130 of 1993*

ABBREVIATIONS

- OHS : Occupational Health and Safety
- CEO : Chief Executive Officer
- CR : Construction Regulations
- HCS : Hazardous Chemical Substances
- MSDS : Material Safety Data Sheet
- AIA : Approved Inspection Authority
- HBA : Hazardous Biological Agents
- OEL : Occupational Exposure Limit

- CSIR : Council for Scientific and Industrial Research
- H&SS : Health and Safety Specification
- HS&EP : Health, Safety and Environmental Plan
- HS&EF : Health, Safety and Environmental File
- CHSO : Construction Health and Safety Officer

3. PURPOSE

The Department is obligated to implement measures to ensure the health and safety of all people and properties affected under its custodianship or contractual commitments, and is further obligated to monitor that these measures are structured and applied according to the requirements of these Health and Safety Specifications.

The purpose of this specification document is to provide the relevant Principal Contractor (and his /her sub-contractor) with any information other than the standard conditions pertaining to construction sites which might affect the health and safety of persons at work and the health and safety of persons in connection with the use of plant and machinery; and to protect persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work during the carrying out of construction work for the Department of Public Works and Infrastructure. The Principal Contractor (and his /her sub-contractor) is to be briefed on the significant health and safety aspects of the project and to be provided with information and requirements.

4. DEFINITIONS

The following definitions from the Occupational Health and Safety Act are listed as follows:

"Chief Executive Officer"
In relation to a body corporate or an enterprise conducted by the State, means the person who is responsible for the overall management and control of the business of such body corporate or enterprise.

"Danger"
Means anything that may cause injury or damage to persons or property.

"Employee"
Means, subject to the provisions of Subsection (2), any person who is employed by or works for any employer and who receives or is entitled to receive any remuneration or who works under the direction or supervision of an employer or any other person.

"Employer"
Means, subject to the provisions of Subsection (2), any person who employs or provides work for any person or remunerates that person or expressly or tacitly undertakes to remunerate him, but excludes a labour broker as defined in Section 1(1) of the Labour Relations Act, 1953 (Act No. 28 of 1956).

"Healthy"
Means free from illness or injury attributable to occupational causes.

Machinery
Means any article or combination of articles assembled, arranged or connected and which is used or intended to be used for converting any form of energy to performing work, or which is used or intended to be used, whether incidental thereto or not, for developing, receiving, storing, containing, confining, transforming, transmitting, transferring or controlling any form of energy.

Plant
Includes fixtures, fittings, implements, equipment, tools and appliances, and anything which is used for any purpose in connection with such plant.

Medical Surveillance
Means a planned programme of periodic examination (which may include clinical examinations, biological monitoring or medical tests) of employees by an occupational health practitioner or, in prescribed cases, by an occupational medicine practitioner. Plant Includes fixtures, fittings, implements, equipment, tools and appliances, and anything which is used for any purpose in connection with such plant. Properly Used Means used with reasonable care, and with due regard to any information, instruction or advice supplied by the designer, manufacturer, importer, seller or supplier.

User
In relation to plant or machinery, means the person who uses plant or machinery for his own benefit or who has the right of control over the use of plant or machinery, but does not include a lessor of, or any person employed in connection with, the plant or machinery.

Reasonably Practicable
Means practicable having regards to: a) the severity and scope of the hazard or risk concerned, b) The state of knowledge reasonably available concerning that hazard or risk and of any means to remove or mitigate that hazard or risk. c) the availability and suitability of means to remove of mitigate that hazard or risk; and d) The cost of removing or mitigating that hazard or risk in relation to the benefits deriving there from.

"Risk"
Means the probability that injury or damage will occur.

"Safe"
Means free from any hazard.

"Standard"
Means any provision occurring: a) in a specification, compulsory specification, code of practice or standard method as defined in Section 1 of the Standards Act, 1993 (Act No. 29 of 1993); OR b) in any specification, code or any other directive having standardization as its aim and issued by an institution or organization inside or outside the Republic which, whether generally or with respect to any particular article or matter and whether internationally or in any particular country or territory, seeks to promote standardisation.

The following definitions from the Construction Regulations are listed as follows:

"**Agent**" – means any person who acts as a representative for a Client;

"**Client**" – means any person for whom construction work is performed;

"**Construction Work**" is defined as any work in connection with –

(a) the erection, maintenance, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure;
(b) the installation, erection, dismantling or maintenance of a fixed plant where such work includes the risk of a person falling;
(c) the construction, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system or any similar civil engineering structure; or
(d) the moving of earth, clearing of land, the making of an excavation, piling, or any similar type of work;

"**Health and Safety File**" – means a file, or other record in permanent form, containing the information required a contemplated in the regulations;

"**Health and Safety Plan**" – means a site, activity or project specific documented plan in accordance with the client's health and safety specification;

"**Health and Safety Specification**" – means a site, activity or project specific document prepared by the client pertaining to all health and safety requirements related to construction work;

"Electrical installation" means any electrical installation as defined in regulation 1 of the Electrical Installation Regulations, published under Government Notice R.2270 of 11 October 1985;

"**Method Statement**" – means a document detailing the key activities to be performed in order to reduce as reasonably as practicable the hazards identified in any risk assessment;

"**Principal Contractor**" – means an employer, as defined in section 1 of the Act who performs construction work and is appointed by the Client to be in overall control and management of a part of or the whole of a construction site;

"**Risk Assessment**" – means a program to determine any risk associated with any hazard at a construction site, in order to identify the steps needed to be taken to remove, reduce or control such hazard.

"**Competent person**" – means any person having the knowledge, training, experience and qualifications specific to the work or task being performed: Provided that where appropriate qualifications and training are registered in terms of the provisions of the South African Qualifications Authority Act, 1995 (Act No. 58 of 1995), these qualifications and training shall be deemed to be the required qualifications and training.

5. OCCUPATIONAL HEALTH & SAFETY MANAGEMENT

5.1. Overall Supervision and Responsibility for OH&S

The Client and/or its Agent shall ensure that the Principal Contractor implements and maintains the agreed and approved H&S Plan. Failure on the part of the Client or Agent to comply with this requirement will not relieve the Principal Contractor from any one or more of his/her duties under the Act and Regulations.

5.2. Further (Specific) Supervision Responsibilities for OH&S

Several appointments or designations of responsible and /or competent people in specific areas of construction work are required by the Act and Regulations. The following competent

appointments, where applicable, in terms of the Construction Regulations and other Regulations shall be made to ensure compliance to the Act, Regulations and SANS Standards.

LEGAL DOCUMENTATION/APPOINTMENTS

The following documents must be provided in the Health and Safety Plan (H&SP):

- Health and Safety Policy signed by CEO or statement of commitment to SHE
- Letter of good standing with the Compensation Commissioner, Federated Employers or similar insurer.
- HSE Organogram (or table), outlining the HSE Team, as well as the appointment(s) they have under the Act and Regulations (reference to specific section/regulation applicable to appointment)
- The competency of each member of the HSE Team must be provided and should include knowledge, training, experience & qualifications specific to the appointment.

Signed copies of the following legal appointments must be provided in the Health, Safety and Environmental Plan:

Section 16.2 appointment	Section 16.2
HSE Representative (if necessary)	Section 17(1)
Incident Investigator	GAR 9(2)
First Aiders	GSR 3(4)
Fire Fighters	ER 9 & CR 29
Risk Assessor	HCS Reg (Incl. Asbestos & Lead); CR 9

The following information must be provided in the H&SP:

- Indicate the estimated number of employees to be working on site.
- Indicate the expected number of sub-contractors to be appointed by the Principal Contractor.

The following competent persons, where applicable, shall be appointed in writing by the Principal Contractor, prior to any work being carried out, and shall adhere to the requirements of the specific sub-regulations.

The competency of each of these appointed competent persons must be provided and should include knowledge, training, experience & qualifications specific to the appointment.

Construction Manager	CR 8 (1)
Assistant Construction Manager	CR 8 (2)
Construction H&S Officer where applicable	CR 8 (5)
Construction Supervisor	CR 8 (7)
Construction Assistant Supervisor	CR 8(8)
Risk assessor	CR 9(1)
Fall Protection Competent Person	CR 10 (1)
Temporary works competent person	CR12 (2)
Excavation Work Supervisor	CR 13 (1)(a)
Demolition Work	CR 14 (1)
Competent Person (Use of Explosives for Demolition Work)	CR14(11
Scaffolding Erector/ Team Leader/ Inspector	CR 16 (1)
Suspended platform Competent Person	CR 17(1)
Rope Access Work Competent Person	CR 18 (1) (a)
Material Hoist Competent Person	CR 19(8)(a)
Bulk Mixing Plant Competent Person	CR 20 (1)
Explosive Powered Tools Competent Person	CR 21(2)(b)
Construction Vehicle and Mobile Plant Competent Person	CR23 (1)(d)
Electrical Machinery Competent Person	CR 24 (c)
Stacking and Storage Supervisor	CR 28 (a)
Fire Equipment Inspector	CR 29(h)

Indicate in the H&SP, which of these listed appointments are applicable to the construction work in question (project specific).

No work involving any of the listed appointments may be performed without the knowledge and approval of an appointed competent person.

5.3 Communication & Liaison

5.2.1 The Principal Contractor will communicate all health and safety concerns with the DPW Health and Safety Officer.

6. RESPONSIBILITIES

6.1 Client/Agent

6.1.2 The Client/Agent shall discuss and negotiate with the Principal Contractor the contents of the health and safety plan and when compliant, approve the plan.

6.2 Principal Contractor

6.2.1 The Principal Contractor shall accept the appointment under the terms and Conditions of Contract. The Principal Contractor shall sign and agree to those terms and conditions and shall, before commencing work, notify the Department of Labour of the intended construction. Annexure 2 of this construction regulation contains a "Notification of Construction Work" form. The Principal Contractor shall submit the notification in writing prior to commencement of work and inform the Client or his Agent accordingly.

6.2.2 The Principal Contractor shall ensure that he is fully conversant with the requirements of this Specification and all relevant health and safety legislation.

6.2.3 The Principal Contractor will in no manner or means be absolved from the responsibility to comply with all applicable sections of the Act, the Construction Regulations or any Regulations proclaimed under the Act or which may perceivable be applicable to this contract.

6.2.4 The Principal Contractor shall provide and demonstrate to the Client a suitable and sufficiently documented health and safety plan based on this Specification, the Act and the Construction Regulations, which shall be applied from the date of commencement of and for the duration of execution of the works. This plan shall, as appendices, include the health and safety plans of all Sub-contractors for which he has to take responsibility in terms of this contract.

6.2.5 The Principal Contractor shall provide proof of his registration and good standing with the Compensation Fund or with a licensed compensation insurer prior to commencement with the works.

6.2.6 The Potential Principal Contractor shall, in submitting his tender, demonstrate that he has made provision for the cost of compliance with the specified health and safety requirements, the Act and Construction Regulations. (Note: This shall have to be contained in the conditions of tender upon which a tenderer's offer is based.)

6.2.7 The Principal Contractor shall consistently demonstrate his competence and the adequacy of his resources to perform the duties imposed on the Principal Contractor in terms of this Specification, the Act and the Construction Regulations.

6.2.8 The Principal Contractor shall ensure that a copy of his health and safety plan is available on site and is presented upon request to the Client, an Inspector, Employee or Sub-contractor.

6.2.9 The Principal Contractor shall ensure that a health and safety file, which shall include all documentation required in terms of the provisions of this Specification, the Act and the Construction Regulations, is opened and kept on site and made available to the Client or Inspector upon request. Upon completion of the works, the Principal Contractor shall hand over a consolidated health and safety file to the Client.

6.2.10 The Principal Contractor shall, throughout execution of the contract, ensure that all conditions imposed on his Sub-contractors in terms of the Act and the Construction Regulations are complied with as if they were the Principal Contractor.

6.2.11 The Principal Contractor shall from time to time evaluate the relevance of the Health and Safety Plan and revise the same as required, following which revised plan shall be submitted to the Client and/or his/her Agent for approval.

6.2.12 A letter of good standing in terms of COIDA (Compensation Commissioner) must be submitted to DPW.

7. SCOPE OF WORK

Construction of the new magistrate office. These specifications are applicable to the specific scope of work pertaining to the above-mentioned project as detailed in the tender documents.

8. HEALTH AND SAFETY FILE

a) The Principal Contractor must, in terms of Construction Regulation 7(7), keep a Health & Safety File on site at all times that must include all documentation required in terms of the Act and Regulations and must also include a list of all Contractors on site that are accountable to the Principal Contractor and the agreements between the parties and details of work being done. A more detailed list of documents and other legal requirements that must be kept in the Health and

b) The Health and Safety File will remain the property of the Client and/or its Agent on its behalf throughout the period of the project and shall be consolidated and handed over to the Client and/or its Agent on its behalf at the time of completion of the project

9. RISK ASSESSMENTS

In terms of Construction Regulations 5 the Client will prepare a baseline risk assessment for the construction work project. The Principal Contractor shall, before commencement of any construction work and during the construction work, have risk assessments performed by a competent person appointed in writing, which risk assessments form part of the health and safety plan to be applied on site, and must include –

(a) the identification of the risks and hazards to which persons may be exposed to;
(b) the analysis and evaluation of the risks and hazards identified;
(c) a documented plan of safe work procedures to mitigate, reduce or control the risks and hazards that have been identified;
(b) a monitoring plan; and
(e) a review plan.

The following hazards are identified:

- Drilling (Breaking of walls)
- Formwork and support work
- Scaffolding
- Construction vehicles and mobile equipment
- Electrical installations and electrical machinery
- Housekeeping
- Stacking and storage practices
- Fire risks and fire precautions
- Use of jackhammers
- Hot work (steel cutting and welding)
- Portable electrical tools
- Intoxicated persons on site
- Use of ladders
- Impact of construction work upon occupants of buildings not evacuated for the duration of the work
- Working at height (fall protection)
- Noise
- Potential presence of asbestos that forms part of the structure (cement fibre)
- Dust

Site Specific risk assessment of the above must be submitted to DPW before commencement of work.

10. HEALTH AND SAFETY POLICY

Each contractor to submit a suitable documented Health and Safety Policy as required by Section 7 of the OHS Act.

11. IDENTIFICATION OF HAZARDS AND DEVELOPMENT OF RISK ASSESSMENTS, STANDARD WORKING PROCEDURES (SWP) AND METHOD STATEMENTS

The Principal Contractor is required to develop Risk Assessments, Standard Working Procedures (SWP) and Method Statements for each activity executed in the contract or project.

The identification of hazards is over and above the hazards identification programme and those hazards identified during the drafting of the Health and Safety Plan.

12. ARRANGEMENTS FOR MONITORING AND REVIEW

12.1 Monthly Audit by Client and/or its Agent on its behalf

The Client and/or its Agent on its behalf will be conducting Periodic Audits at times agreed with the Principal Contractor Audit to comply with Construction Regulation 4(1)(d) to ensure that the principal Contractor has implemented, is adhering to and is maintaining the agreed and approved OH&S Plan.

12.3 Reports

a) The Principal Contractor shall report all incidents where an employee is injured on duty to the extent that he/she:

i. dies
ii. becomes unconscious
iii. loses a limb or part of a limb
iv. is injured or becomes ill to such a degree that he/she is likely either to die or to suffer a permanent physical defect or likely to be unable for a period of at least 14 days either to work or continue with the activity for which he/she was usually employed

OR where:

i. a major incident occurred
ii. the health or safety of any person was endangered
iii. where a dangerous substance was spilled
iv. the uncontrolled release of any substance under pressure took place
v. machinery or any part of machinery fractured or failed resulting in flying, falling or uncontrolled moving objects
vi. machinery ran out of control, to the Provincial Director of the Department of Labour within seven days and at the same time to the Client and/or its Agent on its behalf.

b) The Principal Contractor is required to provide the Client and/or its Agent on its behalf with copies of all statutory reports required in terms of the Act and the Regulations.

c) The Principal Contractor is required to provide the Client and/or its Agent on its behalf with a monthly "SHE Risk Management Report".

d) The Principal Contractor is required to provide a.s.a.p. the Client and/or its Agent on its behalf with copies of all internal and external accident/incident investigation reports.

12.4 Review

The Principal Contractor is to review the Hazard Identification, Risk Assessments and Standard Work Processes at each Production Planning and Progress Report meeting as the construction work develops and progresses and each time changes are made to the designs, plans and construction methods and processes.

The Principal Contractor must provide the Client and/or its Agent on its behalf, other Contractors and all other concerned parties with copies of any changes, alterations or amendments as contemplated in the above paragraph.

12.5 Site Rules and other Restrictions

a) *Site OH&S Rules*

The Principal Contractor must develop a set of site-specific OH&S rules that will be applied to regulate the Health and Safety Plan and associated aspects of the construction. When required for a site by law, visitors and non-employees upon entering the site shall be issued with the proper Personal Protective Equipment (PPE) as and when necessary.

b) Security Arrangements

The Principal Contractor must establish site access rules and implement and maintain these throughout the construction period.

12.6 Training

a) *General Induction Training*

All employees of the Principal and other Contractors must be in possession of proof of General Induction training

b) Other Training

All operators, drivers and users of construction vehicles, mobile plant and other equipment must be in possession of valid proof of training.

12.7 Accident and Incident Investigation

The Principal Contractor is responsible to oversee the investigation of all accidents/incidents where employees and non-employees were injured to the extent that he/she/they had to receive first aid or be referred for medical treatment by a doctor, hospital or clinic. (General Administrative Regulation 9)

The Principal Contractor is responsible for the investigation of all non-injury incidents as described in Section 24 (1) (b) & (c) of the Act and keeping a record of the results of such investigations including the steps taken to prevent similar incidents in future.

Notwithstanding the requirements of Section 24 of the Act, ALL incidents shall be investigated and reported on in writing, irrespective of whether such incident gave rise to injury or damage.

13 OUTLINED DATA, REFERENCES AND INFORMATION ON CERTAIN AND/OR SPECIFIC OBLIGATORY REQUIREMENTS TO ENSURE COMPLIANCE

OHS Act Section/ Regulation	Subject	Requirements
Construction. Regulation	**Notice of carrying out Construction work**	• Department of Labour notified • Copy of Notice available on Site
General Admin. Regulation 4	**Copy of OH&S Act (Act 85 of 1993)**	• Updated copy of Act & Regulations on site. • Readily available for perusal by employees.
COID Act Section 80	**Registration with Compens. Insurer**	• Written proof of registration/Letter of good standing available on Site
Construction. Regulation 4 & 5(1)	**H&S Specification & Programme**	• H&S Spec received from Client and/or its Agent on its behalf • OH&S programme developed & Updated regularly
Section 8(2)(d) Construction. Regulation	**Hazard Identification & Risk Assessment**	• Hazard Identification carried out/Recorded • Risk Assessment and – Plan drawn up/Updated • RA Plan available on Site • Employees/Sub-Contractors informed/trained
Section 16(2)	**Assigned duties (Managers)**	• Responsibility of complying with the OH&S Act assigned to other person/s by CEO.
Section 37(1) & (2)	**Agreement with Mandatories/ (Sub-)Contractors**	• Written agreement with (Sub-)Contractors • List of Subcontractors displayed. • Proof of Registration with Compensation Insurer/Letter of Good Standing
Section 24 & General Admin. Regulation 8 COID Act Sect.38, 39 & 41	**Reporting of Incidents (Dept. of Labour)**	• Incident Reporting Procedure displayed. • All incidents in terms of Sect. 24 reported to the Provincial Director, Department of Labour, within 3 days. (Annexure 1)(WCL 1 or 2) and to the Client and/or its Agent on its behalf • Cases of Occupational Disease Reported • Copies of Reports available on Site • Record of First Aid injuries kept

General Admin. Regulation 9	**Investigation and Recording of Incidents**	• All injuries which resulted in the person receiving medical treatment other than first aid, recorded and investigated by investigator designated in writing. • Copies of Reports (Annexure 1) available on Site • Tabled at H&S Committee meeting • Action taken by Site Management.
Construction. Regulation Driven Machinery Regulations 18 & 19	**Cranes & Lifting Machines Equipment**	• Competent person appointed in writing to inspect Cranes, Lifting Machines & Equipment • Written Proof of Competence of above appointee available on Site. • Cranes & Lifting tackle identified/numbered • Register kept for Lifting Tackle • Log Book kept for each individual Crane • Inspection: - All cranes - **daily by operator** - Tower Crane/s - **after erection/6monthly** - Other cranes - **annually by comp. person** • - Lifting tackle(slings/ropes/chain slings etc.) - daily or before every new application
General Safety Regulation 3	**First Aid**	• Every workplace provided with sufficient number of First Aid boxes. (Required where 5 persons or more are employed) • First Aid freely available • Equipment as per the list in the OH&S Act. • One qualified First Aider appointed for every 50 employees. (Required where more than 10 persons are employed) • List of First Aid Officials and Certificates • Name of person/s in charge of First Aid box/es displayed. • Location of First Aid box/es clearly indicated. • Signs instructing employees to report all • Injuries/illness including first aid injuries
General Safety Regulation 2	**Personal Safety Equipment (PSE)**	• PSE Risk Assessment carried out • Items of PSE prescribed/use enforced

		• Records of Issue kept • Undertaking by Employee to use/wear PSE • PSE remain property of Employer, not to be removed from premises GSR 2(4)
General Safety Regulation 13A	**Inspection of Ladders**	• Competent person appointed in writing to inspect Ladders • Ladders inspected at arrival on site and weekly there after. Inspections register kept • Application of the types of ladders (wooden, aluminium etc.) regulated by training and inspections and noted in register
Asbestos Regulations 5	**Information and training**	• Ensure that employees are adequately informed and trained on both practical aspects and theoretical knowledge.
Asbestos Regulations 17	**Personal Protective equipment (PPE)**	• Ensuring suitable PPE, storing of PPE, disposal of such PPE and that persons exposure is adequately controlled.
Asbestos Regulations 20	**Disposal of asbestos**	• Safe disposal and handling of asbestos or asbestos containing material.

14. LOCKOUT PROCEDURE

Contractors undertaking maintenance and repair work must submit a suitably documented lockout/tag-out procedure to be approved before work commences.

15. HOUSEKEEPING

Good housekeeping will be maintained at all times as per Construction Regulation No. 25. Poor housekeeping contributes to three major problems, namely, costly or increased accidents, fire or fire hazards and reduction in production. Good housekeeping will enhance production time.

In promotion of environmental control all waste, rubble, scrap etc, will be disposed of at a registered dump site and records will be maintained. Where it is found to be impractical to use a registered dump site or it is not available, the Principal Contractor will ensure that the matter is brought to record with the client or his representative, after which suitable, acceptable alternatives will be sought and applied.

Dross and refuse from metals, and waste matters or by-products whose nature is such that they are poisonous or capable of fermentation, putrefaction or constituting a nuisance shall be treated or disposed of by methods approved of by an inspector.

NOTE: No employer (Principal Contractor) shall require or permit any person to work at night or after hours unless there is adequate, suitable artificial lighting including support services in respect of Health and Safety.

16. ELECTRICAL EMERGENCY RESPONSE PROCEDURE

Contractors undertaking electrical maintenance and repair work must submit a suitably documented Electrical Emergency Response Procedure to be approved before work commences.

OTHER TECHNICAL SPECIFICATIONS THAT ARE REQUIRED

Mekan engineering services

TSWELOPELE PRISON BUILDING REPAIR AND MAINTENANCE PROJECT

ELECTRICAL TECHNICAL SPECIFICATION

Client

Department of Public Works
Old Magistrate Court
21-23 Market Square
Kimberley
8301

public works & infrastructure

Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

CESA safma GREEN BUILDING COUNCIL SOUTH AFRICA MEMBER ORGANISATION 2017 SABS ISO 9001 Alberton Office

Contents

ELECTRICAL INSTALLATIONS

1.1 Introduction

These Standards Specifications cover the general technical requirements for the equipment, materials, installation, testing, commissioning, and maintenance of electrical installations for the Department.

"Document" shall mean the complete set of the contract documents, including, the Standard Specification and the Detail Technical Specification including all drawings and variation orders issued in terms of the contract.

"Contractor" shall mean the person, partnership, company, or form appointed for the supply, installation, testing, commissioning and maintenance of the Electrical Installation. In the case the Electrical Installation being a sub-contract, nominated in terms of the Main Contract or otherwise, the word "Contractor" shall also mean the "Sub-Contractor" in terms of the Sub-Contract Conditions for the specific installation. Where applicable the Builder or Principal Contractor shall be referred to as "Main Contractor".

1.2 Installation of Works

The complete installation shall comply with the requirements of this Specification. In the event of discrepancies between the drawings, specifications and bill of quantities, the Engineer shall decide whether the work as executed shall be re-measured on site or whether re-measurement shall be affected from the working drawings only.

The Engineer will inspect the installation from time to time during the progress of the work. Discrepancies will be pointed out to the Contractor and these shall be remedied at the Contractor's expense. Under no circumstances shall these inspections relieve the Contractor of his obligation in terms of the Documents.

The Contractor shall notify the Engineer timeously when the installation reaches important stages of the completion (e.g. before closing cable trenches, before casting concrete, etc) so that the Engineer may schedule his inspection in the best interest of all parties concerned.

1.3 State Building Regulation

The installation shall be erected and tested in accordance with the Acts and Regulations as indicated in PW 379 or PW379 (Civil) – "Standard Conditions in respect of the Supply, Delivery and Installation of the Electrical, Mechanical, Pneumatic and Vacuum Operated Equipment, Control Systems, Plant and Materials".

The Contractor shall issue notices and pay all of the required fees in respect of the installation to the authorities and shall exempt the client from the losses, claims, costs or expenditures which may arise as a result of the Contractor's negligence in complying with the requirements of the regulations

It shall be assumed that the Contractor is conversant with the abovementioned requirements. Should any requirement, by-law or regulation, which contradicts the requirements of this Document, apply or become applicable during erection of the installation, such requirement bye-law or regulation shall overdue this Document and the Contractor shall immediately inform the client of such contradiction. Under no circumstance 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 client.

1.2 Site Conditions

Tenderers are advised to visit the site and acquired themselves with all local conditions pertaining to the execution of the installation before tender closing date. No claim from the Contractor which may arise from

insufficient knowledge of site access, type of site, labour conditions, establishment space, transport and loading/ unloading facilities, power and water supply, etc. will be considered after submission of tenders.

For services where prior permission is required before contractors can visit the site, a visit will be arranged for interested parties.

1.3 Construction period

With regard to the completion date it is to be noted that this date be connected to the completion date of the Building Contract and detailed in the building programme. It shall be expected from the electrical contractor to contact Building Contractor or Quantity Surveyor for details on completion period and also to follow this program. The date for practical completion shall be as on the tender invitation

PART-2 DETAILED ELECTRICAL SPECIFICATION

2.1 Interpretation

The contractor shall thoroughly acquaint him with the complete context of each section of the specification and each paragraph thereof, as well as the drawings and must be sure that his interpretation is correct. The contractor shall allow in his price for the supply of all necessary materials for the successful execution and completion of the installation.

2.2 Registration and clarification

The contractor attention is drawn to the fact that the registration form as an Installation Electrician must be filled in. If this form is not filled in full the tender may be disqualified. Also the electrical contractor must have a CIDB grading of 6EB PE or higher. The contractor shall be responsible for appointing specialist electrical contractor to do all HT /MV work/installation/services.

2.3 Schedules of information

The contractor's attention is drawn to the fact that if the schedules of information required, forming part of this document, are not completed in full, the tender cannot be adjudicated and may be disqualified.

2.4 Sequence of work

The sequence in which the work is to be carried out must be determined in collaboration with the Engineer and in conjunction with the program of the contractor.

2.5 Supervision

All artisans employed on the service must be registered as an accredited person. Apprentices and Improvers, not in possession of this certificate cannot be employed on the service without the prior approval of the Engineer.

2.6 Workmanship

All workmanship shall be of the best and shall follow the best modern practice with a good "finish" on all visible parts of the installation. All equipment shall be levelled, aligned and plumbed. All work shall be done by, or under, the direct supervision of a skilled, qualified artisan. Any sub-general workmanship condemned by the Engineer or his representative shall be dismantled and replaced. The workmanship shall be of the highest grade to the satisfaction of the Engineer or his representative.

All inferior work shall, on indication by the Engineer, immediately be removed and rectified by and at the expense of the contractor.

2.7 Contract materials

All contract materials and equipment shall be new and the best of their kind. They shall be protected from damage before, during and after installation; any damaged, flawed or defaced materials shall be rejected and replaced. All materials and apparatus shall conform to the relevant SABS/SANS Specifications or British General Specifications (if such exist) and inter change ability of similar apparatus is require where makers or catalogue numbers are specified without alternative, no alternative is acceptable: where alternatives are listed, only the named alternatives are acceptable.

The phrase "similar and equal to..." requires that the equipment offered must be closely similar in physical appearance and at least equal in characteristics and performance to the equipment specified. The Engineer must approve the offer of equipment inferior in either respect. Tenderers in writing to the Engineer shall note divergences from specified equipment due to non-availability or the lake of it. All installation work shall comply

with the Code of Practice for the Wiring of Premises, SABS 0142 , as amended.

2.8 Finished appearance

All visible portions of the installation shall be executed to a high General of finished appearance. Any sub-general work will be condemned and shall be removed and replaced at the expense of the contractor

2.9 Earthing

The installation shall be properly earthed to comply with the applicable Code of Practice, SANS 10142 as amended, SABS 1063, as well as requirements to comply with the relevant Local Authority by-laws.

Hot and cold-water pipes as well as waste pipes shall be properly earthed by means of copper strap (copper wire is unacceptable)

All light fittings shall be properly earthed by means of a 2.5 mm^2 stranded bare copper wire unless specified to the contrary.

All metal roofs shall be bonded in a minimum of four positions not exceeding a distance of 20 meters between points as well as all metal gutters and down pipes shall be bonded to the earth conductor. The armouring of all cables shall be bonded to the cable end boxes and cable end plates. Earth conductors shall be run to all hinged doors. Each Distribution Board must have an earth bar to which all panel and field earthing is to be connected.

After completion of the entire earthling installation, it shall be tested in the presence of the consulting engineers. Tenderers shall provide for all the labour and equipment in order to do these tests within the contract.

2.10 Wiring of circuits

All wiring shall be wired as per the layout drawings

PVC cables and conductors shall comply with SABS 159/1957. Only one circuit shall be allowed per conduit unless otherwise specified. Conductors shall be of the stranded copper type throughout.

Conduits shall be of the plain end welded seamless type and comply with the relevant SABS code and Department Specification.

Conduits that are installed in the ground or below surface shall be of the galvanised type.

2.11 Light Circuits

The wiring of light circuits shall consist of 2.5 mm^2 PVC insulated conductors and a 2.5 mm^2 bare copper earth wire in a 20 mm diameter conduit unless otherwise.

Phase conductors shall be red, blue and white with black for a neutral.

Light switches shall be built into walls with the underside of the box, 1200 mm above floor level.

Surface or recessed mounted switches shall be suitable for 16A rating.

The cover plate for recess-mounted switches shall be satin chrome.

All metal parts of the light fittings shall be earthed to the conduit by means of 2.5 mm^2 conductors with separate earth terminal as per Specification.

All the light fittings shall be supplied and as per Specification.

2.12 Wall mounted bulkhead lights

The height of wall lights shall be as indicated on the drawings. All dimensions shall be taken from the finished floor level to the centre of the outlet box. If no dimensions are specified, then the lights shall be installed 2250 mm above floor level.

2.13 Time switches and Daylight Photocells

Time switches shall be installed on this project, and daylight photocells shall be provided and installed in an empty round bulk head light fitting with high impact opal dome diffuser and die cast aluminium base and trim ring.

2.14 Recessed and semi-recessed mounted light fittings

Samples of recessed and semi-recessed light fittings shall be submitted for acceptance by the Engineer and shall be kept on site in order that the correct dimensions can be used for the cut-outs on the ceiling structure.

The contractor shall ensure that the openings marked and boxed out correctly in the positions and be of the correct sizes and shapes.

Conduits in the ceiling voids shall be installed parallel to or perpendicular to beams and walls. Conduits shall be fixed with saddles at no more than 1500 mm centres to roof trusses. The saddles shall not be nailed to the trusses but be fixed with wood screws.

The final connections to the light fittings shall be done in flexible conduit and include a 2.5 mm^2 earth wire.

2.15 Installation of surface mounted light fittings

Light fittings shall be installed as follows:

LED light fittings that are wider than 1200 mm shall be fixed in four positions to the ceilings and those less than 1200 mm wide in three positions.

Plastic type wall plugs with 40 mm long screws and washers shall be used for fixing to concrete slabs.

Where slabs are of the "hollow block" type "spring toggle" type screws shall be used.

The light fittings shall further also be fixed to the conduit outlet box

2.16 Incandescent type light fitting

No incandescent type light fittings shall be used on this project, only light fittings where applicable shall be equipped with energy saving PL type Fluorescent lamps. The fixing method shall be as per fluorescent light fitting which is described in paragraph (a) above.

An additional conductor for circuits with battery chargers for emergency lights

In cases where emergency lights with battery backup equipment are to be installed an additional 2.5 mm^2 PVC insulated conductor shall be installed and be connected directly to the battery charger in each light fitting.

The wiring shall be taken from the same phase as the lighting circuit and be connected to the nearest light switch.

2.17 16A 3-pin socket outlets

Standard recess type
The wiring of socket outlets shall consist of 2 × 4 mm² PVC insulated conductors with 2.5 mm² bare copper earth wire in at least a 20 mm diameter conduit.

2.18 Socket outlets in power skirting

Supply and install a two-cover sheet metal power skirting on the perimeter walls of the office areas and other areas as detailed on the drawings, and as per Specification.

The power skirting shall be provided with two separate clip-in cover plates, one for the power and other for the combined telephone and data sections. The power skirting shall be provided with end covers, corner pieces etc.

The power skirting colours shall be determined on site after the submission of colour samples by the Contractor. Socket outlets and switches shall be mounted on separate cradles in order that the cover plates shall be independently removable.

The power skirting shall be fixed level to the brick wall at 500 mm centres by means of 6 mm diameter "rawl" bolts. The various lengths shall be lined up properly. Brass screws shall be used to fix the power skirting to the desks. The power skirting shall be installed at different light as indicated on the drawings. If any doubts exist, the exact height shall be determined on site.

2.19 Conduit

All conduits to be PVC conduit (unless otherwise indicated). Where conduits enter or leave any distribution board, draw box or extension box must be installed. Care must be taken to ensure that the conduit is properly ensured to these units by means of lock nuts and bushes. All of the necessary parts and tools are properly explained in the enclosed manual.

Each length of conduit shall be inspected, and all burns shall be removed. All conduits that are split locked, dented or otherwise damaged or any conduit with sharp internal edges will not be accepted and will be removed and replaced at the Contractor's expense.

Conduit ends shall be cut at right angles to ensure that ends butt squarely at joints.

Mechanical and Electrical continuity shall be maintained throughout the conduit installation. Conduits may not be relied upon for earth continuity.

A maximum of two 90° bends or the equivalent displacement will be allowed between outlets and/or draw boxes. Draw boxes shall be installed at maximum intervals of 6 metres in straight conduit runs. All bends shall be made without heating the conduit or without reducing the diameter of the conduit. The inside radius of a bend shall not be less than three times the outside diameter of the conduit.

To ensure that all electrical conductors shall be easily with draw able from conduits, the Engineer reserves the right to have the conductors of any circuit removed at this discretion and replaced at the cost of the contractor. If the conduit shall be replaced and the cost of the replacement shall be borne by the contractor.

All conduits must be flush mounted, and no visible conduits will be allowed without the written permission form the Engineer.

Conduits that are to be laid in open roof areas must be secured to the existing roof beams by means of appropriate steel conduit saddle. PVC saddles will not be allowed. It must be noted that these steel conduit saddles must be secured to the roof beans by means of appropriate wooden screws. The use of ordinary nails will not be allowed under any circumstances.

Conduits that are used for any lighting, stove, water heating and bell circuit, or any other circuit except for the outré sockets, must leave the distribution boards form the top in the manner described above.

Conduits that are used for sockets only must leave the distribution boards from the bottom. Care must be taken in both situations to ensure that all joints and connections are secure and tight and will not come loose under normal civil/builders' construction.

The necessary precautions must be taken when any conduits pass expansion joints. These joints must be connected in a proper manner.

2.20 Unwired conduits and outlets

Unwired conduits and outlets shall be provided for telephones, access control and intrusion alarm , fire detection, intercom, PA system etc. as required and indicated on drawings.

All these conduits shall be 25 mm diameter unless indicated otherwise on the drawings. The outlet boxes shall be of the 100 × 100 × 50 mm type recessed in wall and provided with white baked enamel cover plates.

These conduits shall all be provided with 1.6 mm diameter galvanised draw wires.

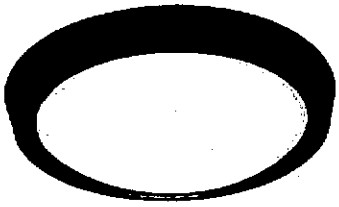
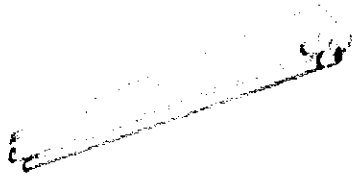
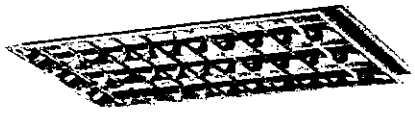
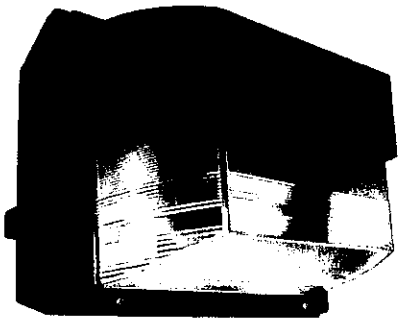
Special draw boxes in the sizes specified on the drawings shall be provided and installed as indicated. These boxes shall be manufactured similar to those specified for distribution boards except a 20 mm thick Nova Board be provided on the inside back plate
"It is specific requirement of this contract that this part of the installation shall be done by specialists who are conversant with this type of work".

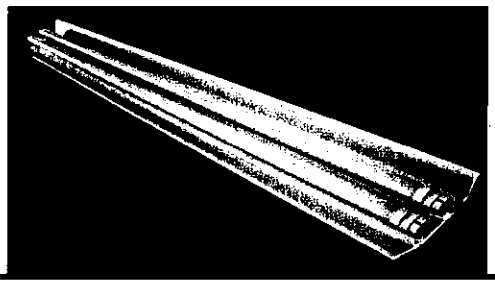
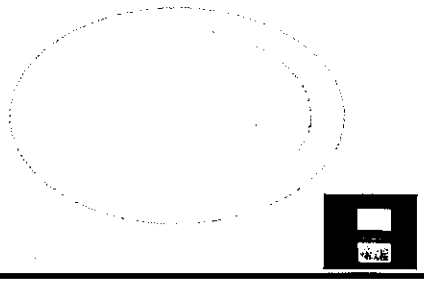
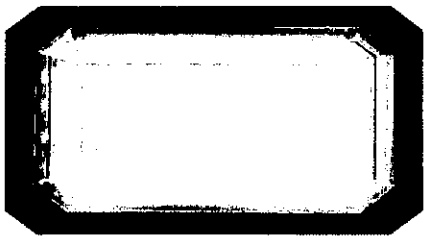
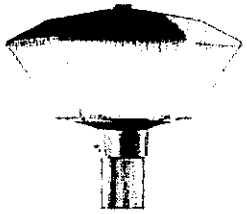
2.21 Power skirting

Supply, delivery, safekeeping and install two-compartment two cover N8 type metal power skirting according to the layout indicated on the drawings. Install the power circuit wiring in the top compartment and the telephone and other light current services in the bottom compartment.

2.22 Light fittings and equipment suppy

The table below shows the types of LED lights which is similar to the existing lights currently at the Prison

DESCRIPTION	PICTURE
Complete Wall mounted interior bulkhead complete with 2x18W LED lamp, control gear, similar or equal and approved, white trim.	
1500mm 2 lamp 58W open channel LED luminaire with energy saving Lamps.	
1200X600mm 3 lamps recessed open channel fluorescent Light 36W	
1500mm 2 lamp 58W Waterproof LED luminaire with energy saving Lamps.	
Resistant LED wall light 2X36w lamps	

T8 Double Fluorescent LED Tube Light Fitting with Reflector 1500mm 58W	
18W Panel LED Recessed Downlight	
Exterior bulkhead	
Aerodynamic resistance parking area light	

2.22.1 LED under this contract

All light fittings and equipment as described in the following schedules shall be provided by the Electrical Contractor as part of the conditions of tender and be handed over in a perfect working condition.

All the light fittings provided for this contract and delivered to site shall be new except for all light fittings which shall be identified for re-use by the Consulting Engineer on side.

The electrical contractor at his own expenses shall replace any light fitting damaged during the contract.

The light fittings delivered to site shall be properly packed and marked with the name of the supplier. The Consulting Engineer shall not accept equipment or light fittings that don't comply with these conditions.

Tenderers are advised that where the wording "equal or similar" are used, it is intended for the description of the required light fitting and the contractor should source and submit alternative light fittings for approval to the Consulting Engineer prior to the submission of tenders.

All electronic ballasts, lamps and capacitors shall comply with the relevant SABS code.

Specification for light fittings (Refer light fitting schedule).

2.1.1 Engineers Assessment report

The attached report shall be as guideline indicating the scope of work that needs to be carried out but not limited to it.

2.2 Labelling

All components shall be clearly marked and identified by means of the engraved plastic laminate or other approved material with black lettering on a white background.

The component labels are not to be affixed to the component but to a position either adjacent to or below the component.

Name plates shall be screwed to the panel covers or wherever mounted.

All descriptions are to be in English.

The main panel isolator is to be installed "main isolator" on a red label with white lettering at least 10mm high.

2.3 Guarantees

The electrical contractor against any defects in the material and/or manufacturer shall unconditionally guarantee all light fittings including the components for a period of 12 calendar months from the date that the installation has been accepted by the Client (excluding the lamps)

Fluorescent and discharge lamps shall be guaranteed for a period of 6 months by the electrical contractor from the date of final handing over to the client.

Should any light fitting or detect in the components or painting occur before the guarantee period has expired then the electrical contractor shall replace same at his own expense.

Only the electrical contractor and no one else shall be liable for the full responsibility related to the guarantees and ensure that allowance is made in his tender for this.

The guarantees shall not cover any intentional damage to property or negligence on behalf of the client.

2.4 Ordering of equipment

The timeous ordering of all light fittings is the responsibility of the electrical contractor. Prior to ordering the electrical contractor shall confirm whether the guarantees and types of fittings had changed. The electrical contractor shall also refer to alterations to drawings issued from time to time. The electrical contractor is free to order the material to suit the programme, the arrangement as described above arrangements for storage and insurance.

2.5 Balancing

The contractor shall balance the completed installation at each distribution board and at the main switchboard to the satisfaction of the Engineer or its representative and of the Supply Authority. Circuit tails shall be left sufficiently long to permit of re-allocation between phases and lacing of conductors shall only be done after the balancing is approved.

2.6 Spares and tools

The successful tenderer shall, at the completion of the contract, place in the care of the Principals' representative all spares, and tools supplied for the switchboards and other equipment. This included two keys for each distribution board door lock and two of any other special keys or spanners required for the maintenance and operation of the installation.

2.7 Final inspection

Before the contractor is to hand over the building, the electrical installation shall be completed, and the contractor shall accompany the Engineer or its representative on a full inspection of all sections of the contract. During this inspection all defects in the installation shall be recorded, a copy of the list being handed to the Contractor.

On the day upon which the contractor conducts his own handing-over inspections of the building, the Engineer or its representative will carry out a final inspection and all the defects listed in the previous inspection shall, at that date, have been completely rectified

. Should it be necessary for the Engineer or its representative to carry out any further inspections, due to the contractor not having properly remedied the defects, the costs of such additional inspections shall be for the account of the Contractor.

PART-3 QUALITY SPECIFICATION

3. General

This Quality specification defines the Generals of materials and equipment, installation work and ancillary work to be employed in the electrical installation contract or sub-contract. The Project Specification defines the extent of work required.

3.1 REGULATIONS, LAWS AND BY-LAWS

The supply and installation of the work shall be in agreement with the Conditions of the Contract with special attention to the following in particular:

a) The Occupational Health and Safety Act no. 85 of 1993, as revised, whereby SABS 0142 is enclosed.

b) Government notices.

c) The local Municipal By-laws and any special requirements of the local supply authorities.

d) The local Fire Office Regulations.

e) Telkom Regulations

f) Any special conditions specified in this specification.It must be clearly understood that, where differences in the Generals occur as stated in (a), (b), (c), (d), (e) and

(f) or where additional requirements are required, the higher General requirements shall apply.

In the event of any contradiction between (a), (b), (c), (d), (e) and (f), then (f) shall be accepted above the rest.

Where any required by-law or regulation, which applies or becomes applicable during the execution of the electrical installation, is in conflict with the stipulation of the document, the former must have preference in all cases. The contractor must immediately notify the engineer of such discrepancies.

The contractor may not make any alterations to the installation before written sanction to do so is received from the Engineer or its representative.

3.2 Conflict between specifications and drawings

Should there be conflict between the specifications and drawings then sections shall be considered in the following order of priority:

i. Drawings
ii. Technical Specifications
iii. Bill of Quantities

Should the Contractor note an inconsistency between the specifications and drawings he shall be responsible for notifying the Engineer or his Representative/Agent and obtaining clarification or instructions prior to ordering or installing equipment.

3.3 As-installed drawings

A special set of all electrical drawings will be issued to the electrical Contractor, who must keep it in a secure place in the site office. The purpose of these drawings is to update all information indicated thereon as and when any variations to the originals should occur. All updating of these drawings shall be done in red ink and shall be perfectly legible.
All relevant information regarding the installation will be clearly shown on these drawings. Once a month these drawings will be provided to the Engineer or his Representative/Agent for inspection and approval.

3.4 Liaison

The electrical Contractor shall, in each case, provide the Principal Contractor with all necessary information, dimensions, materials, etc., as called for in the specification, in good time.

It is essential that the electrical Contractor work in close collaboration with the Principal Contractor to ensure that where his services run in proximity with other services, there are no clashes.

Failure to comply with the above may mean that corrective measures will have to be taken to correctly position the equipment. Any abortive work resulting will be entirely to the electrical Contractor's account.

Where the electrical Contractor is to provide electrical supplies to control panels forming part of other contract works, it is essential that the electrical Contractor lies fully with the particular Contractor who must provide the electrical Contractor with all information necessary so as to ensure that the supply cable terminates in the correct position and that the phase rotation complies with the equipment installed.

Failure to do so may result in the electrical Contractor being held responsible for the cost of removing and replacing not only his own but also the equipment of the Principal Contractor and other Contractors.

3.5 Electrical/electronic equipment

All the equipment must be properly protected against damage, faulty functioning or interference by any external factors such as static electricity, induced voltage, magnetizing forces, radio waves, etc., which may occur in the building.

Equipment which is sensitive to interference and interference peaks in the electrical circuit; variations in voltage and frequency such as normally occur in the electrical distribution network, and the municipal supply to the building, which are inevitable, must be fitted with the necessary stabilizers, over and under-voltage protection equipment, suppressers, etc.

Equipment must be so manufactured and installed (and provided with suppression), that it does not cause any interference to other equipment or in any way affect the functioning thereof.

3.6 Terminology

Labels must indicate the functions of equipment and components in the distribution boxes and/or distribution boards.
The terminology on the identification labels must be in English.

3.7 Certificate of compliance by an accredited person

On completion of the electrical installation the contractor shall complete the Certificate of Compliance for the electrical Installation in the form of Annexure 1 as described in the Occupational Health and Safety Act no. 85of 1993, as amended, and obtainable from the Electrical Contracting Board of South Africa. This form must be handed to the Engineer or its representative. (An example is affixed to the back of this specification).

3.8 Installation tests

Tests as stipulated in the "Occupational Health and Safety Act no. 85 of 1993, as amended, and in the "Code of Practice for the Wiring of Premises" SABS 0142 (as amended), must be done. These test reports forms must be filled in fully and correctly in ink, signed by the installation electrician and handed to the Engineer or its representative.
Tests must be conducted on site after the whole installation is complete, unless written the Engineer to the contrary grant's permission. The tests must include a full-load test for an adequate period to ensure the satisfactory working of the installation. If negative test results are obtained, faults must be rectified, and tests again done.
The contractor must supply all testing apparatus, correctly calibrated.

All tests shall be carried out in conjunction with and to the satisfaction of the Supply Authority and in the presence of the Engineer or his representative. The contractor shall make all arrangements for testing and inspection, the costs thereof being included in the Tender Price.

All 220 Volt socket outlets shall be tested for polarity and the sensitivity of the earth leakage protection equipment shall be tested by means of an approved instrument.

Each length of cable shall be tested for insulation and polarity by means of a 1000 Volt Megger designed for that

purpose. In the case of underground cables this shall be done before back filling. In addition, the earth-loop impedance of each conductor earth electrode shall be measured.

The earth resistance shall be tested by means of an approved instrument. "Danger" notices shall be displayed at remote ends of cables under test. The contractor shall ensure that the installation is completed in every respect and that there are no major defects prior to notifying the Engineer (in writing) for a first delivery inspection.

The Engineer will accept zero minor defects during the final inspection. Should the number of defects be exceeded at the final inspection then the Engineer will terminate that inspection and request that the contractor arrange an additional final inspection.

3.9 Fixings and supports

Fixings to concrete and brickwork shall be by means of bolts grouted into the structure or by means of expanding bolts. The necessary holes shall be made by means of carbide-tipped "masonry" drills: percussion drilling is unacceptable. Fixings to brickwork shall be into solid brick and not into joints.

Plugs or inserts of wood are not acceptable. Fixings to steel work shall be by means of bolts and nuts through steelwork or by bolts in tapped holes in the steel. "Caddy" proprietary fixings are acceptable if specifically suited to the duty involved,

Fixings into hollow tiles and the like shall be by means of cavity anchors similar and equal to "HILTI". "Butterfly" or "Toggle" bolts are not acceptable; the holes shall be formed by means of " masonry" drills. Powder-driven "shot" bolts are not acceptable.

3.10 Chasing and cutting

Whenever possible, arrangements shall be made with the Contractor for building in the conduits, etc., of a flush installation. If this is not possible all chasing and cutting shall be done under this contract. All chasing and cutting shall be done with properly sharpened tools, with the minimum possible damage to the building: power-driven cutting tools shall be used wherever possible. No cutting or chasing shall be done without the express permission of the architect or the structural engineer in charge of the project.

The Contractor will make good all plaster and brickwork damaged in the course of normal chasing and cutting. However, any additional plaster work or making good which has to be carried out due to the contractor's inefficient or late installation of conduit, switchboxes, plug boxes or other equipment, will be carried out at the contractor's expense.

3.11 Levelling and plumbing

All equipment shall be carefully levelled and plumbed, checked with a spirit level. Should any equipment be unsatisfactorily installed in this respect it shall be dismantled and reinstalled, the costs of making good to damaged structures, plaster and paint will be for the account of the Contractor.
It must be noted that boxes for imported accessories must be levelled and plumbed when installed, since the inserts cannot be levelled independently of the boxes.

3.12 INSTALLATION OF CABLES

3.12.1 General

All cable sleeves, manholes and cable markers are to be provided by the Contractor unless otherwise specified. Others will provide Cable ducts in the floors of buildings unless otherwise specified.

Cable run indoors shall be supported on cable trays or cable rack, secured thereto by heavy plastic strapping. The cables shall be fixed at intervals not greater than those stipulated in SABS 0142 and shall be spaced sufficiently to avoid de-rating in terms of SABS 0142

Cables shall be individually fixed so that anyone may be removed from a group without disturbing the others. Cables installed in trenches shall be installed to a depth of 750mm below final ground level. All cable depth

measurements shall be made to the top of the cable when laid directly in ground or to the top of the duct or sleeve where these are provided. The contractor may only deviate from the above depth provided prior authority in writing has been obtained from the Engineer.

A yellow PVC cable warning tape with the wording "DANGER/GEVAAR" shall be installed above all cables installed in cable trenches. Every run of cable shall be a single length without joints; save that where a run exceeds the general drum length of where the length of a run is increased after the cable is delivered on site, a through box will be permitted. Such through boxes shall be so placed as to afford easy access for maintenance and repair; when they are required in underground cable runs the contractor shall provide special cable markers to locate them.

All cable tails shall be provided with either cable lugs or ferrules as may be appropriate. At each sealing end straps-on cable markers shall be fixed, showing clearly and indelibly the number and size of cable cores and the destination of the cable.

3.12.2 Cable routes

Cables shall follow the routes shown on the drawings; the routes shall only be varied with the written permission of the Engineer. Where no routes are defined on the drawings the contractor may select routes to his reasonable preference but shall obtain written approval of them before installing the cables.

The Contractor shall, before trenching commences, familiarizes him with the routes and site conditions and the procedure and order of doing the work shall be planned in conjunction with the general construction program for other services and building requirements. The Contractor shall acquaint himself with the position of all the existing services such as storm water pipes, water mains, sewer mains, gas pipes, telephone cables, etc. before any excavations are commenced. For this purpose, he shall approach the Engineer's representative, the local municipal authority and any other authority which may be involved, in writing.

The Engineer reserves the right to alter any cable route or portion thereof in advance of cable laying. Payment in respect of any additional or wasted work involved shall be at the documented rates. The removal of obstructions along the cable routes shall be subject to the approval of the Engineer.

3.12.3 Trenching

Trenching shall be programmed in advance and the approved program shall not be departed from except with the consent of the Engineer. The Contractor will be held responsible for damage to any existing services brought to his attention by the relevant authorities and shall be responsible for the cost of repairs.

The Contractor shall take all the necessary precautions and provide the necessary barriers, warning signs and/or lights to ensure that the public and/or employees on site are not endangered. The Contractor shall ensure that the excavations will not endanger existing structures, roads, railways, other site constructions or other property. Trenches shall connect the points shown on the drawings in a straight line. The Engineer beforehand shall approve any deviations due to obstructions or existing services. Trenches shall be as straight as possible and shall be excavated to a depth of 750mm x 300mm wide. The bottom of the trench shall be of smooth contour, and shall have no sharp dips or rises, which may cause tensile forces in the cable during back filling.

The excavated material shall be placed adjacent to each trench in such a manner as to prevent nuisance, interference or damage to adjacent drains, gateways, trenches, water furrows, other works, properties or traffic. Where this is not possible the excavated materials shall be removed from site and returned for back filling on completion of cable lying.

Trenches across roads, access ways or footpaths shall not be left open. If cables cannot be laid immediately the Contractor shall install temporary "bridges" or cover plates of sufficient strength to accommodate the traffic concerned. In the event of damage to other services or structures during trenching operations the Contractor shall immediately notify the Engineer and institute repairs.

Prior to cable laying the trench shall be inspected thoroughly and all objects likely to cause damage to the cables either during or after lying shall be removed. Where ground conditions are likely to reduce maximum current carrying capacities of cables or where the cables are likely to be subjected to chemical or other damage or electrolytic action, the Engineer shall be notified before installing the cables. The Engineer will advise on the course of action to be taken. Extreme care shall be taken not to disturb surveyor's pegs. These pegs shall not be covered with excavated material. If the surveyor's pegs are disturbed, a person qualified to do so shall replace them.

3.12.4 Bedding

The bottom of the trench shall be filled across the full width with a 150mm layer of suitable soil sifted through a 6mm mesh and levelled off. Only sandy clay or loam soil with a satisfactory thermal resistivity (not exceeding 1,5 C m/W) may be used for this purpose. Sea or river sand, ash, chalk, peat, clinker or clayey soil shall not be used. The use of crusher sand is acceptable. Where no suitable soil is available on site, the Contractor shall import fill from elsewhere and make all the necessary arrangements to do so. The cost of importing soil for bedding purposes shall be included in the unit rates for excavations. After cable laying a further layer of bedding shall be provided to extend to 100mm above the cables.

3.12.5 Back filling

The Contractor shall not commence with the back filling of trenches without prior notification to the Engineer so that the cable installation may be inspected. Should the Contractor fail to give a timeous notification, the trenches shall be re-opened at the Contractor's cost. Such an inspection will not be unreasonably delayed. For all cables, a coloured plastic-marking tape shall be installed 200mm above the cable. The tape shall be yellow, with red skull and crossbones with the words "ELECTRIC CABLE /ELEKTRIESE KABEL". These markings shall not be more than 1m apart from centre to centre.

Back filling shall be undertaken with soil suitable to ensure settling without voids. The maximum allowable diameter of stones presents in the back-fill material, is 75mm. The Contractor shall have allowed in his tender for the importation of suitable backfill material if required. The backfill shall be compacted in layers of 150mm and sufficient allowance shall be made for final settlement.

The Contractor shall maintain the refilled trench at his expense for the duration of the contract. Surplus material shall be removed from site and suitably disposed of. On completion, the surface shall be made good to match the surrounding area. In the case of roadways or paved areas the excavations shall be consolidated to the original density of the surrounding material and the surface finish reinstated.

3.12.6 Mechanical excavators

Power driven mechanical excavators may be used for trenching operations provided that they are not used in close proximity to other plant, services or other installations likely to be damaged by the use of such machinery. The use of power-driven mechanical excavators shall be subject to the approval of the Engineer. Should the excavator produce trenches that exceed the required dimensions, payment based on volumetric excavation rates will be calculated on the required dimensions only.

3.12.7 Blasting

No guarantee is given or implied that blasting will not be required. Should blasting be necessary and approved by the Engineer, the Contractor shall obtain the necessary authority from the relevant Government Departments and Local Authorities. The Contractor shall take full responsibility and observe all conditions and regulations set forth by the above authorities.

3.13 ELECTRICAL SUPPLY CABLES

3.13.1 General

All low voltage underground cables must be stranded copper-core PVC/SDP/PVC 600/1000 Volt grade, multi-cored, PVC insulated, PVC covered, wire armoured, and PVC encased. PVC cables must meet SABS 150 and 1507 as amended, where applicable.

Cables must be of new stock and must still be sealed when brought onsite. If these conditions are not met, it may lead to the cables being removed from the site and their being replaced with the correct type, all at the contractor's expense. The contractor must do all measuring on site himself in respect of lengths of cable, earth wires and ditches required.

The lengths given in the schedules are only allowed for tender purposes. Payments will only be made for the

lengths of cable installed and at the Tendered tariffs. In their tenders, tenderers must allow for cut-off lengths of cables and bends.

The storage, transport, handling and lying of cables must conform to approved and acceptable practice and must meet the requirements of SABS 0198 as amended. Cables who are cut and left open for a period of time before being coupled, must be sealed in the prescribed manner. When such cable ends are flooded by water, they must be subjected to the tests prescribed by the engineer. The contractor must have adequate suitable equipment and labour available to prevent damage to cables.

Before the cable is installed, the cable trenches must be carefully inspected and any objects, which may damage the cable during or after installation, must be removed.

3.13.2 Sealing glands for PVC insulated cables

The sealing glands must consist of a sleeve in which a conical bush screws into one side and a nickel-brass or galvanised steel lock nut is situated on the other side. The galvanising must meet SABS 763 as amended standards. The sleeve must have a hollow groove on the side on which the cable enters the sleeve to house the top ring of the waterproofing mantle.

The waterproofing mantle must be manufactured from non-weathering neoprene or other synthetic rubber and must be proof against water, oil and sunlight. These mantles must fit snugly over the sealing glands and the cables. Sealing glands must have a 150-screw thread and must be suitable for the specified cable sizes.

3.13.3 Cable joints

Cable joints are not permissible except where specifically approved. No joints will be allowed where the Specified length of cable appears on a drum.

3.13.4 Sleeves

Cable sleeves shall be provided where shown on the drawings and wherever necessitated by installation conditions. Sleeves shall be of steel water pipe when traversing railways sidings, heavy duty tarmac, loading areas, etc.; they shall be of other approved materials where traffic loading is lighter.

Cable sleeves shall be not less than 100mm internal diameter unless specifically noted otherwise in the Project Specification; they shall be of continuously smooth bore with no snags or hitches enroute and shall encompass only easy sweeping bends permitting the easy passage of the heaviest cable involved. No cable sleeve shall exceed ten meters without a manhole draw position, unless authorised in writing by the Engineer.

Cable sleeves entering a floor cable duct shall be swept gently to the level of the bottom of the trench so that cables do not kink at entry to the trench.

Cable sleeves brought to switchboards or distribution boards having no associated floor cable ducts or brought to rising cable ducts shall be swept up easily so that the cable emerges vertically from the floor. In cases where the emerging cable is exposed to view, wooden dams shall be fitted round the cable at the top of the sleeve, and the floor screened completely round the cable.

The outer ends of cable sleeves entering buildings shall, after drawing in the cables, be waterproofed with cable compound of low melting point. Sweeping bends shall be installed where sleeves enter distribution boards. Sharp sleeve bends are not acceptable. Cables attached to external walls must be placed in a recessed galvanised pipe from 300mm below ground level into the meter box or into roof spaces complete with brass bushes at both ends. The ends of all sleeves shall be sealed with a non-hardening watertight compound after the installation of cables.

All sleeves intended for future use shall likewise be sealed.

3.13.5 Cable markers

The necessary number of cable markers must be installed so as to indicate the route of underground cables, as

on the drawings. Where the direction of cables changes, this must be indicated on the surface by means of cable markers. Cable markers must be concrete pyramids, with measurements of 150 x 150mm on the top and 250 x 250mm at the bottom. Their height must be 300mm. Brass plates must be cast into the tops of these pyramids in such a way that they cannot be removed easily.

The words "ELECTRIC CABLE" must be punched onto these plates as well as the voltage of the cable and an arrow indicating the direction of the cable routes. The cable must link to the cable marker by a galvanised wire cast in the cable marker. Cable markers must be placed on the surface above all underground cables and must stand out 35mm above ground level, unless they are a danger to pedestrians or traffic, in which case the tops of the markers must be flush with the level of the ground.

Cable markers must be placed at the beginning and end of each cable route (E.g. where a cable goes into a cable kiosk or a building); at changes of direction; at all joints; above cable sleeve inlets and outlets, and along the whole cable route at distances not exceeding 50 meters.

3.13.6 Wiring trunkings

Wiring trunking shall comply with the requirements of SABS 1197 Part I and shall be of completely metallic construction unless otherwise specified. Each run of trunking shall be complete with all-necessary feed-in boxes, splices, elbows, and tee-pieces. End-closers, etc., all to be factory-made equipment.

The size of trunking required for any run, if not given in the Project Specification, shall be calculated from requirements given in SABS 0142 making allowance for 25% future increase in cables. Each run of trunking shall be accurately aligned and levelled and shall be supported at close enough intervals to prevent sag or sway: provide additional supports where direct fixing to the building structure does not permit this requirement to be met.
Circuits from more than one switchboard or distribution board shall not share the same trunking. Each run of trunking shall embody a single bus earth conductor sized in compliance with SABS 0142 to match the highest-rated protective device of all the circuits in the run. Each length of trunking shall be bonded to this bus earth: reduced earth conductors for circuits leaving the trunking shall be crimped or soldered to the bus earth at the points of take-off. Circuit conductors in trunking shall be strapped together in their individual circuits at intervals not greater than 2 meters, using approved strapping.

Each circuit shall be identified, at intervals not greater than 3 meters, by approved ferrules bearing the circuit number as given in the wiring schedules. Suitable clips shall be installed in the trunking to restrain cables in position when the trunking covers are opened. Unless otherwise called for in the Project Specification the trunkings shall be finished with Class 2 enamel to SABS 1197: 1980, using epoxy powder paint in colours as specified.

3.14 ELECTRICAL CONDUCTOR CONDUITS

3.14.1 Steel conduits

Conductor conduits must be made of thick steel and be solid drawn or welded heavy gauge screwed type conduits, meeting SABS 1065 as amended specification and bearing the SABS mark. All conduits must be painted, inside and out, with smooth elastic enamel paint. No conduit may be less than 20mm in diameter.

3.14.2 Smooth-ended conductor conduits

Smooth-ended conduits may be used provided they meet the following requirements:

(1) They must meet SABS 1007 as amended standards and bear the SABS mark.

(2) They must be installed in accordance with the SABS code of practice 0142 as amended.

(3) The conduit is not used for earth continuity.

3.14.3 Galvanised conduits

All conduits subjected to weather, moisture, acid or harmful substances and gases must be galvanised. Galvanised conduits must be hot-dip galvanised, inside and out, in accordance with SABS 763 as amended.

3.14.4 PVC conduits

PVC conductor conduits may only be used if so specified and/or written approval is obtained from the Engineer. PVC conduits must be installed strictly in accordance with the manufacturer's instructions must meet SABS 950 as amended standards and bear the SABS mark.

3.14.5 Flexible conduits

Flexible conductor conduits must be used for the final connection of equipment at installations where equipment is often moved, for installation involving vibrating equipment and for any connections for which ordinary conduits are not suitable. Flexible conduits must be connected to the rest of the equipment via a draw-box. Flexible conduits can also be connected directly to the end of a conduit if there is a draw-box within 2 metres of the connection and the flexible conduit can be easily rewired.

Flexible conduits must be PVC covered metal conduits or other approved type conduits. In ceiling spaces flexible galvanised steel conduits may be used. Coupling sleeves for these flexible conduits must be gland type or screw type manufactured from brass or cadmium/zinc plated mild steel. Flexible conduits must be installed in accordance with paragraph 5.4.4 of SABS 0142 as amended and must meet BS731 Part 1 as amended standards.

3.14.6 Conduit Fittings

All conduit fittings shall conform to SABS 1065 Part I and II. Conduit bushes shall be made of brass or nylon smoothly rounded at outlet; the threads shall be undercut to ensure that the bushes may be screwed fully home. Other conduit fittings shall be malleable cast iron with screwed entry spouts, finished hot-dip galvanised, sherardized or black enamelled according to the nature of the conduit run in which they are to be installed. No solid tees or elbows shall be used; all draw boxes and inspection fittings shall be provided with properly fitted covers secured by their full complement of screws.

3.15 CONDUCTOR CONDUIT INSTALLATION

3.15.1 General

The contractor must acquaint him of the positions of all equipment items such as cabinets, shelves working surfaces, etc., before he commences with conduit installation. The positions of switches and outlet sockets, as shown on the drawings are only approximate. The contractor must check that the final position of these Switches and outlet socket points are not covered by the installation of the above items or are situated somewhere on connections between raw walls and outer wall finishes.

No extras will be allowed for the moving of switches and outlet socket points resulting from the Contractor's neglect to check final position of equipment or type or wall finishing. The conduit installation must be executed flush with the surface of the wall on the surface, above the ceiling in the roof space or in concrete slabs, depending on what is specified. Conduits must enter distribution boards from above, except where specified otherwise. All conduits shall be bent cold by machine, any distorted conduits being rejected.

All conduits exhibiting roughness or obstructions in the bore shall be rejected. All conduits shall be securely bonded to their terminating gear; complete electrical and mechanical continuity throughout every conduit run shall be ensured and each run shall be securely bonded to earth. The contractor shall collaborate with the engineer or its representative in testing the earth resistance of random runs of conduit.

3.15.2 Installation requirements

All conduits must be renamed, and all joints must be screwed tightly to one another. Running joints with long screw threads may only be used to ensure an effectively strong mechanical and electrical continuous connection. Where more than one outlet socket is connected to the same circuit, the conduits must be looped from the one outlet point to the other. No wiring may be done until the whole conduit installation has been installed, fastened and inspected.

No conductors may be drawn through before all foreign matter and moisture has been carefully removed from conduits. To ensure that conductors can be easily withdrawn from any circuit, the engineer retains the right to withdraw, at its discretion, any conductors from any circuit. If this withdrawal occurs easily and without any sign of damage, the costs of the withdrawal and replacement of conductors will be borne by the engineer.20 However, if the conductors are damaged, the costs of the test and the replacement of conductors will be borne by the contractor.

3.15.3 In open roof-spaces

In open roof-spaces the conduit from the distribution board must, if possible, end in a prefabricated sheet-steel draw-box, at least 1,2mm thick, which is situated near each distribution board in a roof-space of at least one-meter free space. Light and outlet socket circuits may be grouped separately in common conductor conduits from the distribution board to the draw-box. The installation of conduits in open roof-spaces above ceilings must be executed before the walls and ceilings are painted. All conduits must be installed parallel and at right angles to roof trusses and they must be secured by saddles spaced not more than 1 250mm apart. Saddles may be attached to trusses with clout nails. Draw-boxes with metal cover-plates must be supplied, if necessary. Standard switch or outlet socket boxes are not acceptable for this purpose.

Draw-boxes must be installed near to gangplanks (where provided). All conduit draw-boxes in open roof-spaces must be so placed that wiring therein can be easily inspected. Inspection T pieces and elbows are not allowed. Conduits ending in a roof-space of less than one metal free height must be lengthened, where necessary, to where there is adequate free height, but in such a case the shortest possible route may be followed. (in other words, it is not necessary to install these conduits parallel and at right-angles to the roof-trusses). In roof-spaces with a free height of less than one meter, installation must be done in such a way that all wiring can be done from below, as in the case of a concrete slab construction (loop method). All conduit ends for light points in open ceilings must be firmly braced.

3.15.4 Flush conduit installations

Where a flush installation is called for, all conduits shall be installed completely concealed within the building fabric; the outer faces of conduits in plastered walls shall not be less than 13mm back from the finished plaster surface. If required the Contractor shall do all chasing of brick and concrete surfaces but shall first obtain the Architect's approval in writing for any chasing machines. The Contractor will build around flush conduits and shall ensure that such conduits and their terminating enclosures are accurately placed in time and shall verify that all enclosures are plumb, level and aligned with plaster at the time of building-in. The cost of any making good to structures and finishes necessitated by the Contractor's failure to comply with these requirements will be for the account of the Contractor.

Conduits set in concrete slabs or beams shall be firmly fixed in position before concrete is cast; where groups of conduits are brought to distribution board positions or the like, they shall be fixed with spaces between equal to one conduit diameter, to permit of an adequate fill of concrete. Conduits shall, as far as possible, be run in and through the neutral axes of slabs and beams. Conduit outlet boxes in slabs shall be bolted to shuttering with 5mm screws and nuts, to ensure accurate positioning.

Conduits in hollow tile slabs shall be run only in the solid concrete portions of the slab, using back entry boxes; where large conduits in groups traverse such slabs, the Contractor shall seek permission for selected rows of tiles to be replaced by solid concrete. Unless otherwise specified hereafter, every conduit crossing an expansion joint in concrete shall be provided with an outer sleeve of conduit two sizes larger, extending 150mm either side of the joint; the annular gaps at each end between conduit and outer sleeve shall be plugged to exclude concrete mix. All conduits traversing expansion joints in concrete shall be provided with stranded earth wires which shall be bonded to the first conduit boxes in the runs on each side of the joint. Conduits in floor slabs shall be run wholly in the concrete and not in surface bends or fill.

Steel conduits shall not be run in breeze or ash; if any conduits have to traverse such areas the Contractor shall ensure that they are completely encased in mass concrete provided specially for the purpose or shall use non-metallic conduit. The Contractor shall position conduit draw-boxes as inconspicuously as possible, selecting less important rooms, such as stores, tea kitchens and the like. Where practicable, suitably filleted multi circuit draw boxes shall be used, furnished with heavy gauge overlapping sheet steel covers enamelled in colours to match the building finish.

The Contractor shall agree to the positions of draw boxes in advance in collaboration with the Engineer or its

representative. Where flush-mounted draw boxes, outlet boxes, or accessory boxes occur in plastered ceiling and walls, the Contractor shall provide a suitable slip-fit former in each box so that the plasterer may finish up to the box with a hard-clean edge. When the plaster is dry the former shall be removed from the box and, after drawing in wiring, each box shall be provided with an overlapping blank cover plate finished in correct matching colour to approval. The Contractor shall notify the Engineer immediately he commences conduit work on a deck and shall arrange for each deck to be inspected by the Engineer or its representative before concrete is cast, giving adequate notice to ensure that the inspection does not delay the Contractor's work.

3.15.5 Surface conduit installations

Where the installation is to be surface-run, conduits shall be installed strictly parallel to horizontal and vertical building lines. Wherever runs comprising several conduits in parallel have to be set, they shall be carefully bent by machine so that the bent conduits are concentric or coaxial as may be applicable. Where draw boxes are required in such multi-conduit runs they shall be grouped in neat single-line staggered formations with cover plate securing screws readily accessible.

Purpose-made multi-saddle bars shall be used for securing such runs, such that individual conduits may be removed and replaced without disturbing other conduits in the run. Stand-off saddles or multi-saddle bars shall be used to support all surface-run conduits: "Caddy" saddles are acceptable.

All purpose-made supports shall be of steel or aluminium and shall be neatly finished, degreased and derusted, primed with one coat of calcium plum bate and finished with two coats of epoxy powder paint in colours to be approved by the Engineer. All surface-runs of black enamelled conduits shall, after complete installation, be cleaned of all oil and grease, lightly sanded and finished with a touch-up coat of black enamel; the enamel shall be compatible with the maker's finish.

3.15.6 Conduits at terminal points

Conductor conduits must be fixed to switch boxes, outlet socket boxes and in distribution board boxes by means of two lock-nuts and one brass bush or one lock-nut and one brass sleeve nut. All conduits, which terminate in switch boxes and outlet socket boxes and in distribution board boxes, must be fitted with brass bushes. Conduits to fluorescent light accessories must be attached to the light apparatuses by means of lock nuts and brass bushes.

PVC/SWA/PVC cables and conduit shall be connected to unthreaded metal enclosures by means of brass male bushes fitted inside the enclosures and connected through a coupler to the conduit; alternatively, by means of inner and outer lock-nuts and female brass bushes. In all cases where the terminating enclosure is painted, the bushes shall embody earth terminals and earth wires shall be connected thereto.

3.15.7 Draw wires

Conductor conduits which are installed for other services or future extension, but which will not receive conductors immediately, must be fitted with galvanised or steel draw wires.

3.16 Switch boxes and outlet socket boxes

Flush-mounting boxes for housing electrical accessories and for use as Telecom outlets, etc., shall be General 100 x 100 x 50mm and 100 x 50 x 50mm metal boxes complying with th requirements of SABS 1085 Part 1 :1980 The boxes must be made of heavy pressed galvanised steel at least 0,09mm thick. Boxes for a maximum of three combined light switches must be 100mm x 50mm x 50mm with one knock-out disc plate each on the top and bottom sides and two knock-out plates each on the left and right sides and on the back.

Boxes for outlet sockets must be 100mm x 100mm x 50mm with two knock out disc plates each on all five the above-mentioned surfaces (top, bottom, sides and back). The knock out boxes must be hot-dip galvanised type

boxes as stipulated in SABS 763 as amended When these boxes are installed care must be taken to mount them square and with the front end of the boxes not more (deeper) than 10 mm from the final surface.

3.17 Cover plates

Cover plates for switches and outlet sockets (including blank cover plates) must be made of rustproof metal at least 1,2mm thick. Paint finish must be baked enamel and the colour BSS 4-046, as amended, except where stipulated otherwise. Cover plates for switches and outlet sockets must meet SABS 1084 as amended standards. Cover plates for insulation must be finished with white baked enamel paint, except where stipulated differently.

3.18 Conductors

Cables used for wiring the building must be 250 V grade PVC insulated cables. Heat resistant cables must be either asbestos insulated or heatproof PCP insulated (e.g. B.I.C.C. or other approved type). Cables must not be old stock and must be delivered on site with their seals unbroken. PVC insulated conductors must meet SABS 150 and 1507 as amended standards and bear the SABS mark.

Conductors for light circuits must be 2,5mm^2 and those for outlet socket circuits 4mm^2, unless specified otherwise. Because of the distortion of insulating materials at temperatures above 57°C, PVC cables must not be directly attached to the terminal clamps of equipment such as stoves, geysers, built-in electrical heaters and any other electrical apparatus or equipment (including light accessories) of which the temperature exceeds 57°C.

3.19 CONDUCTORS IN CONDUITS

3.19.1 Wiring

Wiring may only be done after the conduit installation and plasterwork has been completed, but before painting commences. Except where stipulated otherwise, wiring must be drawn into screw-type conduits. No more than two circuits of the same type may be drawn into one conduit, with the exception of conduits between distribution boards and the steel draw-boxes (over distribution boards), where the number of circuits per conduit may be exceeded. Wiring of circuits must be executed for the loop system and no wires may be joined inside conduits. No more than four conductors will be allowed at any one light point. Cutting away of wire strands on the conductor side is not permitted.

3.19.2 Connection at outlet points

Connection of light accessories or other electrical apparatus, where connecting terminals are used, must be made by means of block type connecting terminals with brass connecting pieces, or the insulated steel spring type. Other types of connecting terminals will not be allowed. Inlet openings in light accessories must be fitted with brass input caps, where they are used as wiring inlets. In light accessories fitted with light bulbs, the wiring between lamp holder and circuit connection must consist of heat resistant insulated conductors. The connection must be made in the 25mm space stipulated for this type of light accessory.

3.20 LUMINAIRES

3.20.1 luminaires identification

Lighting outlets are numbered on the drawings and provided with a type letter which, from the Key to Luminaires Types, defines the type of luminaires to be installed on each outlet: the absence of a letter reference indicates a blanked outlet. The numbering of the outlets defines the circuitry and control required.

3.20.2 Lamps

Each luminaire shall be furnished with the required number of lamps of the appropriate type, wattage and colour as specified in the Key to Luminaires Type References or as implied by the catalogue number of the luminaires specified. Tubular fluorescent lamps for general service shall comply with the requirements of SABS 1041 as amended. Unless specified to the contrary they shall be Colour 2 to SABS 1041.

Incandescent lamps for general service shall comply with the requirements of VC 8043: as amended.

3.20.3 Installation of luminaires

All light points must be mounted symmetrically on the ceiling with proper consideration being given to the ceiling squares and/or rendering. The positions of light points as indicated on the plans, are only approximate and the contractor must determine the final positions of light fittings on site in collaboration with the Electrical Engineer or his representative, if any doubt exists concerning actual outlet points. Light fittings must be mounted in such a way that they can easily be completely removed.

Fluorescent light fittings must be attached to ceilings with no gaps appearing between the fittings and the ceiling. On ceilings with open roof-spaces above, fluorescent fittings must be bolted to 50mm x 70mm wooden beams, which are attached to the ceiling beams. The contractor must arrange for the above-mentioned wooden supports to be installed and the onus is on him to see that the work is satisfactorily done.

All luminaires shall be fixed strictly level or plumb as apposite, parallel to building lines. Steel set screws shall secure Luminaires fed from 2-hole outlet boxes directly thereto: fluorescent luminaires fixed near each end. Two pairs of such screws, permitting accurate levelling shall fix fluorescent luminaires more than 200mm in width. Luminaires recessed in concrete shall have their outer casings cast into the carcass concrete or grouted therein, the inner assemblies being fixed to the outer casings and accurately aligned to the ceiling soffit.

Luminaires recessed in non-structural ceilings shall be fixed to ceiling rendering or tracks by means of self-levelling sliding or screw lugs; only if this means be impracticable shall the luminaires be side screwed into brandering. Luminaires mounted in pairs or in continuous rows end-to-end need only have one outlet per row; from which sub-circuit wiring and earth wire shall be extended through the raceways of continuous luminaires, neatly clipped along one side of the raceways. Luminaires so mounted shall be coupled together by bolts and nuts with shims and washers, such that the alignment in rows is accurate and permanently maintained. At each joint between luminaires the end of the raceways shall be drilled and chassis-punched and provided with through going bushed nipples for sub-circuit wiring.

The lamps and diffuser assemblies of fluorescent luminaires shall only be installed immediately before final testing, so that a completely clean lighting installation is handed over. Gloves shall be worn when handling the polished reflector assemblies of low brightness luminaires; gloved hands are recommended for handling plastic diffusers to minimize the accumulation of dust due to static electricity.

Suspended fluorescent fittings must be hung by means of two rods (with lengths as specified) attached to a single roof truss. Except where specified otherwise, suspended bulb-type fittings must be mounted with the lowest part of the glass not lower than 2 400mm above the finished floor surface.

3.20.4 Luminaires outlets

Outlets for luminaires shall be provided throughout the contract as scheduled and shown on the drawings. They shall in general be 60mm diameter 2-hole B.S.I. conduit boxes, deep pattern in concrete slabs and shallow pattern in normal flush and surface installations. Outlets for luminaires shall be wired by means of 2,5mm^2 PVC insulated copper conductors and a 2,5mm^2 earth conductor in 20mm diameter conduit. Luminaires outlets for fittings recessed in concrete or brickwork shall be made with conduit locknut and bushed to the outer enclosures of the fittings.

Outlets for fittings recessed in ceiling voids shall be unswitched 5 ampere 3-pin socket outlets set in steel boxes, with properly bounded earth pins; they shall be fixed in the ceiling void, clear of the fittings but immediately accessible on removal of the fittings. Outlet boxes for future fittings, not presently equipped, shall be provided with overlapping blank cover plates, finished in baked enamel to match the surround. Such future outlets need not be wired; if wiring has to pass through the outlet boxes, however, sufficient slack shall be left in each box to permit of future connections being made.

Unless otherwise shown or specified outlets for bracket lights shall be taken for tendering purposes to be 2,2m above finished floor or landing level. Confirming data will be issued to the successful tenderer, who shall be responsible for seeking confirmed positions in good time before erection of walls concerned. Failure to obtain confirmation of positions will result in all costs of repositioning and making good being debited to the contractor. Connection of light accessories, where connecting terminals are used, must be made by means of block type connecting terminals with brass connecting pieces, or the insulated steel spring type. Other types of connecting terminals will not be allowed. Inlet openings in light accessories must be fitted with brass input caps, where they are used as wiring inlets.

In light accessories fitted with light bulbs, the wiring between lamp holder and circuit connection must consist of heat resistant insulated conductors. The connection must be made in the space stipulated for this type of light accessory.

3.21 Light switch outlets

Switches shall be provided throughout the installation for the control of lights and other single-phase loads. These switches must be of the best-approved tumbler, micro-gap type. All switches must have a rating of 16amp and be suitable for a voltage of 220/250 volt. Switches must have covered terminals for safe wiring and the contacts must be made of silver material. Switches must be so installed that the tumbler movement occurs on a vertical plane. All switches must meet SABS 163, as amended standards and bear the SABS mark

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Where used for switching fluorescent or discharge lamp loads, they shall either carry the manufacturer's endorsement that they are suitable for such service or comply with the requirements of BS 3676 category "X". Flush switches shall be mounted in flush boxes to SABS 1085 Part I and furnished with overlapping cover plates to SABS 1084, metal unless otherwise specified; the colour finish to metal plates must be confirmed before ordering.

A single outlet box shall not accommodate more than two switches; double or larger boxes shall be used for groups of more than two switches. Surface-mounted switches shall be housed in metal or polycarbonate enclosures with integral protection for the switch toggles. Weatherproof switches shall preferably be of all-plastics construction with toggles operated through flexible transparent panels, "Busch-Jaeger" or equal. The degree of protection shall be at least IP55. Unless approved otherwise, light switches must be installed next to doors on the lock side of the door at a height of 1 400mm. Where the lock position is not indicated in drawings, the position thereof must be determined before switch boxes are installed.

Where the lower part of a wall consists of face bricks and finishing of the upper part of plaster, switches must be installed in the plastered surface provided that the lower edge of the plaster finish does not exceed a height of 1 500mm above the finished floor level. Switches shall be flush-mounted in 100mm x 50mm x 50mm wall boxes and surface-mounted in 128mm x 78mm x 35mm extension boxes with 2,5mm2 PVC insulated copper conductors in 20mm diameter conduit.

3.22 Photo-electric switches

This unit must consist of a photocell, thermal starter and switch. The body of this unit must be manufactured from strong material to protect it against tampering, and it must also have good anti-weathering features; it must be capable of withstanding ultra-violet rays and long periods of exposure to the sun.

The unit must be a wall-mountable type and it must be fitted with a suitable mounting frame. The unit must be mounted over a 60mm (diameter) round draw-box of which the lid must be fitted with a grommet to protect conductors entering the draw-box. The unit must be installed in such a way that it is not activated by any of the other light fittings.
The unit must be pre-set in the factory so that it will switch on at an illumination level of approximately 54 Lux and switch off again at 108 Lux. A time delay of at least 15 seconds must be provided for to prevent the switch from being activated by lightning or other brief changes in the illumination level.

3.23 Socket outlets

All outlet sockets must be high quality standard three-pin type outlet sockets and they must be installed with the control switch or circuit breaker in one box under a common cover plate, except where specified otherwise. The switch must be a tumbler micro-gap type switch. The outlet socket and switch must have a 16 Amp rating and be suitable for a voltage of 220/250 volts. Outlet sockets must meet SABS 164 and 1514 standards and bear the SABS mark. The switches must meet SABS 163, and the circuit breakers SABS 156 standards and bear the

SABS mark. Socket outlets shall be shuttered units complying with the requirements of BS 1363. Outlet socket assemblies shall be mounted in boxes to SABS 1085 and furnished with overlapping steel cover plates to SABS 1084.

The engineer or its representative shall confirm the colour finish of the plates before ordering. Surface-mounting socket outlet assemblies shall be housed in 128mm x 128mm x 35mm extension boxes and industrial type enclosures, metalled or of polycarbonate material, incorporating protection for the switch or circuit breaker toggles. Lighting switches and all socket outlet assemblies in the same building shall be of the same manufacture, type and colour finish. Each socket outlet is generally shown on the drawings with a symbol indicating the type and the height of the outlet above finished floor level. If no dimension is given, a written directive shall be obtained from the engineer before positioning the outlet.

Where the lower part of a wall has a face brick finish and the top part is plastered, outlet sockets must be mounted in the plastered surface, provided that the bottom edge of the plaster finish does not exceed a height of 500mm above finished floor level. Switched socket circuits shall be wired by means of 4mm^2 PVC insulated copper conductors and a 2,5mm^2 earth conductor in 20mm diameter conduit unless otherwise specified. Unswitched sockets in ceiling voids and wall-mounted types for extractor fans shall be wired by means of 2,5mm^2 PVC insulated copper conductors and a 2,5mm^2 earth conductor.

All switched socket circuits shall be protected by means of earth leakage units in the distribution boards. In certain instances, unequipped boxes for future switch socket outlets may be called for. Such outlets shall comprise flush boxes only with bushed conduits, the boxes being furnished with blind yokes and blank overlapping cover plates matching the plates of equipped outlets. The boxes shall be mounted at exactly the same height as adjacent switch socket outlets; the blank plates shall be brought to these outlet boxes if required for looping purposes, in which case sufficient slack wire shall be left to allow of easy connections to the future outlet assembly.

STANBY GENERATOR

CONTENTS

HB 01 SCOPE

HB 01.01 This specification comprises all aspects regarding the service and maintenance of a standby power system. The standby power sources will consist of:

i) 3x500Kva kVA diesel generator.

HB 01.02 This specification shall form an integral part of the repair and maintenance contract document and shall be read in conjunction with Portion 3, the Additional Specifications included with this document.

HB 02 STANDARD SPECIFICATIONS, REGULATIONS AND CODES

HB 02.01 The latest edition, including all amendments up to date of tender of the following specifications, publication and codes of practice shall be read in conjunction with this specification and shall deemed to form part thereof.

HB 02.05 Manufacturer's specifications and maintenance instructions

HB 02.06 Additional requirements

Equipment and material supplied and installed shall be new and unused.
The Contractor shall ensure that all safety regulations and measures are applied and enforced during repair and maintenance work on cabling, wiring, fuel tanks, batteries and diesel engines.

HB 03 OPERATING AND MAINTENANCE MANUALS

HB 03.01 The Contractor shall be responsible for the compilation of a complete set of Operating-and-Maintenance manuals.

This shall be done in accordance with the Additional Specification SB – Operating and Maintenance manuals.

All information shall be recorded and reproduced in electronic format as well as supplying the Engineer with three sets of hard copies.

HB 03.02 Over and above what is specified in the Additional Specification – SB Operating and Maintenance manuals, the Operating and Maintenance Manual to be compiled shall be structured and shall at least include the following:

03.02.01 Description of installation

a) Complete system description of each standby power source. This shall be done for each installation individually. The system description shall contain detailed information regarding the supply configuration (cabling, distribution boards), the switching arrangement (change-over and override facilities) and the refuelling procedure as well as the earthing, fire and lightning protection arrangement.

b) Service records

03.02.02 Commissioning Data

a) Complete commissioning, test and inspection data of standby power system.

This shall be done for each installation individually. The commissioning data will comprise voltage and output current measurements, running hour meter readings, battery voltage during starting and engine compression tests.

03.02.03 Operating Data

a) Safety precautions to be implemented.
b) Operation of systems; automatic, manual and bypass switching.
c) Emergency starting and forced change-over procedure.

03.02.04 Maintenance instructions

a) Recommended service intervals with service descriptions.
b) Projected service life of:
   - diesel engine to next overhaul
   - diesel engine starter batteries
c) Trouble shooting diagrams.
d) Schedule of consumable spares.

HB 04 TEST AND INSPECTIONS PRIOR TO PRACTICAL COMPLETION OF REPAIR WORK

HB 04.01 It is the responsibility of the Contractor to provide all labour, accessories and properly calibrated and certified measuring instruments necessary to record the following parameters:

04.01.01 output phase voltages
04.01.02 output current per phase
04.01.03 insulation testing at 500V
04.01.04 system earthing resistance testing by means of wheat stone bridge instrument
04.01.05 load testing, utilising dummy loads

The Contractor is responsible for the arrangement of such tests. He shall give at least 72 hours notice to the Engineer prior to the test date.

HB 05 QUALITY ASSURANCE SYSTEM

HB 05.01 Following formal approval of his Quality Assurance system by the Engineer to the Contractor shall implement the approved Quality Assurance system.

HB 05.02 Records of this Quality Assurance system shall be kept throughout the duration of the contract and shall be submitted to the Engineer as required by the Department.

HB 06 RE-COMMISSIONING OF INSTALLATION

On practical completion of the repair work, battery replacement and services, the installations shall be put into operation.

HB 07 REPAIR WORK TO STANDBY POWER INSTALLATIONS

HB 07.01 The various systems shall be repaired during the first phase of the repair and maintenance contract.

HB 07.02 The scope of the repair work shall include, but shall not be limited to the activities listed below.

HB 07.03 The Contractor shall record the repair actions in tabular format before the Contractor's responsibility for maintenance commences.

HB 07.04 Repair work shall be executed within the approved period for repairs.

HB 07.05 New equipment and material (eg. batteries, fuel pumps, starter motor, etc) shall be supplied with a written guarantee confirming a defects liability period of 12 months from date of practical completion. These guarantees shall be furnished in favour of the Department of Public Works.

HB 08 STANDBY GENERATORS : TECHNICAL DETAILS

HB 08.01 Installation description

Refer to the enclosed schedule:

GENERATOR DESCRIPTION : .....

No.	Locality	Engine Description	Alternator Description	Output kVA	Auto/ Manual/ Switching	Operational Yes/No	Critical load	Last service

HB 08.02 Scope of repair work : generators

HB 08.02.01 Clean plant room, clean and re-lamp luminaires. Seal all sleeves with chicken wire and builders foam. Put rodent poison inside cable trenches (2 x 500g).
Paint floor with epoxy paint.

Service diesel engine and steam clean engine, alternator as well as day tank.

Inspect all rubber hoses and wiring; replace if required.

Service existing battery.

Do cold starting volt drop test on prime mover starter battery; replace starter battery if required.

Clean sliprings and inspect brushgear. Open alternator terminal box, clean and tighten terminations. Check and record earthing value as measured with resistance measuring instrument.

Service alarm panel and clean internally and externally. Simulate and verify all alarm and shut down conditions. Replace all inoperative lamps, sirens and meters.

Repair lagging on exhaust system and reseal room exit port.

Reinstate fuel shut off system with fusible link.

Fit new padlocks on plant room.

HB 08.02.02 Do witnessed dummy load test.

HB 08.02.03 Service change-over switchgear. Disassemble contactors and clean. Test operation following service.

HB 08.03 Generator repair work : measurement and payment

HB 08.03.01 Repair plant room

The unit of measurement shall be a lump sum.

The tendered rate shall include full compensation for the repair and upgrade of the plant room. This includes repair work on luminaires, doors, locks including the fitting of new padlocks.

Walls and ceilings shall be washed with sugar soap. Floors shall be washed and painted with grey 2-part industrial epoxy paint.

Cable trenches shall be cleaned and finally vacuumed. All cable sleeves shall be sealed with builders foam and chicken wire.

HB 08.03.02 Service genset

The unit of measurement shall be a lump sum.

The tendered rate shall include full compensation for the complete mechanical service of the generator installation according to the manufacturer's instructions, replacement of wiring and hoses as needed, opening and cleaning of alternator and alarm panel as well as the steam cleaning of the assembly.

HB 08.03.03 Diesel engine service

The unit of measurement shall be the number of mechanical services performed on diesel engines in the 500Kw range.

The tendered rate shall include full compensation for the execution of a full engine service as per the manufacturer's recommendations including air, fuel and oil filters, oil and other consumable items.

HB 08.03.04 Replace starter battery

The unit of measurement shall be the number of diesel starter batteries replaced.

The tendered rate shall include full compensation for the removal of the existing battery, the installation and reconnection of a new "Deltec Heavy-Duty Freedom"-type battery and final test of start up volt drop.

HB 08.03.05 Dummy load test

The unit of measurement shall be the number of on-site dummy load tests performed.

The tendered rate shall include full compensation for the opening of the alternator terminal box, connection of dummy load, 30 minute full load test, recording of test results and disconnection of load and reconnection of site load.

HB 08.03.06 Change-over switchgear service

The unit of measurement shall be the number of assemblies serviced.

The tendered rate shall include full compensation for the disassembly of the change-over contractor pair, cleaning and reinstallation as well as the testing following completion of the test.

HB 08.03.07 Supply and install padlocks

The unit of measurement shall be the number of 75mm padlocks installed.

The tendered rate shall include full compensation for the ordering, supply, engraving and installation of the plant room padlocks.

HB 08.03.08 Supply of diesel fuel

The unit of measurement shall be the quantity of diesel fuel supplied and transferred into day tanks.

The tendered rate shall include full compensation for the supply, transport and transfer of diesel fuel.

HB 08.03.09 Supply of Tools and Spares

The unit of measurement shall be a lump sum. The tendered rate shall include full compensation for the supply and delivery of the Tools and Spares specified.

HB 09 UPS UNITS : TECHNICAL DETAILS

HB 09.01 Installation description

UPS DESCRIPTION : .....

Item No	Locality	Manufacture	Model	Output		Operational Yes / No	Approx year of install	Critical load supplied	Last service
				Single phase	kVA				

HB 09.02 Scope of repair work : UPS unit

HB 09.02.1 Remove cabinet cover / doors. Clean unit internally and externally. Check operation of ventilating fan and replace air intake filter, if fitted. Check and record earthing value with prescribed resistance measuring instrument.

HB 09.02.02 Record output voltage, frequency and current in Record book. Record battery voltage.

HB 09.02.03 Clean battery cabinet and tighten terminals. Do witnessed dummy load test and submit report on condition of batteries.

HB 09.02.04 Replace UPS batteries upon instruction from Department.

HB 09.03 UPS repair work : measurement and payment

HB 09.03.01 Service UPS electronic and battery cabinet

The unit of measurement shall be the number of UPS systems opened and serviced.

The tendered rate shall include full compensation for the opening, cleaning , visual inspection of cable terminations, ventilating fans, battery links and the recording of earthing resistance.

HB 09.03.02 Dummy load test

The unit of measurement shall be the number of on-site UPS dummy load tests performed.

The tendered rate shall include full compensation for the connection of a UPS dummy load, 30 minute full load test recording of test results, including battery voltage and reconnection of site cabling as well as a written report on battery condition.

HB 09.03.03 Replace UPS batteries

The unit of measurement shall be a lump sum.

The tendered rate shall include full compensation for the disconnection and safe disposal of old batteries and supply, installation and connection of new sealed "Willard Vantage" UPS batteries.

HB 10 NEW GENERATORS

IT IS A PREREQUISITE FOR THIS CONTRACT THAT THE EMERGENCY GENERATOR INSTALLATION BE DONE BY A SPECIALIST WHO IS COMPETENT WITH THIS TYPE OF WORK.

HB 10.1 Scope of standby Generator

The Army base is in need of a new emergency generator complete in a weather proof and sound proof canopy and this document cover the supply, delivery, installation, testing and commissioning of the standby generating installation, which will mainly consist of the following:

- A new control and monitoring panel for the standby generator,
- Day Fuel Tank(s) to provide sufficient fuel for a 12-hour running period at full load, pumping facilities as described. The first filling of fuel to be included as part of the installation. Provision must be made for a electrical fuel filling pump.
- All control and power conductor/cables between Standby Generating Plant, Control and Monitoring Panel, and Main Low Voltage Distribution board,
- Sound Attenuating Generator Room door and louvres (inlet and outlet). (If applicable)
- The Generating Plant shall be installed on top of a concrete platform, which forms part of this Contract.
- The installation shall include everything necessary whether specified in detail or not, to ensure a complete installation to the approval of the Engineer or his Representative/ Agent.
- Full particulars, performance curves and illustrations of the new equipment, which is offered, must be submitted together with the tender. Tenderers may tender for a standard unit, which satisfies these specifications, and any deviations from these specifications must be clearly set out.
- The questionnaire attached to these specifications must be completed in full by tenderers.

HB 10.2 Requirements

The equipment delivered under this contract must be suitable for work in the Northern Cape area, with a maximum atmospheric temperature of 42°C and a minimum temperature of -7°C. The onus is on the bidder to determine any other local conditions, which could possibly influence the price of the bid.

The unit must be fully automatic i.e. it must switch on and deliver power in case any of the three phases of the main supply should fail and must switch off when the normal supply is repaired. The unit must have the capacity to deliver continuously under the given environmental conditions without over-heating. The unit must be able to deliver 110% of the specified capacity for one hour for any un-interrupted period of twelve hours of delivery according BSS 5514 as amended.

Curves supplied by the manufactures of the engine which show the capacity of the unit to deliver different revolutions per minute for both uninterrupted as well as interrupted functioning must accompany the bid. Curves showing the fuel consumption of the unit when used for the delivery of the electricity must also be submitted with the bid.

The engine and alternator must be mounted on a duplex-type pedestal. The pedestal must consist of a frame mounted on a towing bed by means of vibration mufflers. The unit must be placed directly on the concrete floor of the engine room.

A drip tray must be installed under the unit and must be large enough to receive drops from any part of the machine.

HB 10.3 Output

The unit must have an output capacity of 25/50 kVA at 400/230 Volt. Three phase 4 wire and supply function at 50 Hz and deliver a maximum at a power factor of 0,8.

The continuously rated load of 25/50 kVA at any power factor ranging from 0,8 to 1,0 (unity). The design and arrangement of the standby generating plant shall be capable of accepting 100% of the load specified (25/50kVA) and attain stability within 10 seconds.

The rated power of the unit must be adjusted to allow for conditions of location as set out in the specifications.

The correction of the capacity of the unit must conform strictly to requirements of the BSS 5514 of 1977 as up to now amended. The use of any other method of correction must be approved and fully motivated. Such corrections must be guaranteed in writing and demonstrated by successful bidder during test on location.

HB 10.4 Delivery

Tenderers must confirm in their tenders that the place for the emergency power generator, as indicated allows for sufficient room for the unit as tendered and should modifications be required they must be indicated in the bid.

If cable trenches are provided. Bidders when submitting their bids must include a layout for the placing of equipment in the engine room.

Delivery on location must take place with the co-operation of the Engineer after confirmation that the engine room is ready for the installation of the new emergency power generator.

HB 10.5 Diesel Engine

HB 10.5.1. General

The equipment shall be complete will all required ancillary items including fuel pipes, exhausts, engine cooling, fuel tank(s), fuel, starting batteries, cables and conductors.

The engine must comply with the requirements of BSS 5514 as amended and must be of the pressure atomising type with compression ignition and a maximum work speed of 1500 r.p.m. The engine must be large enough for the required electricity generation under the conditions existing on location or on site. For both manual and automatic starting, the unit must be capable of delivering a load equivalent to the specified output capacity on site and start delivery within 10 seconds of switching on.

HB 10.5.2. Switching on and off

The engine must be capable of delivering at full load upon being switched on while cold without the use of any special ignition appliance in winter as well as in summer.

The automatic control must provide for three successive attempts at switching on at intervals of 30 seconds in between.

If the unit cannot switch on it must be switched off and a visible as well as audible alarm must be given by means of a special relay on the switchboard.

HB 10.5.3. Rating

The engine shall be rated to drive the alternator continuously at the Steady State Load. Provision shall also be made for the engine to meet the overload condition of 10% for one hour. Continuous rating shall be in accordance with BSS5514 of 1979.

HB 10.5.4. Water Cooling

The requirements for the cooling fan and radiator must comply with overload and ambient temperature conditions.

HB 10.5.5. Air/Louvers (If applicable)

Air louvers shall be provided.

The louvers, both intake and exhaust, shall be equal or similar to Trox Acoustic anodised aluminium type weather louvers.

HB 10.6. Alternator

HB 10.6.1. General

The alternator must be of the self-charging type without brushes with a closed ventilated drip tight cover and must be able to deliver continuously without exceeding the temperature limits as contained in BSS 5000 as amended, in the rotor and rotor windings.

Both windings must be fully impregnated for tropical climates and must be treated with oil resisting varnish.

HB 10.6.2. Voltage regulation

The alternator voltage must be self-regulated and not use solid sheet equipment.

The inherent voltage regulation must not be more than ± 2,5% of the nominal specified voltage with all loads and a power factor of between 1 and 0,8 with a speed variation of 4,5% between now and full load.

HB 10.6.3. Rating

The rating of the alternator shall be as specified above when driven at 1500 rpm and shall be capable of supplying an unbalanced load.

HB 10.6.4. Electrical Protection

The alternator output shall be controlled by means of a motorised circuit breaker rated to the full output of the alternator.

HB 10.7. Control Panel

HB 10.7.1. General

A separate panel or panel on the machine must be provided for the unit on which all equipment is mounted to control and protect the generator system, to enhance automatic switch over and to charge the battery.

The control panel must be a floor mounted, totally covered unit consisting of steel panels mounted on a sturdy frame of angel iron.

The front part of the panel must be straight and all equipment must be mounted behind the front panel by means of suitable mountings.

All equipment, connections and connection clips must be hinged or easily accessible. The front panels must either be detachable or be held in place by means of locking bolts. Self tapping screws must not be used in the construction of the board.

The steel work of the board must be thoroughly rust free and be provided with an undercoat of zinc chromate and be furnished off with two coats of high quality cream coloured enamel paint.

All master circuits as well as control circuits trip switches must be provided with connection clips of suitably rated capacity. Screw-type connection clips must be of a kind that prevents the cable strands from separating. All connection clips must be clearly marked.

All cables must be provided with an approved marker and the numbering on the markers must correspond with the wiring diagram of the board.

The automatic control and protection equipment must be mounted on a separate easily replaceable small panel with printed current circuits. The equipment must mainly be of the solid sheet type with transistors. After the equipment has been mounted on the panel the reverse side of the panel must be sealed with an approved resin. Nevertheless any other proved system of control will be considered if it is described in detail.

All equipment on the board such as contactors, switches, bus bars etc. must be spaciously constructed so as to be able to carry at least 110% of the full load of the alternator's electric current.

An earth bar must be supplied in the control panel and all non current carrying metal must be earthed to this.

The neutral point of the system must be securely connected to the earth bar. Suitable connection clips must be supplied on the earth bar as connection points for the main earthing conductors supplied and installed by others.

HB 10.7.2. Component Mounted Inside the Panel

The following must be mounted in the panel:

-Alternator Circuit Breaker

The circuit breaker shall be adequately rated to protect the alternator and shall be motorised.

-Contactors

The contactors shall be rated for the full load specified.

-Meters and Gauges

The requirement for meters and gauges shall comply with those of the Specification.

One flush mounted square faced voltmeter, minimum size of 75mm, with a scale of 0 - 500 Volt to show the alternator voltage. Installed with this voltmeter a flush mounted selection switch with six measuring positions and one off position to connect the voltmeter between the neutral and the three phases and between phases.

-The meters as specified for the battery charger.

One flush mounted square faced frequency meter, minimum size of 75mm, to indicate the alternator's frequency supply.

Three flush-mounted square faced peak demand ammeter, minimum size of 75mm.

Hour counter with cyclo meter counter to indicate the number of hours that the engine works. The smallest readable period of time must be one tenth of an hour.

-Sensors

Sensors shall be as specified.

-Over current

The overload device shall form an integral part of the alternator circuit breaker as specified.

-Timers

Timers shall be incorporated in the relay logic controls as described in the Specification.

-Pushbuttons

Pushbuttons shall conform to the requirements of the Specification.

-Indicators

Indicators shall be in accordance with the Specification.

-Service selection switch

A selection switch with four working positions, marked "Auto/ Manual/ Test/ and Off", must be provided.

With the selection switch on "Auto" the engine must start and stop automatically depending on whether the main supply is available or not.

When the selection switch is on "Test" the engine may only be switched on or stopped by means of press buttons but the load must not be switched on.

If the selection switch is on "Manual" the engine must take over the load when switched on by means of the press button but it must not be possible to connect the engine to the main supply or to connect the main supply to the generator.

If the selection switch is on "Off" the engine must be completely disconnected from the automatic control circuits so that maintenance work may be done.

HB 10.8. Alarms

Four relays with reset buttons are desired so as to give a visual as well as audible warning and to stop the engine as soon as any protection equipment comes into operation. Protection must be given against high engine temperature, low oil pressure, over speed and in the case of a start failure. The indicator lights and reset buttons must be marked in English.

"Temperature High"

"Oil Pressure Low"

"Over speed"

"Start Failure"

A further two relays with reset buttons must be provided in order to give only visual and audible signals when the fuel level in the tank falls low and also when the battery or charger does not function properly. This must not stop the engine. The indicator lights and reset buttons must be marked in English.

"Fuel Low"

"Battery charger Failure"

Nevertheless any other proved control systems will be considered if it is described in detail.

All relays must be able to switch on the alarm siren. A switch must be installed in the alarm circuit to switch off the alarm signal but the fault indicators on the control panel must remain on until the fault is rectified.

The protection circuits and indications must take power from the battery.

A press button must be provided for every function so that the fault condition may be repeated for test purposes.

HB 10.9. Labelling

Labelling shall conform to the requirements of the Specification.

The switches, indicator lights, meters, press buttons etc. must be clearly marked with imitation ivory strips.
All marks, inscriptions, labels and instructions on the board must be in English.

HB 10.10. Workshop and "As-Constructed" Drawings, Wiring Diagrams and Training

The workshop and "as-constructed" drawings shall be submitted to the Engineer or his Representative/Agent for scrutiny and approval before the final issue of the three sets of "as-constructed" drawings and maintenance and operating manuals.

The successful tenderer must as soon as possible after receiving the contract submit detailed drawings and wiring diagrams of the control board to the Engineers representative.

At take-over the wiring diagram must be mounted on the wall in the engine room in a glass faced frame with all information regarding operation and maintenance.

After the completion of installation and when the engine is in full working order the successful tenderer must train an operator in the operation of the apparatus until he is fully conversant with the equipment, the functioning and handling thereof.

Three copies of the manual containing details of maintenance, tracing of faults and the operation of the installation must be handed over to the Engineer after the contract is finished.

HB 10.11. Alternator Power Configuration

The alternator switch shall be a 40/75 Amp 10 kA 3 pole motorised circuit breaker.

The Alternator switch shall be motorised to facilitate automatic opening and closing. This switch shall control the load directly.

The Electrical contractor shall make available a 400/230 Volt 3 phase 50Hz alternating current supply to the control panel.

HB 10.13. Cables and Wiring

For the alternator, main supply cable and feeder cable to emergency board PVC insulated copper cables with steel armour must be used. These cables must comply with SABS 150 and 1507.

For the control circuits multi strange PVC insulated copper wires must be used. These wires must be put neatly in wire trays.

HB 10.14 Warning Notices

A clearly legible indelible warning notice must be put up in a conspicuous place in the engine room. The notice must be made of corrosion free and durable material and must read as follows:-

"DANGER This engine will start without warning. Turn selector switch on control board to "OFF" before working on the engine."

All notices as describe in the Occupational Health and Safety Act no. 85 of 1993 must be put in and around the engine room.

HB 10.15. Battery Charger

HB 10.15.1. General

The battery charger shall be as specified under clause 9.1 of the General Technical Specification. The battery charger shall be capable of a minimum charge of 10 Amps.

Equipment must be supplied on the board to charge the battery from the main supply. The charger must operate automatically according to the condition of the battery and it must consist of an air-cooled transformer, a full wave rectifier of the solid sheet type together with the necessary automatic control equipment for the constant voltage system.

A flush mounted ammeter, with a suitable scale to measure the charging current and a flush mounted voltmeter with spring-loaded pressure knob or switch to read the battery voltage, must be provided on the board.

HB 10.15.2. Alarms

Local alarm on charger failure is required.

The failure of charger alarm shall also form part of the General Alarm (Remote) condition, and the charger failure alarm shall initiate a general alarm condition as specified elsewhere via a set of potential free contacts.

HB 10.16. Commissioning and Tests

The tests as specified at the suppliers works shall prove the performance of the generating plant. The site commissioning tests would require proof that all systems function on site including simulation of mains failure. The contractor shall prepare a check list for the Engineer or his Representative/Agent's approval of all tests to be performed at the works on site.

Amongst others the following items will be checked:

- Fuel pumps and float switches,
- Sound levels,
- Vibration,
- Timing - Load Acceptance, Mains return, engine shut-down, etc.,
- Recovery time duration,
- Phase rotation,
- Earthing,
- Settings,
- Quality.

The following tests must be carried out on location after completion of the installation:-

i) A full load test over three hours, during which time fuel consumption, oil consumption and temperature rises will be measured.

ii) Tests similar to the above at half load and three quarter of the load.

iii) Measuring time required for starting, switch over, stopping etc.

iv) Measuring the noise level in the machine room one meter from the engine at three quarter of the load.

v) Measuring the noise level one meter from the exhaust.

vi) Simulating all the faults and checked that the safety circuits is in full working condition.

The representative of the Provincial Government must be apprised of the day and hour of the tests.

All equipment including test instruments and diesel required for the tests must be provided by the contractor.

Test certificates of all tests as described above must be provided before the engine is put into operation.

HB 10.17. Fuel System

HB 10.17.1. General

The fuel(tank) installation shall comply with the requirements of the Specification and those of the SABS Code of Practice for the storage and handling of liquid fuel, as amended.

A water catch point must be provided in the feeder pipe from the feeder tank to the engine.

Fuel connection pipes must be made of copper and provision must be made for all connections with vibrating parts.

HB 10.17.2. Day Tank Requirements

A fuel tank shall be supplied, installed and connected inside the Generator.

An overflow socket connected in parallel to a draining socket feeding back to the tank is required.

The fuel tank shall be provided with:

- Level indicator,
- "LOW FUEL" and "EXTRA-LOW FUEL" level alarm sensors,
- 24V d.c. fire solenoid valve to prevent flow into the generator room should a fire be detected in the generator room,
- An electric fuel pump for filling the tank.

The Generator Contractor shall construct a suitably sized bund wall, complete with sump as part of this sub-contract in accordance with the requirements of SABS 0131.

HB 10.17.3. Tank Capacity

The fuel tank capacity shall be adequate for at least 12 hours running at full load operation, and not less than 200 litres.

HB 10.18. Noise Suppression

HB 10.18.1. Acoustic Louvers as Sound Attenuators (If applicable)

Acoustic louvers shall be supplied and installed by the Generator contractor as specified in the Specification, sound attenuators shall be fitted to the louvers inside the plant room, similar to Trox type. The contractor shall submit details of the installation and the sound attenuators manufacturers sound analysis charts.

The entrance door to the generator room shall be of the acoustic sound-attenuating type Trox door, supplied and installed by the Generator System Sub-contractor, and shall be provided with pad lockable locking facilities.

HB 10.18.2 Muffler on exhaust pipe

The noise level must be kept as low as possible. An effective muffler of the household type must be supplied to limit the noise level to 75 dB at a distance of 3 m from the exhaust point.

The exhaust pipe must be installed in such a way that the exhaust gases do not cause inconvenience to the public. The exhaust pipe must be connected to the engine by means of flexible joints to absorb engine vibrations that could cause damage. The exhaust pipe and silencer must be carefully supported along their course and must be covered with approved insulation material to control heat radiation and noise in the engine room. The exhaust pipe must protrude 0,5 m above the gutters and must have a cover to prevent rain from entering the exhaust pipe.

HB 10.19 Fire Precautions

HB 10.19.1. Fire Extinguisher

The fire extinguisher shall be mounted on the wall inside the generator room, next to the entrance.

HB 10.20 Fire Detection System

The Generator contractor shall provide a fire detection alarm.

In addition a second set of potential free contacts shall be provided for a remote fire alarm condition.

A CO2 fire protection system is not required for the Generator.

HB 10.21 Permanent Building Accommodation

The Contractor shall be responsible for the supply and installation of the generating plant at the space provided, including the accommodating of the following;

- Engine and alternator on it's bed plate,
- Exhaust system lead to open air,
- Control panel,
- Starting battery,
- Day fuel tank with bund wall (if applicable),
- Fire protection installation,
- Acoustic louvres,
- Acoustic door (lockable with padlock facilities),
- Acoustic material covering walls (if applicable),
- Statutory warning notices fixed outside on door,
- Other items of equipment required to comply with this specification.

HB 10.22 External cable connections to Generator control room

The -Contractor shall terminate the following cables and conductors at the Generator Control Panel (Cable / conductors supplied by the Electrical contractor):

- The generator auxiliary power supply to operate battery charger, heaters, etc.

The Generator contractor shall supply, install and terminate the following cables and conductors;

- The main alternator output power supply cables between the alternator and Low Voltage Change-Over Panel in the Generator Room, which shall be 6/16mm2 x 4c PVC SWA PVC Cable with copper conductors. These cables shall be provided with enhanced armouring suitable for earthing / E.C.C. use.

Cable Terminations

"These glands shall be of the adjustable type and shall be suitable for PVC SWA general purpose 660/1000 volt cable.

Gland for use indoors and sheltered from the weather elements shall be made of nickel plated brass, comprising the following:

- cone nut,
- barrel with captive cone which can swivel,
- adjustable nipple,

- lock nut,
- screw-on earth tag with 50% cross-section of the maximum conductor size and max. cross section of 70 sq. mm,
- cable entrance side of barrel shall have a purpose made groove to accept a shroud,
- shroud made of non-deteriorating neoprene or synthetic rubber shroud which is resistant to water, oil and sunlight and which shall fit tightly around cable and gland.

These glands shall be CCG Cable Glands type BW or equivalent.

HB 10.23 Guarantee and Maintenance period defects/liability

The submission of a tender is deemed to incorporate a 12 month equipment free maintenance period against any defects as well as a 12 month defects liability period against poor and faulty workmanship, materials and parts, as well as full servicing of all equipment during the first 12 months, to minimum PAWC requirements.

A suitably qualified Representative of the Contractor shall visit the site at least twice during the free maintenance period, perform the necessary preventative maintenance and ensure that the entire installation is functioning correctly. (To be witnessed by Engineers Representative.)

The first free maintenance visit shall be between the first three (3) months and (5) months of the Guarantee period.

The second free maintenance visit shall be between the first (9) and (11) months of the guarantee period.

The costs of these visits shall be included in the tender pride.

If at any time during the free maintenance period the equipment is out of commission as a result of any defect covered by the guarantee or due to the fact that spares were not available, the free maintenance period shall BE EXTENDED AUTOMATICALLY by a period of time equal to the period during which the equipment was OUT OF COMMISSION.

Should the contractor delay to hand over the installation in good working order after the expire of the specified twelve months he will be responsible for further monthly maintenance until final take over.

During the period of maintenance the contractor will perform the following duties:

i) Report to the official in charge of keeping the maintenance records and indicate in the logbook the date of visit, what tests were performed, what adjustments were made and any other necessary details.

ii) Clean the equipment and accessories if necessary.

iii) Where necessary lubricate all moving parts.

iv) Check all the filters, clean them and if necessary they must be replaced.

v) Check lubrication oil and when necessary top it up.

vi) After the engine has run for the specified number of hours, for one oil filter, the filter must be replaced and the oil sump must be drained and filled up with new oil. The reading on the hour meter on the switchboard must be used to determine the number of running hours.

In this case only the costs of the actual amount of oil used must be debited as an extra on the monthly account.

vii.) Clean the oil filter and or replace the filter element as much as is recommended by the manufacturers of the engine. The costs of the new filter element may be debited as an extra on the monthly account.

viii) Check the fuel injection system and connections and readjust where necessary.

ix) Check the battery and add electrolyte when necessary.

x) Test-run the engine for 30 minutes and check the automatic starting with simulated faults on every phase of the main supply.

Check the proper functioning of all parts including electrical equipment, the protection equipment with fault alarms and indicators, the change over equipment and the battery charger. Make all adjustments where necessary.

xi) Inform the Client of any parts that have become unusable because of normal wear and tear or which is damaged outside the control of the contractor.

The contractor must immediately after receiving such a report submit to the Client a detailed quotation for repair or replacement of such parts.

xii) Notify the Client when it has become necessary to de-carbonize the engine and submit a quotation for the service.

ANNEXURE 1:

SCHEDULES OF MATERIAL

SCHEDULE OF TECHNICAL INFORMATION

The following material will be used should I/we be awarded the Contract:

ITEM	MATERIAL	TRADE NAME & CATALOGUEIS	MATERIAL ACCORDING TO SPECIFICATION	COUNTRY OF ORIGIN

ANNEXURE 2

INFORMATION ON PREVIOUS CONTRACTS

Tenderers are requested to give information on at least three contracts recently successfully completed, or presently being executed by them. The contracts must at least be similar to this installation with respect to type and size of location. This information will be used when tenders are considered.

NAME OF CLIENT AND DISCRIPSION OF WORK	NAME OF CONSULTANT	AMOUNT OF CONTRACT	DATE OF COMPLETION

ANNEXURE 3:

REGISTRATION AS AN ELECTRICAL CONTRACTOR

The contractor is responsible for the completion and submission of the required application forms, in respect of registration, to the particular supplying authority. A copy of the registration form must be forwarded to the Engineer or its representative as soon as possible after the contract has been allocated. The electrical installation may not commence before the registration certificate and proof that the particular electrician is registered as an installation electrician has been received.

The successful tenderer/electrical sub-contractor must be registered as an Electrical Contractor with the Electrical Contracting Board of South Africa, with the Workmen's Compensation Commissioner and the Unemployment Insurance Commissioner to qualify for this contract.

The successful tenderer must complete the following questionnaire and submit it to the Engineer before any work is commenced.

THE TENDER MAY NOT BE CONSIDERED UNLESS ALL THE NECESSARY INFORMATION HAS BEEN SUBMITTED.

Has the company been registered as an electrical contractor with the Electrical Contracting Board of South Africa?.

YES	NO

Registration No.: .....

Date of issue: .....

Has the company been registered with:

1. The Department of Manpower?

YES	NO

Registration No.: .....

Date of issue: .....

2. The Workmen's Compensation Commissioner?

YES	NO

Registration No.: .....

Date of issue: .....

The Unemployment Insurance?

YES	NO

Registration No.: .....

Date of issue: .....

I/We certify that the above information is correct and undertake to comply with the provisions in Regulation 4(2) and 6(1) of Government Notice R2920 of 23 October 1992 promulgated under Section 35 of the Occupational Health and Safety Act, No. 85.

SIGNATURE OF CONTRACTOR: .....

DATE: .....
NAME OF CONTRACTOR: .....
ADDRESS: .....
.....

Regulation (4) 2 reads as follows:

CONSTRUCTION
Except in the case of electrical installations supplied by a single-phase electricity supply at the point of supply, an accredited person shall exercise general control over all electrical installation work being carried out and no person shall allow such work without such control.

Regulation 6(1) reads as follows:

COMMENCEMENT OF AND PERMISSION TO CONNECT INSTALLATION WORK
No person shall commence with installation work which would require a new electricity supply or an increase in electricity supply capacity unless the supplier has been notified thereof in the form of Annexure 2 : Provided that the supplier may waive this requirement in respect of such types of work as he may specify