rural development
& agrarian reform

Department:
Rural Development & Agrarian Reform
PROVINCE OF THE EASTERN CAPE

BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

LOCATION: ERF 1 KEISKAMAHOEK

SCMU8-22/23-0065

Deputy Director: Supply Chain Management **DEPARTMENT OF RURAL DEVELOPMENT & AGRARIAN REFORM** Amathole District Private Bag X 9032 East London Contact: Name: Mrs D McGregor Telephone: 043 807 8771/ 082 716 4374 Email: Debra.Mcgregor@drdar.gov.za	**Directorate: Engineering Services** **Chief Engineer** **DEPARTMENT OF RURAL DEVELOPMENT & AGRARIAN REFORM** Amathole District Private Bag X 9032 East London Contact: Name: Mr. T Musara Telephone: 043 807 8777/ 073 596 4850 Email: Tapiwanashe.Musara@drdar.gov.za
Tenderer **……..** **……**	
CSD Number:	
LOGIS Number:	
Preference Points Claimed:	
Closing date on tender: **10 October 2022** **at 11:00**	
Total of the prices inclusive of applicable taxes: R	

The Tender

EASTERN CAPE PROVINCIAL GOVERNMENT
DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM

BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

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EASTERN CAPE PROVINCIAL GOVERNMENT
DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM

BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

T1.1 Tender Notice and Invitation to Tender

1.	The Department of Rural Development and Agrarian Reform, Eastern Cape Provincial Government, invites tenders for the BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT. The construction works shall include the following: • Site, Clearing and Earthworks • Construct a steel structure. • Backfilling, concrete floor, construction of market stalls, aprons. • Supply, deliver and install Gutters, downpipes, tanks, tank stands and a tap. Time of completion for this contract is **4 Months**
2.	All tenderers must submit proof of valid and active registration with the CIDB in a GB class of construction works: It is estimated that tenderers must have a CIDB designation of level **3 GB or HIGHER**. Bidders exceeding their threshold of CIDB grading by more than **15%** in combination with any other contract awarded to the contractor, which will be executed simultaneously, could be regarded as non-responsive.
3.	Tender documents will be available during working hours after **08:00** as of **9 September 2022** till the day before the tenders close, by emailing the Assistant Director Supply Chain Management (debra.mcgregor@drdar.gov.za) ; or can be downloaded free of charge from the Departmental website (www.drdar.gov.za) or https://etenders.treasury.gov.za. The physical address for collection of tender documents is: THE DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM SCM OFFICES, 94 Fitzpatrick Road Old BKB Building, Arcadia East London, 5200
4.	A compulsory site inspection and clarification meeting will be held on **20 September 2022 at 11:00 at the Keiskammahoek DRDAR Office (Next to the Magistrates Court – Department of Justice)**. After the clarification meeting the prospective tenderers will be taken to the site to familiarize themselves with the conditions of the roads and site. No documents will be sold at the site inspection meeting. The technician's details are indicated in point 20 below.
5.	The completed tender document and any supporting documentation shall be placed in a single sealed envelope clearly marked **"CONTRACT NO: SCMU8-22/23-0065 BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT."** and deposited in the tender box at: **THE DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM, OLD BKB BUILDING, CNR FITZPATRICK AND PANMURE, 2nd FLOOR SARS, BUILDING** not later than **11:00 on 10 October 2022** when the tender box will close. Tenderers should ensure that tender documents are delivered timeously to the correct address. If the tender is late, it will not be accepted for consideration.
6.	**All submitted certificates must be valid for 90 days after the Tender Closing Date.**

7. In terms of Preferential Procurement Regulation of 2017 the 80/20 preference point system is applicable.

8. Broad-Based Black Economic Empowerment (B-BBEE) requires that tenderers submit original and valid B-BBEE Status Level Verification Certificates or certified copies thereof to substantiate their B-BBEE rating claims. Failure to submit such a certificate will result in the tenderer not qualifying for preference points for B-BBEE. The tenderers must submit verification certificates that are accredited by:

- SANAS (South African National Accredited System).
- Sworn affidavit.

In terms of Regulation 5 (2) and 6 (2) of the Preferential Procurement Regulations, preference points must be awarded to a tenderer for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (90/10 system)	Number of points (80/20 system)
1	10	20
2	9	18
3	6	14
4	5	12
5	4	8
6	3	6
7	2	4
8	1	2
Non-compliant contributor	0	0

A trust, consortium or joint venture must obtain and submit a consolidated B-BBEE Status Level Verification Certificate with their tenders.

9. All tenderers must be registered on the National Treasury Centralized Suppliers Data Base, on the EC LOGIS system and the CIDB before the closing date of tenders and provide the information.

Invalid or non-submission of the following documents will render the Bidder disqualified:

- **Tax compliance status and company directors of bidders will be verified on CSD for all price quotations and bids. Hard copies of Tax Clearance Certificate and CK documents are therefore no longer needed to be attached in the bid.**
- **Company Profile**
- **Copy of CIDB contractor grading certificate (Must be Active on day of closing)**
- **JV Agreement (if Applicable)**
- **Proof of CSD registration (active & recently updated)**
- **Proof of registration on the LOGIS system (active & recently updated)**

10. Part of the works cannot be sub contracted without prior approval from the Engineer.

11. **All bidders must ensure that they comply with the designated sectors for "Local Content ECBD 6.2". The SABS standard approved technical specification number SATS 1286:2011 and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C, D and E} are available on the DTI's official website. http://www.thedti.gov.za/industrial development/ip.jsp at no cost.**

Minimum content threshold for local products for:

- Steel products and components for construction must be 100%
- High Density Polyethylene (Hdpe) Pipes must be 100 %
- Electrical Cables must be 90 %

Bidders are required to achieve a stipulated minimum threshold for local production and content as per DTI designated sector as per section 8 of the PPPFA Regulation of 2017. Bidders must complete SBD6.2 with Annexure C and must be submitted with the quote. Failure to submit will invalidate the bid.

12.	The tender with the lowest price or any tender offer will not necessarily be accepted.
13.	**For a project to the value of R 3.0 million and more, a Bidder/Contractor who is not from the Eastern Cape Province, must sub-contract 25% of the contract value to a Bidder/Contractor within the Eastern Cape Province.**
14.	All tenders must be submitted on the official forms – (not to be re-typed). Telephonic, telegraphic, e-mail or facsimile will not be accepted.
15.	Failure to supply all supplementary information, certificates and documentation may result in the tender being rendered non-responsive.
16.	This tender is subject to the General Conditions of Contract (GCC 2015) and, if applicable, any other Special Conditions of Contract (SCC).
17.	Bidders must submit in terms of point 15 above, the following with the bid submission: i) CIDB certificate of the subcontractor(s). ii) Proof of the CSD registration of the subcontractor(s). iii) BBBEE certificate/affidavit of the subcontractor(s). iv) Provide details of which items in the bill of quantities will be part of the subcontracting agreement.
18.	**NB: Bidders should note that this forms part of a batch of tenders included into the DRDAR infrastructure program within the Eastern Cape; the employer reserves the right not to award more than TWO projects to be executed simultaneously within the province. The department as a procuring entity will conduct a risk assessment based on amounts and nature of the commodity for the final decision vs the bidders capacity.**
19.	Administrative enquiries should be directed to: Mrs. D McGregor Tel: 043 706 8771 Email: debra.mcgregor@drdar.gov.za
20.	Technical enquiries should be directed to: Mr. F Makaula Tel: 082 821 4070 Email: fezile.makaula@drdar.gov.za

The Department of Rural Development and Agrarian Reform adheres to all relevant Acts including the Black Economic Empowerment Act No. 53 of 2003, the Preferential Procurement Policy Framework Act No. 5 of 2000 and the Employment Equity Act No. 55 of 1998

PART A
INVITATION TO BID

ECBD 1

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE DRDAR					
BID NUMBER:	**SCMU8-22/23-0065**	CLOSING DATE:	**10 October 2022**	CLOSING TIME:	**11:00**
DESCRIPTION	**BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.**				

BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT *(STREET ADDRESS)*

DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM

OLD BKB BUILDING, CNR FITZPATRICK AND PANMURE, ARCADIA

EAST LONDON

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO		**TECHNICAL ENQUIRIES MAY BE DIRECTED TO:**	
CONTACT PERSON	Mrs. D. McGregor	CONTACT PERSON	Mr. F Makaula
TELEPHONE NUMBER	043 706 8771 / 082 716 4374	TELEPHONE NUMBER	082 821 4070
FACSIMILE NUMBER	(043)7421312	FACSIMILE NUMBER	(043)7421312
E-MAIL ADDRESS	debra.mcgregor@drdar.gov.za	E-MAIL ADDRESS	fezile.makaula@drdar.gov.za

SUPPLIER INFORMATION				
NAME OF BIDDER				
POSTAL ADDRESS				
STREET ADDRESS				
TELEPHONE NUMBER	CODE		NUMBER	
CELL PHONE NUMBER				
FACSIMILE NUMBER	CODE		NUMBER	
E-MAIL ADDRESS				
VAT REGISTRATION NUMBER				
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		**OR** CENTRAL SUPPLIER DATABASE No:	MAAA _____

B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE	TICK APPLICABLE BOX] ☐ Yes ☐ No	B-BBEE STATUS LEVEL SWORN AFFIDAVIT	[TICK APPLICABLE BOX] ☐ Yes ☐ No

[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]

1. ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	☐Yes ☐No [IF YES ENCLOSE PROOF]	**2.** ARE YOU A FOREIGN BASED SUPPLIER FOR **THE GOODS /SERVICES /WORKS OFFERED?**	☐Yes ☐No [IF YES, ANSWER PART B:3]

QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS

IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?	☐ YES	☐ NO
DOES THE ENTITY HAVE A BRANCH IN THE RSA?	☐ YES	☐ NO
DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?	☐ YES	☐ NO
DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?	☐ YES	☐ NO
IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?	☐ YES	☐ NO

IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 BELOW.

PART B
TERMS AND CONDITIONS FOR BIDDING

1. BID SUBMISSION:
1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.
1.2. **ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED – (NOT TO BE RE-TYPED) OR IN THE MANNER PRESCRIBED IN THE BID DOCUMENT.**
1.3. **BIDDERS MUST REGISTER ON THE CENTRAL SUPPLIER DATABASE (CSD) TO UPLOAD MANDATORY INFORMATION NAMELY: (BUSINESS REGISTRATION/ DIRECTORSHIP/ MEMBERSHIP/IDENTITY NUMBERS; TAX COMPLIANCE STATUS; AND BANKING INFORMATION FOR VERIFICATION PURPOSES). B-BBEE CERTIFICATE OR SWORN AFFIDAVIT FOR B-BBEE MUST BE SUBMITTED TO BIDDING INSTITUTION.**
1.4. **WHERE A BIDDER IS NOT REGISTERED ON THE CSD, MANDATORY INFORMATION NAMELY: (BUSINESS REGISTRATION/ DIRECTORSHIP/ MEMBERSHIP/IDENTITY NUMBERS; TAX COMPLIANCE STATUS MAY NOT BE SUBMITTED WITH THE BID DOCUMENTATION. B-BBEE CERTIFICATE OR SWORN AFFIDAVIT FOR B-BBEE MUST BE SUBMITTED TO BIDDING INSTITUTION.**
1.5. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000 AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.
1.6. BIDDERS ARE REQUIRED TO ACHIEVE A STIPULATED MINIMUM THRESHOLD FOR LOCAL PRODUCTION AND CONTENT AS PER DTIC DESIGNATED SECTOR AS PER SECTION 8 OF THE PPPFA REGULATION OF 2017. BIDDERS MUST COMPLETE SBD6.2 WITH ANNEXURE C AND MUST BE SUBMITTED WITH THE QUOTE. FAILURE TO SUBMIT WILL INVALIDATE THE BID
1.7. **THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (SBD7).**
2. TAX COMPLIANCE REQUIREMENTS
2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.
2.3 APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.
2.4 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
2.5 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
2.6 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.
2.7 NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE."

NB: FAILURE TO PROVIDE / OR COMPLY WITH ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.

SIGNATURE OF BIDDER: ……

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

DATE: ……...

T 1.2

Tender Data

T1.2 Tender Data

The conditions of tender are the Standard Conditions of Tender as contained in Annex C of the CIDB Standard for Uniformity in Construction Procurement (August 2019). (See **www.cidb.org.za).**

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

The additional conditions of tender are:

Clause	Data
C.1.1	The employer is the Department of Rural Development and Agrarian Reform, Eastern Cape Provincial Government**.**
C.1.2	The tender documents issued by the employer comprise: T1.1 Tender notice and invitation to tender T1.2 Tender data T2.1 List of returnable documents **Part 1: Agreements and contract data** C1.1 Form of offer and acceptance C1.2 Contract data C1.3 Form of Guarantee C1.4 Adjudicator's Contract **Part 2: Pricing data** C2.1 Pricing instructions C2.2 Activity schedules / Bills of Quantities **Part 3: Scope of work** C3.1 Scope of work C3.2 Specifications **Part 4 : Site information** C4.1 Site information C4.2 Drawings Additional documents of which the Contractor are to obtain their own copies are: **"General Conditions of Contract for Construction Works – 3rd Edition 2015".** This document is issued by the South African Institution of Civil Engineering. (Short title "General Conditions of Contract for Construction Works 2015"), and is obtainable separately. Tenderers shall obtain their own copies. **"South African National Standards".** These documents are obtainable separately, and tenderers shall obtain their own copies of the applicable sections. **"The Occupational Health and Safety Act No 85 of 1993 and Amendment Act No 181 of 1993, and the Construction Regulations 2014".** This document is obtainable separately, and tenderers shall obtain their own copies. In addition, tenderers are advised, in their own interest, to obtain their own copies of the following acts, regulations and standards referred to in this document as they are essential for the tenderer to get

	acquainted with the basics of construction management, the implementation of preferential construction procurement policies and participation of targeted enterprise and labour. **The Construction Industry Development Board Act No 38 of 2000 and the Regulations in terms of the CIDB Act 38/2000, Government Notice No 692 of 9 June 2004**, **SANS 1921:2004 Construction and Management** Part 1: General Engineering and Construction Works; Part 6: HIV/AIDS Awareness. **SANS 10396:2003 Implementing Preferential Construction Procurement Policies using Targeted Procurement Procedures** **SANS 1914:2003 Targeted Construction Procurement, Parts 1 to 6, dealing with Participation of Targeted Enterprises, Joint Ventures, Targeted Labour etc.** **The Department of Rural Development and Agrarian Reform Procurement Policy.** The Tender Document and the drawings shall be obtained from the Employer or his authorized representative at the physical address stated in the Tender Notice, upon payment of the deposit stated in the Tender Notice.
C.1.4	The employer's agent is: Mr. T. Musara 043 706 8777 Tapiwanashe.Musara@drdar.gov.za
C.2.1	Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations for a **3 GB or HIGHER class** of construction work, are eligible to have their tenders evaluated. Bidders exceeding the threshold of CIDB grade **3** in combination with any other contract awarded to the contractor which will be executed simultaneously could be regarded as non-responsive. Joint ventures are eligible to submit tenders provided that: 1. every member of the joint venture is registered with the CIDB; 2. the lead partner has a contractor grading designation in the **3 GB or HIGHER** class of construction work; and 3. the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a **3 GB or HIGHER** class of construction work or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations.
C.2.2	The employer **will not** compensate the tenderer for any costs incurred during the tender process.
C.2.7	The arrangements for a clarification meeting are as stated in the Tender Notice and Invitation to Tender.
C.2.13.2	Submit one original document completed in black ink. The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.

	Ensure that the employer receives the tender offer at the address specified in the tender data not later than the closing time stated in the tender data. Proof of posting shall not be accepted as proof of delivery. Accept that, if the employer extends the closing time stated in the tender data for any reason, the requirements of the standard conditions of tender in this part of SANS 10845 apply equally to the extended deadline.
C.2.13.5	The employer's address for delivery of tender offers and identification details to be shown on each tender offer package are: Location of tender box: THE DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM, OLD BKB BUILDING, CNR FITZPATRICK AND PANMURE, ARCADIA. Physical address: OLD BKB BUILDING, CNR FITZPATRICK AND PANMURE, ARCADIA Identification details: Reference number, title of tender and the closing date and time of the tender. Postal address: **Department of Rural Development and Agrarian Reform** **Supply Chain Management Directorate** **Private Bag X 9032** **EAST LONDON, 5200**
C.2.13.9	Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.
C.2.15.	The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.
C.2.17.	Additional information/clarification could be requested after closure of the bid. Non-submission / late submission of such information/clarification, could result in the bid being declared non-responsive. The employer may also request additional information / bank ratings, in order to establish the financial capacity of the bidder. Non-submission / late submission of such information / bank ratings, could result in the bid being declared non-responsive.
C.2.16.	The tender offer validity period is 90 days
C.2.23.	The tenderer is required to submit with his tender • a Certificate of Contractor Registration issued by the Construction Industry Development Board and where a tenderer satisfies CIDB contractor grading designation requirements through joint venture formation, such tenderers must submit the Certificates of Contractor Registration in respect of each partner. • a Copy of CSD registration Proof (Active & Recently updated). • a Copy of LOGIS registration Proof (Active & Recently updated) • Joint Venture Agreement and Power of attorney in case of a Joint Venture. • ID certificates in case of one-man concerns. • Workman's Compensation Registration Certificate. • Valid B-BBEE Certificate / affidavit.
C.3.11.	**This bid will be evaluated in Four (4) phases as follows:**

Phase One: Prequalification: Only bids of bidders adhering to the minimum cidb grading designation, and who's cidb registration is active will be considered further.

Phase Two: Bidders not meeting the minimum criteria stipulated for local production and content in the tender document will be disqualified from further evaluation.

Phase Three: Compliance, responsiveness to the bid rules and conditions, thereafter they will be evaluated on PPPFA.

Phase Four: Bidders passing all stages above will thereafter be evaluated on PPPFA.

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

Maximum points on price	-	**80 points**
Maximum points for B-BBEE	-	**20 points**
Maximum points	-	**100 points**

1. PHASE ONE: PRE-QUALIFICATION

1. Prequalification: Only bids of bidders adhering to the minimum cidb grading designation, and whose cidb registration is active will be considered further.

2. PHASE TWO: EVALUATION ON LOCAL PRODUCTION AND CONTENT

- On local content designated items, only locally produced goods or services with the stipulated minimum threshold for local content considered.
- Exchange rate to be used for the calculation of local content (local content and local production are used interchangeably) must be the exchange rate published by the SARB at 12:00 on the date, one week (7 calendar days) prior to the closing date of the bid.
- Failure to indicate minimum percentage (%) or not meeting minimum percentage for local content will automatically invalidate the bid for further consideration.
- If the raw material or input to be used for a specific item is not available locally, bidders should obtain written authorization from the DTIC should there be a need to import such raw material or input and a copy of this authorization letter must be submitted together with the bid document at the closing date and time.
- The tenderer has duly completed and signed the Declaration Certificate for Local Production and Content (**SBD 6.2 form)** together with **Annexure C** (Local Content Declaration: Summary Schedule) and submitted the documents at the closing date and time of the bid. Failure to submit will invalidate the bid.
- The main contractor may not sub contract work to an extent that the local content and production is compromised. The conditions and rules applying to the main bidder on local production and content also apply to the sub-contractor(s).
- For further information, bidders may contact the units dealing with Metal Fabrication, Capital and Rail Transport Equipment within DTIC at 012 394 5157. Email: TSamanga@thedtic.gov.za

3. PHASE THREE: RESPONSIVENESS TO THE BID REQUIREMENTS AND RULES

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

1. Bid Document (This Document must be submitted in its original format)
2. Bids which are late, incomplete, unsigned or submitted by facsimile or electronically, will not be accepted.
3. Bidder must be registered with CIDB in the correct grading and class of works as per the tender notice and requirements. Bidders must ensure that their CIDB status is active on

closing date. It is the responsibility of the bidder to keep the status on CIDB active throughout bidding process (advert until award stage).

4. Bidders must be a legal entity or partnership or joint venture or consortia.
5. Form of offer and Acceptance (fully completed and signed)
6. SBD 4- Declaration of Interest (fully completed and signed)
7. Compulsory Enterprise Questionnaire (Completed and signed)
8. If the offer (any of the items quoted for) is "Vat Inclusive", the VAT registration number of service provider must be indicated. Bidders are not entitled to claim the VAT if they are not VAT registered.
9. Certificate of Authority for Joint Ventures (if applicable). In the case of a joint venture, a signed JV agreement stating the share interest or percentage of each partner should also be made available to the department by the JV.
10. Resolution to Sign (if applicable)
11. Attendance of compulsory briefing meeting (where applicable)
12. Only one offer per item per bidder is allowed and alternative offers will not be considered. If more than one offer per item is received, none of the offers will be considered. Bidders are also not allowed to submit a bid/ quotation whilst they are in agreements with other bidders in the form of joint ventures or consortiums.
13. This tender will be awarded as a whole. All trades listed in the Bills of Quantities or Pricing schedule must be priced for (except provisional sums and allowances), failure to do so will result increase commercial risk of the bid and may lead to elimination or passing over of the bidder.

B. Other Conditions of bid/ Non eliminating

1. DRDAR Policy applies.
2. Returnable Schedule: SBD1 – Invitation to bid must be completed and signed
3. The bidder must be registered on the Central Supplier Database (CSD) prior the award
4. All bidders' tax matters must be in order prior award. Bidders' tax matters will be verified through CSD.
5. Declaration of Employees of the State or other State Institutions.
6. Bidders must submit a minimum of three (3) written contactable references for projects successfully completed in the past (clearly indicating client name, contract value, contract term, contact person, contact details). Refer to Annexure I and Annexure M. This is not an elimination factor, but important for the department to make a decision. Unless it is used for Quality/functionality Points.
7. Bidders must submit a list of projects where he or she has submitted tender offers but tender results have not been confirmed by the client. Refer to Annexure L. This is not an elimination factor, but important for the department to make a decision. Unless it is used for Quality/functionality Points.
8. Bidders must submit their company profiles, list of available resources, plant and machinery and any other additional capacity with the bid. Refer to Annexure K and H. This is not an elimination factor, but important for the department to make a decision. Unless it is used for Quality/functionality Points.
9. The bidder must also list all projects where there are pending litigations or litigations have been concluded. The form for this is also attached after Annexure J.
10. Failure to complete section 7: SUB-CONTRACTING as per the SBD 6.1, will automatically results in the non-awarding of points for B-BBEE.
11. Should the bidder intend to sub-contract more than 25%, it is compulsory to submit valid B-BBEE certificates or a valid original or certified copy of a Sworn Affidavit attested by a Commissioner of Oaths (for EMEs/QSEs) for all proposed sub-contractors. Failure will automatically result in no points awarded for B-BBEE, irrespective if the main bidder submitted an original or certified copy of his/her own B-BBEE certificate.
12. A valid original or certified copy of B-BBEE certificate must be submitted with the bid OR a valid original or certified copy of a Sworn Affidavit attested by a Commissioner of Oaths prepared and issued in terms of the amended B-BBEE Construction Sector Codes (CSC000) must be submitted in order to qualify for preference points for B-BBEE. In case of a joint venture or consortium a valid original or certified copy of B-BBEE certificate must submit a consolidated B-BBEE certificate. In case of EMEs/QSEs (joint venture) submitting separate Sworn Affidavits, the EME or QSE with the lowest B-BBEE contributor will be used for purposes of calculating points. Bidders are encouraged to either consolidate their B-BBEE point calculations or form joint ventures with partners

which have the same level of B-BEE contribution or higher. Failure to comply, will automatically results in the non-awarding of points for B-BBEE.

13. The Department will contract with the successful bidder by signing a formal contract.
14. This tender will be awarded as a whole. All trades listed in the Bills of Quantities or Pricing schedule must be priced for (except provisional sums and allowances which also need to be added to the total), failure to do so will increase commercial risk of the bid and may lead to elimination or passing over of the bidder.
15. Wherever a brand name is specified in this document (i.e. specifications, pricing schedule, bill of quantities or anywhere), the department requires an item similar/equivalent or better.

4. PHASE FOUR: EVALUATION POINTS ON PRICE AND B-BBEE REGULATIONS OF 2017

The **80/20 preference point system** shall be applied for the purposes of this bid as per the requirements of the *Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000)* and B-BBEE/ PPPFA Regulations *of 2017*

Criteria	Points
POINTS ON PRICE	**80**
B-BBEE	**20**
TOTAL	**100**

The 80/20 preference point system for acquisition of services, works or goods up to Rand value of R50 million:

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

The financial offer will be scored using the following formula:

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

The value of value of W_1 is:

1) 90 where the financial value inclusive of VAT of all responsive tenders received have a value in excess of R 50 000 000 or
2) 80 where the financial value inclusive of VAT of one or more responsive tender offers have a value that equals or is less than R 50 000 000.

5. COMPETITIVE NEGOTIATION PROCEDURES

1. The competitive negotiation procedures shall be used to negotiate with a number of responsive and qualified tenderers in order to arrive at the most acceptable offer in terms of one of the methods for the evaluation of tenders.
2. The employer shall negotiate with responsive and qualified tenderers when using the competitive negotiation procedures through one or more rounds of competitive negotiations, based on their rankings or the number of tender evaluation points, until the remaining tenderers are invited to submit final offers. During such negotiations, the employer:

   a) shall ensure equal treatment of all tenderers and not provide any requirements, criteria, guidelines, documents, clarification or other information relative to the negotiations in a discriminatory manner which may give some tenderers an advantage over others;
   b) may provide for the negotiated procedure to take place in successive stages in order to reduce the number of tenders to be negotiated with, by applying the evaluation criteria disclosed in the procurement documents that are issued to tenderers;

	c) may not reveal to the other participant's solutions proposed or other confidential information communicated by a tenderer participating in the process without that tenderer's agreement; d) may request that tender offers be clarified, specified and fine-tuned provided that such clarification, specification, fine-tuning or additional information does not: i) involve changes to the basic features of the tender process or the tender data; or ii) alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect on the tender process; and e) shall close the negotiation with tenderers when solutions which are capable of meeting its needs are identified, inform the tenderers accordingly and call for best and final offers. 3. Tenderers shall be informed of the competitive negotiation process and notified of the evaluation criteria and associated weightings in the tender data. The evaluation criteria associated with each successive round of negotiations shall not be varied. Tenderers shall be notified in advance of the weighting attached to each category or subcategory of evaluation criteria whenever another round of offers is called for.
C.3.13.	**Tender offers will only be accepted if:** a) the tenderer is registered on the Central Supplier Database (CSD) for the South African government (see https://secure.csd.gov.za/) unless it is a foreign supplier with no local registered entity b) the tenderer is in good standing with SARS according to the Central Supplier Database. Bidders must submit a CSD no. or tax status compliance pin. c) the preferred tenderer will be required to submit an approved insurer undertaking to provide the Performance Bond / Guarantee / Surety / Security to the format and/or standard as per contract data. d) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation; e) the tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; f) the tenderer has not: i) abused the Employer's Supply Chain Management System; or ii) failed to perform on any previous contract and has been given a written notice to this effect; g) the tenderer has completed the Compulsory Declaration and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process; h) the tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process and persons in the employ of the state are permitted to submit tenders or participate in the contract; i) Bids which are late, incomplete, unsigned or submitted by facsimile or electronically will not be accepted. j) the tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer; k) The tenderer undertakes to maximize the sourcing of building material or infrastructure input material from Eastern Cape based suppliers or manufacturers.

	l) the employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2014, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely. m) The SABS approved technical specification number SATS 12886:2011 and the Guidance on the Calculation of the local Content together with the Local Content Declaration Template (Annexure C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Annex C) are accessible to all potential bidders on the DTIC's official website. http://www.thedtic.gov.za/industrialdevelopment/ip.jsp at no cost. n) the tender has offered a market related offer. If the offer is believed not to be market related, the department through its Supply Chain Management bid committees will attempt to negotiate the offer with identified bidder/s to a reasonable amount. Bidders are not allowed to increase their tender offers during this process. o) A Resolution of signatory form has been completed and signed by director/s or a letter bearing a letterhead of the tenderer has been attached (specific to this bid) to the bid submission; it must be duly signed by all directors and submitted the bid. Only a duly authorized official can sign the bid. p) Prospective bidders must register on CSD prior submitting bids (open tenders). Any prospective bidder found to have Tax matters not in order with SARS (verified through CSD) during the evaluation process (after being given an opportunity to rectify tax matters) will be eliminated and not be considered further in the process. Preferred bidder/s will be afforded an opportunity to rectify their tax affairs within 7 days. A bidder that fails to rectify its tax matters with SARS will be eliminated. q) The bid will also be evaluated on designated sectors. Only locally produced goods or locally manufactured goods with a stipulated minimum threshold for local production and content will be considered. The bidder must correctly complete and sign SBD 6.2 and Annexure C to declare the Local Production and Content. Details of designated sectors are detailed in the bid documents. r) **NOTE:** The amount reflected on the Form of Offer and Acceptance takes precedence over any other total amount indicated elsewhere in bidder's tender submission. If the Form of Offer and Acceptance has no value or figure, the bidder will be regarded as having made no offer. s) The department reserves the right not to award the bid to the most favorable tenderer, if any of the situations occur: if it is not assisting in the advancement of designated groups; risk profile of the favorable firm is too high; the bidder has been awarded a considerable number of projects by the department or provincial government; has performed unsatisfactorily in the past, etc.
C.3.17.	The number of paper copies of the signed contract to be provided by the employer is one.

T1.3 STANDARD CONDITIONS OF TENDER

The conditions of tender are the Standard Conditions of Tender as contained in Annex C of the CIDB Standard for Uniformity in Construction Procurement (August 2019). (See www.cidb.org.za).

C.1 General

C.1.1 Actions

C.1.1.1 The employer and each tenderer submitting a tender offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in C.2 and C.3, timeously and with integrity, and behave equitably, honestly and transparently, comply with all legal obligations and not engage in anticompetitive practices.

C.1.1.2 The employer and the tenderer and all their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the employer shall declare any conflict of interest to whoever is responsible for overseeing the procurement process at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

Note: 1) A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.

2) Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty which would in any way affect any decisions taken.

C.1.1.3 The employer shall not seek and a tenderer shall not submit a tender without having a firm intention and the capacity to proceed with the contract.

C.1.2 Tender Documents

The documents issued by the employer for the purpose of a tender offer are listed in the tender data.

C.1.3 Interpretation

C.1.3.1 The tender data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of these conditions of tender.

C.1.3.2 These conditions of tender, the tender data and tender schedules which are required for tender evaluation purposes, shall form part of any contract arising from the invitation to tender.

C.1.3.3 For the purposes of these conditions of tender, the following definitions apply:

a) **conflict of interest** means any situation in which:

i) someone in a position of trust has competing professional or personal interests which make it difficult to fulfill his or her duties impartially;
ii) an individual or tenderer is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or

iii) incompatibility or contradictory interests exist between an employee and the tenderer who employs that employee.

b) **comparative offer** means the price after the factors of a non-firm price and all unconditional discounts it can be utilised to have been taken into consideration;

c) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the employer or his staff or agents in the tender process;

d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels;

C.1.4 Communication and employer's agent

Each communication between the employer and a tenderer shall be to or from the employer's agent only, and in a form that can be readily read, copied and recorded. Communications shall be in the English language. The employer shall not take any responsibility for non-receipt of communications from or by a tenderer. The name and contact details of the employer's agent are stated in the tender data.

C.1.5 Cancellation and Re-Invitation of Tenders

C.1.5.1 An employer may, prior to the award of the tender, cancel a tender if-

a) due to changed circumstances, there is no longer a need for the engineering and construction works specified in the invitation;

b) funds are no longer available to cover the total envisaged expenditure; or

c) no acceptable tenders are received.

d) there is a material irregularity in the tender process.

C.1.5.2 The decision to cancel a tender invitation must be published in the same manner in which the original tender invitation was advertised

C.1.5.3 An employer may only with the prior approval of the relevant treasury cancel a tender invitation for the second time.

C.1.6 Procurement procedures

a) C.1.6.1 General

Unless otherwise stated in the tender data, a contract will, subject to C.3.13, be concluded with the tenderer who in terms of C.3.11 is the highest ranked or the tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.

b) C.1.6.2 Competitive negotiation procedure

C.1.6.2.1 Where the tender data require that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of C.3.4, the employer shall announce only the names of the tenderers who make a submission. The requirements of C.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.

C.1.6.2.2 All responsive tenderers or at least a minimum of not less than three responsive tenderers that are highest ranked in terms of the evaluation criteria stated in the tender data shall be invited to enter into competitive negotiations based on the principle of equal treatment, keeping confidential the proposed solutions and associated information.

Notwithstanding the provisions of C.2.17, the employer may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

C.1.6.2.3 At the conclusion of each round of negotiations, tenderers shall be invited by the employer to revise their tender offer based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.

C.1.6.2.4 The contract shall be awarded in accordance with the provisions of C.3.11 and C.3.13 after tenderers have been requested to submit their best and final offer.

c) C.1.6.3 Proposal procedure using the two stage-system

C.1.6.3.1 Option 1

Tenderers shall in the first stage submit technical proposals and, if required, cost parameters around which a contract may be negotiated. The employer shall evaluate each responsive submission in terms of the method of evaluation stated in the tender data, and in the second stage negotiate a contract with the tenderer scoring the highest number of evaluation points and award the contract in terms of these conditions of tender.

C.1.6.3.2 Option 2

C.1.6.3.2.1 Tenderers shall submit in the first stage only technical proposals. The employer shall invite all responsive tenderers to submit tender offers in the second stage, following the issuing of procurement documents.

C.1.6.3.2.2 The employer shall evaluate tenders received during the second stage in terms of the method of evaluation stated in the tender data, and award the contract in terms of these conditions of tender.

C.2 Tenderer's obligations

C.2.1 Eligibility

C.2.1.1 Submit a tender offer only if the tenderer satisfies the criteria stated in the tender data and the tenderer, or any of his principals, is not under any restriction to do business with employer.

C.2.1.2 Notify the employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used by the employer as the basis in a prior process to invite the tenderer to submit a tender offer and obtain the employer's written approval to do so prior to the closing time for tenders.

C.2.2 Cost of tendering

C.2.2.1 Accept that, unless otherwise stated in the tender data, the employer will not compensate the tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer complies with requirements.

C.2.2.2 The cost of the tender documents charged by the employer shall be limited to the actual cost incurred by the employer for printing the documents. Employers must attempt to make available the tender documents on its website so as not to incur any costs pertaining to the printing of the tender documents.

C.2.3 Check documents

Check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.

C.2.4 Confidentiality and copyright of documents

Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a tender offer in response to the invitation.

C.2.5 Reference documents

Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are not attached but which are incorporated into the tender documents by reference.

C.2.6 Acknowledge addenda

Acknowledge receipt of addenda to the tender documents, which the employer may issue, and if necessary apply for an extension to the closing time stated in the tender data, in order to take the addenda into account.

C.2.7 Clarification meeting

Attend, where required, a clarification meeting at which tenderers may familiarize themselves with aspects of the proposed work, services or supply and raise questions. Details of the meeting(s) are stated in the tender data.

C.2.8 Seek clarification

Request clarification of the tender documents, if necessary, by notifying the employer at least five (5) working days before the closing time stated in the tender data.

C.2.9 Insurance

Be aware that the extent of insurance to be provided by the employer (if any) might not be for the full cover required in terms of the conditions of contract identified in the contract data. The tenderer is advised to seek qualified advice regarding insurance.

C.2.10 Pricing the tender offer

C.2.10.1 Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes except Value Added Tax (VAT), and other levies payable by the successful tenderer, such duties, taxes and levies being those applicable fourteen (14) days before the closing time stated in the tender data.

C.2.10.2 Show VAT payable by the employer separately as an addition to the tendered total of the prices.

C.2.10.3 Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the contract data.

C.2.10.4 State the rates and prices in Rand unless instructed otherwise in the tender data. The conditions of contract identified in the contract data may provide for part payment in other currencies.

C.2.11 Alterations to documents

Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations.

C.2.12 Alternative tender offers

C.2.12.1 Unless otherwise stated in the tender data, submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted as well as a schedule that compares the requirements of the tender documents with the alternative requirements that are proposed.

C.2.12.2 Accept that an alternative tender offer must be based only on the criteria stated in the tender data or criteria otherwise acceptable to the employer.

C.2.12.3 An alternative tender offer must only be considered if the main tender offer is the winning tender.

C.2.13 Submitting a tender offer

C.2.13.1 Submit one tender offer only, either as a single tendering entity or as a member in a joint venture to provide the whole of the works identified in the contract data and described in the scope of works, unless stated otherwise in the tender data.

C.2.13.2 Return all returnable documents to the employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.

C.2.13.3 Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the tender data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the employer.

C.2.13.4 Sign the original and all copies of the tender offer where required in terms of the tender data. The employer will hold all authorized signatories liable on behalf of the tenderer. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.

C.2.13.5 Seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY". Each package shall state on the outside the employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.

C.2.13.6 Where a two-envelope system is required in terms of the tender data, place and seal the returnable documents listed in the tender data in an envelope marked “financial proposal” and place the remaining returnable documents in an envelope marked “technical proposal”. Each envelope shall state on the outside the employer’s address and identification details stated in the tender data, as well as the tenderer's name and contact address.

C.2.13.7 Seal the original tender offer and copy packages together in an outer package that states on the outside only the employer's address and identification details as stated in the tender data.

C.2.13.8 Accept that the employer will not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.

C.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the tender data.

C.2.14 Information and data to be completed in all respects

Accept that tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the employer as non-responsive.

C.2.15 Closing time

C.2.15.1 Ensure that the employer receives the tender offer at the address specified in the tender data not later than the closing time stated in the tender data. Accept that proof of posting shall not be accepted as proof of delivery.

C.2.15.2 Accept that, if the employer extends the closing time stated in the tender data for any reason, the requirements of these conditions of tender apply equally to the extended deadline.

C.2.16 Tender offer validity

C.2.16.1 Hold the tender offer(s) valid for acceptance by the employer at any time during the validity period stated in the tender data after the closing time stated in the tender data.

C.2.16.2 If requested by the employer, consider extending the validity period stated in the tender data for an agreed additional period with or without any conditions attached to such extension.

C.2.16.3 Accept that a tender submission that has been submitted to the employer may only be withdrawn or substituted by giving the employer's agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted. If the validity period stated in C.2.16 lapses before the employer evaluating tender, the contractor reserves the right to review the price based on Consumer Price Index (CPI).

C.2.16.4 Where a tender submission is to be substituted, a tenderer must submit a substitute tender in accordance with the requirements of C.2.13 with the packages clearly marked as "SUBSTITUTE".

C.2.17 Clarification of tender offer after submission

Provide clarification of a tender offer in response to a request to do so from the employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

Note: *Sub-clause C.2.17 does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the Employer elect to do so.*

C.2.18 Provide other material

C.2.18.1 Provide, on request by the employer, any other material that has a bearing on the tender offer, the tenderer's commercial position (including notarized joint venture agreements), referencing arrangements, or samples of materials, considered necessary by the employer for the purpose of a full and fair risk assessment.

Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the employer's request, the employer may regard the tender offer as non-responsive.

C.2.18.2 Dispose of samples of materials provided for evaluation by the employer, where required.

C.2.19 Inspections, tests and analysis

Provide access during working hours to premises for inspections, tests and analysis as provided for in the tender data.

C.2.20 Submit securities, bonds and policies

If requested, submit for the employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies and certificates of insurance required in terms of the conditions of contract identified in the contract data.

C.2.21 Check final draft

Check the final draft of the contract provided by the employer within the time available for the employer to issue the contract.

C.2.22 Return of other tender documents

If so instructed by the employer, return all retained tender documents within twenty-eight (28) days after the expiry of the validity period stated in the tender data.

C.2.23 Certificates

Include in the tender submission or provide the employer with any certificates as stated in the tender data.

C.3 The employer's undertakings

C.3.1 Respond to requests from the tenderer

C.3.1.1 Unless otherwise stated in the tender Data, respond to a request for clarification received up to five (5) working days before the tender closing time stated in the Tender Data and notify all tenderers who collected tender documents.

C.3.1.2 Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to prequalify a tenderer to submit a tender offer in terms of a previous procurement process and deny any such request if as a consequence:

a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements;
b) the new partners to a joint venture were not prequalified in the first instance, either as individual firms or as another joint venture; or
c) in the opinion of the Employer, acceptance of the material change would compromise the outcome of the prequalification process.

C.3.2 Issue Addenda

If necessary, issue addenda that may amend or amplify the tender documents to each tenderer during the period from the date that tender documents are available until three (3) working days before the tender closing time stated in the Tender Data. If, as a result a tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all tenderers who collected tender documents.

C.3.3 Return late tender offers

Return tender offers received after the closing time stated in the Tender Data, unopened, (unless it is necessary to open a tender submission to obtain a forwarding address), to the tenderer concerned.

C.3.4 Opening of tender submissions

C.3.4.1 Unless the two-envelope system is to be followed, open valid tender submissions in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.

C.3.4.2 Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the tender data, the name of each tenderer whose tender offer is opened and, where applicable, the total of his prices, number of points claimed for its BBBEE status level and time for completion for the main tender offer only.

C.3.4.3 Make available the record outlined in C.3.4.2 to all interested persons upon request.

C.3.5 Two-envelope system

C.3.5.1 Where stated in the tender data that a two-envelope system is to be followed, open only the technical proposal of valid tenders in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data and announce the name of each tenderer whose technical proposal is opened.

C.3.5.2 Evaluate functionality of the technical proposals offered by tenderers, then advise tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of tenderers, who score in the functionality evaluation more than the minimum number of points for functionality stated in the tender data, and announce the score obtained for the technical proposals and the total price and any points claimed on BBBEE status level. Return unopened financial proposals to tenderers whose technical proposals failed to achieve the minimum number of points for functionality.

C.3.6 Non-disclosure

Not disclose to tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful tenderer.

C.3.7 Grounds for rejection and disqualification

Determine whether there has been any effort by a tenderer to influence the processing of tender offers and instantly disqualify a tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.

C.3.8 Test for responsiveness

C.3.8.1 Determine, after opening and before detailed evaluation, whether each tender offer properly received:

a) complies with the requirements of these Conditions of Tender,
b) has been properly and fully completed and signed, and
c) is responsive to the other requirements of the tender documents.

C.3.8.2 A responsive tender is one that conforms to all the terms, conditions, and specifications of the tender documents without material deviation or qualification. A material deviation or qualification is one which, in the Employer's opinion, would:

a) detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work,
b) significantly change the Employer's or the tenderer's risks and responsibilities under the contract, or
c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.

Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.

C.3.9 Arithmetical errors, omissions and discrepancies

C.3.9.1 Check responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.

C.3.9.2 Check the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with C.3.11 for:

a) the gross misplacement of the decimal point in any unit rate;
b) omissions made in completing the pricing schedule or bills of quantities; or c) arithmetic errors in:

(i) line item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or (ii) the summation of the prices.

C.3.9.3 Notify the tenderer of all errors or omissions that are identified in the tender offer and either confirm the tender offer as tendered or accept the corrected total of prices.

C.3.9.4 Where the tenderer elects to confirm the tender offer as tendered, correct the errors as follows:

a) If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.

b) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern and the tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.

C.3.10 Clarification of a tender offer

Obtain clarification from a tenderer on any matter that could give rise to ambiguity in a contract arising from the tender offer.

C.3.11 Evaluation of tender offers

The Standard Conditions of Tender standardize the procurement processes, methods and procedures from the time that tenders are invited to the time that a contract is awarded. They are generic in nature and are made project specific through choices that are made in developing the Tender Data associated with a specific project.

Conditions of tender are by definition the document that establishes a tenderer’s obligations in submitting a tender and the employer’s undertakings in soliciting and evaluating tender offers. Such conditions establish the rules from the time a tender is advertised to the time that a contract is awarded and require employers to conduct the process of offer and acceptance in terms of a set of standard procedures.

The CIDB Standard Conditions of Tender are based on a procurement system that satisfies the following system requirements:	
Requirement	**Qualitative interpretation of goal**
Fair	The process of offer and acceptance is conducted impartially without bias, providing simultaneous and timely access to participating parties to the same information.
Equitable	Terms and conditions for performing the work do not unfairly prejudice the interests of the parties.

Transparent	The only grounds for not awarding a contract to a tenderer who satisfies all requirements are restrictions from doing business with the employer, lack of capability or capacity, legal impediments and conflicts of interest.
Competitive	The system provides for appropriate levels of competition to ensure cost effective and best value outcomes.
Cost effective	The processes, procedures and methods are standardized with sufficient flexibility to attain best value outcomes in respect of quality, timing and price, and least resources to effectively manage and control procurement processes.

The activities associated with evaluating tender offers are as follows:

a) Open and record tender offers received
b) Determine whether or not tender offers are complete
c) Determine whether or not tender offers are responsive
d) Evaluate tender offers
e) Determine if there are any grounds for disqualification
f) Determine acceptability of preferred tenderer
g) Prepare a tender evaluation report
h) Confirm the recommendation contained in the tender evaluation report

d) C.3.11.1 General

The employer must appoint an evaluation panel of not less than three persons conversant with the proposed scope of works to evaluate each responsive tender offer using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the tender data.

C.3.12 Insurance provided by the employer

If requested by the proposed successful tenderer, submit for the tenderer's information the policies and / or certificates of insurance which the conditions of contract identified in the contract data, require the employer to provide.

C.3.13 Acceptance of tender offer

Accept the tender offer; if in the opinion of the employer, it does not present any risk and only if the tenderer:

a) is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement;
b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract;
c) has the legal capacity to enter into the contract;
d) is not; insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act No. 2008, bankrupt or being wound up, has his/her affairs administered by a court or a judicial officer, has suspended his/her business activities or is subject to legal proceedings in respect of any of the foregoing;
e) complies with the legal requirements, if any, stated in the tender data; and
f) is able, in the opinion of the employer, to perform the contract free of conflicts of interest.

C.3.14 Prepare contract documents

C.3.14.1 If necessary, revise documents that shall form part of the contract and that were issued by the employer as part of the tender documents to take account of:

a) addenda issued during the tender period,
b) inclusion of some of the returnable documents and
c) other revisions agreed between the employer and the successful tenderer.

C.3.14.2 Complete the schedule of deviations attached to the form of offer and acceptance, if any.

C.3.15 Complete adjudicator's contract

Unless alternative arrangements have been agreed or otherwise provided for in the contract, arrange for both parties to complete formalities for appointing the selected adjudicator at the same time as the main contract is signed.

C.3.16 Registration of the award

An employer must, within twenty-one (21) working days from the date on which a contractor's offer to perform a construction works contract is accepted in writing by the employer, register and publish the award on the cidb Register of Projects.

C.3.17 Provide copies of the contracts

Provide to the successful tenderer the number of copies stated in the Tender Data of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

C.3.18 Provide written reasons for actions taken

Provide upon request written reasons to tenderers for any action that is taken in applying these conditions of tender but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

PART T2 - RETURNABLE DOCUMENTS

BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

T2.1 List of Returnable Documents

The tenderer must complete the following returnable documents:

1 Returnable Schedules required only for tender evaluation purposes

- Certificate of authority for joint ventures (where applicable)
- Compulsory Enterprise Questionnaire
- Record of Addenda to Tender Documents
- Proposed Amendments and Qualifications
- Schedule of Subcontractors
- Schedule of Plant and Equipment
- Schedule of the Tenderer's Experience
- Schedule of current projects

2 Other documents required only for tender evaluation purposes

- Proof of registration on the CSD and copy of active and updated certificate attached.
- Certificate of Contractor Registration issued by the Construction Industry Development Board.
- Certificate of B-BBEE Registration with level of contribution.

3 Returnable Schedules that will be incorporated into the contract

- Preferencing Schedule SBD 6.1
- Declaration Certificate for Local Production and Content for Designated Sectors SBD 6.2

4 Other documents that will be incorporated into the contract

- Declaration of validity of information.
- Bidder's Declaration - SBD 4.
- Certificate of tenderer's visit to site.
- Tenderer's financial standing.
- Surety and Bank details.
- Form of intent to provide a Performance Guarantee.
- Key personnel for project.
- Curriculum Vitae of key personnel.
- Preliminary Construction Programme.
- Alteration by tenderer.
- Contractor's Health and Safety declaration.
- Contractor's Health and Safety Plan.

5 The offer portion of the C1.1 Offer and Acceptance

6 C1.2 Contract Data (Part 2)

7 C2.2 Bills of quantities

CERTIFICATE OF AUTHORITY FOR JOINT VENTURES

This Returnable Schedule is to be completed by joint ventures.

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

NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
Lead partner		Signature ……..…….. Name …… Designation ……
		Signature …….. Name …… Designation ……
		Signature …….. Name …… Designation ……
		Signature …….. Name …… Designation ……

COMPULSORY ENTERPRISE QUESTIONNAIRE

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

Section 1: **Name of enterprise:** _____

Section 2: **VAT registration number, if any:** _____

Section 3: **cidb registration number, if any:** _____

Section 4: **CSD number:** _____

Section 5: **Particulars of sole proprietors and partners in partnerships:**

Name*	**Identity number***	**Personal income tax number***

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

Section 6: **Particulars of companies and close corporations**

Company registration number: _____

Close corporation number: _____

Tax reference number: _____

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

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

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

i) Authorize the employer to verify the tenderers tax clearance status from the South African Revenue Service that it is in order;

ii) Confirms that neither the name of the enterprise or the name of any partner, manager, director or any other person, who wholly or partly exercises or may exercise control over the enterprise, appears on the Register of Tender Defaulters established in terms of the Prevention and combating of Corruption Activities Act of 2004;

iii) Confirms that no partner, manager, director or any other person, who wholly or partly exercises or may exercise control over the enterprise, has within the last five years been convicted of fraud or corruption;

iv) Confirms that I/we are not associated, linked or involved with any other rendering entities submitting tender offers and have no other relationship with any of the tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest; and

v) Confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

Signed		Date	
Name		Position	
Enterprise name			

RECORD OF ADDENDA TO TENDER DOCUMENTS

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

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

Attach additional pages if more space is required.

Signed		Date	
Name		Position	
Tenderer			

PROPOSED AMENDMENTS AND QUALIFICATIONS

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

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

Page	Clause or item	Proposal

Signed		Date	
Name		Position	
Tenderer			

SCHEDULE OF PROPOSED SUBCONTRACTORS

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

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

	Name and address of proposed Subcontractor	Nature and extent of work	Previous experience with Subcontractor.
1.			
2.			
3.			
4.			
5.			

Signed		Date	
Name		Position	
Tenderer			

SCHEDULE OF PLANT AND EQUIPMENT

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

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

Quantity	Description, size, capacity, etc.

Attach additional pages if more space is required.

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

Quantity	Description, size, capacity, etc.

Attach additional pages if more space is required.

Signed		Date	
Name		Position	
Tenderer			

SCHEDULE OF THE TENDERER'S EXPERIENCE

The following is a statement of similar work in respect of this tender successfully executed by myself / ourselves during the past three (3) years:

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

Signed		Date	
Name		Position	
Tenderer			

SCHEDULE OF CURRENT PROJECTS

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

The description of each project must include the following information:

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

NO.	NAME OF PROJECT.	NAME OF CLIENT.	CONTACT DETAILS OF CLIENT.	PROJECT VALUE	STAGE OF PROJECT
1					
2					
3					

	Attach a separate page to address this issue (the above table is just for reference purposes).
The undersigned, who warrants that she/ he is duly authorised to do so on behalf of the enterprise, confirms that the content of this schedule that presented by the tenderer are within my personal knowledge and are to the best of my knowledge both true and correct.	

Signed		Date	
Name		Position	
Enterprise Name			

CONTRACTORS CERTIFICATE OF REGISTRATION ON CSD

[The tenderer shall submit the Contractor's Certificate of Registration on the CSD. Failure to submit the certificate with the tender document will lead to the conclusion that the tenderer is not registered on the National Treasury Central Suppliers Database and therefore not eligible to tender].

CONTRACTORS CERTIFICATE OF REGISTRATION WITH CIDB

[The tenderer shall submit the Contractor's Certificate of Registration with CIDB. Failure to submit the certificate with the tender document will lead to the conclusion that the tenderer is not registered with the CIDB and therefore not eligible to tender].

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

SBD 6.1

This preference form must form part of all bids invited. It contains general information and serves as a claim form for preference points for Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution

NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017.

---

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to all bids:

- the 80/20 system for requirements with a Rand value of up to R 50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R 50 000 000 (all applicable taxes included).

1.2

a) The value of this bid is estimated to **not exceed R 50 000 000** (all applicable taxes included) and therefore the 80/20 preference point system shall be applicable; or

b) Either the 80/20 or 90/10 preference point system will be applicable to this tender (*delete whichever is not applicable for this tender*).

1.3 Points for this bid shall be awarded for:

(a) Price; and

(b) B-BBEE Status Level of Contributor.

1.4 The maximum points for this bid are allocated as follows:

	POINTS
PRICE	80
B-BBEE STATUS LEVEL OF CONTRIBUTOR	20
Total points for Price and B-BBEE must not exceed	**100**

1.5 Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

1.6 The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

2. DEFINITIONS

(a) **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;

(b) "**B-BBEE status level of contributor"** means the B-BBEE status of an entity in terms of a code of good practice on black economic empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;

(c) **"bid"** means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of goods or services, through price quotations, advertised competitive bidding processes or proposals;

(d) **"Broad-Based Black Economic Empowerment Act"** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);

(e) **"EME"** means an Exempted Micro Enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;

(f) **"functionality"** means the ability of a tenderer to provide goods or services in accordance with specifications as set out in the tender documents.

(g) **"prices"** includes all applicable taxes less all unconditional discounts;

(h) **"proof of B-BBEE status level of contributor"** means:

1) B-BBEE Status level certificate issued by an authorized body or person;

2) A sworn affidavit as prescribed by the B-BBEE Codes of Good Practice;

3) Any other requirement prescribed in terms of the B-BBEE Act;

(i) **"QSE"** means a qualifying small business enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;

(j) **"rand value"** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;

3. POINTS AWARDED FOR PRICE

3.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

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

80/20 **or** **90/10**

$$Ps = 80\left(1 - \frac{Pt - P\min}{P\min}\right) \quad \text{or} \quad Ps = 90\left(1 - \frac{Pt - P\min}{P\min}\right)$$

Where

Ps = Points scored for price of bid under consideration

Pt = Price of bid under consideration

Pmin = Price of lowest acceptable bid

4. POINTS AWARDED FOR B-BBEE STATUS LEVEL OF CONTRIBUTOR

4.1 In terms of Regulation 6 (2) and 7 (2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (90/10 system)	Number of points (80/20 system)
1	10	20
2	9	18
3	6	14
4	5	12
5	4	8
6	3	6
7	2	4
8	1	2
Non-compliant contributor	0	0

5. BID DECLARATION

5.1 Bidders who claim points in respect of B-BBEE Status Level of Contribution must complete the following:

6. B-BBEE STATUS LEVEL OF CONTRIBUTOR CLAIMED IN TERMS OF PARAGRAPHS 1.4 AND 4.1

6.1 B-BBEE Status Level of Contributor: _____ = _____ (maximum of 10 or 20 points)

(Points claimed in respect of paragraph 7.1 must be in accordance with the table reflected in paragraph 4.1 and must be substantiated by relevant proof of B-BBEE status level of contributor.

7. SUB-CONTRACTING

7.1 Will any portion of the contract be sub-contracted?

(***Tick applicable box***)

YES		NO	

7.1.1 If yes, indicate:

i) What percentage of the contract will be subcontracted? .....…… %
ii) The name of the sub-contractor: ……..
iii) The B-BBEE status level of the sub-contractor: .....……..
iv) Whether the sub-contractor is an EME or QSE:
v)

(Tick applicable box)

YES		NO	

vi) Specify, by ticking the appropriate box, if subcontracting with an enterprise in terms of Preferential Procurement Regulations,2017:

Designated Group: An EME or QSE which is at last 51% owned by:	EME √	QSE √
Black people		
Black people who are youth		
Black people who are women		
Black people with disabilities		
Black people living in rural or underdeveloped areas or townships		
Cooperative owned by black people		
Black people who are military veterans		
OR		
Any EME		
Any QSE		

8. **DECLARATION WITH REGARD TO COMPANY/FIRM**

8.1 Name of company/firm: …….

8.2 VAT registration number: ……

8.3 Company registration number: ……

8.4 TYPE OF COMPANY/ FIRM

□ Partnership/Joint Venture / Consortium
□ One-person business/sole propriety
□ Close corporation
□ Company
□ (Pty) Limited
[TICK APPLICABLE BOX]

8.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

……
……
……

8.6 COMPANY CLASSIFICATION

□ Manufacturer
□ Supplier
□ Professional service provider
□ Other service providers, e.g. transporter, etc.
[*TICK APPLICABLE BOX*]

8.7 Total number of years the company/firm has been in business: ……

8.8 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBEE status level of contributor indicated in paragraphs 1.4 and 6.1 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

i) The information furnished is true and correct;

ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;

iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 6.1, the contractor may be required to furnish documentary proof to the satisfaction of

the purchaser that the claims are correct;

iv) If the B-BBEE status level of contributor has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –

(a) disqualify the person from the bidding process;

(b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;

(c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;

(d) recommend that the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted by the National Treasury from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and

(e) forward the matter for criminal prosecution.

WITNESSES

1. ……..…..

2. …….

……
SIGNATURE(S) OF BIDDERS(S)

DATE: ……..

ADDRESS ……..

……..

……..

SWORN AFFIDAVIT – B-BBEE EXEMPTED MICRO ENTERPRISE - GENERAL

SWORN AFFIDAVIT – B-BBEE QUALIFYING SMALL ENTERPRISE (QSE) – CONTRACTORS

I, the undersigned,

Full name & Surname	
Identity number	

Hereby declare under oath as follows:

1. The contents of this statement are to the best of my knowledge a true reflection of the facts.

2. I am a Member / Director / Owner of the following enterprise and am duly authorised to act on its behalf:

Enterprise Name:	
Trading Name (If	
Registration Number:	
Enterprise Physical Address:	
Type of Entity (CC, (Pty) Ltd, Sole Prop	
Nature of Business:	
Definition of "Black People"	As per the Broad-Based Black Economic Empowerment Act 53 of 2003 as Amended by Act No 46 of 2013 "Black People" is a generic term which means Africans, Coloureds and Indians – (a) Who are citizens of the Republic of South Africa by birth or descent; or (b) Who became citizens of the Republic of South Africa by naturalization- i. Before 27 April 1994; or ii. On or after 27 April 1994 and who would have been entitled to acquire citizenship by naturalization prior to that date.

3. I hereby declare under Oath that:

☐ The Enterprise is _____% **Black Owned** as per Amended Code Series CSC000 of the Revised Construction Sector Codes of Good Practice issued under section 9 (1) of B-BBEE Act No 53 of 2003 as Amended by Act No 46 of 2013,

☐ The Enterprise is _____% **Black Woman Owned** as per Amended Code Series CSC000 of the Revised Construction Sector Codes of Good Practice issued under section 9 (1) of B-BBEE Act No 53 of 2003 as Amended by Act No 46 of 2013,

☐ The Enterprise is _____% Black Designated Group Owned as per Amended Code Series CSC000 of the Revised Construction Sector Codes of Good Practice issued under section 9 (1) of B-BBEE Act No 53 of 2003 as Amended by Act No 46 of 2013,

☐ Based on the Financial Statements/Management Accounts and other information available on the

latest financial year-end of _____**,** the annual Total Revenue was between R 10,000,000 million (Ten Million Rands) and less than R 50,000,000.00 (fifty Million Rands).

☐ Please confirm on the table below the B-BBEE level contributor, **by ticking the applicable box.**

100% Black Owned	**Level One** (135% B-BBEE procurement recognition level)	
At least 51% Black Owned but less than 100% black owned	**Level Two** (125% B-BBEE procurement recognition level)	

NB: KEY NOTES FOR QSE (extract from Gazette No. 41287)

- 5.6.3 A QSE that is at least 51% Black Owned or 100% Black Owned that does not comply with paragraph 3.6.2.3 above, will be discounted by one level from that level awarded in paragraphs 5.3.1 and 5.3.2 respectively.

- 5.3.4 Despite paragraphs 5.2, 5.3.1 and 5.3.2, an at least 51% Black Owned QSE's B-BBEE Status Level and corresponding B-BBEE Recognition Level will be enhanced by one level if it achieves full points (excluding the bonus points) for the Skills Development element of the QSE Scorecard (paragraphs 1.1, 1.2 and 1.3 of Statement CSC603) or the Preferential Procurement and Supplier Development element of the QSE Scorecard (paragraphs 1.1, 1.2, 1.3 and 2.1 of CSC604).

- 5.3.5 For the avoidance of doubt, a Measured Entity that is measured in terms of the full QSE scorecard is not eligible for enhancement in terms of paragraph 5.3.4 above.

- Contractors and/Built Environment Professionals are encouraged to familiarize themselves with the Construction Sector Codes (CSC000) as issued through Government Gazette No. 41287, Board No. NOTICE 931 OF 2017.
  Details are available on: www.thedtic.gov.za/economic_empowernment/bee_sector_charters.jsp

- An electronic copy can also be requested through DPW offices (Supply Chain Offices)

4. I know and understand the contents of this affidavit and I have no objection to take the prescribed oath and consider the oath binding on my conscience and on the owners of the enterprise which I represent in this matter.

5. The sworn affidavit will be valid for a period of 12 months from the date signed by commissioner.

Deponent Signature: _____ Date: _____

_____

Commissioner of Oaths
Signature & Stamp

DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

SBD 6.2

NB: This Standard Tender Document (SBD) must form part of all tenders invited. It contains general information and serves as a declaration form for local content (local production and local content are used interchangeably).

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2011 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

1 GENERAL CONDITIONS

1.1. Preferential Procurement Regulations, 2011 (Regulation 9) makes provision for the promotion of local production and content.

1.2. Regulation 9.(1) prescribes that in the case of designated sectors, where in the award of bids local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

1.3. Where necessary, for bids referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE.

1.4. A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5. The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

LC = [1- x / y] *100

Where
x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by the South African Reserve Bank (SARB) at 12:00 on the date of advertisement of the bid as required in paragraph 4.1 below.

The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedtic.gov.za/industrial development/ip.jsp at no cost.

A bid may be disqualified if –

(a) this Declaration Certificate and the Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation; and
(b) the bidder fails to declare that the Local Content Declaration Templates (Annex C, D and E) have been audited and certified as correct.

2. Definitions

2.1 **"bid"** includes written price quotations, advertised competitive bids or proposals;

2.2 **"bid price"** price offered by the bidder, excluding value added tax (VAT);

2.3 **"contract"** means the agreement that results from the acceptance of a bid by an organ of state;

2.4 **"designated sector"** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;

2.5 **"duly sign"** means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual).

2.6 **"imported content"** means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;

2.7 **"local content"** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;

2.8 **"stipulated minimum threshold"** means that portion of local production and content as determined by the Department of Trade and Industry; and

2.9 **"sub-contract"** means the primary contractor's assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3. The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:

3.1 The stipulated minimum threshold(s) for local production and content for this tender is/are as follows:

Description of services, works or goods	Stipulated minimum threshold
All Steel Products & Components for construction All High Tensile reinforcing bars, All steel beams , columns, rafters, haunches, angles, cleats, plates, purlins, sheeting and brackets	**100 %**
High Density Polyethylene (Hdpe) Pipes All Polyethylene pipes	**100 %**
Electrical Cables All electrical cables	**90%**

Bidders are required to archive a stipulated minimum threshold for local production and content as per DTIC designated sector as per section 8 of the PPPFA Regulation of 2017. Bidders must complete SBD6.2 with Annexure C and must be submitted with the quote. Failure to submit will invalidate the bid.

4. Does any portion of the services, works or goods offered? have any imported content? **YES / NO**

4.1. If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the general conditions must be the rate(s) published by the SARB for the specific currency at 12:00 on the date of advertisement of the bid.

The relevant rates of exchange information are accessible on **www.reservebank.co.za.**

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	
Yen	
Other	

NB: Tenderers must submit proof of the SARB rate (s) of exchange used.

5. Were the Local Content Declaration Templates, (Annex C, D and E) audited and certified as correct? **YES / NO**

5.1. If yes, provide the following particulars:
(a) Full name of auditor: ……
(b) Practice number: ……..
(c) Telephone and cell number: ……
(d) Email address: ……..

(Documentary proof regarding the declaration will, when required, be submitted to the satisfaction of the Accounting Officer / Accounting Authority)

6. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dtic must be informed accordingly in order for the dtic to verify and in consultation with the Accounting Officer / Accounting Authority provide directives in this regard.

LOCAL CONTENT DECLARATION
(REFER TO ANNEX B OF SATS 1286:2011)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. SCMU8-22/23-0065

ISSUED BY: (Procurement Authority / Name of Department / Departmental Entity): .....

NB

1. The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

2. Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedtic.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned ……..... (full names),

do hereby declare, in my capacity as ……..……..

of ..... (name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.

(b) I have satisfied myself that

(i) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011; and
(ii) the declaration templates have been audited and certified to be correct.

(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R
Imported content (x), as calculated in terms of SATS 1286:2011	R
Stipulated minimum threshold for local content (paragraph 3 above)	
Local content %, as calculated in terms of SATS 1286:2011	

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 13 of the Preferential Procurement Regulations, 2011 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

SIGNATURE: _____ **DATE:** _____

WITNESS No. 1 _____ **DATE:** _____

WITNESS No. 2 _____ **DATE:** _____

Annex C

Local Content Declaration - Summary Schedule

(C1)	**Tender No.**			
(C2)	**Tender description:**			
(C3)	**Designated product(s)**			
(C4)	**Tender Authority:**			
(C5)	**Tendering Entity name:**			
(C6)	**Tender Exchange Rate:**	Pula	EU	GBP
(C7)	**Specified local content %**			

Note: VAT to be excluded from all calculations

Calculation of local content								Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total Imported content
(C8)	*(C9)*	*(C10)*	*(C11)*	*(C12)*	*(C13)*	*(C14)*	*(C15)*	*(C16)*	*(C17)*	*(C18)*	*(C19)*

(C20) **Total tender value**	**R 0**	
(C21) **Total Exempt imported content**		**R 0**
(C22) Total **Tender value net of exempt imported content**		**R 0**
(C23) **Total Imported content**		**R 0**
(C24) **Total local content**		**R 0**
(C25) **Average local content % of tender**		

Signature of tenderer from Annex B

Date:

SATS 1286.2011

Annex D

Imported Content Declaration - Supporting Schedule to Annex C

(D1)	Tender No.	SCMU8-17/18-072
(D2)	Tender description:	
(D3)	Designated Products:	
(D4)	Tender Authority:	
(D5)	Tendering Entity name:	
(D6)	Tender Exchange Rate:	Pula

Note: VAT to be excluded from all calculations

EU R 9.00 GBP R 12.00

A. Exempted imported content

Tender item no's	Description of imported content	Local supplier	Overseas Supplier	Calculation of imported content: Forign currency value as per Commercial Invoice	Tender Exchange Rate	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Summary: Tender Qty	Exempted imported value
(D7)	(D8)	(D9)	(D10)	(D11)	(D12)	(D13)	(D14)	(D15)	(D16)	(D17)	(D18)

(D19) Total exempt imported value R 0

This total must correspond with Annex C - C 21

B. Imported directly by the Tenderer

Tender Item no's	Description of imported content	Unit of measure	Overseas Supplier	Calculation of imported content: Forign currency value as per Commercial Invoice	Tender Rate of Exchange	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Summary: Tender Qty	Total imported value
(D20)	(D21)	(D22)	(D23)	(D24)	(D25)	(D26)	(D27)	(D28)	(D29)	(D30)	(D31)

(D32) Total imported value by tenderer R 0

C. Imported by a 3rd party and supplied to the Tenderer

Description of imported content	Unit of measure	Local supplier	Overseas Supplier	Calculation of imported content: Forign currency value as per Commercial Invoice	Tender Rate of Exchange	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Summary: Quantity imported	Total imported value
(D33)	(D34)	(D35)	(D36)	(D37)	(D38)	(D39)	(D40)	(D41)	(D42)	(D43)	(D44)

(D45) Total imported value by 3rd party R 0

D. Other foreign currency payments

Type of payment	Local supplier making the payment	Overseas beneficiary	Calculation of foreign currency payments: Foreign currency value paid	Tender Rate of Exchange	Summary of payments: Local value of payments
(D46)	(D47)	(D48)	(D49)	(D50)	(D51)

(D52) Total of foreign currency payments declared by tenderer and/or 3rd party

(D53) Total of imported content & foreign currency payments - (D32), (D45) & (D52) above R 0

This total must correspond with Annex C - C 23

Signature of tenderer from Annex B

Date:

SATS 1286.2011

Annex E

Local Content Declaration - Supporting Schedule to Annex C

(E1)	**Tender No.**	SCMU8-17/18-072
(E2)	**Tender description:**	
(E3)	**Designated products:**	
(E4)	**Tender Authority:**	
(E5)	**Tendering Entity name:**	

Note: VAT to be excluded from all calculations

Local Products (Goods, Services and Works)	Description of items purchased	Local suppliers	Value
	(E6)	*(E7)*	*(E8)*
		***(E9)* Total local products (Goods, Services and Works)**	R 0

(E10)	**Manpower costs**	(Tenderer's manpower cost)	R 0
(E11)	**Factory overheads**	(Rental, depreciation & amortisation, utility costs, consumables etc.)	R 0
(E12)	**Administration overheads and mark-up**	(Marketing, insurance, financing, interest etc.)	R 0

***(E13)* Total local content** R 0

This total must correspond with Annex C - C24

Signature of tenderer from Annex B

Date:

EXAMPLE
ANNEXURE C, D & E ON LOCAL CONTENT AND PRODUCTION

DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This Standard Bidding Document (SBD) must form part of all bids invited. It contains general information and serves as a declaration form for local content (local production and local content are used interchangeably).

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017, the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

3. General Conditions

3.1. Preferential Procurement Regulations, 2017 (Regulation 8) make provision for the promotion of local production and content.

3.2. Regulation 8.(2) prescribes that in the case of designated sectors, organs of state must advertise such tenders with the specific bidding condition that only locally produced or manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

3.3. Where necessary, for tenders referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE.

3.4. A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

3.5. The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

LC = [1 - x / y] * 100

Where
x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by South African Reserve Bank (SARB) at 12:00 on the date of advertisement of the bid as indicated in paragraph 4.1 below.

The SABS approved technical specification number SATS 1286:2011 is accessible on http:/www.thedtic.gov.za/industrial development/ip.jsp at no cost.

3.6. A bid may be disqualified if this Declaration Certificate and the Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation;

EXAMPLE ONLY

4. The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:

No.	Description of services, works or goods	Unit (e.g. m2, m3, ton, etc)	Quantity	Stipulated minimum threshold
1	Mild steel reinforcement to structural concrete work: 12 mm diameter bars	tonnes	261.95	100%
2	Mild steel reinforcement to structural concrete work: 10 mm diameter bars	tonnes	240	100%
3	Furniture High back Chair	No.	261.95	85%

3. Does any portion of the goods or services offered have any imported content?

(***Tick applicable box***)

YES		X	NO	

3..1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the general conditions must be the rate(s) published by SARB for the specific currency at 12:00 on the date of advertisement of the bid.

The relevant rates of exchange information is accessible on www.reservebank.co.za

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	**Rates of exchange**
US Dollar	R14 / $1
Pound Sterling	R19.50 / 1 pound
Euro	R14.10 / 1 Euro
Yen	R0.50 / 100 Yens
Other	

NB: Bidders must submit proof of the SARB rate(s) of exchange used.

4. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dtic must be informed accordingly in order for the dtic to verify and in consultation with the AO/AA provide directives in this regard.

EXAMPLE ONLY

LOCAL CONTENT DECLARATION
(REFER TO ANNEX B OF SATS 1286:2011)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. SCMU5-18/19-0013.....

ISSUED BY: (Procurement Authority / Name of Institution):
DEPARTMENT OF PUBLIC WORKS.....

NB

1 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

2 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedtic.gov.za/industrial development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, **MKHAYA PHONDO** (full names), do hereby declare, in my capacity as **DIRECTOR**……..of .....**PHONDO CONSTRUCTION**.....(name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.

(b) I have satisfied myself that:

(i) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011; and

(c) The local content percentage (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C:

Bid price, excluding VAT (y)	R 370 940
Imported content (x), as calculated in terms of SATS 1286:2011	R 62 868
Stipulated minimum threshold for local content (paragraph 3 above)	100%+85%
Local content %, as calculated in terms of SATS 1286:2011	83.05%

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above.
The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Institution has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Institution imposing any or all of the remedies as provided for in Regulation 14 of the

EXAMPLE ONLY

Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

SIGNATURE: **DATE: 23 Oct 2018**

WITNESS No. 1 **DATE: 23 Oct 2018**

WITNESS No. 2 **DATE: 23 Oct 2018**

EXAMPLE ONLY

Annex C

Local Content Declaration - Summary Schedule

(C1)	**Tender No.**	SCMU5-18/19-0888
(C2)	**Tender description:**	Construction of BHISHO JSS School
(C3)	**Designated product(s)**	Steel Products and Structures and Furnture
(C4)	**Tender Authority:**	Department of Public Works (EC)
(C5)	**Tendering Entity name:**	IPHONDO CONSTRUCTION (PTY) LTD
(C6)	**Tender Exchange Rate:**	Pula GBP
(C7)	**Specified local content %**	100% and 85%

Note: VAT to be excluded from all calculations

EXAMPLE ONLY

	Calculation of local content							Tender summary				
Tender item no's	List of items	Tender price each (ex VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Unit of measurement	Tender Qty	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)		(C16)	(C17)	(C18)	(C19)
53, 34, 50	Mild steel reinforcement to structural concrete work: 12 mm diameter bars	R 35.00	R 0.00	R 35.00	R 0.00	R 35.00	100%	tonnes	261.95	R 9 168	R 0	R 0
54,35	Mild steel reinforcement to structural concrete work: 10 mm diameter bars	R 23.00	R 0.00	R 23.00	R 0.00	R 23.00	100%	tonnes	240.00	R 5 520	R 0	R 0
25	Furniture High back Chair	R 1 600.00	R 0.00	R 1 600.00	R 240.00	R 1 360.00	85%	No.	261.95	R 356 252	R 0	R 62 868

(C20) Total tender value	R 370 940	
(C21) Total Exempt imported content	R 0	
(C22) Total Tender value net of exempt imported content	R 370 940	
(C23) Total Imported content		R 62 868
(C24) Total local content		R 308 072
(C25) Average local content % of tender		83.05%

Signature of tenderer from Annex B

Date: 24-Oct-18

Annex D

Imported Content Declaration - Supporting Schedule to Annex C

(D1)	**Tender No.**	SCMU5-18/19-0888	**Note:** VAT to be excluded from all calculations
(D2)	**Tender description:**	Construction of BHISHO JSS School	
(D3)	**Designated Products:**	Furniture products	
(D4)	**Tender Authority:**	Department of Public Works (EC)	
(D5)	**Tendering Entity name:**	IPHONDO CONSTRUCTION (PTY) LTD	
(D6)	**Tender Exchange Rate:**	Pula	EU GBP

EXAMPLE ONLY

A. Exempted imported content

Tender item no's	Description of imported content		Local supplier	Overseas supplier	Calculation of imported content: Foreign currency value as per Commercial Invoice	Tender Exchange Rate	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Summary: Tender Qty	Summary: Exempted imported value
(D7)	(D8)		(D9)	(D10)	(D11)	(D12)	(D13)	(D14)	(D15)	(D16)	(D17)	(D18)
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

(D19) Total exempt imported value R 0

This total must correspond with Annex C - C 21

B. Imported directly by the Tenderer

Tender item no's	Description of imported content		Unit of measure	Overseas Supplier	Calculation of imported content: Forign currency value as per Commercial Invoice	Tender Rate of Exchange	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Summary: Tender Qty	Summary: Total imported value
(D20)	(D21)		(D22)	(D23)	(D24)	(D25)	(D26)	(D27)	(D28)	(D29)	(D30)	(D31)
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		

(D32) Total imported value by tenderer R 0

C. Imported by a 3rd party and supplied to the Tenderer

Description of imported content		Unit of measure	Local supplier	Overseas Supplier	Calculation of imported content: Forign currency value as per Commercial Invoice	Tender Rate of Exchange	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Summary: Quantity imported	Summary: Total imported value
(D33)		(D34)	(D35)	(D36)	(D37)	(D38)	(D39)	(D40)	(D41)	(D42)	(D43)	(D44)
25	2mm Material fabric of a High back chair (1m x 2m)		No.	Walton Chinese fabric	$12.00	R 14.00	R 168.00	R 37.00	R 35.00	R 240.00	262	R 62 868

(D45) Total imported value by 3rd party R 62 868

D. Other foreign currency payments

Type of payment	Local supplier making the payment	Overseas beneficiary	Calculation of foreign currency payments: Foreign currency value paid	Tender Rate of Exchange	Summary of payments: Local value of payments
(D46)	(D47)	(D48)	(D49)	(D50)	(D51)
EFT	FNB	Walton Chinese fabric	$12	R 14.00	R 168

(D52) Total of foreign currency payments declared by tenderer and/or 3rd party

Signature of tenderer from Annex B

(D53) Total of imported content & foreign currency payments - (D32), (D45) & (D52) above R 62 868

Date: 24-Oct-18

This total must correspond with Annex C - C 23

Annex E

Local Content Declaration - Supporting Schedule to Annex C

EXAMPLE ONLY

(E1)	**Tender No.**	SCMU5-18/19-0888
(E2)	**Tender description:**	Construction of Bhisho JSS
(E3)	**Designated products:**	Steel Products and Structures
(E4)	**Tender Authority:**	Department of Public Works (EC)
(E5)	**Tendering Entity name:**	Phondo Construction

Note: VAT to be excluded from all calculations

Local Products (Goods, Services and Works)	Description of items purchased	Local suppliers	Value
	(E6)	(E7)	(E8)
	Mild steel reinforcement to structural concrete work: 12 mm diameter bars	RC Steel (Pty)Ltd	R 8 050
	Mild steel reinforcement to structural concrete work: 10 mm diameter bars	RC Steel (Pty)Ltd	R 4 500
	Furniture High back Chair	Budget Joshua Home Furniture	R 289 166
	(E9) Total local products (Goods, Services and Works)		R 301 716

(E10)	**Manpower costs**	(Tenderer's manpower cost)	R 2 500
(E11)	**Factory overheads**	(Rental, depreciation & amortisation, utility costs, consumables etc.)	R 1 500
(E12)	**Administration overheads and mark-up**	(Marketing, insurance, financing, interest etc.)	R 2 356
		(E13) Total local content	R 308 072
		This total must correspond with Annex C - C24	

Signature of tenderer from Annex B

Date: 24-Oct-18

DECLARATION (VALIDITY OF INFORMATION PROVIDED)

I ……. declare that the information provided is true and correct, the signature to the tender document is duly authorised and documentary proof regarding any tendering issue will, when required, be submitted to the satisfaction of the Department of Rural Development and Agrarian Reform.

DATE . ..... **SIGNATURE OF DECLARER** .....

POSITION OF DECLARER .....

NAME OF COMPANY OR TENDERER .....

Should the tenderer have, in the opinion of the Department of Rural Development and Agrarian Reform, acted fraudulently illegally, in bad faith or in any improper manner, misrepresented itself with regard to the tender, then the Department of Rural Development and Agrarian Reform may, in its sole discretion:

* Ignore any tenders without advising the tenderer thereof
* Cancel the contract without prejudice to any legal rights the Department of Rural Development and Agrarian Reform may have

Should the tenderer disregard this or conduct affairs in a way that transgresses from good business practices, this could seriously impair future business relations between the Department of Rural Development and Agrarian Reform and such tenderer.

BIDDER'S DISCLOSURE

SBD 4

1. PURPOSE OF THE FORM

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

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

2. Bidder's declaration

2.1 Is the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest[1] in the enterprise employed by the state? **YES/NO**

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

Full Name	Identity Number	Name of State institution

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

2.2.1 If so, furnish particulars:

……..

……..

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

2.3.1 If so, furnish particulars:

……..

……..

3 DECLARATION

I, the undersigned, (name)…… in submitting the accompanying bid, do hereby make the following statements that I certify to be true and

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

complete in every respect:

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

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

3.3 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium[2] will not be construed as collusive bidding.

3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.

3.4 The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

3.5 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.

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

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

……	……
Signature	Date
……	……
Position	Name of bidder

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

CERTIFICATE OF TENDERER'S VISIT TO SITE

This is to certify that, I .....

representative of (tenderer) .....

.....

.....

of (address) .....

.....

.....

.....

Telephone number: .....

Fax number: .....

in the company of (Engineer's representative) .....

visited and examined the site on (date) .....

I further certify that I have made myself familiar with all local conditions likely to influence the work and the cost thereof, that I am satisfied with the description of the work and the explanations given by the said Engineer's Representative and that I understand perfectly the work to be done, as specified and implied, in the execution of this contract.

TENDERER'S REPRESENTATIVE: (Signature).....

(Name).....

ENGINEER'S REPRESENTATIVE: (Signature).....

(Name).....

FORM OF INTENT TO PROVIDE A PERFORMANCE GUARANTEE

[The tenderer must provide a letter from the bank or institution. with whom he has made the necessary arrangements, to the effect that the said bank or institution will be prepared to provide the required performance guarantee when asked to do so].

KEY PERSONNEL

In terms of the Project Specification and the Conditions of Tender, unskilled workers may only be brought in from outside the local municipality if such personnel are not available locally.

The tenderer shall list below the personnel, which he intends to utilise on the Works, including key personnel, which may have to be brought in from outside if not available locally.

EMPLOYEE SKILLS TEAM No ___	NUMBER OF PERSONS			
	KEY PERSONNEL, PART OF THE CONTRACTOR'S ORGANISATION	KEY PERSONNEL TO BE IMPORTED IF NOT AVAILABLE LOCALLY	UNSKILLED PERSONNEL TO BE RECRUITED FROM LOCAL COMMUNITY	YEARS EXPERIENCE
Director				
Contracts Manager				
Site Agent				
Skilled Worker				
Semi-skilled Worker				
Unskilled Worker				
Other				
Other				
Other				
Other				
Other				

DATE . ..... **SIGNATURE OF TENDERER** .....
(of person authorised to sign on behalf of the Tenderer)

CURRICULUM VITAE OF KEY PERSONNEL

DIRECTOR	
Name:	**Date of birth:**
Profession:	**Nationality:**
Qualifications:	
Professional Registration Number:	
Name of Employer (firm):	
Current position:	**Years with firm:**
Employment Record:	
Experience Record Pertinent to Required service:	

Certification:

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

DATE . ..... **SIGNATURE OF DIRECTOR** .....

DATE . ..... **SIGNATURE OF TENDERER** .....
(of person authorised to sign on behalf of the Tenderer)

CONTRACTS MANAGER	
Name:	**Date of birth:**
Profession:	**Nationality:**
Qualifications:	
Professional Registration Number:	
Name of Employer (firm):	
Current position:	**Years with firm:**
Employment Record:	
Experience Record Pertinent to Required service:	

Certification:

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

DATE .. .. **SIGNATURE OF CONTRACTS MANAGER .....**

DATE .. .. **SIGNATURE OF TENDERER** .....
(of person authorised to sign on behalf of the Tenderer)

SITE AGENT	
Name:	**Date of birth:**
Profession:	**Nationality:**
Qualifications:	
Professional Registration Number:	
Name of Employer (firm):	
Current position:	**Years with firm:**
Employment Record:	
Experience Record Pertinent to Required service:	

Certification:

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

DATE: ..... **SIGNATURE OF SITE AGENT:** .....

DATE: . ..... **SIGNATURE OF TENDERER:** .....
(of person authorised to sign on behalf of the Tenderer)

PRELIMINARY CONSTRUCTION PROGRAM

The tenderer shall submit a preliminary program reflecting the proposed sequence and duration of the various activities comprising the work for this Contract to include the projected cash flow for each activity. The program shall be in accordance with the information supplied in the Contract, requirements of the Project Specifications and with all other aspects of his tender.

[Note: The program must be based on the completion time as specified in the Contract Data.]

Schedule	Abbreviated description	Days per action	Cumulative project construction days
1	Site Establishment		
2	Cleaning trenches for structure foundations.		
3	Placing of concrete for foundations of walls.		
4	Building of foundation walls steel shed.		
5	Import and place selected fill material for structure floor and compact to required density.		
6	Conduct compaction tests on fill material.		
7	Building of structure.		
8	Placing of concrete for steel beam footings and floor		
9	Build office and storeroom		
10	Construct selling stalls		
11	Electrical installations and plumbing		
12	Clean site and remove establishment on site		
13	Placing of concrete for foundations of walls.		

PROPOSED CONSTRUCTION PERIOD _____ WEEKS

DATE . ..... **SIGNATURE OF TENDERER** .....
(of person authorised to sign on behalf of the Tenderer)

BASELINE RISK ASSESSMENT

PROJECT TITLE	BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.
SCMU NUMBER	SCMU8-22/23-0065
PLEASE NOTE THAT THIS IS A BASELINE RISK ASSESSMENT AND NOT A DETAILED RISK ASSESSMENT OF ALL ANTICIPATED ACTIVITIES ON SITE	

Activity	*Risk to Safety*	*Risk to Health*	*Risk to Environmental*	*Risk to Public Safety*	*Control Measures*
Working at height of 2-9m	***Medium***	***Low***	***N.A.***	***Low***	***Make use of appropriate scaffolding and ladders.***
Working in single story roof	***Medium***	***Low***	***N.A.***	***Low***	***Make use of appropriate safety gear.***
Excavations of up to 1.5m	***Medium***	***Low***	***N.A.***	***Medium***	***Barricade excavation areas.***
Movement of machinery and vehicles on site	***Low***	***Low***	***N.A.***	***Medium***	***Fence site, and put access control measures in place.***

You can list all activities on a separate page to address this issue (the above table is just for reference purposes).

Signed		***Date***	
Name		***Position***	
Enterprise name			

ALTERATIONS BY TENDERER

Should the tenderer desire to make any departure or modification to the General Conditions of Contract, Special Conditions of Contract, Specifications, Schedule of Quantities or Drawings, or to qualify his tender in any way, he shall set out his proposals clearly hereunder, or alternatively, state them in a covering letter attached to his tender and referred to hereunder, failing which the tender will be deemed to be unqualified.

PAGE	CLAUSE OR ITEM	DESCRIPTION

DATE .. .. **SIGNATURE OF TENDERER** .....
(of person authorised to sign on behalf of the tenderer

CONTRACTORS HEALTH AND SAFETY DECLARATION

In terms of Clause 5(1)(h) of the OHSA 1993 Construction Regulations 2014 (referred to as "the Regulations" hereafter), a Contractor may only be appointed to perform construction work if the Employer is satisfied that the Contractor has the necessary competencies and resources to carry out the work safely in accordance with the Occupational Health and Safety Act No 85 of 1993 and the OHSA 1993 Construction Regulations 2014.

To that effect a person duly authorised by the tenderer must complete and sign the declaration hereafter in detail.

Declaration by Tenderer

1. I the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act No 85 of 1993 (as amended by the Occupational Health and Safety Amendment Act No 181 of 1993), and the OHSA 1993 Construction Regulations 2014.
2. I hereby declare that my company has the competence and the necessary resources to safely carry out the construction work under this contract in compliance with the Construction Regulations and the Employer's Health and Safety Specifications.
3. I hereby confirm that adequate provision has been made in my tendered rates and prices in the Bill of Quantities to cover the cost of all resources, actions, training and all health and safety measures envisaged in the OHSA 1993 Construction Regulations 2014, including the cost of the specific items listed in the tables hereafter.

   (Tables to be completed by tenderer)

TABLE 1: COST OF SAFETY PERSONNEL

PERSONNEL	COSTS AS ALLOWED IN TENDER	NOMINATED PERSON/S
Construction Supervisor		
Construction Safety Officer		
Health and Safety		
Health and Safety Committee		

TABLE 2: COST OF SAFETY EQUIPMENT

EQUIPMENT	STATE YES or NO	COST ALLOWED FOR IN TENDER
Hard hats		
Safety boots		
Add items as per risk assessment:		

4. I hereby undertake, if my tender is accepted, to provide, before commencement of the works under the contract, a suitable and sufficiently documented Health and Safety Plan in accordance with Regulation 7(1)(a) of the Construction Regulations, which plan shall be subject to approval by the Employer.

5. I confirm that copies of my company's approved Health and Safety Plan, the Employer's Safety Specifications as well as the OHSA 1993 Construction Regulations 2014 will be provided on site and will at all times be available for inspection by the Contractor's personnel, the Employer's personnel, the Engineer, visitors, and officials and inspectors of the Department of Labour.

6. I hereby confirm that, I will be liable for any penalties that may be applied by the Employer in terms of the said Regulations (Regulation 33) for failure on the Contractor's part to comply with the provisions of the Act and the Regulations.

7. I agree that my failure to complete and execute this declaration to the satisfaction of the Employer will mean that I am unable to comply with the requirements of the OHSA 1993 Construction Regulations 2014, and accept that my tender will be prejudiced and may be rejected at the discretion of the Employer.

DATE ..... **SIGNATURE OF TENDERER** .....
(of person authorised to sign on behalf of the Tenderer)

CONTRACTORS HEALTH AND SAFETY PLAN

[Not applicable for tender purposes]

[The successful Tenderer, only, shall be required to submit the Contractor's Health and Safety Plan as required in terms of Regulation 7 of the Occupational Health and Safety Act 1993 Construction Regulations 2014, and referred to in T2.1, List of Returnable Documents point 4 (other documents that will be incorporated into the contract) <u>after acceptance</u> of the tender]

EVALUATION SCHEDULE 1 – PROJECT REFERENCE FORMS - 1

Project title:	BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.
Project Number:	SCMU8-22/23-0065

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

I, _____ (name and surname) of

_____ (company name) declare

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

Project name: _____

Project location: _____

Construction period: _____ Completion date: _____

Contract value: _____

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

Key Performance Indicators	**Very Poor 1**	**Poor 2**	**Fair 3**	**Good 4**	**Excellent 5**	**Total**
1. Project performance						
2. Quality of Service						
3. Resources: Personnel						
4. Time management / programming						
5. Financial management / Project budget management/cash flow, etc.						
TOTAL						

- Would you consider / recommend this tenderer again:

YES	NO

- Any other comments:

_____

_____

_____

- My contact details are:

Telephone: _____ Cellphone: _____ Fax: _____

E-mail: _____

Thus signed at _____ on this _____ day of _____ 2022

_____

Signature of principal agent

COMPANY STAMP

NOTE:

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

_____

Name of Tenderer

_____ _____

Signature of Tenderer Date

EVALUATION SCHEDULE 1 – PROJECT REFERENCE FORMS - 2

Project title:	BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.
Project Number:	SCMU8-22/23-0065

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

I, _____ (name and surname) of

_____ (company name) declare

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

Project name: _____

Project location: _____

Construction period: _____ Completion date: _____

Contract value: _____

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

Key Performance Indicators	**Very Poor 1**	**Poor 2**	**Fair 3**	**Good 4**	**Excellent 5**	**Total**
6. Project performance						
7. Quality of Service						
8. Resources: Personnel						
9. Time management / programming						
10. Financial management / Project budget management/cash flow, etc.						
TOTAL						

- Would you consider / recommend this tenderer again:

YES	NO

- Any other comments:

  _____

  _____

  _____

- My contact details are:

Telephone: _____ Cellphone: _____ Fax: _____

E-mail: _____

Thus signed at _____ on this _____ day of _____ 2022

_____

Signature of principal agent

COMPANY STAMP

NOTE:

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

_____

Name of Tenderer

_____ _____

Signature of Tenderer Date

EVALUATION SCHEDULE 1 – PROJECT REFERENCE FORMS - 3

Project title:	BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.
Project Number:	SCMU8-22/23-0065

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

I, _____ (name and surname) of

_____ (company name) declare

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

Project name: _____

Project location: _____

Construction period: _____ Completion date: _____

Contract value: _____

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

Key Performance Indicators	Very Poor 1	Poor 2	Fair 3	Good 4	Excellent 5	Total
11. Project performance						
12. Quality of Service						
13. Resources: Personnel						
14. Time management / programming						
15. Financial management / Project budget management/cash flow, etc.						
TOTAL						

- Would you consider / recommend this tenderer again:

YES	NO

- Any other comments:

_____

_____

_____

- My contact details are:

Telephone: _____ Cellphone: _____ Fax: _____

E-mail: _____

Thus signed at _____ on this _____ day of _____ 2022

_____

Signature of principal agent

COMPANY STAMP

NOTE:

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

_____

Name of Tenderer

_____ _____

Signature of Tenderer Date

The Contract

PART C1: AGREEMENT AND CONTRACT DATA

C 1.1

Form of Offer and Acceptance

EASTERN CAPE PROVINCIAL GOVERNMENT
DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM

BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

C1.1 Form of Offer and Acceptance

Note: *1 This form of offer and acceptance is identical to that contained in Annex F of SANS 10845 - 1: Construction Procurement Processes, Procedures and Methods.*
2 SAICE's Practice Manual #1, The use of South African National Standards in Construction Procurement, provides guidance on the formulation of the wording for the actual offer where it is not based on the offered total of prices.

Offer

The employer, identified in the acceptance signature block, has solicited offers to enter into a contract for the procurement of: **SCMU8-22/23-0065: BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.** The tenderer, identified in the offer signature block, has examined the documents listed in the tender data and addenda thereto as listed in the returnable schedules, and by submitting this offer has accepted the conditions of tender.

By the representative of the tenderer, deemed to be duly authorized, signing this part of this form of offer and acceptance, the tenderer offers to perform all of the obligations and liabilities of the contractor under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of contract identified in the contract data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VALUE ADDED TAX IS……...

……..….. Rand (in words);

R …….…. (in figures) (or other suitable wording)

This offer may be accepted by the employer by signing the acceptance part of this form of offer and acceptance and returning one copy of this document to the tenderer before the end of the period of validity stated in the tender data, whereupon the tenderer becomes the party named as the contractor in the conditions of contract identified in the contract data.

Signature(s)		Date:	
Name(s)			
Capacity:			
For tenderer: (Name and address)			
Name & Signature of witness:		Date:	

ACCEPTANCE

By signing this part of this form of offer and acceptance, the employer identified below accepts the tenderer's offer. In consideration thereof, the employer shall pay the contractor the amount due in accordance with the conditions of contract identified in the contract data. Acceptance of the tenderer's offer shall form an agreement between the employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:
Part C1 Agreements and contract data, (which includes this agreement)

Part C2 Pricing data

Part C3 Scope of work

Part C4 Site information and drawings and documents or parts thereof, which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the returnable schedules as well as any changes to the terms of the offer agreed by the tenderer and the employer during this process of offer and acceptance, are contained in the schedule of deviations attached to and forming part of this form of offer and acceptance. No amendments to or deviations from said documents are valid unless contained in this schedule.

The tenderer shall within two weeks after receiving a completed copy of this agreement, including the schedule of deviations (if any), contact the employer's agent (whose details are given in the contract data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the conditions of contract identified in the contract data. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy of this document, including the schedule of deviations (if any). Unless the tenderer (now contractor) within five (5) working days of the date of such receipt notifies the employer in writing of any reason why he/she cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the parties.

Signature(s)		Date:	
Name(s)			
Capacity:			
For the employer: (Name and address)			
Name & Signature of witness:		Date:	

SCHEDULE OF DEVIATIONS

Notes:

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

1 Subject _____

Details: _____

2 Subject _____

Details: _____

3 Subject _____

Details: _____

4 Subject _____

Details: _____

By the duly authorised representatives signing this agreement, the employer and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the tender data and addenda thereto as listed in the returnable schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the employer during this process of offer and acceptance.

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

For the Tenderer:		For the Employer:
……	Signature	……
……...	Name	……
……	Capacity	……

Name and address of organization:		Name and address of organization:
……		……
……		……
……		……
……	Witness Signature	……
……..	Witness Name	……
……	Date	……

CONFIRMATION OF RECEIPT

The Tenderer, (now Contractor), identified in the form of Offer part of the Agreement, hereby confirms receipt from the Employer. Identified in the Acceptance part of the Agreement, of one fully completed original copy of this Agreement. Including the Schedule of Deviations (if any) today:

The ……(day) of …….. (month) 20……(year), at

…….. (place)

For the Contractor:

Signature: …….

Name: …….

Capacity: ……

Signature and name of witness:

Signature: …….

Name: …….

C 1.2

Contract Data

C1.2 Contract Data

The General Conditions of Contract for Construction Works (2015) published by the South African Institution of Civil Engineering, is applicable to this contract. Copies of these conditions of contract may be obtained from the South African Institution of Civil Engineering (Tel 011-805 5947).

The General Conditions of Contract for Construction Works make several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the general conditions of contract.

The Contract Data and General Conditions of Contract shall have precedence over the Drawings, Scope of Work and Standardised Specifications in the interpretation of any ambiguity or inconsistency.

Contract Specific Data

The following contract specific data, referring to the General Conditions of Contract for Construction Works, Third Edition, 2015, are applicable to this Contract:

Clause	Data
1.1.1.13	The Defects Liability Period is **90 days.**
1.1.1.14	The time for achieving Practical Completion is **4 Months,** inclusive of the 14-day period referred to in Clause 5.3.2 below, and inclusive of non-working days referred to in Clause 5.8.1 below, but exclusive of special non-working days (Clause 5.8.1).
1.1.1.15	The name of the Employer is DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM
1.1.1.16	The name of the Employer's Agent is **Mr. T. Musara**
1.1.1.17	THE NAME OF THE Employer's Agent Representative is **Mr. F Makaula**
1.1.1.26	The Pricing Strategy is Re-measurement Contract
1.1.1.35	"**Drawings**" means all drawings, calculations and technical information forming part of the Contract Documents and any modifications thereof or additions thereto from time to time approved in writing by the Employer's Agent or delivered to the Contractor by the Employer's Agent.
1.1.1.36	**Letter of Notification**" means the letters of formal notification, signed by the Employer, of the decision of the Supply Chain Management Bid Adjudication Committee sent to all tenderers. The notification of the decision does not form part of the Employer's Acceptance of the successful tenderer's Offer and no rights shall accrue.

1.2.1	**DELIVERY OF NOTICES** The following three additional sub-clauses, covering alternative methods of communication, apply: -
1.2.1.3	Sent by facsimile or any like communication irrespective of it being during office hours or otherwise. Fax: 043 706 0550
1.2.1.4	Posted to the addressee for certified delivery by the postal Authorities The Chief Engineer AMATHOLE DISTRICT Private Bag X 9032 EAST LONDON 5200
1.2.1.5	Delivered by a courier service and signed for by the addressee
1.2.1.2	The Employer's address for receipt of communications is: **The Chief Engineer** DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM Private Bag X9032 EAST LONDON 5200
2.1.4	The following additional clause applies: - "Without limiting the generality of the afore going, the Schedule of Rates and Prices shall include: (b) The provision and use of all labour, plant, tools instruments, templates, materials, transport and all other appliances that may be required for satisfactorily protecting and efficiently carrying out the works without interruption or delay. (c) The provision and housing of adequate staff and labour force and the provision of false work of every kind and description necessary for the due and proper performance of the Contract. (d) The execution of the Works in orderly and progressive manner until it has been completed. Time being of the essence of the Contract the progressive development of the Works shall be arranged so that the time from the start to the finish of the construction of the said Works shall not exceed the time laid down in the Tender. (e) The inclusion in the tendered rates for all and any of the general liabilities such as Establishment Charges, legal contingencies, regulations, risks or damage, Royalties and all other overhead charges. The submission of a tender shall be considered prima facie evidence that the Contractor has complied with the requirements of this clause and has satisfied him/herself as to all circumstances and local conditions which may influence or affect his Tender."

2.4.1	The following additional clause applies: - In the event of any discrepancy or conflict between any parts of the Contract Documents, the order of precedence shall be as follows: 1. Project Particular Specifications 2. Special Conditions of Contract 3. General Conditions of Contract 4. Conditions of Tender 5. Generic Specifications 6. Contract Drawings 7. Bill of Quantities
2.5.1	The following additional clause applies: - The Employer may make direct payments to suppliers on behalf of the Contractor subject to the receipt of a specific request from the Contractor and subject to the following conditions: - an original of the invoice together with a singed Cession Form is submitted together with a certificate approved by the Engineer. - the contractor cedes, transfers and assigns all the rights, title and interest in and to the materials and goods to the total value of the invoice. - the cession shall become effective as soon as payment is made by the Employer or on behalf of the Employer - the Contractor indemnifies the Employer against any loss or damage whatsoever to the said material and goods whilst they are in the Contractors possession and in transit to the site and until such time as they are safely and properly stored on the site, and the Contractor undertakes to effect adequate insurance against these risks. Such insurance shall be for the full value of the materials and goods and goods certified for payment and the insurance policy ceded in full to the Employer.
3.2.3	The Employer's Agent shall obtain the specific approval of the Employer before executing any of his functions or duties according to the following Clauses of the General Conditions of Contract: Clause 3.3.1 Nomination of Employer's Agent Representative Clause 3.3.4 Employer's Agent authority to delegate Clause 5.8.1 Non-working times Clause 5.11.2 Suspension of the Works Clause 5.12.4 Acceleration instead of extension of time
3.3.7	The following additional clause applies: - The onus rests with the Contractor to raise any item about which the Contractor may be uncertain, with the Engineer's Representative. Any advice given to the Contractor by the Engineer's Representative in response to matters so raised shall not be construed as instructions and shall be held to have been given without prejudice.
3.3.8	The following additional clause applies: - The Employer or the Employer's Agent under delegated authority, reserves the right to obtain the services of consultants on any matter pertaining to this contract; the employment of such consultants forms no part of this contract; a consultant's advice and/or documentation is to be followed only if the Employer's Agent or the Employer's Agent Representative so instructs.
4.1	All references to "design" are deemed to be deleted and the Contractor shall bear no liability in respect of the Projects design, other than the temporary works and items clearly indicated to design on drawings.

4.3.3	The following additional clause applies: - The Employer and the Contractor shall enter into an agreement to complete the work required for the construction of the works in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act (Act 85 of 1993) and the Construction Regulations promulgated there under. An agreement is included in the Contract Document (at the end of Contract Data) and shall be completed and submitted to the Employer together with a letter of good standing from the Compensation Commissioner (if not insured with a Licensed Compensation Insurer) within fourteen (14) days after the Commencement Date. The Contractor shall ensure that any letter of good standing shall be timeously renewed in order that it remains in full force for the duration of the Contract.
5.3.1	The documentation required before commencement with the Works execution are: 1 Health and Safety Plan (Refer to Clause 4.3) 2 Risk Mitigation Plan for Construction; 3 Initial programme (Refer to Clause 5.6) 4 Security (Refer to Clause 6.2) 5 Insurance (Refer to Clause 8.6) 6 Letter of Good Standing from the Compensation Commissioner (if not insured with a Licensed Compensation Insurer)
5.3.2	The time to submit the documentation required before commencement with the Works execution is 14 days.
5.3.3	The Contractor shall commence with execution of the Works within 7 days after receiving an instruction to commence with the Works.
5.4.1	The Contractor shall bear all costs and charges for special and temporary rights of way required by him in connection with access to the Site.
5.5.1	The Works shall be completed (Practical Completion) within **4 Months.**
5.8.1	The non-working days are Sundays. The special non-working days are: (1) All gazetted public holidays falling outside the year end break. (2) The year end break commencing on 15 December and ending on 9 January
5.8.3	The following additional clause shall apply: Should the Employer's Agent permit work outside of normal Employer working hours (viz Mondays to Fridays inclusive sunrise to sunset) and on Saturdays, Sundays or on any of the non-working days stated in the Appendix and if he deems the presence of the Employer's Agent Representative or other duly authorised representative to be necessary, the Contractor will be liable for the cost of such supervision (calculated at a daily rate of 1/130 of the annual salary of such representative). Where the Employer's Agent has ordered such work, the salary of the representative will be to the account of the Employer. A minimum of 24 hours notification of intent to work outside normal working hours shall be regarded as sufficient notice as set out in 5.8.1"

5.12.2.2	No extension of time will be granted in respect of any delays attributed to normal climatic conditions. Normal climatic conditions shall be deemed to include normal rainfall and associated wet conditions and materials, strong winds and extremes of temperature. However, in the event that delays to critical activities exceed 2 consecutive working days for each month, then abnormal climatic conditions shall be deemed to exist, and an extension of time may be claimed in accordance with the provisions of Clause 5.12. Claims for delays for abnormal climatic conditions shall be accompanied by substantiating facts and evidence, which shall be submitted timeously by the Contractor as each day or half-day delay is experienced. It shall be further noted that where the critical path is not affected, no extension of time for abnormal climatic conditions or for any other reason will be entertained
5.13.1	The penalty for failing to complete the Works is **8.50c/R100 of contract amount per day.** No claim for bonus payments in respect of early completion will be entertained.
5.14.1	Practical Completion: In terms of this contract, practical completion will be reached, once all the works have been completed in full, according to the bill of quantities and project specifications, and dually been approved by the Employers agent representative.
5.16.3	The latent defect period is **5 Years.**
6.2.1	The security to be provided by the Contractor shall be **10 % performance guarantee,** or **5% Retention and 5% performance guarantee,** or **10% Retention**. The performance guarantee shall contain the wording of the document included in C1.3.
6.6.1	The provisional sums stated in the Schedule of Quantities are net amounts covering the actual expenditure which the Employer may incur.
6.7.6	The following additional clause shall apply: The Works are measured in accordance with the current SANS 1200 and the standard system of measurement of Civil Engineering quantities for South Africa, published by the South African Institution of Civil Engineers. No claims arising from the method of measurement will be entertained.
6.8.1	Should the rated tendered be unrealistically high or low, the Employer's Agent may instruct the contractor to balance the rates while the contract sum will stay firm, before commencement of construction. The revised balanced rates will be final and binding. And the value of the payment certificates is to be calculated in accordance with the revised rates and/or prices of the tender throughout the period of the Contract.
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is **80%.**
6.10.3	The percentage retention on amounts due to the contractor is 10% and the limit on retention is 5% of the Contract Price if guarantees of an insurance company or bank that are provided are equal to or greater than 10% of the contract price.

6.10.4	Add the following to clause: Notwithstanding the above, the Employer's Agent shall be empowered to withhold the delivery of the payment certificate until the Contractor has complied with his obligations to report in terms of Clause 4.10.2 and as described in the Scope of Work.
8.5.2	The following additional clause shall apply: If the Contractor receives any claim in respect of any loss or injury or damage to any person or property, then the Contractor shall immediately report the same to the Employer's Agent and, if at the end of ninety days from the date of receipt of such claim the Contractor cannot satisfy the Employer's Agent that the claim has been settled or that valid reasons for the non-settlement of the claim exist, then the Employer may, without limiting the obligations and responsibilities of the Contractor, negotiate a settlement and deduct all sums due in respect of such claim from payments due to the Contractor.
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 **R 80 000.00.**
8.6.1.3	The limit of indemnity for liability insurance is R 2 000 000.00 per claim for projects under R 5 000 000.00 and R 5 000 000.00 for projects over R 5 000 000.00.
9.2.1.3.8	Add the following to clause: The Contractor committed a corrupt or fraudulent act during the procurement process or the execution of the contract.
9.2.1.3.8	Add the following to clause: An official or other role player committed any corrupt or fraudulent act during the procurement process or in the execution of the contract that benefited the Contractor.
10.4.1	The parties may at any time agree to settle disputes with the help of an impartial third party.
10.5.3	The number of Adjudication Board Members to be appointed is THREE.
2.	**CLAUSES APPLICABLE TO EPWP CONTRACTS**
4.1	Variations to the Conditions of Contract are: *Add the following at the end of sub clause 4.1.2.*

4.1.3	The Employer and the Contractor hereby agree, in terms of the provisions of Section 37(2) of the Occupational Health and Safety Amendment Act, 1993 (Act 85 of 1993), hereinafter referred to as 'the Act', that the following arrangements and procedures shall apply between them to ensure compliance by the Contractor with the provisions of the Act: (i) The Contractor undertakes to acquaint the appropriate officials and employees of the Contractor with all relevant provisions of the Act and the Regulations promulgated in terms of the Act. (ii) The Contractor undertakes that all relevant duties, obligations and prohibitions imposed in terms of the Act and Regulations on the Contractor will be fully complied with. (iii) The Contractor accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and Regulations and expressly absolves the Employer from himself being obliged to comply with any of the aforesaid duties, obligations and prohibitions, with the exception of such duties, obligations and prohibitions expressly assigned to the Employer in terms of the Act and its associated Regulations. (iv) The Contractor agrees that any duly authorised officials of the Employer shall be entitled, although not obliged, to take such steps as may be necessary to monitor that the Contractor has conformed to his undertakings as described in paragraphs (i) and (ii) above, which steps may include, but will not be limited to, the right to inspect any appropriate site or premises occupied by the Contractor, or any appropriate records or safety plans held by the Contractor. (v) The Contractor shall be obliged to report forthwith to the Employer and Engineer any investigation, complaint or criminal charge which may arise as a consequence of the provisions of the Act and Regulations, pursuant to work performed in terms of this Contract, and shall, on written demand, provide full details in writing, to the Employer and Engineer, of such investigation, complaint or criminal charge.
4.1.4	The Contractor shall furthermore, in compliance with Constructional Regulations 2014 to the Act: (i) Acquaint himself with the requirements of the Employer's health and safety specification as laid down in regulation 5(1) of the Construction Regulation 2014, and prepare a suitably and sufficiently documented health and safety plan as contemplated in regulation 7(1) (a) of the Construction Regulation 2014 for approval by the Employer or his assigned agent. The Contractor's health and safety plan and risk assessment shall be submitted to the Employer for approval within fourteen (14) days after receiving a completed copy of the Agreement and shall be implemented and maintained from the Commencement of the Works. (ii) The Employer, or his assigned agent, reserves the right to conduct periodic audits, as contemplated in the Construction Regulations 2014, to ensure that the Contractor is compliant in respect of his obligations. Failure by the Contractor to comply with the requirements of these Regulations shall entitle the Engineer, at the request of the Employer or his agent, to suspend all or any part of the Works, with no recourse whatsoever by the Contractor for any damages incurred as a result of such suspension, until such time that the Employer or his agents are satisfied that the issues in which the Contractor has been in default have been rectified.
6.7.6	*Add new subclause6.7.6:* **"Payment for the labour-intensive component of the works** Payment for works identified in the Scope of Work as being labour-intensive shall only be made in accordance with the provisions of the Contract if the works are constructed strictly in accordance with the provisions of the scope of work. Any non-payment for such works shall not relieve the Contractor in any way from his obligations in contract.
3. ADDITIONAL CONDITIONS OF CONTRACT:	
Clause	
4.13	Add new sub clause 4.13: **Applicable labour laws** The Ministerial Determination, Special Public Works Programmes, issued in terms of the Basic Conditions of Employment Act of 1997 by the Minister of Labour in Government Notice No R63 of 25 January 2002, as reproduced below, shall apply to works described in the scope of work as being labour-intensive and which are undertaken by unskilled or semi-skilled workers.

4.13 (cont.)	**1 Introduction** 1.1 This document contains the standard terms and conditions for workers employed in elementary occupations on a Special Public Works Programme (SPWP). These terms and conditions do NOT apply to persons employed in the supervision and management of a SPWP.
4.13 (cont.)	1.2 In this document – (a) "department" means any department of the State, implementing agent or contractor; (b) "employer" means any department, implementing agency or contractor that hires workers to work in elementary occupations on a SPWP; (c) "worker" means any person working in an elementary occupation on a SPWP; (d) "elementary occupation" means any occupation involving unskilled or semi-skilled work; (e) "management" means any person employed by a department or implementing agency to administer or execute an SPWP; (f) "task" means a fixed quantity of work; (g) "task-based work" means work in which a worker is paid a fixed rate for performing a task; (h) "task-rated worker" means a worker paid on the basis of the number of tasks completed; (i) "time-rated worker" means a worker paid on the basis of the length of time worked. **2 Terms of work** 2.1 Workers on a Special Public Works Programme (SPWP) are employed on a temporary basis. 2.2 A worker may NOT be employed for longer than 24 months in any five-year cycle on a SPWP. 2.3 Employment on a SPWP does not qualify as employment as a contributor for the purposes of the Unemployment Insurance Act 30 of 1966. **3 Normal hours of work** 3.1 An employer may not set tasks or hours of work that require a worker to work– (a) more than forty hours in any week; (b) on more than five days in any week; and (c) for more than eight hours on any day. 3.2 An employer and worker may agree that a worker will work four days per week. The worker may then work up to ten hours per day. 3.3 A task-rated worker may not work more than a total of 55 hours in any week to complete the tasks allocated (based on a 40-hour week) to that worker. **4 Meal breaks** 4.1 A worker may not work for more than five hours without taking a meal break of at least thirty minutes duration. 4.2 An employer and worker may agree on longer meal breaks. 4.3 A worker may not work during a meal break. However, an employer may require a worker to perform duties during a meal break if those duties cannot be left unattended and cannot be performed by another worker. An employer must take reasonable steps to ensure that a worker is relieved of his or her duties during the meal break. 4.4 A worker is not entitled to payment for the period of a meal break. However, a worker who is paid on the basis of time worked must be paid if the worker is required to work or to be available for work during the meal break.
4.13 (cont)	**5 Special conditions for security guards** 5.1 A security guard may work up to 55 hours per week and up to eleven hours per day. 5.2 A security guard who works more than ten hours per day must have a meal break of at least one hour or two breaks of at least 30 minutes each.

	6 Daily rest period Every worker is entitled to a daily rest period of at least eight consecutive hours. The daily rest period is measured from the time the worker ends work on one day until the time the worker starts work on the next day.
4.13 (cont)	**7 Weekly rest period** Every worker must have two days off every week. A worker may only work on their day off to perform work which must be done without delay and cannot be performed by workers during their ordinary hours of work ("emergency work"). **8 Work on Sundays and public holidays** 8.1 A worker may only work on a Sunday or public holiday to perform emergency or security work. 8.2 Work on Sundays is paid at the ordinary rate of pay. 8.3 A task-rated worker who works on a public holiday must be paid – (a) the worker's daily task rate, if the worker works for less than four hours; (b) double the worker's daily task rate, if the worker works for more than four hours. 8.4 A time-rated worker who works on a public holiday must be paid – (a) the worker's daily rate of pay, if the worker works for less than four hours on the public holiday; (b) double the worker's daily rate of pay, if the worker works for more than four hours on the public holiday. **9 Sick leave** 9.1 Only workers who work four or more days per week have the right to claim sick-pay in terms of this clause. 9.2 A worker who is unable to work on account of illness or injury is entitled to claim one day's paid sick leave for every full month that the worker has worked in terms of a contract. 9.3 A worker may accumulate a maximum of twelve days sick leave in a year. 9.4 Accumulated sick leave may not be transferred from one contract to another contract. 9.5 An employer must pay a task-rated worker the worker's daily task rate for a day's sick leave. 9.6 An employer must pay a time-rated worker the worker's daily rate of pay for a day's sick leave. 9.7 An employer must pay a worker sick pay on the worker's usual pay day. 9.8 Before paying sick pay, an employer may require a worker to produce a certificate stating that the worker was unable to work on account of sickness or injury if the worker is – (a) absent from work for more than two consecutive days; or (b) absent from work on more than two occasions in any eight-week period. 9.9 A medical certificate must be issued and signed by a medical practitioner, a qualified nurse or a clinic staff member authorised to issue medical certificates indicating the duration and reason for incapacity. 9.10 A worker is not entitled to paid sick leave for a work-related injury or occupational disease for which the worker can claim compensation under the Compensation for Occupational Injuries and Diseases Act.
4.13 (cont)	**10 Maternity leave** 10.1 A worker may take up to four consecutive months unpaid maternity leave. 10.2 A worker is not entitled to any payment or employment-related benefits during maternity leave. 10.3 A worker must give her employer reasonable notice of when she will start maternity leave and when she will return to work. 10.4 A worker is not required to take the full period of maternity leave. However, a worker may not work for four weeks before the expected date of birth of her child or for six weeks after the birth of her child, unless a medical practitioner, midwife or qualified nurse certifies that she is fit to do so. 10.5 A worker may begin maternity leave – (a) four weeks before the expected date of birth; or (b) on an earlier date –

	(i) if a medical practitioner, midwife or certified nurse certifies that it is necessary for the health of the worker or that of her unborn child; or (ii) if agreed to between employer and worker; or (c) on a later date, if a medical practitioner, midwife or certified nurse has certified that the worker is able to continue to work without endangering her health. 10.6 A worker who has a miscarriage during the third trimester of pregnancy or bears a stillborn child may take maternity leave for up to six weeks after the miscarriage or stillbirth. 10.7 A worker who returns to work after maternity leave, has the right to start a new cycle of twenty-four months employment, unless the SPWP on which she was employed has ended. **11 Family responsibility leave** 11.1 Workers who work for at least four days per week, are entitled to three days paid family responsibility leave each year in the following circumstances: (a) when the employee's child is born; (b) when the employee's child is sick; (c) in the event of a death of (i) the employee's spouse or life partner; (ii) the employee's parent, adoptive parent, grandparent, child, adopted child, grandchild or sibling. **12 Statement of conditions** 12.1 An employer must give a worker a statement containing the following details at the start of employment: (a) the employer's name and address and the name of the SPWP; (b) the tasks or job that the worker is to perform; and (c) the period for which the worker is hired or, if this is not certain, the expected duration of the contract; (d) the worker's rate of pay and how this is to be calculated; (e) the training that the worker will receive during the SPWP. 12.2 An employer must supply each worker with a copy of these conditions of employment.
4.13 (cont)	**13 Keeping records** 13.1 Every employer must keep a written record of at least the following: (a) the worker's name and position; (b) in the case of a task-rated worker, the number of tasks completed by the worker; (c) in the case of a time-rated worker, the time worked by the worker; (d) payments made to each worker. 13.2 The employer must keep this record for a period of at least three years after the completion of the SPWP. **14 Payment** 14.1 An employer must pay all wages at least monthly in cash or by cheque or into a bank account. 14.2 A task-rated worker will only be paid for tasks that have been completed. 14.3 An employer must pay a task-rated worker within five weeks of the work being completed and the work having been approved by the manager or the contractor having submitted an invoice to the employer. 14.4 A time-rated worker will be paid at the end of each month. 14.5 Payment must be made in cash, by cheque or by direct deposit into a bank account designated by the worker. 14.6 Payment in cash or by cheque must take place – (a) at the workplace or at a place agreed to by the worker; (b) during the worker's working hours or within fifteen minutes of the start or finish of work;

	(c) in a sealed envelope which becomes the property of the worker. 14.7 An employer must give a worker the following information in writing: (a) the period for which payment is made; (b) the numbers of tasks completed or hours worked; (c) the worker's earnings; (d) any money deducted from the payment; (e) the actual amount paid to the worker. 14.8 If the worker is paid in cash or by cheque, this information must be recorded on the envelope and the worker must acknowledge receipt of payment by signing for it. 14.9 If a worker's employment is terminated, the employer must pay all monies owing to that worker within one month of the termination of employment. **15 Deductions** 15.1 An employer may not deduct money from a worker's payment unless the deduction is required in terms of a law. 15.2 An employer must deduct and pay to the SA Revenue Services any income tax that the worker is required to pay. 15.3 An employer who deducts money from a worker's pay for payment to another person must pay the money to that person within the time period and other requirements specified in the agreement law, court order or arbitration award concerned. 15.4 An employer may not require or allow a worker to – (a) repay any payment except an overpayment previously made by the employer by mistake; (b) state that the worker received a greater amount of money than the employer actually paid to the worker; or (c) pay the employer or any other person for having been employed.
4.13 (cont)	**16 Health and safety** 16.1 Employers must take all reasonable steps to ensure that the working environment is healthy and safe. 16.2 A worker must – (a) work in a way that does not endanger his/her health and safety or that of any other person; (b) obey any health and safety instruction; (c) obey all health and safety rules of the SPWP; (d) use any personal protective equipment or clothing issued by the employer; (e) report any accident, near-miss incident or dangerous behaviour by another person to their employer or manager. **17 Compensation for injuries and diseases** 17.1 It is the responsibility of the employers (other than a contractor) to arrange for all persons employed on a SPWP to be covered in terms of the Compensation for Occupational Injuries and Diseases Act, 130 of 1993. 17.2 A worker must report any work-related injury or occupational disease to their employer or manager. 17.3 The employer must report the accident or disease to the Compensation Commissioner. 17.4 An employer must pay a worker who is unable to work because of an injury caused by an accident at work 75% of their earnings for up to three months. The employer will be refunded this amount by the Compensation Commissioner. This does NOT apply to injuries caused by accidents outside the workplace such as road accidents or accidents at home. **18 Termination** 18.1 The employer may terminate the employment of a worker for good cause after following a fair procedure. 18.2 A worker will not receive severance pay on termination.

	18.3 A worker is not required to give notice to terminate employment. However, a worker who wishes to resign should advise the employer in advance to allow the employer to find a replacement. 18.4 A worker who is absent for more than three consecutive days without informing the employer of an intention to return to work will have terminated the contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period. 18.5 A worker who does not attend required training events, without good reason, will have terminated the contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period. **19 Certificate of service** 19.1 On termination of employment, a worker is entitled to a certificate stating – (a) the worker's full name; (b) the name and address of the employer; (c) the SPWP on which the worker worked; (d) the work performed by the worker; (e) any training received by the worker as part of the SPWP; (f) the period for which the worker worked on the SPWP; (g) any other information agreed on by the employer and worker.

PART 2: DATA PROVIDED BY THE CONTRACTOR

Clause	Data
1.1.1.9	The name of the Contractor is …….
1.2.1.2	The address of the Contractor is: Physical Address: Postal Address: …….. …….. …….. …….. …… …….. …… …….. e-mail: …… Tel. No. …….. Fax No. ……
1.1.1.14	The time for achieving Practical Completion is **4 months.**
6.5.1.2.3	The percentage allowance to cover overhead charges is …… %
6.2.1	The security to be provided by the Contractor shall be one of the following:

Type of security (Value Added Tax is excluded from the Contract Sum and the value of the Works for calculating the percentages)	Contractor's choice. Indicate "Yes" or "No"
Performance Guarantee of 10% of the Contract Sum.	
Performance Guarantee of 5% of the Contract Sum + 5% Retention.	
10% Retention	

AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT NO. 85 OF 1993

THIS AGREEMENT is made between .....

……

(hereinafter called the EMPLOYER) of the one part, herein represented by: .....

.....

in his capacity as: .....

AND:

(hereinafter called the CONTRACTOR) of the other part, herein represented by .....

.....

in his capacity as: .....

duly authorised to sign on behalf of the Contractor.

WHEREAS the CONTRACTOR is the Mandatory of the EMPLOYER in consequence of an agreement between the CONTRACTOR and the EMPLOYER in respect of

CONTRACT No.: **SCMU8-22/23-0065: BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT** for the construction, completion and maintenance of the works;

NOW THEREFORE the parties agree as follows:

1. **The CONTRACTOR undertakes to acquaint the appropriate officials and employees of the CONTRACTOR with all relevant provisions of the ACT and the regulations promulgated in terms thereof.**

2. The CONTRACTOR undertakes to fully comply with all relevant duties, obligations and prohibitions imposed in terms of the ACT and Regulations: Provided that should the EMPLOYER have prescribed certain arrangements and procedures that same shall be observed and adhered to by the CONTRACTOR, his officials and employees. The CONTRACTOR shall bear the onus of acquainting himself/herself/itself with such arrangements and procedures.

3. The CONTRACTOR hereby accepts sole liability for such due compliance with the relevant duties, obligations, prohibitions, arrangements and procedures, if any, imposed by the ACT and Regulations, and the CONTRACTOR expressly absolves the EMPLOYER and the Employer's CONSULTING EMPLOYER'S AGENTS from being obliged to comply with any of the aforesaid duties, obligations, prohibitions, arrangements and procedures in respect of the work included in the contract.

4. The CONTRACTOR agrees that any duly authorised officials of the EMPLOYER shall be entitled, although not obliged, to take such steps as may be necessary to ensure that the CONTRACTOR has complied with his undertakings as more fully set out in paragraphs 1 and 2 above, which steps may include, but shall not be limited to, the right to inspect any appropriate site or premises occupied by the CONTRACTOR, or to take such steps it may deem necessary to remedy the default of the CONTRACTOR at the cost of the CONTRACTOR.

5. The CONTRACTOR shall be obliged to report forthwith to the EMPLOYER any investigation, complaint or criminal charge which may arise as a consequence of the provisions of the ACT and Regulations, pursuant to work performed in terms of this agreement, and shall, on written demand, provide full details in writing of such investigation, complaint or criminal charge.

Thus signed at ..... for and on behalf of the **CONTRACTOR**

on this day..... day of ..... 20_____

SIGNATURE: .....

NAME AND SURNAME: .....

CAPACITY: .....

WITNESS: 1. ..... ……...

2. .....

Thus signed at .....for and on behalf of the **EMPLOYER**

on this day..... day of .....20_____

SIGNATURE: .....

NAME AND SURNAME: .....

CAPACITY: .....

WITNESS: 1. .....

2. ……..

CESSION OF RIGHTS FOR MATERIALS ON SITE

Claim for materials on site

Payment Certificate No. ..... **Date:** ....

Contract: .....

Employer: ..... …

Contract No:..... .....

Contractor: ....

I / We, the undersigned,.....
(Print name)

in my / our capacity as .....of ..... …….
(Print capacity) (Company)

hereby confirm that the Contractor is the bona fide owner of the goods and materials described in the attached schedule and the Contractor hereby cedes assigns and transfers all the right, title and interest claim and demand in and due to the materials and goods described in the attached schedule in favour of the Employer.

All rights of the Employer in and to this Cession shall become effective immediately upon the Contractor obtaining payment for the goods referred to on the attached schedule (less payment of retention monies that may be validly retained in respect thereof) from which time forward the ownership of all the stated goods and materials will vest in and pass irrevocably to the Employer.

Notwithstanding the foregoing all risk or loss and/or damage to the said goods and materials whilst in the Contractor's stores up until the time that all the goods and materials have been installed in the Works shall be the responsibility of the Contractor.

This Cession shall neither constitute a novation of nor amend the terms of the Contract existing between the Employer and the Contractor nor shall it in any manner vitiate any of the rights and obligations imposed on either party.

Signed by: ..... Date: .....
for and on behalf of the Contractor.

Witnessed by: .....Date: .....

(NOTE: This form, together with the documentary proof of ownership or proof of payment by the Contractor to the supplier, shall accompany the Contractor's claim for payment for materials on site in terms of Clause 49.1.5 of the General Conditions of Contract Third Edition 2015).

C 1.3

Form of Guarantee

EASTERN CAPE PROVINCIAL GOVERNMENT
DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM

BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

C1.3 Form of Guarantee: Contract No. SCMU8-22/23-0065.

For use with the General Conditions of Contract of Construction Works, Third Edition (2015)

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means ……

Physical address: ……..

"Employer" means …….

"Contractor" means: ……..…….

"Employer's Agent" means ….……

"Works" means: ……..……

"Site" means: …….

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

"Contract "SUM" means: The accepted amount inclusive of tax of R _____

Amount in words: _____

Type of performance Guarantee: _____ (insert Variable or Fixed)

"Expiry Date" means (Give date) or any other later date set by the Contractor and/or Employer provided such instruction is received prior to the Expiry Date as indicated here

CONTRACT DETAILS

Employer's Agent issues: Interim Payment Certificates, Final Payment Certificate and the Certificate of Completion of the Works as defined in the Contract.

1. VARIABLE PERFORMANCE GUARANTEE

1.1 Where a Variable Performance Guarantee has been selected, the Guarantor's liability shall be limited during the following periods to diminishing amounts of the Guaranteed Sum as follows:

1.1.1 From and including the date of signing the Performance Guarantee up to and including the date of the interim payment certificate certifying, for the first time, more than 50% of the Contract Sum:

R _____

(Amount in words_____)

1.1.2 From the day following the date of the said interim payment certificate up to and including the Expiry Date, or the date of issue by the Employer's Agent of the Certification of Completion of the Works, whichever occurs first?

R _____

(Amount in words_____)

1.2 The employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on which the interim payment certificate certifying, for the first time, more 50% of the Contract Sum, has been used and the date on which the Certificate of Completion of the Works has been issued.

2. FIXED PERFORMANCE GUARANTEE

2.1 Where a Fixed Performance Guarantee has been selected, the Guarantor's liability shall be limited to the amount of the Guaranteed Sum.

2.2 The Guarantor's period of liability shall be from and including the date on which the Performance Guarantee is signed, up to and including the Expiry Date, or the date of issue by the Employer's Agent of the Certificate of Completion of the Works, or the date of payment in full of the Guaranteed Sum, whichever occurs first.

2.3 The employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.

3. CONDITIONS APPLICABLE TO VARIABLE AND FIXED PERFORMANCE GUARANTEES

3.1 The Guarantor hereby acknowledges that:

3.1.1 Any reference in this Performance Guarantee to the Contract is made of the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a surety ship.

3.1.2 Its obligation under this Performance Guarantee is restricted to the payment of money.

3.2 Subject to the Guarantors maximum liability reoffered to in 1.1 or 2.1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 3.2.1 to 3.2.3:

3.2.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Employer's Agent in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 3.2.2,

3.2.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that period of seven (7) days has elapsed since the first written demand in terms of 3.2.1 and the sum certified has still not been paid,

3.2.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 3.2

3.3 Subject to the Guarantor's maximum liability reoffered to in 1.1 or 2.1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:

3.3.1 The Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 3.3, or

3.3.2 a provincial or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 3.3, and

3.3.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.

3.4 It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 3.2 and 3.3 shall not exceed the Guarantor's maximum liability in terms of 1.1 or 2.1.

3.5 Where the Guarantor has made payment in terms of 3.3, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.

3.6 Payment by the Guarantor in terms of 3.2 or 3.3 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.

3.7 Payment by the Guarantor in terms of 3.3 will only be made against the return of the original Performance Guarantee by the Employer.

3.8 The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may consider fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.

3.9 The Guarantor chooses the physical address as stated above for the services of all notices for all purpose in connection herewith.

3.10 This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 1.1.2 or 2.2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.

3.11 This performance Guarantee, with the required demand notices in terms of 3.2 or 3.3, shall be regarded as a liquid document for the purposes of obtaining a court order.

3.12 Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrates 'Courts Act No 32 of 1994, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at:_____ Date _____

Guarantor's signatory (1) _____

Capacity _____

Guarantor's signatory (2) _____

Capacity _____

Witness signatory (1) _____

Witness signatory (2) _____

PART C2 – PRICING DATA

C 2.1

Pricing Instructions

C2.1 Pricing Instructions

1. Measurement and payment shall be in accordance with the relevant provisions of clause 8 of each of the SABS 1200 Standardised Specifications for Civil Engineering Construction referred to in the Scope of Work. The Preliminary and General items shall be measured in accordance with the provisions of SABS 1200-A, *General.*

2. The units of measurement described in the Bills of Quantities are metric units. Abbreviations used in these Bills of Quantities are as follows:

%	=	percent
h	=	hour
ha	=	hectare
kg	=	kilogram
kl	=	kilolitre
km	=	kilometre
km-pass	=	kilometre-pass
kPa	=	kilopascal
kW	=	kilowatt
l	=	litre
m	=	metre
mm	=	millimetre
m^2	=	square metre
m^2-pass	=	square metre-pass
m^3	=	cubic metre
m^3-km	=	cubic metre-kilometre
month	=	month
MN	=	meganewton
MN.m	=	meganewton-metre
MPa	=	megapascal
No.	=	number
Prov sum	=	Provisional sum
PC sum	=	Prime Cost sum
R/only	=	Rate only
sum	=	lump sum
t	=	ton (1000 kg)
W/day	=	Work day

3. Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.

4. The prices and rates in these Bills of Quantities are fully inclusive prices for the work described under the items. Such prices and rates cover all costs and expenses that may be required in and for the execution of the work described in accordance with the provisions of the Scope of Work, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the Contract Data, as well as overhead charges and profit. These prices will be used as a basis for assessment of payment for additional work that may have to be carried out.

5. It will be assumed that prices included in these Bills of Quantities are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders. (Refer to www.stanza.org.za or www.iso.org for information on standards)

6. Where the Scope of Work requires detailed drawings and designs or other information to be provided, all costs associated therewith are deemed to have been provided for and included in the unit rates and sum amount tendered such items

7. An item against which no price is entered will be considered to be covered by the other prices or rates in the Bills of Quantities. A single lump sum will apply should a number of items be grouped together for pricing purposes.

8. The quantities set out in these Bills of Quantities are approximate and do not necessarily represent the actual amount of work to be done. The quantities of work accepted and certified for payment will be used for determining payments due and not the quantities given in the Bills of Quantities.

9. The short descriptions of the items of payment given in these Bills of Quantities are only for the purposes of identifying the items. More details regarding the extent of the work entailed under each item appear in the Scope of Work.

10. Descriptions in the Bills of Quantities are abbreviated and comply generally with those in the SABS 1200 Standardised Specifications.

C 2.2

Bill of Quantities

SECTION A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
	SANS 1200 AA	SECTION A: PRELIMINARY AND GENERAL					
A .1	8.3	FIXED-CHARGE ITEMS					
A .1.1	8.3.1	Contractual Requirements	Sum	=========	=========		
A.1.2	8.3.2	Provision of facilities on site:					
A.1.2.1		b) Facilities for Contractor	Sum	=========	=========		
A.1.3.	8.3.3	General responsibilities and other fixed-charge obligations	Sum	=========	=========		
A.1.4	8.3.4	Removal of site Establishment	Sum	=========	=========		
A.2	8.4	TIME-RELATED ITEMS					
A.2.1	8.4.1	Contractual Requirements	Sum	=========	=========		
A.2.2	8.4.2	Operate and maintain facilities on the Site:					
A.2.2.1		b) Facilities for Contractor	Sum	=========	=========		
A.2.3.	8.4.3	General Responsibilities and other time-related obligations	Sum	=========	=========		
Total Carried Forward							

SECTION A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
A.3	SANS 1200 A 8.5	SUMS STATED PROVISIONALLY BY ENGINEER					
A.3.1		b)(1)(i) Remuneration of Community Liaison Officer	Prov. Sum	=========	=========	20,000	00
A.3.2		b)(1)(ii) Other tests as requested by Engineer	Prov. Sum	=========	=========	20,000	00
A.3.3		b)(1)(iii) Water connection between poly-ethylene plastic tank and including pipe work and stand pipe.	Prov. Sum	=========	=========	5,000	00
A.3.5		b)(2)(i) Overheads, charges and profit on item A.3.1	%	20,000.0			
A.3.6		b)(2)(ii) Overheads, charges and profit on item A.3.2	%	20,000.0			
A.3.7		b)(2)(iii) Overheads, charges and profit on item A.3.3	%	5,000.0			
A.4	PAM	OCCUPATIONAL HEALTH AND SAFETY ACT					
A.4.1	PAM 8.2.1	All costs and obligations to comply with the OHS Act Construction Regulations	Sum	=========	=========		
A.4.2	PAM 8.2.1	Time related obligations to comply with the OHS Act Construction Regulations	Sum	=========	=========		
Total Carried Forward To Summary							

SECTION B: RURAL MARKET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
		SECTION B: RURAL MARKET STRUCTURE					
B.1		EARTHWORKS					
B.1.1	PC 1.1	Site Clearing - Clear and grub	m²	50.0			
B.1.2	SANS 1200 C 8.2.2	Remove and grub large trees and tree stumps of girth					
B.1.2.1		a) Over 1m and up to and including 2m	No.	1.0			
B.1.3	SANS 1200 D 8.3.2	Bulk Excavation					
B.1.3.1		a) Excavate in all materials and use for embankment or backfill or dispose, as ordered	m³	60.0			
B.1.3.2		b) Extra over for hard rock excavation	m³	15.0			
B.1.4	PC 1.2	Compacted filling material supplied by the Contractor					
		a) G7 Material compacted to 98% AASHTO	m³	30.0			
		b) G5 Material compacted to 98% AASHTO	m³	30.0			
B.1.5	PC 1.3	In-place treatment of subgrade material by ripping and compacting to 96% AASHTO	m³	30.0			
B.1.6	PC 1.4	Cleaning and shaping existing foundation trenches	m	73.8			
B.1.7	PC 1.5	Prescribed density tests on filling	No.	10.0			
B.2		CONCRETE WORKS					
B.2.1	PC 2.1	Mass concrete (25 MPa/19mm) for strip footing	m³	11.3			
B.2.2	PC 2.2	Mass concrete (25MPa/19mm) apron at a fall	m³	4.0			
B.2.3	PC 2.3	Reinforced concrete					
B.2.3.1		150mm thick reinforced concrete surface bed to yield a 28-day strength of 35 Mpa (38mm to dust well graded concrete mix). Concrete abrasion resistance to exhibit properties which align with SANS class AR2. Concrete to be reinforced 40mm Structural Synthetic Polypropylene Macro Fibres and to contain Sika ViscoCrete-10 super plasticiser for workability.	m³	31.0			
B.2.3.2		Stub Column with a 28 day crushing strength of 30 Mpa	m³	1.1			
B.2.3.3		Stall Tables (25 Mpa/19mm)	m³	8.5			
B.2.3	PC 2.4	Wooden float top of concrete to be at a slope	m²	29.0			
B.2.4	PC 2.5	Steel float top of concrete to be level	m²	240.0			
Total Carried Forward							

SECTION B: RURAL MARKET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
B.2.5	PC 2.6	Expansion joints with 10mm polyurethane sealer between vertical concrete or brick surfaces and column plinths	m	26.0			
B.2.6	PC 2.7	Steel reinforcing Items					
B.2.6.1		a) High tensile reinforcing bars - Y8's	kg	38.4			
B.2.6.2		b) High tensile reinforcing bars - Y12's	kg	230.2			
B.2.6.3		c) High tensile reinforcing bars - Y16's	kg	637.1			
B.2.6.4		d) High tensile steel mesh - Ref. 193	kg	375.2			
B.2.7	PC 2.8	One layer of waterproof sheeting under surface beds 250 micron	m²	205.0			
B.3		MASONRY WORKS					
B.3.1	BPC 3.1	Brickwork					
B.3.1.1		230mm Burnt clay brick walls in foundations	m²	52.0			
B.3.1.2		230mm clay brick walls for office building and stalls. Tambotie Satin (or similar) on the exterior face.	m²	170.0			
B.3.1.3		230mm Burnt clay brick walls to office building and stalls	m²	94.0			
B.3.2	PC 3.2	One layer of 375-micron damp proof course in walls	m	115.0			
B.3.3	PC 3.3	Prestressed fabricated lintels					
B.3.3.1		1.5m x 140mm x 75mm lintels to windows	No.	1.0			
B.3.3.2		1.5m x 140mm x 75mm lintels to doors	No.	2.0			
B.4		CEMENT PLASTER PLASTERING					
B.4.1	PC 4.1	15mm thick cement plaster on internal walls	m²	216.0			
B.5		WINDOWS, DOORS AND FITTINGS					
B.5.1	PC 5.1	Durowin Code ND1 (1 245mm x 553mm) window frames fitted	No.	1.0			
B.6		INSTALLATION OF GLAZING IN WINDOWS					
B.6.1	PC 6.1	Clear glass to steel window frames	m²	0.7			
Total Carried Forward							

SECTION B: RURAL MARKET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
B.7		METALWORK					
B.7.1	PC 5.2	Steel door frames: 2 032mm x 813mm x 234mm	No.	2.0			
B.7.2	PC 5.3	Steel door frames (Half Door): 1 000 mm x 813mm x 234mm	No.	8.0			
B.8		JOINERY					
B.8.1	PC 7.1	Semi-solid flush internal quality doors	No.	1.0			
B.8.2	PC 7.2	Solid flush external quality doors	No.	1.0			
B.8.3	PC 7.2	Solid flush external quality doors	No.	8.0			
B.9		IRON MONGERY					
B.9.1	PC 8.1	Three lever heavy duty mortice lock	No.	2.0			
B.9.2	PC 8.2	Galvanised barrel bolt latch	No.	8.0			
B.10		PLUMBING AND DRAINAGE					
B.10.1	PC 9.4	5 000 litre polyethylene rainwater tank, fittings, valves and anchored to tank base	No.	1.0			
B.10.2	PC 9.5	Extra over tank stand for rainwater harvest tank	No.	1.0			
B.10.3	PC 9.1	Roof gutters, on and including gutter brackets at not exceeding 1m centres	m	18.0			
B.10.4	PC 9.2	Extra over for eave gutter for outlet	No.	1.0			
B.10.5	PC 9.3	Rainwater downpipes, fixed with and including holder bats to walls at not exceeding 1,5m centres	m	5.0			
B.11		PAINTING					
B.11.1	PC 10.1	Paint one coat undercoat and two coats flexible durable paint on plastered walls	m²	216.0			
B.11.2	PC 10.2	Paint three coats flexible durable paint on doors, door frames and windows, lightly sanded in between each coat	m²	23.0			
B.12		ROOF					
B.12.1	PC 15.1	Roof covering with 0.58mm thick galvanised Chromadek IBR roofing sheets Class Z275 fixed to lip channels purlins	m²	210.0			
Total Carried Forward							

SECTION B: RURAL MARKET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
B.13		STRUCTURAL STEELWORK					
B.13.1	PC 11.1	Professional fees for the Structural Engineer	PC Sum	=========	=========	80,000	00
B.13.2	PC 11.2	Handling fee for item B.13.1	%	80,000.0			
B.13.3	SANS1200 H	Structural Steelwork					
B.13.3.1	8.3.1	Supply and Fabrication					
B.13.3.1.1	8.3.1.1	Preparation of Shop detail drawings	Sum	=========	=========		
B.13.3.1.2	8.3.1.2	Supply and fabrication of steelwork					
		Columns:					
B.13.3.1.2.1		IPE 200 x 100 x 22.4 kg/m in columns C3	ton	0,238			
B.13.3.1.2.2		IPE 200 x 100 x 22.4 kg/m in columns C3x	ton	0,079			
B.13.3.1.2.3		IPE 200 x 100 x 22.4 kg/m in columns C4	ton	0,269			
		Wind Portal Columns:					
B.13.3.1.2.4		IPE 200 x 100 x 22.4 kg/m in columns C1	ton	0,119			
B.13.3.1.2.5		IPE 200 x 100 x 22.4 kg/m in columns C1x	ton	0,119			
B.13.3.1.2.6		IPE 200 x 100 x 22.4 kg/m in columns C2	ton	0,119			
B.13.3.1.2.7		IPE 200 x 100 x 22.4 kg/m in columns C2x	ton	0,119			
		Wind Portal Beams:					
B.13.3.1.2.8		305 x 102 x 25 kg/m in beams B1	ton	0,273			
		Rafters:					
B.13.3.1.2.9		IPE 200 x 100 x 22.4 kg/m in beams R1	ton	0,136			
B.13.3.1.2.10		IPE 200 x 100 x 22.4 kg/m in beams R1x	ton	0,136			
B.13.3.1.2.11		IPE 200 x 100 x 22.4 kg/m in beams R2	ton	0,136			
B.13.3.1.2.12		IPE 200 x 100 x 22.4 kg/m in beams R2a	ton	0,136			
B.13.3.1.2.13		IPE 200 x 100 x 22.4 kg/m in beams R3	ton	0,136			
B.13.3.1.2.14		IPE 200 x 100 x 22.4 kg/m in beams R3a	ton	0,136			
B.13.3.1.2.15		IPE 200 x 100 x 22.4 kg/m in beams R4	ton	0,136			
B.13.3.1.2.16		IPE 200 x 100 x 22.4 kg/m in beams R4a	ton	0,136			
		Haunches:					
B.13.3.1.2.17		IPE 200 x 100 x 22.4 kg/m in rafters H1	ton	0,090			
B.13.3.1.2.18		IPE 200 x 100 x 22.4 kg/m in rafters H2	ton	0,093			
Total Carried Forward To Summary							

SECTION B: RURAL MARKET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		Bracing:					
B.13.3.1.2.19		90 x 90 x 6mm Equal angles roof bracings XB1	ton	0,208			
B.13.3.1.2.20		90 x 90 x 6mm Equal angles roof bracings XB2	ton	0,208			
B.13.3.1.2.20		40 x 40 x 5mm Equal angles knee bracings	ton	0,041			
		Purlin:					
B.13.3.1.2.20		125 x 75 x 20 x 2.5mm Pre-galvanised CRLC	ton	0,973			
		Miscellaneous					
B.13.3.1.2.21		50 x 50 x 3mm Equal angles gutter support	ton	0.036			
B.13.3.1.2.22		50 x 50 x 3mm Equal angles sheeting rail	ton	0.121			
B.13.3.2	8.3.2	Delivery to Site					
B.13.3.2.1	8.3.2.1	Normal delivery	ton	4,193			
B.13.3.3	8.3.3	Erection on Site					
		Columns:					
B.13.3.3.1		IPE 200 x 100 x 22.4 kg/m in columns C3	ton	0,238			
B.13.3.3.2		IPE 200 x 100 x 22.4 kg/m in columns C3x	ton	0,079			
B.13.3.3.3		IPE 200 x 100 x 22.4 kg/m in columns C4	ton	0,269			
		Wind Portal Columns:					
B.13.3.3.4		IPE 200 x 100 x 22.4 kg/m in columns C1	ton	0,119			
B.13.3.3.5		IPE 200 x 100 x 22.4 kg/m in columns C1x	ton	0,119			
B.13.3.3.6		IPE 200 x 100 x 22.4 kg/m in columns C2	ton	0,119			
B.13.3.3.7		IPE 200 x 100 x 22.4 kg/m in columns C2x	ton	0,119			
		Wind Portal Beams:					
B.13.3.3.8		305 x 102 x 25 kg/m in beams B1	ton	0,273			
		Rafters:					
B.13.3.3.9		IPE 200 x 100 x 22.4 kg/m in beams R1	ton	0,136			
B.13.3.3.10		IPE 200 x 100 x 22.4 kg/m in beams R1x	ton	0,136			
B.13.3.3.11		IPE 200 x 100 x 22.4 kg/m in beams R2	ton	0,136			
B.13.3.3.12		IPE 200 x 100 x 22.4 kg/m in beams R2a	ton	0,136			
B.13.3.3.13		IPE 200 x 100 x 22.4 kg/m in beams R3	ton	0,136			
B.13.3.3.14		IPE 200 x 100 x 22.4 kg/m in beams R3a	ton	0,136			
Total Carried Forward To Summary							

SECTION B: RURAL MARKET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
B.13.3.3.15		IPE 200 x 100 x 22.4 kg/m in beams R4	ton	0,136			
B.13.3.3.16		IPE 200 x 100 x 22.4 kg/m in beams R4a	ton	0,136			
		Haunches:					
B.13.3.3.17		IPE 200 x 100 x 22.4 kg/m in rafters H1	ton	0,090			
B.13.3.3.18		IPE 200 x 100 x 22.4 kg/m in rafters H2	ton	0,093			
		Bracing:					
B.13.3.3.19		90 x 90 x 6mm Equal angles roof bracings XB1	ton	0,208			
B.13.3.3.20		90 x 90 x 6mm Equal angles roof bracings XB2	ton	0,208			
B.13.3.3.21		40 x 40 x 5mm Equal angles knee bracings	ton	0,041			
		Purlin:					
B.13.3.3.22		125 x 75 x 20 x 2.5mm Pre-galvanised CRLC	ton	0,973			
		Miscellaneous					
B.13.3.3.23		50 x 50 x 3mm Equal angles gutter support	ton	0.036			
B.13.3.3.24		50 x 50 x 3mm Equal angles sheeting rail	ton	0.121			
B.13.3.4	8.3.4	Erection bolts					
B.13.3.4.1		Hot Dip Galvanised Grade 8.8	ton	0.18			
B.13.3.5	8.3.6	Holding Down (HD) Bolts					
B.13.3.5.1		Grade 5,8 Holding down M20 x 600mm long with washers and nuts	No	48			
B.14		ELECTRICAL INSTALLATION					
B.14.1	PC 11.1	Electrical design, drawings and material list	Sum	=========	=========		
B.14.2	PC 11.2	Connection to ESKOM/Municipal electrical network	Sum	=========	=========		
B.14.3	PC 11.3	Main-Electrical distribution board	Sum	=========	=========		
B.14.4	PC 11.4	Internal electrical wiring	Sum	=========	=========		
B.14.5	PC 11.5	Light switches	No.	2.0			
B.14.6	PC 11.6	Luminaries Type H (4000W MH Hi-Bay) or similar	No.	6.0			
B.14.7	PC 11.7	16A 3-pin socket outlet, double	No.	3.0			
B.14.8	PC 11.8	"As built drawings" and issuing of CoC	Sum	=========	=========		
Total Carried Forward To Summary							

SECTION B: RURAL MARKET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
B.15		SUSPENDED CEILING FOR OFFICE AND STOREROOM					
B.15.1	PC 13.1	Design, supply, deliver and install according to manufacturer specifications a suspended ceiling complete with ceiling tiles, wall angles, main tees, hanger straps, fasteners, looped wires, cross tees, angles cleat etc	m²	1.0			
B.15.2	PC 13.2	Gypsum cornice to ceiling	m	2.0			
B.15.3	PC 13.3	Glass fibre ceiling insulation	m²	2.0			
Total Carried Forward To Summary							

SECTION C: FENCING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
C.1		FENCING					
C.1.1	PC 14.1	Installation of fence using jet black taper locking posts (2.4m High) and jet black ClearVu Invisible Wall Panels (3.305m wide, 1.8m high). 3.5mm wire diameter. Panels to includes clamps and tech bolts. Fence to include shark tooth spikes - coated (100mm x 1.65 length). All items to be galvanised, then Marine Fusion Coated (Acid Modified).	m	270.0			
C.1.2	PC 14.2	Installation of sliding gates. Jet black ClearVu Gates - embedded posts- including spikes (6m single leaf). 1.8m high sliding gate. Galvanised, then Marine Fusion Coated (Acid Modified)	No.	2.0			
C.1.3	PC 14.3	Installation of pedestrian gate. Jet black ClearVu Gates - embedded posts- including spikes (1.2m single leaf). 1.8m high sliding ate. Galvanised, then Marine Fusion Coated (Acid Modified)	No.	2.0			
Total Carried Forward To Summary							

SCMU8-21/22 -0062

BILL OF QUANTITIES

KEISKAMAHOEK RURAL MARKET

SUMMARY OF SECTIONS

SECTION	DESCRIPTION	AMOUNT (RAND)
1	SECTION A: PRELIMINARY AND GENERAL	.....
2	SECTION B: RURAL MARKET STRUCTURE	.....
3	SECTION C: FENCING	.....
	SUBTOTAL	.....
4	Contingencies 5%	.....
	SUBTOTAL	.....
5	VAT 15%	.....
Total Carried Forward To Form of Offer		

C 3.1
Scope of Work

EASTERN CAPE PROVINCIAL GOVERNMENT
DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM

BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

C3.1 Scope of Work

1. Scope of Work and Management

TOPIC	SUB TOPIC
DESCRIPTION OF THE WORKS	
Employer's objective	Construction of a farmer's market at Keiskamahoek opposite the main Post Office in the Amahlathi Local Municipality of Amathole District.
Overview and extent of works	This contract entails the construction of a 16 x 12m steel building structure that encompasses eight clay brick selling stalls, a brick and mortar office and a cold storage room to store unsold produce. Connection of an outside tap to a water harvesting tank. Installation of approximately 270m long ClearVuTM fence. Earth and electrical works. This project was started in the last financial year but could not be completed due to contractual issues. As a result, some of the work is complete, viz: • Foundation trenches are complete. They may need to be cleaned and shaped according to the drawings and specifications. Excavation, ripping, filling with imported G5 and G7 gravel, and compaction for the surface bed are to be undertaken under this contract. • Column/Base footing for the columns is complete. Stub columns and unreinforced strip footing will be undertaken in this contract. Minor improvements may be required on the completed foundation. • The 5000 l water tank is in place together with its concrete supporting platform. Minor improvement or complete replacement of the water tank may be required depending on the condition and placement of the tank during construction. • The site is fenced. Additional health and safety requirements must be adhered to according to the OHS specification. A taxi rank, post office and several supermarkets surround the site; consequently, the contractor is to ensure that the operations severely affect none of the businesses and commuters. The known existing services are shown in the drawings. There is an underground Telkom fibre that crosses the structure. The contractor must ensure that the cable is protected when performing the works.
Location of the works	Keiskamahoek opposite the main Post Office in the Amahlathi Local Municipality. Refer to locality drawings for co-ordinates.
ENGINEERING	
Design + Drawings + Specifications	Done + Will be issued + Compiled by the division Engineering Services of DRDAR
PROCUREMENT	

Preferential procurement procedures	Method 1 – Price Preference
Sub-contracting	Sub-contracting will be allowed. The Contractor must however indicate at tender stage which portions of the work will be sub-contracted and to whom.
CONSTRUCTION	
Works specifications	1. The standards specifications will apply, as stated in: SPECIFICATION OF CONSTRUCTION MATERIALS AND METHODS TO BE USED FOR AGRICULTURAL ON-FARM INFRASTRUCTURE, First addition, December 2020, Revision "DRDAR SCMM-01/2020 2. Applicable SANS 1200 standards for the building works. 3. Attached Project Particular Specifications will apply.
Plant and materials	1. The Employer will not provide any plant or material. 2. The Contractor shall inform the Engineer in good time, to inspect and approve the plant and materials that will be used before construction commences or on arrival of material on site.
Construction equipment	1. The Employer will not provide any equipment. 2. The Contractor shall provide all suitable construction equipment necessary to complete the project.
Existing services	Care should be taken by the contractor not to damage any existing services. The Engineer shall show the position of all existing infrastructure both above ground and below ground to the Contractor and the contractor are to ensure that no excavations shall commence without consent of the Engineer.
Site establishment	1. The Employer will not provide any facilities on site. 2. The Contractor shall provide an office, storage shed, toilets, security, vehicles, labour and accommodation.
Site usage	The Contractor shall not utilize the site for any other purpose than the construction of the agreed works.
Permits and way leaves	The Contractor will negotiate all necessary permits and way leaves with the local community.
Survey control and Setting out works	The Contractor will be responsible for the survey and setting out of all construction levels. After setting out the levels the Contractor will inform the Engineer to inspect the levels before any excavation work or construction work may commence.
MANAGEMENT	
Management of works	1. Applicable SANS 1200 standards for the building works. 2. Attached Project Particular Specifications will apply 3. The standards specifications will apply, as stated in: SPECIFICATION OF CONSTRUCTION MATERIALS AND METHODS TO BE USED FOR AGRICULTURAL ON-FARM INFRASTRUCTURE, First addition, December 2020, Revision "DRDAR SCMM-01/2020 4. Drawings and specifications will be provided by the Employer and shall be the only acceptable drawings for the agreed works.

	5. The Engineer will be available to perform inspections every day on request, but will perform at least one scheduled inspection per week. 6. The Contract type is measured where payments to the Contractor will be made after measurement of the work done by the Engineer according to the following payment schedule. 6.1. The Contractor shall submit invoices according to the agreed claims and the Engineer will recommend the payment. 6.2. The Engineer will inspect the work at the Contractor's request to measure the progress and determine the part payment that is due when both parties are in agreement about the claim. 6.3. All payments can include materials that are secured on site under control of the Contractor. Materials on site which are not yet built into the works will compensated at 80% of the value as per the invoice from the material suppliers. 6.4. The Employer allows for monthly interim payments for the project that can be used, 1 practical and 1 final payment. 6.5. The practical completion of the construction work implies the work is complete and the beneficiaries can use the infrastructure. 6.6. The final and last payment is the retention money that will be paid after a predetermined period after all construction work is done. This is the defects liability period. 6.7. Certificates of Completion and Final Approval will be issued by the Engineer for practical and final construction completion. 7. The Contractor shall provide the Engineer with proof that Insurance has been obtained for the contract period. 8. The Contractor shall keep a daily record of all labour related matters, weather occurrences, all incidents that influenced construction. 9. Communications between the Employer and Contractor will be in writing with copies to all stakeholders. 10. The Contractor shall be responsible for testing the works after completion to ensure compliance with the Employer's requirements. 11. The Employer will commission the works during a public handing over ceremony. 12. The Contractor shall repair all defects of workmanship and materials during the liability period.
Health and safety	1. Attached Generic Occupational Health and Safety Specifications will apply. 2. Applicable SANS 1200, SANS 10400 and 10142 standards will apply; 3. Occupational Health and Safety Act (Act No. 85 of 1993) will apply; 4. The Contractor shall appoint a person that will be responsible for health and safety issues on site and provide the Engineer with the name and credentials of this person. This person must also be trained in First Aid and must have a comprehensive First Aid Kit on site. 5. The Contractor shall be responsible to design and apply measures to prevent accidents or injury to any person or property during construction.

C 3.2

Specifications

PARTICULAR / GENERIC SPECIFICATIONS

BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

SCOPE

PS SCOPE

THIS BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

PS 1 DISCLAIMER

The information regarding subsurface conditions, materials on site and site information supplied, is provided in good faith for the contractor's convenience as an indication of conditions likely to be encountered. No responsibility will be accepted for, and there is no guarantee of the information being representative of the whole area of the works or materials.

The information provided will not be regarded as in way limiting. The contractor will be held to have satisfied himself of all conditions to be encountered on site and to allow accordingly in his tendered rates.

PS 2 APPLICABLE STANDARDS

The South African Bureau of Standards, Standard Specifications for Civil Engineering Construction (SABS 1200). It shall however be noted that reference is made in certain of the specifications to other standardized specifications which may or may not be included in this document. Where such specifications are not included, they shall however be deemed to be included in the Contract documents.

The Contractor shall have available for reference on site at all times a full set of the above specifications, together with any other to which they refer. These specifications shall remain the property of the Contractor but shall be made available to the Engineer whenever required throughout the duration of the Contract.

The South African Bureau of Standards, Standard Specifications for Civil Engineering Construction (SABS 1200) shall apply to this Contract together with additional amendments as set out herein

PS 3 PLANT AND MATERIALS

The Employer will not be providing any plant or supplying any materials for use by the Contractor in executing the works. The Contractor must provide all plant and materials of whatever nature necessary to enable him to undertake the works as specified.

The Contractor must provide all necessary samples and copies of the relevant test results required to prove compliance with the specifications, prior to utilisation of any material within the works.

PS 3.1 Construction Equipment

The provision of all tools and equipment of whatever nature, required for execution of the scheduled items, must be the responsibility of the Contractor, and the cost thereof must be included in the rates for the respective items of work.

PS 4 EXISTING SERVICES

The Contractor will be issued with drawings showing the position of existing services in the vicinity of his working area. The Contractor must contact the service authorities concerned (i.e. Water, Sanitation,

Electricity and Telecommunications) to confirm the position of existing services, and must apply for the Construction Permit for work programmed within the road reserve when required.

The Contractor is required to undertake work in proximity to existing services and he must take all necessary precautions to prevent any damage to these services. In this regard, the Contractor must excavate by hand to expose and confirm the location and depth of each existing service prior to carrying out any construction over or around the service.

Should his operations result in any damage to existing services, he must immediately notify the Engineer and the local authority, who will inspect the damage and determine what further action is required. The Contractor must be responsible for the cost of all repairs or reinstatement necessary, whether these are carried out with his own resources or by a third party.

PS 5 SITE ESTABLISHMENT

PS 5.1 Services and Facilities Provided by the Employer

The Employer will not provide any facilities or services.

PS 5.2 Facilities Provided by the Contractor

Due to the extremely constricted nature of the site, the Contractor must be required to determine the most convenient location for his camp site in consultation with the Community/Owner such that this will cause the least disruption and interference with his activities. Dependent on his actual space requirement, different components of the camp could be located in different areas.

Should the Contractor elect to locate any or all of his facilities in one area for a certain duration, and then relocate them later, any associated costs must be solely for his account, and no claims of any nature for additional costs will be entertained.

The Contractor will be required to provide certain facilities for the exclusive use of the Engineer and his staff, all as defined in SABS 1200 AB, and as amended by any variations / additions in clause C3.4.1.6.

PS 5.3 Storage and Laboratory Facilities

The employer has no specific requirements for any storage or laboratory facilities, and the Contractor should provide whatever he deems to be necessary to support his activities.

PS 5.4 Other Facilities and Services

Should the Contractor require a supply of municipal water to enable him to undertake any of his activities on the site then he must make his own arrangements with the Community/Owner or Municipality for a suitable point of supply. The Contractor must agree the details of both the position and the size of connection required with the relevant officials, and must be responsible for the cost of the connection, the cost of water used, and the cost of removal and reinstatement on completion.

Should the Contractor require an electrical connection to his campsite then he must submit an application to the Community/Owner, Municipality's electricity department or Eskom as might be applicable to obtain a supply with the necessary capacity at a suitable position. The Contractor must be responsible for the cost of the connection, the cost of electricity used, and the cost of removal and reinstatement on completion.

The Contractor must:

i) make his own arrangements for whatever telephone and facsimile services he may require.
ii) provide sufficient serviced, portable toilets at convenient locations for the use of his staff during their time spent on site.
iii) supply a first aid kit to be available at the site office, and re-stock the contents as and when necessary.
iv) make available a list of emergency contact numbers for ambulance, police and fire services.
v) provide the necessary facilities on site to temporarily store refuse, and make arrangements with the Municipality for regular refuse removals. Refuse storage facilities must make allowance for waste separation, re-cycling and re-use wherever possible

All costs associated with any of the above aspects must be included in the relevant preliminary and general items.

PS 5.5 Vehicles and Equipment

No vehicles or specialised equipment is required for the employer and his agents.

PS 5.6 Advertising Rights

No advertising of any kind will be allowed on the site.

PS 5.7 Notice Boards

Two project notice boards will be required in accordance with SABS 1200 AB, and as amended by any variations/additions in clause C3.4.1.6.

PS 6 SITE USAGE

The Contractor must restrict his operations to the boundaries of the site and he must not be allowed to occupy or impact on any other adjacent areas.

PS 7 PERMITS AND WAY LEAVES

The Contractor will be required to provide copies of permits for any borrow pits or quarries from which he intends to obtain bedding material or aggregate.

The Contractor must be responsible for obtaining all of the necessary way leaves, permissions or permits applicable to working near any existing services or other infrastructure on Site, and must ensure that any way leaves, permissions or permits obtained by the Employer's Agent prior to the award of the Contract are transferred into the Contractor's name. (Refer also to clause C3.4.4 above.)

The Contractor must abide by any conditions imposed by such way leaves, permissions or permits.

The Contractor must ensure that all way leaves, permissions and permits are kept on site and are available for inspection by the relevant service authorities on demand.

PS 8 ALTERATION, ADDITIONS, EXTENSIONS AND MODIFICATIONS TO EXISTING WORKS

Wherever the Contractor is required to carry out construction to lines and levels based on or tying into existing infrastructure, he must first check that the information provided for the existing works is accurate and correct. Should there be any discrepancies as regards position, or defects in the quality of the existing work which may affect the proposed work, then the Contractor must report these to the Engineer and request clarification prior to proceeding with the new construction.

PS 9 INSPECTION OF ADJOINING PROPERTIES

The Contractor and the Engineer must together inspect and record the condition of all adjoining properties or existing services, prior to the commencement of any work that may impact on these existing facilities in any way.

PS 10 WATER FOR CONSTRUCTION PURPOSES

The Contractor must make his own arrangements with the Community/Owner or Municipality to obtain water for construction purposes.

PS 11 SURVEY CONTROL AND SETTING OUT OF THE WORKS

The Contractor must be solely responsible for the setting out of his work, and will be provided with the necessary bench marks and co-ordinated pegs on which to base the setting out.

All other control points and benchmarks required for construction or computation of quantities must be set out by the Contractor in consultation with the Engineer. Points set out must be clearly marked and the position and all other relevant data placed on a site plan. A copy of the plan must be handed to the Engineer immediately, for control purposes.

Any existing beacons disturbed or removed during the course of the Contract will be replaced at the Contractor's cost. Only a land surveyor or the Engineer's Surveyor who originally installed the beacons will be allowed to replace them.

PS 12 MANAGEMENT

PS 12.1 Management of the Works

PS 12.1.1 Applicable SANS Standards

The applicable standards are listed in clause PPS 2.

PS 12.1.2 Particular / Generic Specifications

Particular or generic specifications are included for all parts of the work.

PS 12.1.3 Planning and Programming

Within 14 days of the Commencement Date the Contractor must prepare and submit to the Engineer for approval a fully detailed programme showing:

- the sequence and duration of all activities required to undertake the scheduled work.
- the linkage between activities deemed to be on the critical path.
- critical dates for receipt of information and drawings.
- milestone date for Completion of different sections of the work.

Whenever the work deviates significantly from the proposed programme for whatever reason, the Contractor must, following a request from the Engineer, must prepare a new programme that shows how the work will be re-scheduled so as to achieve the original Completion Date.

The Contractor must take cognisance of the exploration work which has to be executed prior repairing or replacing of existing pipelines.

PS 12.1.4 Sequence of the Works

The sequence of work must be carried out strictly in accordance with the approved programme as detailed above.

PS 12.1.5 Methods and Procedures

Prior to the commencement of any work on the Site the Contractor must submit method statements for each separate construction activity that he is required to undertake. The method statements must be submitted to the Engineer for approval at least 10 days prior to the scheduled start of the activity. The method statements must set out the technical procedures to be followed in carrying out the activity and must include details of compliance with both Occupational Health and Safety and Environmental aspects.

The Contractor must ensure that his staff and workers are properly trained in the safe and effective use of any equipment, plant or materials necessary to undertake the work.

PS 12.1.6 Quality Control

The Contractor must provide whatever samples of materials are required for approval prior to commencement, together with the applicable test results to prove compliance with the relevant specification. He must undertake all necessary tests that are stipulated in terms of the applicable specification to ensure that his workmanship meets the required standard.

PS 12.1.7 Environment

The Contractor must ensure that he is fully aware of the requirements of the CEMP and that he understands his responsibilities regarding both his management of the project and the actual construction activities on Site.

PS 12.1.8 Accommodation of Traffic

The Contractor is responsible for the safety of all vehicular and pedestrian traffic affected by his work and must provide all the necessary warning signs, barricading and lighting as necessary, fully in compliance with the requirements of the SADC Road Traffic Signs Manual and with the approval of the Traffic Department.

PS 12.1.9 Other Contractors

The Contractor has sole possession of the site and does not have to deal with other contractors.

PS 12.1.10 Testing, Completion, Commissioning

Each aspect of the work included in the Contract must be fully tested in accordance with the requirements of the relevant standard specification, as amended by the Specification Data as

applicable, prior to completion of the works as a whole. All outstanding work must be completed and substandard work must be corrected prior to completion taking place.

PS 12.1.11 Recording of weather

The Contractor is required to keep a detailed record of daily weather conditions on the Site. The information must include rainfall, wind speed and direction, cloud cover and temperature. The format and extent of detail required must be agreed with the Engineer prior to commencement. (Refer to clause PS 12.1.17) below). A summary of inclement weather shall be recorded in the minutes of site meetings.

PS 12.1.12 Format of Communications

All communication of whatever nature is through the Engineer. Only under circumstances that relate to health and safety can the Contractor act on instructions issued by any other party. These instructions must then be immediately communicated to the Engineer with a request for confirmation of the instruction.

The Contractor is required to provide a suitable triplicate book which is used for communication between the Engineer or his representative and the Contractor. The book may be used for the issue of site instructions, the request for information or inspections, or merely to record aspects of contractual importance.

PS 12.1.13 Key Personnel

Within 14 days of the Commencement Date and prior to commencement of any operations on site, the Contractor shall submit to the Employer's Agent detailed CV's of his key personnel together with their relevant contact details. Should the key personnel not be the same as those included in the tender submission, then the Contractor shall be required to provide personnel with equivalent or better qualifications and experience.

The Contractor keeps a site representative competent to administer and control the works continuously in the Working Areas during the execution of the works. The Contractor informs the Engineer of the name of the site representative, and any instruction given to the site representative by the Engineer is deemed to be given to the Contractor.

PS 12.1.14 Management Meetings

The Contractor is required to attend a monthly site meeting during which all aspects relating to the progress, scope, expenditure, OHS, environmental and general administration of the Contract is discussed. The Contractor must ensure that his representative at the meeting has the necessary understanding and authority to make decisions regarding these issues.

In addition, technical meetings are held on monthly, during which time aspects of a more technical nature relating to the actual construction process and quality of the work are addressed.

PS 12.1.15 Forms for Contract administration

The Contractor will keep all records as stated below as well as the following:

- EPWP forms to be submitted together with all Payment Certificates.
- Report on progress and labour at site meetings.

PS 12.1.16 Payments

All payments to the Contractor are by means of direct electronic transfer and the Contractor must provide his banking details to the Engineer together with the initial payment claim.

PS 12.1.17 Daily Records

The Contractor is required to maintain a daily record of all construction activities taking place on Site which includes details of plant, personnel, and visitors as well as other events such as weather conditions or any circumstances that may have a bearing on the nature and progress of his operations.

The Contractor is required to provide a detailed report at each site meeting. The report must be in a format to be agreed with the Engineer and contain the following:

- Details of actual progress versus programme for each construction activity.
- A daily record of rainfall and other weather events that could affect the work.
- Details of any delays that have occurred due to weather or any other cause.

- A record of resources (people, plant and equipment) present on Site.
- Details of any accidents or lost time incidents that have occurred.
- A list of information required.

PS 12.1.18 Payment Certificates

Payment Certificates shall be drawn up in an agreed format based on the bills of quantities and any variation orders authorised. The date for submission of each payment claim shall be agreed with the Employer's Agent. The procedure for preparation of Payment Certificates shall be as follows:

- The actual quantity for each item shall be agreed with the Employer's Agent or his representative based on the cumulative total of the previous monthly quantity and the additional work carried out during the month.
- The Contractor shall draw up and submit his claim using the agreed quantities.
- The Employer's Agent shall check the claim and confirm the amount to be paid.
- The Contractor shall provide a VAT invoice to the Employer's Agent for the agreed amount.
- The Employer's Agent shall prepare the payment certificate and submit the claim, accompanied by the VAT invoice.

PS 12.1.19 Proof of Compliance with the Law

The Contractor is required to comply with all regulations and laws of whatever nature which are applicable to his operations throughout the duration of the Contract, and produce documentary evidence when requested for all aspects, including, but not limited to:

- Valid proof of registration with the Compensation Commissioner.
- Proof of registration for income tax and VAT.
- Compliance with the Occupational Health and Safety Act and Construction Regulations.

PS 12.2 Health and Safety

The Contractor must comply with all relevant aspects of the Occupational Health and Safety Act together with the Regulations referred to therein, as applicable to the scope of his activities.

Particular attention must be paid to the issuing of the relevant Notices, appointment of responsible people, undertaking Hazard Identification and Risk Assessments, and preparation of a Health and Safety Plan. All necessary documentation must be prepared and submitted for comment and approval immediately after the Contract award.

Specific Health and Safety considerations applicable to this project are detailed in the Occupational Health and Safety Specification, attached to this document.

Method statements submitted for the Contractor's construction activities include details of compliance with Occupational Health and Safety, and must be submitted immediately after the Contract award and prior to commencement with any work on Site.

The Contractor must provide the necessary personal protective equipment and clothing to all staff as relevant for the type of work being carried out.

Whenever the Contractor's staff are subjected to hazardous substances, excessive dust or noise, he must arrange for pre and post-employment medical examinations on the affected employees.

No member of the Contractor's staff is allowed on Site while under the influence of alcohol or drugs. Any member of his staff who exhibit signs of alcohol or drug usage must be immediately removed from the premises.

The Contractor is responsible for the protection of the public in the areas in which he is working and must provide barricades and lighting as necessary to ensure their safety. He is also responsible for the safe control of traffic wherever his works impact on the existing roadways.

PROJECT SPECIFICATIONS FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

HEALTH AND SAFETY

PAM HEALTH AND SAFETY SPECIFICATIONS

Generic occupational health and safety specification for construction work contracts

PAM: SCOPE

This health and safety specification in respect of a construction work contract:

a) provides the overarching framework within which the contractor is required to demonstrate compliance with certain requirements for occupation health and safety established by the Occupational Health and Safety Act of 1993 during construction;

b) establishes the manner in which the contractor is to manage the risk of health and safety incidents in during the construction; and

c) establishes the manner in which the employer's health and safety agent will interact with the contractor.

Note 1. This specification establishes generic requirements to enable the employer and the contractor to satisfy aspects of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the Construction Regulations, 2014. The contractor is required to develop, implement and maintain package specific health and safety plans. The employer is required to provide certain package specific information to the contractor or a health and safety specification for the works to enable such plans to be formulated. Accordingly, this generic specification on its own cannot ensure compliance with the requirements of the aforementioned Act (See Annexure A).

Note 2. The Construction Regulations, 2014, require an employer to stop any contractor from executing construction work which is not in accordance with the contractor's health and safety plan for the site or which poses to be a threat to the health and safety of persons.

Note 3. This specification establishes generic health and safety requirements. Site specific requirements for health and safety are stated in the scope of work associated with a contract (see Annexure A).

Note 4. The South African Council for the Project and Construction Management Professions has established the following specified categories of registration in terms of the Project and Construction Management Professions Act of 2000 (Act No. 48 of 2000):

a) a Construction Health and Safety Agent who may be appointed by an employer to act as his agent in terms of the Occupational Health and Safety Act of 1993 and the Construction Regulations issued in terms of that Act;
b) a Construction Health and Safety Manager who may be appointed by an employer to complement his professional team or by a contractor to manage company or project health and safety performance and compliance in accordance with the Occupational Health and Safety Act and Regulations; and
c) a Construction Health and Safety Officers who may be appointed by an employer to mitigate the risk on a project or by a contractor to monitor and assist on-site health and safety performance and compliance in accordance with the Occupational Health and Safety Act and Regulations and services.

PAM 1 DEFINITIONS

Act: The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

contractor: person or organization that contracts to provide the work covered by the contract

contract manager: person appointed by the employer to administer the contract on his behalf

competent person: any person who:

a) has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications specific to that work or task; and

b) is familiar with the Act and applicable regulations made in terms of the Act

Note: The Regulations stipulate that where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act of 2000.those qualifications and training must be regarded as the required qualifications and training.

danger: anything which may cause injury or damage to persons or property

employer: person or organisation that enters into a contract with the contractor for the provision of the work covered by the contract

employer's health and safety agent: the person appointed as agent by the employer in terms of Regulation 4(5) of the Construction regulations and named in the contract data as the being the employer's agent responsible for health and safety matters

ergonomics: the application of scientific information concerning humans to the design of objects, systems and the environment for human use in order to optimise human well-being and overall system performance

hazard: a source of or exposure to danger

hazard identification: the identification and documenting of existing or expected hazards to the health and safety of persons, which are normally associated with the type of construction work being executed or to be executed

health and safety plan: a documented plan which addresses hazards identified and includes safe work procedures to mitigate, reduce or control the hazards identified

health and safety specification: a site, activity or project specific document pertaining to all health and safety requirements related to construction work which is included in the contractor's contract with the employer or an order issued in terms of framework agreement

healthy: free from illness or injury attributable to occupational causes

incident: an event or occurrence occurring at work or arising out of or in connection with the activities of persons at work, or in connection with the use of plant or machinery, in which, or in consequence of which:

a) any person dies, becomes unconscious, suffers the loss of a limb or part of a limb or is otherwise injured or becomes ill to such a degree that he 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 to continue with the activity for which he was employed or is usually employed;

b) a major incident occurred; or

c) the health or safety of any person was endangered and where:
   i) a dangerous substance was spilled;
   ii) the uncontrolled release of any substance under pressure took place;
   iii) machinery or any part thereof fractured or failed resulting in flying, falling or uncontrolled moving objects; or machinery ran out of control

inspector: a person designated as such under section 28 the Act

major incident: an occurrence of catastrophic proportions, resulting from the use of plant or machinery, or from activities at a workplace

reasonably practicable: practicable having regard 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 of removing or mitigating that hazard or risk;

c) the availability and suitability of means to remove or mitigate that hazard or risk; and

d) the cost of removing or mitigating that hazard or risk in relation to the benefits deriving therefrom;

risk: the probability that injury or damage will occur

safe: free from any hazard

scaffold: any temporary elevated platform and supporting structure used for providing access to and supporting workmen or materials or both

structure:

a) any building, steel or reinforced concrete structure (not being a building), railway line or siding, bridge, waterworks, reservoir, pipe or pipeline, cable, sewer, sewage works, fixed vessels, road, drainage works, earthworks, dam, wall, mast, tower, tower crane, bulk mixing plant, pylon, surface and underground tanks, earth retaining structure or any structure designed to preserve or alter any natural feature, and any other similar structure;

b) any false work, scaffold or other structure designed or used to provide support or means of access during construction work; or

c) any fixed plant in respect of construction work which includes installation, commissioning, decommissioning or dismantling and where any construction work involves a risk of a person falling

substance: any solid, liquid, vapour, gas or aerosol, or combination thereof

suitable: capable of fulfilling or having fulfilled the intended function or fit for its intended purpose

temporary works: any falsework, formwork, support work, scaffold, shoring or other temporary structure designed to provide support or means of access during construction

workplace: any premises or place where a person performs work in the course of his employment

PAM 2 INTERPRETATION

PAM 2.1 The Act and its associated regulations shall have precedence in the interpretation of any ambiguity or inconsistency between it and this specification.

PAM 2.2 Compliance with the requirements of this specification does not necessarily result in compliance with the provisions of the Act.

PAM 3 REQUIREMENTS

PAM 3.1 General requirement

The contractor shall:

a) create and maintain as reasonably practicable a safe and healthy work environment,

b) execute the work in a manner that complies with all the requirements of the Act and all its associated regulations, and in so doing, minimize the risk of incidents occurring;

c) conspicuously display any site specific number assigned to the construction site in terms of the Construction Regulations 2014 at the main entrance to the site; and

d) respond to the notices issued by the employer's health and safety agent as follows:

1) Improvement Notice: improve health and safety performance over time so that repeat notices are not issued;

2) Contravention Notice: rectify contravention as soon as possible;

3) Prohibition Notice: terminate affected activities with immediate effect and only recommence activities when it is safe to do so.

Note: Financial penalties can be applied should Contravention Notices be issued. This should be dealt with in the Contract Data.

PAM 3.2 Administration

PAM 3.2.1 Notification of intention to commence construction work

PAM 3.2.1.1 The contractor shall on sites where no construction work permit has been issued by the Provincial Director of the Department of Labour notify such director in writing using a form similar to that contained in Annexure 2 of the Construction Regulations issued in terms of the Act before construction work commences and retain proof of such notification in the health and safety file where the work includes:

a) excavation work;

b) working at height where there is a risk of falling;

c) the demolition of a structure;

d) the use of explosives; or

e) a single storey dwelling for a client who is going to reside in such dwelling upon completion

PAM 3.2.1.2 The contractor shall ensure that no work commences on an electrical installation which requires a new supply or an increase in electricity supply before the person who supplies or contracts or agrees to supply electricity to that electrical installation has been notified of such work.

PAM 3.2.1.3 The contractor shall ensure that no asbestos work is carried out before the Provincial Director of the Department of Labour has been notified in writing.

PAM 3.2.2 Copy of the Act

The contractor shall ensure that a copy of the Act and relevant regulations is available on site for inspection by any person engaged in any activity on the site.

PAM 3.2.3 Good standing with the compensation fund or a licensed compensation insurer

The contractor shall before commence with any work on the site provide the employer's health and safety representative with proof of good standing with the compensation fund or with a licensed compensation insurer.

PAM 3.2.4 Emergency procedures

PAM 3.2.4.1 The contractor shall submit for acceptance to the employer's health and safety agent an emergency procedure which include but are not limited to fire, spills, accidents to employees, exposure to hazardous substances, which:

a) identifies the key personnel who are to be notified of any emergency;

b) sets out details including contact particulars of available emergency services; and

c) the actions or steps which are to be taken during an emergency.

PAM 3.2.4.2 The contractor shall within 24 hours of an emergency taking place notify the employer's health and safety agent in writing of the emergency and briefly outline what happened and how it was dealt with.

PAM 3.2.5 Health and safety file

PAM 3.2.5.1 The contractor shall establish and maintain on site a health and safety file which contains copies, as relevant of:

a) the following documents which shall be placed in the file prior to commencing with physical construction activities

1) copy of the contraction work permit issued in terms of the Construction Regulations 2014;

2) the contractor's health and safety policy, signed by the chief executive officer, which outlines the contractor's objectives and how they will be achieved and implemented by the contractor;

3) copies of all risk assessments that were conducted

4) the notification made to the Provincial Director of Labour, and if relevant, the notification of the person who supplies or contracts or agrees to supply electricity to that electrical installation;

5) the letters of appointment, as relevant, together with a brief curriculum vita (CV) of:

— the construction manager and any assistant construction managers;
— the construction health and safety manager
— the construction health and safety officer
— the risk assessor who is tasked to perform the risk assessments; and
— the registered person responsible for the electrical installation covered by the Electrical Installations Regulations;
— the authorised persons responsible for gas appliances, gas system gas reticulation system covered by the Pressure Equipment Regulations;

6) a copy of the certificate of registration of the registered person responsible for the electrical installation covered by the Electrical Installations Regulation;

7) the approval of the design of the part of an electrical installation which has a voltage in excess of 1 kV by a person deemed competent in terms of the Electrical Installations Regulations;

8) the approval of the design of the part of an electrical installation which has a voltage in excess of 1 kV by a person deemed competent in terms of the Electrical Installations Regulations;

9) proof of registration of the electrical contractor who undertakes the electrical installation in terms of the Electrical Installations Regulations;

10) the preliminary hazard identification undertaken by a competent person;

11) the organogram which outlines the roles of the construction supervisor's assistants and safety officers; and

12) the contractor's health and safety plan;

13) the emergency procedures;

14) the procedure for the issuing and replacement of lost, stolen, worn or damaged personal protective clothing and equipment; and

15) proof that the contractor and all the subcontractors are registered and in good standing with the compensation fund or with a licensed compensation insurer relevant to the type of work performed;

b) the following documents, as relevant, which shall be placed in the file after construction activities have commenced

1) the letters of appointments, if relevant, together with a brief curriculum vita (CV) of:

— persons who are required to assist the construction supervisor;
— construction supervisor for the site in respect of construction work covered by the Construction Regulations;
— competent persons;
— assistants of construction supervisor; and
— designers of temporary works;

2) any revisions to the organogram which outlines the roles of the construction supervisor's assistants and safety officers;

3) each and every subcontract agreement and each and every subcontractor's approved health and safety plan;

4) proof that every subcontractor is registered and in good standing with the compensation fund or with a licensed compensation insurer relevant to the type of work performed;

5) proof of all subcontractor's induction training whenever it is conducted;

6) copies of the minutes of the contractor's subcontractors' health and safety meetings;

7) copies of each of the contractor's subcontractors' health and safety policy, signed by the chief executive officer, which outlines the contractor's objectives and how they will be achieved and implemented by the contractor;

8) the health and safety plans of all the contractor's subcontractors who are required to provide such plans;

9) copies of the fall protection plan and each revision thereof;

10) a comprehensive and updated list of all the subcontractors employed on site by the contractor, indicating the type of work being performed by such sub-contractors;

11) the outcomes of the monthly audits for compliance with the approved health and safety plan of each and every sub-contractor working on the site;

12) any report made to an inspector by the health and safety committee;

13) the minutes of all health and safety meetings and any recommendations made to the contractor by the health and safety committee;

14) the findings of all audit reports made regarding the implementation of the contractor's or a subcontractor's health and safety plan;

15) the inputs of the safety officer, if any, into the health and safety plan;

16) details of induction training conducted whenever it is conducted including the list of attendees;

17) proof of the following where suspended platforms are used:

— a certificate of system design issued by a professional engineer, professional certificated engineer or a professional engineering technologist;

— proof of competency of erectors, operators and inspectors;
— proof of compliance of operational design calculations with requirements of the system design certificate;
— proof of performance test results;
— sketches indicating the completed system with the operational loading capacity of the platform;
— procedures for and records of inspections having been carried out;
— procedures for and records of maintenance work having been carried out;
— proof that the prescribed documentation has been forwarded to the provincial director;

18) letters of appointments for competent persons to supervise the activities which law requires to be so supervised;

19) a copy of risk assessments made by competent persons;

20) records of the register of inspections made by a competent person immediately before and during the placement of concrete or any other load on formwork;

21) the names of the first aiders on site and copies of the first aid certificates of competency;

22) the names of the persons the persons who are in possession of valid certificate of competency in first aid and copies of such certificates;

23) medical certificates of fitness for the contractor's and subcontractors' employees specific to the construction work to be performed and issued by an occupational health and safety practitioner:

24) details of all incidents together with the Contractor's investigative report on such incident;

25) the record of inspections carried out by the designers of structures to ensure compliance with designs; and

26) any other documentation required in terms of regulations issued in terms of the Act including a record of all drawings, designs, materials used and other similar information concerning the completed structure;

PAM 3.2.5.2 The health and safety file shall be made available for inspection by any inspector, subcontractor, the contract manager, the employer's health and safety agent or employee of the contractor upon the request of such persons.

PAM 3.2.5.3 The health and safety file shall be updated to ensure that its contents always reflect the latest available information.

PAM 3.2.5.4 The contractor shall hand over a copy of the health and safety file to the employer's health and safety agent upon completion of the contract and if relevant, a certificate of compliance accompanied by a test report for the electrical installation in accordance with the provisions of the Electrical Installation Regulations.

PAM 3.2.6 Health and safety committee

PAM 3.2.6.1 The contractor shall convene health and safety meetings whenever more than two health and safety representatives have been appointed for the site. These meetings shall be attended by all health and safety representatives and persons nominated by the contractor. Such meetings shall be convened whenever necessary but at least once every month to:

a) make recommendations to the contractor regarding any matter affecting the health or safety of persons on the site; and

b) discuss any incident on the site in which or in consequence of which any person was injured, became ill or died.

PAM 3.2.6.2 The contractor shall consult with the health and safety committee on the development, monitoring and review of the risk assessment.

PAM 3.2.6.3 The contractor shall ensure that minutes of the health and safety committee meetings are kept. The employer's health and safety agent shall be invited to attend such meetings as an observer.

PAM 3.2.7 Inspections, formal enquires and incidents

PAM 3.2.7.1 The contractor shall inform the relevant safety representative:

a) beforehand of inspections, investigations or formal inquiries of which he has been notified by an inspector; and

b) as soon as reasonably practicable of the occurrence of an incident on the site.

PAM 3.2.7.2 The contractor shall record all incidents and notify the employer's health and safety agent of any incident, except in the case of a traffic accident on a public road, as soon as possible after it has occurred and report such incidence to an inspector of the department of labour and notify the Provincial Director of the Department of Labour of such incident within 7 days on the prescribed form.

PAM 3.2.7.3 The contractor shall investigate all incidents and issue the employer's health and safety agent with copies of such investigations.

PAM 3.2.7.4 The contractor shall in the event of an incident in which a person dies, or is injured to such an extent that he is likely to die, or suffered the loss of a limb or part of a limb:

a) notify the Provincial Director of the Department of Labour of such incident by telephone, facsimile or similar means of communication;

b) ensure that no person disturbs the site at which the incident occurred or remove any article or substance involved in the incident therefrom, without the consent of an inspector, unless an action is necessary to prevent a further incident, to remove the injured or dead, or to rescue persons from danger; and.

c) provide the Provincial Director of the Department of Labour with a report which includes the measures that the contractor or his subcontractor intend to implement to ensure a safe site as reasonably practicable.

PAM 3.2.7.5 The contractor shall notify the Provincial Director of the Department of Labour of the death of any person which results from injuries sustained in an incident.

PAM 3.2.8 Personal protective equipment and clothing

The contractor shall ensure that:

a) all workers are issued with the necessary personal protective clothing;

b) all workers are identifiable at all times by having the company for which they work for printed on the back or front of their overalls; and

c) clear procedures are in place for the replacement of lost, stolen, worn or damage personal protective clothing.

PAM 3.3 Appointments

PAM 3.3.1 Construction manager

The contractor shall appoint in writing one full time competent person as the construction manager with the duty of managing all the construction on a single site including that of ensuring occupational health and safety compliance. Where appropriate, the contractor shall appoint in writing one or more assistant construction managers.

PAM 3.3.2 Appointment of construction health and safety officers

The contractor shall after consultation with the employer after considering the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the site, prior to commencing the work and if necessary, appoint a full-time or a part-time suitably qualified health and safety officer to assist in the control of all health and safety related aspects on the site.

PAM 3.3.3 Construction supervisors

PAM 3.3.3.1 The construction manager shall in writing appoint construction supervisors responsible for construction activities and ensuring occupational health and safety compliance on the construction site.

PAM 3.3.3.2 A contractor shall after considering the size of the project and if considered necessary, appoint in writing one or more competent employees for different sections of the work to assist the construction supervisor.

PAM 3.3.4 Competent persons

PAM 3.3.4.1 The contractor shall appoint in writing competent persons to supervise or inspect, as relevant, any of the following:

a) formwork and support work operations;

b) excavation work;

c) demolition work;

d) scaffolding work operations;

e) suspended platform work operations;

f) material hoists;

g) bulk mixing plants;

h) temporary electrical installations;

i) the stacking and storage of articles on the site; and

j) fire equipment.

PAM 3.3.4.2 The contractor shall appoint in writing competent persons to:

a) induct employees in health and safety; and

b) prepare and update as necessary a fall protection plan and to provide the construction manager with a copy of the latest version of such plan.

PAM 3.3.5 Health and safety representatives

PAM 3.3.5.1 The contractor shall appoint in writing one health and safety representative for every 50 employees working on the site, whenever there are more than 20 employees on the site, to:

a) review the effectiveness of health and safety measures;

b) identify potential hazards and potential major incidents;

c) in collaboration with his employer, examine the causes of incidents;

d) investigate complaints by any employee of the contractor relating to that employee's health or safety on the site;

e) make representations to the contractor on matters arising from a), b), c) or d) or on general matters affecting the health or safety of the employees at the workplace;

f) inspect the site with a view to, the health and safety of employees, at regular intervals;

g) participate in consultations with inspectors at the workplace and accompany inspectors on inspections of the workplace; and

h) participate in any internal health or safety audit.

PAM 3.3.5.2 The contractor shall provide the health and safety representatives with the necessary assistance, facilities and training to carry out the functions established in 4.3.1

PAM 3.4 Employer's health and safety agent

PAM 3.4.1 The employer's health and safety agent shall:

a) audit the contractor's compliance with the requirements of this specification prior to the commencement of any physical construction activities on the site;

b) accept or reject the contractor's health and safety plans, giving reasons for rejecting such plans;

c) monitor the effective implementation of all safety plans;

d) conduct periodic and random audits on the health and safety file to establish compliance with the requirements of this specification;

e) visit the site at regular intervals to conduct site inspections, and based upon such visits issue, wherever necessary, Improvement Notices, Contravention Notices and Prohibition Notices, to the contractor or any of the contractor's subcontractors with a copy to the contract manager and, where relevant, to the contractor.

PAM 3.4.2 The contractor shall invite the employer's health and safety agent to audit compliance with the requirements of this specification before commencing with any physical construction activity on the site.

PAM 3.5 Creating and maintaining a safe and healthy work environment

PAM 3.5.1 General

PAM 3.5.1.1 The contractor shall with respect to the site and the construction work that are contemplated:

a) cause a preliminary hazard identification to be performed by a competent person before commencing any physical construction activity;

b) evaluate the risks associated with the identified hazard to the health and safety of such employees and the steps that need to be taken to comply with the Act; and

c) as far as is reasonably practicable, prevent the exposure of such employees to the hazards concerned or, where prevention is not reasonably practicable, minimize such exposure.

PAM 3.5.1.2 The contractor shall ensure that:

a) all reasonably practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work;

b) no structure or part of a structure is loaded in a manner which would render it unsafe; and

c) account of information, if any, provided by the designer of the structure is taken into account in the risk assessment;

Note: The information provided by the designer should outline known or anticipated dangers or hazards relating to the work and make available all information required for the safe execution of the work. It should provide as relevant, geotechnical information (or make reference to reports provided in the site information), the loading the structure is designed to withstand, the methods and sequence of construction.

PAM 3.5.1.3 The contractor shall carry out regular inspections and audits to ensure that the work is being performed in accordance with the requirements of this specification.

PAM 3.5.2 Risk assessment

PAM 3.5.2.1 The contractor shall before the commencement of any work on site and during construction work, cause a risk assessment to be performed by a competent person appointed in writing. Such an assessment shall as a minimum:

a) identify hazards to which persons may be exposed to;

b) analyse and evaluate the identified risks associated with the identified hazards;

c) document a plan of safe work procedures, including the use of any personal protective equipment or clothing and the undertaking of periodic “toolbox talks” or inductions before undertaking hazardous work, to mitigate, reduce or control the risks and hazards that have been identified;

d) provide a monitoring plan; and

e) provide a review plan.

Note: A risk assessment is an important step in protecting workers as well as complying with the law. It helps to focus on the risks that really matter in a particular workplace – the ones with the potential to cause real harm. Workers and others have a right to be protected from harm caused by a failure to take reasonable control measures. The following four steps are suggested:

1) Identify the hazards by looking at what could reasonably be expected to cause harm, ask employees or their representatives what they think, obtain advice from trade associations or publications on health and safety, check manufacturer’s instructions or data sheets for chemicals and equipment as they can be very helpful in spelling out the hazards and putting them in their true perspective, review accident and ill-health records, think about long-term hazards to health (eg high levels of noise or exposure to harmful substances) as well as safety hazards etc.

2) Identify who may be harmed and how by identifying how individuals and groups of people might be harmed i.e. what type of injury or ill health might occur.

3) Evaluate the risks and decide on precautions by doing everything ‘reasonably practicable’ to protect people from harm i.e. by looking at how things are done, what controls are in place and how the work is organised and comparing this against good practice to see if more can be done to bring practices up to standard. Consider if the hazard can be removed all together, and if not how can the risks be controlled so that harm is unlikely, e.g. try a less risky option (eg switch to using a less hazardous chemical); prevent access to the hazard (eg by guarding); organize work to reduce exposure to the hazard (eg put barriers between pedestrians and traffic); issue personal protective equipment (eg clothing, footwear, goggles etc); and provide welfare facilities (eg first aid and washing facilities for removal of contamination).

4) Record the findings by writing down the findings of the risk assessment.

PAM 3.5.2.2 The contractor shall ensure that as far as is reasonably practicable, ergonomic related hazards are analysed, evaluated and addressed in the risk assessment.

PAM 3.5.2.3 Notwithstanding the provisions of the fall protection plan, the contractor shall ensure that:

a) all unprotected openings in floors, edges, slabs, hatchways and stairways are adequately guarded, fenced or barricaded or that similar means are used to safeguard any person from falling through such openings;

b) no person works in an elevated position, unless such work is performed safely as if working from a scaffold or ladder;

c) notices are conspicuously placed at all openings where the possibility exists that a person might fall through such openings;

d) fall prevention and fall arrest equipment is:

— suitable and of sufficient strength for the purpose or purposes for which it is being used having regard to the work being carried out and the load, including any person, it is intended to bear; and
— securely attached to a structure or plant and the structure or plant and the means of attachment thereto is suitable and of sufficient strength and stability for the purpose of safely supporting the equipment and any person who is liable to fall;

e) fall arrest equipment is only used where it is not reasonably practicable to use fall prevention equipment; and

f) suitable and sufficient steps are taken to ensure, as far as is reasonably practicable, that in the event of a fall by any person, the fall arrest equipment or the surrounding environment does not cause injury to the person.

PAM 3.5.2.4 Where roof work is being performed on a construction site, the contractor shall ensure that it is indicated in the fall protection plan that:

a) the roof work has been properly planned;

b) the roof erectors are competent to carry out the work;

c) no employees are permitted to work on roofs during inclement weather conditions or if weather conditions are a hazard to the health and safety of the employees;

d) prominent warning notices are to be placed where all covers to openings are not of sufficient strength to withstand any imposed loads and where fragile material exists;

e) the areas mentioned in paragraph *(d)* are to be suitably barricaded off to prevent persons from entering;

f) suitable and sufficient platforms, coverings or other similar means of support have been provided to be used in such a way that the weight of any person passing across or working on or from fragile material is supported; and

g) there is suitable and sufficient guard-rails or barriers and toe-boards or other similar means of protection to prevent, so far as is reasonably practicable, the fall of any person, material or equipment.

PAM 3.5.3 Health and safety plans

PAM 3.5.3.1 The contractor shall prior to commencing the work to which this specification applies, submit to the employer's health and safety agent for approval a suitable and sufficiently documented health and safety plan, based on this specification, the health and safety specification and the risk assessment that is conducted.

PAM 3.5.3.2 The health and safety plan shall as a minimum provide:

a) the information contained in Table 1 in respect of each of the hazards associated with work falling within the scope of the contract); and

b) an outline of the manner in which the contractor intends complying with the requirements of this specification.

Table 1: Example of the format of a health and safety plan

What are the hazards relating to work tasks?	Who might be harmed and how?	What are the safe work procedures for the site?	What further action is necessary (monitoring and review)?	Action by whom	Action by when

PAM 3.5.3.3 The contractor shall discuss the submitted health and safety plan with the employer's health and safety agent, modify such plan in the light of the discussions and resubmit the modified plan for approval.

PAM 3.5.3.4 The contractor shall apply the approved health and safety plan from the date of its commencement and for the duration of the work to which this specification applies.

PAM 3.5.3.5 The contractor shall conduct periodic audits for compliance with the approved health and safety plan at intervals agreed upon with the employer's health and safety agent, but at least once every month.

PAM 3.5.3.6 The contractor shall review and update the health and safety plan whenever changes to the works are brought about or following the occurrence on an incident.

PAM 3.5.4 Responsibilities towards employees and visitors

PAM 3.5.4.1 The contractor shall as far as be reasonably practicable, cause every employee to be made conversant with the hazards to his health and safety attached to any work which he has to perform, any article or substance which he has to produce, process, use, handle, store or transport and any plant or machinery which he is required or permitted to use, as well as with the precautionary measures which should be taken and observed with respect to those hazards or safe work procedures.

PAM 3.5.4.2 The contractor shall ensure that all employees under his or her control and the employees of his subcontractors who are performing construction work are:

a) informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment; and

b) issued with proof of health and safety induction training issued by a competent person and carry proof of such induction when working on site.

PAM 3.5.4.3 The contractor shall cause a record of training to be kept which indicates the training dates, the names, identity numbers and job description of all those who attended such training and the name, identity number and competence of the person who provided the training.

PAM 3.5.4.4 The contractor shall not allow or permit any employee to enter the site, unless such person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.

PAM 3.5.4.5 The contractor shall ensure that each visitor to a construction site, save where such visitor only visits the site office and is not in direct contact with the construction work activities:

a) undergoes health and safety instruction pertaining to the hazards prevalent on the site; and

b) is provided with the necessary personal protective equipment.

PAM 3.5.4.6 The contractor shall provide suitable on-site signage to alert workers and visitors to health and safety requirements. Such signage shall include but not be limited to:

a) unauthorized entrance prohibited;

b) signage to indicate what personal protective equipment is to be worn; and

c) activity related signs.

PAM 3.5.4.7 The contractor shall not permit any person who is or who appears to be under the influence of intoxicating liquor or drugs, to enter or remain at a workplace.

PAM 3.5.5 Subcontractors

PAM 3.5.5.1 The contractor may only subcontract work in terms of a written subcontract and shall only appoint a subcontractor should he be reasonably satisfied that such a subcontractor has the necessary competencies and resources to safely perform the work falling within the scope of the contract. Such a subcontract shall require that the subcontractor:

a) co-operate with the contractor as far as is necessary to enable both the contractor and sub-contractor to comply with the provisions of the Act; and

b) as far as is reasonably practicable, promptly provide the contractor with any information which might affect the health and safety of any person at work carrying out work or any person who might be affected by the work of such a person at work or which might justify a review of the health and safety plan.

PAM 3.5.5.2 The contractor shall provide any sub-contractor who is submitting a tender or appointed to perform a sub-contract falling within the scope of the contract, with the relevant sections of this specification and the health and safety specification.

PAM 3.5.5.3 The contractor shall discuss and negotiate with each subcontractor performing construction work the subcontractor's health and safety plan and approve that plan for implementation.

PAM 3.5.5.4 The contractor shall take reasonable steps as are necessary to ensure that:

a) potential contractors submitting tenders have made sufficient provision for health and safety measures during the construction process;

b) each subcontractor is registered and in good standing with the compensation fund or with a licensed compensation insurer prior to their performance of work on site;

c) all the subcontractor's employees have a valid medical certificate of fitness specific to the construction work which are to be performed which is issued by an occupational health and safety practitioner;

d) all sub-contractors co-operate with each other to enable each of those sub-contractors to comply with the requirements of the Act and associated regulations;

e) each subcontractor performing construction work has and maintains a health and safety file containing the relevant information described in 4.2.5; and

f) each sub-contractor's health and safety plan is implemented and maintained.

PAM 3.5.5.5 The contractor shall conduct periodic document verifications and audits for compliance with the approved health and safety plan of each and every sub-contractor working on the site at intervals agreed upon with such subcontractors, but at least once per month.

PAM 3.5.5.6 The contractor shall stop any subcontractor from executing construction work which is not in accordance with the contractor's or subcontractor's health and safety plan for the site or which poses a threat to the health and safety of persons.

PAM 3.5.5.7 The contractor shall ensure that where changes to the works occur including design changes, sufficient health and safety information and appropriate resources are made available to subcontractor to execute the work safely.

PAM 3.5.5.8 The contractor shall ensure that:

a) every subcontractor is registered and in good standing with the compensation fund or with a licensed compensation insurer prior to work commencing on site;

b) potential subcontractors submitting tenders have made provision for the cost of health and safety measures during the construction process; and

c) every subcontractor has in place a documented health and safety plan prior to commencing any work on site which falls within the scope of the contract.

PAM 3.5.5.9 The contractor shall receive, discuss and approve health and safety plans submitted by subcontractors.

PAM 3.5.5.10 The contractor shall ensure that all subcontractors are informed regarding any hazard as stipulated in the risk assessment before any work commences, and thereafter at such times as may be determined in the risk assessment.

PAM 3.5.5.11 The contractor shall reasonably satisfy himself that all employees of subcontractors are informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment.

PAM 3.5.5.12 The contractor shall satisfy himself and ensure that all subcontractor employees deployed in the site are:

a) informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment; and

b) issued with proof of health and safety induction training issued by a competent person and carry proof such induction when working on site.

PAM 3.5.5.13 The contractor shall undertake a risk assessment together with subcontractors whenever subcontractors are working in close proximity to other subcontractors particularly activities involve excavations, the moving of earth, the movement of heavy machinery and working at heights.

PAM 3.5.6 First aid, emergency equipment and procedures

PAM 3.5.6.1 The contractor shall where more than five employees are employed at a workplace, provide a first aid box or boxes at or near the workplace which shall be available and accessible for the treatment of injured persons at that workplace. Such first aid boxes shall contain suitable first aid equipment which includes the items listed in the General Safety Regulations issued in terms of the Act.

PAM 3.5.6.2 The contractor shall ensure that where there are more than 10 employees employed on the site that for every group of up to 50 employees at that workplace, at least one person is readily available during normal working hours, who is in possession of a valid certificate of competency in first aid.

PAM 3.5.7 Facilities for workers

PAM 3.5.7.1 The contractor shall provide and keep clean and fit for use at or within reasonable access of the site:

a) at least one shower facility for every 15 workers;

b) at least one sanitary facility for every 30 workers;

c) changing facilities for each gender; and

d) sheltered eating areas.

PAM 3.5.7.2 A contractor shall provide reasonable and suitable living accommodation for the workers at construction sites which are remote from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available.

PAM 3.6 Design of temporary work

The contractor shall:

a) provide the health and safety agent with the names and contract particulars of the designers involved in the design of temporary works;

b) issue the designers with a copy of the health and safety specification as well as any pertinent information contained in the contract and;

c) provide the health and safety agent with certificates issued by the designer of the temporary works that such works are fit for purpose before such works are used in support construction activities.

PAM 4 MEASUREMENT AND PAYMENT

PAM 4.1 Principles

Tenderers (including those sub-contractors and/or suppliers who are preparing prices/quotations for submission to the main Tenderer) must ensure that they make adequate financial provision in their tenders for full compliance with the OHS Act, the Regulations thereto and this H&S specification. Financial provision shall therefore be made by each Tenderer for, inter alia, the following:

- Carrying out and documenting risk assessments of all work to be carried out under the contract.
- Preparation of safe work procedures.
- Preparation of an H&S plan, discussing it with the Employer, and then amending it as agreed.
- Preparation of a Project H&S File to include all requirements of Annexure A.
- Regular updating of all of the foregoing.
- Provision of medical certificates of employees.
- Provision of PPE and protective clothing for employees
- Complying with all H&S requirements for the duration of the contract.
- Provision of forced ventilation (as required when working in confined spaces).
- The completion and checking of the safety file upon completion of the works and handing it over to the Employer.

To enable the Employer to appraise the allowances that Tenderers have made for H&S in their tenders, so that he/she can fulfil his/her obligations in terms of Clause 7 of the Construction Regulations, separate items have been included in the Bill of Quantities for Health and Safety.

Failure by a Tenderer to submit realistic prices for the scheduled H&S items may prejudice his tender.

ANNEXURE A (to H&S specification)

PAM 5 TASK COMPLETION FORM

The Principal Contractor and Sub-Contractors must submit proof of compliance with Annexure A with the construction phase H&S plan where applicable.

PAM Item No.	Requirement	OHSA Requirement	Submission Date
2.1	Notification of Intention to Commence Construction / Building Work	Complete Schedule 1 (Construction Regulations)	Before commencement on site
2.2	Assignment of Responsible Person to Supervise Construction Work	All relevant appointments, as per OHS Act and Construction Regulations.	Before commencement on site
2.3	Competence of Responsible Persons	Employer Requirement & OHS Act	Together with H&S plan
2.4	Compensation of Occupational Injuries and Diseases Act (COIDA) 130 of 1993	COIDA Requirement	Together with H&S plan
2.5	Health and Safety Organogram	Employer Requirement	Together with H&S plan
2.6	Initial Hazard Identification and Risk Assessment based on the Employer's assessment	Construction Regulations.	Together with H&S plan
2.7	Medical Certificate of Employees	Construction Regulations	On commencement of construction.

ANNEXURE B (to H&S specification)

PAM 6 OTHER REQUIREMENTS

The Principal Contractor shall comply but not be limited to the following requirements and shall report on these to the Employer at progress meetings or at least monthly whichever is sooner.

What	When	Output	Accepted by Employer & date
Induction training	Every worker before he/she starts work.	Attendance registers	
Awareness Training (Tool Box Talks)	At least weekly	Attendance registers	
Health & Safety Reports	Monthly	Report covering: - Incidents / accidents and investigations - Non-conformances by employees & contractors - Internal & External H&S audit reports	
Emergency procedures	Ongoing evaluation of procedure	Table procedure in writing as well as tel. numbers	
Risk assessment	Updated and signed off at least monthly	Documented risk assessment	
Safe work procedures	Drawn up before workers are exposed to new risks	Documented set of safe work procedures (method statements) updated and signed off.	
General Inspections	Weekly & daily	Report OHS Act compliance: - Scaffolding - Excavations - Formwork & support work - Explosive tools	
General Inspections	Monthly	- Firefighting equipment - Portable electrical equipment - Ladders - Lifting equipment/slings	
List of contractors	List to be updated weekly	Table list, number of workers and Company tel. numbers	
Workman's Compensation	Ongoing	Table a list of Contractors' workman's compensation proof of good standing.	

PAM 7 MEASUREMENT AND PAYMENT

PAM 7.1 Basic principles

In addition to those aspects covered by PAM 7.2 below, Occupational Health and safety aspects related to particular items of work will be held to be covered by the tendered sum or rate for that work.

PAM 7.2 Scheduled items

	ITEM	UNIT
7.2.1	**General safety obligations:** ……	**Sum**

Compliance with the general health and safety obligations will be measured and paid by the sum. This item may be scheduled as a fixed charge item.

7.2.2	**Time related obligations:** ……	**Sum**

Compliance with the general health and safety obligations will be measured and paid by the sum. This item may be scheduled as a time-related item.

PROJECT SPECIFICATIONS FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE MBASHE LM OF AMATHOLE DISTRICT.

ENVIRONMENTAL MANAGEMENT PLAN

PEM ENVIRONMENTAL MANAGEMENT PLAN

PEM.1 PURPOSE

The purpose of the EMP is to encourage good management practices through planning and commitment with respect to environmental issues, and to provide rational and practical environmental guidelines to minimise disturbance of the natural environment.

PEM.2 RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT

The contractor will be responsible for environmental control on site during construction and the maintenance period. The construction activities will be monitored by an independent environmental specialist and audited against the EMP.

PEM.3 TRAINING AND INDUCTION OF EMPLOYEES

The contractor has a responsibility to ensure that all those people involved in the project are aware of and familiar with the environmental requirements for the project (this includes sub-contractors, casual labour, etc.).

PEM.4 COMPLAINTS REGISTER AND ENVIRONMENTAL INCIDENT BOOK

Any complaints received by the project team from the community will be recorded. The complaint will be brought to the attention of the site manager.

All complaints received will be investigated and a response given to the complainant within 28 days.

All environmental incidents occurring on the site will also be recorded.

PEM.5 ENVIRONMENTAL SAFETY

The management of impacts associated with various categories of concern is discussed as separate topics, indicated below.

PEM.5.1 Soil

(a) Topsoil should be temporarily stockpiled, separately from (clay) subsoil and rocky material, when areas are cleared. If mixed with clay sub-soil the usefulness of the topsoil for rehabilitation of the site will be lost.

(b) Stockpiled topsoil should not be compacted and should be replaced as the final soil layer. No vehicles are allowed access onto the stockpiles after they have been placed.

(c) Stockpiled soil should be protected by erosion-control berms if exposed for a period of greater than 14 days during the wet season. The need for such measures will be indicated in the site-specific report.

(d) Topsoil stripped from different sites must be stockpiled separately and clearly identified as such. Topsoil obtained from sites with different soil types must not be mixed.

(e) Topsoil stockpiles must not be contaminated with oil, diesel, petrol, waste or any other foreign matter, which may inhibit the later growth of vegetation and microorganisms in the soil.

(f) Soil must not be stockpiled on drainage lines or near watercourses without prior consent from the Project Manager.

(g) Soil should be exposed for the minimum time possible once cleared of invasive vegetation, that is the timing of clearing and grubbing should be co-ordinated as much as possible to avoid prolonged exposure of soils to wind and water erosion. Stockpiled topsoil must be either vegetated with indigenous grasses or covered with a suitable fabric to prevent erosion and invasion by weeds.

(h) Limited vehicular access is allowed across rocky outcrops and ridges.

(i) All cut and fill surfaces need to be stabilized with appropriate material or measures when major civil works are complete.

(j) Erosion and donga crossings must be dealt with as river crossings. Appropriate soil erosion and control procedures must be applied to all embankments that are disturbed and de-stabilized.

(k) All equipment must be inspected regularly for oil or fuel leaks before it is operated. Leakages must be repaired on mobile equipment or containment trays placed underneath immobile equipment until such leakage has been repaired.

(l) Soil contaminated with oil must be appropriately treated and disposed of at a permitted landfill site or the soil can be regenerated using bio-remediation methods.

(m) Runoff must be reduced by channeling water into existing surface drainage system.

PEM.5.2 Water

(a) Adequate sedimentation control measures must be instituted at any river crossings when excavations or disturbance of a riverbanks or riverbeds takes place.

(b) Adequate sedimentation control measures must be implemented where excavations or disturbance of drainage lines of a wetland may take place.

(c) All fuel, chemical, oil, etc. spills must be confined to areas where the drainage of water can be controlled. Use appropriate structures and methods to confine spillages such as the construction of berms and pans, or through the application of surface treatments that neutralise the toxic effects prior to the entry into a watercourse.

(d) Oil absorbent fibres must be used to contain oil spilt in water.

(e) During construction through a wetland, the majority of the flow of the wetland should be allowed to pass downstream.

(f) Vehicular traffic across wetland areas must be avoided.

(g) No dumping of foreign material in streams, rivers and/or wetland areas is allowed.

(h) The wetland area and/or river must not be drained, filled or altered in any way including alteration of a bed and/or, banks, without prior consent from the DWAF. The necessary licenses must be obtained in terms of Section 21 and 22 of the National Water Act, 36 of 1998 from DWAF.

(i) No fires or open flames are allowed in the vicinity of the wetland, especially during the dry season.

(j) No swimming, washing (including vehicles and equipment), fishing or related activity is permitted in a wetland or river without written permission from the Project Manager.

(k) Disturbances to nesting, breeding and roaming sites of animals in or adjacent to wetland areas must be minimized.

PEM.5.3 Air

(a) Speed limits must be implemented in all areas, including public roads and private property to limit the levels of dust pollution.

(b) Dust must be suppressed on access roads and construction sites during dry periods by the regular application of water or a biodegradable soil stabilisation agent. Water used for this purpose must be used in quantities that must not result in the generation of run-off.

(c) The site-specific investigation will quantify the impact of dust on nearby wetlands, rivers and dams in terms of sedimentation. Mitigation measures identified during the site specific study must be implemented.

(d) The Contractor must notify the Principal of all schools within 50m of the site of proposed activities. The Principal must in turn ensure that children with allergies and respiratory ailments take the necessary precautionary measures during the construction period. The Contractor must ensure that construction activities do not disturb school activities e.g. dust clouds may reduce visibility affecting sports activities.

(e) Waste must be disposed of, as soon as possible at a municipal transfer station, skip or on a permitted landfill site. Waste must not be allowed to stand on site to decay, resulting in malodours.

(f) Noise control measures must be implemented. All noise levels must be controlled at the source. All employees must be given the necessary ear protection gear. IAP's must be informed of the excessive noise factors.

(g) The Contractor must inform all adjacent landowners of any after-hour construction activities and any other activity that could cause a nuisance e.g. the application of chemicals to the work surface. Normal working hours must be clearly indicated to adjacent land owners.

(h) No loud music is allowed on site and in construction camps.

(i) No fires are allowed if smoke from such fires will cause a nuisance to IAP's.

PEM.5.4 Social and Cultural

(a) Access by non-construction people onto any construction sites must be restricted. The Contractors activities and movement of staff must be restricted to designated construction areas only.

(b) The Contractors crew must be easily identifiable due to clothing, identification cards or other methods.

(c) Rapid migration of job seekers could lead to squatting and social conflict with resident communities and increase in social pathologies if not properly addressed. The Contractor must ensure that signs indicating the availability of jobs are installed.

(d) Criteria for selection and appointment (by the Contractor) of construction labour must be established to allow for preferential employment of local communities. The Local Authority must be actively involved in the process of appointing temporary labourers.

(e) Sub-Contractors and their employees must comply with all the requirements of this document and supporting documents e.g. the Contract document that applies to the Contractor. Absence of specific reference to the sub-contractor in any specification does not imply that the sub-contractor is not bound by this document.

(f) No member of the construction workforce is allowed to wander around private property, except within the immediate surroundings of the site.

(g) The Contractor must provide suitable sanitation facilities for site staff. Sanitation provided during the construction phase should be managed so that it does not cause environmental health problems. The use of the surrounding fields or grounds for toilet purposes is not permitted under any circumstance.

(h) The Contractor must arrange for all his employees and those of his sub-contractors to be informed of the findings of the environmental report before the commencement of construction to ensure:

- A basic understanding of the key environmental features of the work site and environments, and
- Familiarity with the requirements of this document and the site specific report.

(i) Supervisory staff of the Contractor or his sub-contractors must not direct any person to undertake any activities which would place such person in contravention of the specifications of this document endanger his/her life or cause him/her to damage the environment.

(j) The demand for construction materials and supplies will have an effect on the local economy. This impact can be optimised by sourcing and purchasing materials locally and regionally wherever possible, insofar as the material complies with the design specification.

(k) The Contractor must maintain a detailed complaints register. This must be forwarded, together with solutions, to the authorities when requested.

PEM.5.5 Aesthetics

(a) Scenic Quality

Damage to the natural environment must be minimized.

Trees and tall woody shrubs must be protected from damage to provide a natural visual shield. Excavated material must not be placed on such plants and movement across them must not be allowed, as far as practical.

The clearing of all sites must be kept to a minimum and surrounding vegetation must, as far as possible, be left intact as a natural shield.

No painting or marking of natural features must be allowed.

(b) All above ground structures could be treated or painted to blend in with the natural environment.

(c) Cut and fill areas, river and stream crossings and other soil stabilisation works must be constructed to blend in with the natural environment.

(d) Natural outcrops, rocky ridges and other natural linear features, must not be bisected. Vegetation on such features must, as far as possible, not be cut unless absolutely necessary for construction.

(e) Excavated material must be flattened (not compacted) or removed from site. No heaps of spoil material must be left on site once the Contractor has moved off site either temporarily or permanently.

(f) Any complaints from interest groups regarding the appearance of the construction site must be recorded and addressed promptly by the Contractor.

PEM.5.6 Archaeology and Cultural Sites

a) All finds of human remains must be reported to the nearest police station.

b) Human remains from the graves of victims of conflict, or any burial ground or part thereof which contains such graves and any other graves that are deemed to be of cultural significance may not be destroyed, damaged, altered, exhumed or removed from their original positions without a permit from the South African Heritage and Resource Agency (SAHRA).

c) Work in areas where artefacts are found must cease immediately.

d) Under no circumstances must the Contractor, his/her employees, his/her sub-contractors or his/her sub-contractors' employees remove, destroy or interfere with archaeological artefacts. Any person who causes intentional damage to archaeological or historical sites and/or artefacts could be penalised

or legally prosecuted in terms of the National Heritage Resources Act, 25 of 1999.

e) A fence at least 2 m outside the extremities of the site must be erected to protect archaeological sites.

f) All known and identified archaeological and historical sites must be left untouched.

g) Work in the area can only be resumed once the site has been completely investigated. The Project Manager will inform the Contractor when work can resume.

PEM.5.7 Flora

a) All suitable and rare flora and seeds must be rescued and removed from the site. They must be suitably stored, for future use in rehabilitation.

b) The felling and/or cutting of trees and clearing of bush must be minimised.

c) Bush must only be cleared to provide essential access for construction purposes.

d) The spread of alien vegetation must be minimized.

e) Any incident of unauthorised removal of plant material, as well as accidental damage to priority plants, must be documented by the Contractor.

f) Woody vegetative matter stripped during construction must either be spread randomly throughout the surrounding fields so as to provide biomass for other microorganisms and habitats for small mammals and birds, or it may be stockpiled for later redistribution over the reinstated top soiled surface. No vegetative matter must be burnt or removed for firewood other than those removed during the grubbing and clearing phase. Such vegetation can be made available to the local inhabitants to be used as firewood.

g) No tree outside the footprint of the Works area must be damaged.

PEM.5.8 Fauna

a) No species of animal may be poached, snared, hunted, captured or willfully damaged or destroyed.

b) Snakes and other reptiles that may be encountered on the construction site must not be killed unless the animal endangers the life of an employee.

c) Anthills and/or termite nests that occur must not be disturbed unless it is unavoidable for construction purposes.

d) Disturbances to nesting sites of birds must be minimized.

e) The Contractor must ensure that the work site is kept clean and free from rubbish, which could attract pests.

PEM.5.9 Infrastructure

a) The relevant authorities must be notified of any interruptions of services, especially the District Municipality, Local Municipality, National Road Agency, Transnet, TELKOM and ESKOM. In addition, care must be taken to avoid damaging major and minor pipelines and other services.

b) The integrity of property fences must be maintained.

c) No telephone lines must be dropped during the construction operations, except were prior agreement by relevant parties is obtained. All crossings must be protected, raised or relocated as necessary.

d) All complaints and/or problems related to impacts on man-made facilities and activities must be promptly addressed by the Contractor and documented.

e) Storage Facilities

- Proper storage facilities should be provided for the storage of oils, grease, fuels, chemicals and hazardous materials.
- The Contractor must ensure that accidental spillage does not pollute soil and water resources.
- Fuel stock reconciliation must be done on all underground tanks to ensure no loss of oil, which could pollute groundwater resources.
- Cement must be stored and mixed on an impermeable substratum.

f) Traffic Control

All reasonable precautions must be taken during construction to avoid severely interrupting the traffic flow on existing roads, especially during peak periods.

Before any work can start the Local Traffic Department must be consulted about measures to be taken regarding pedestrian and vehicular traffic control.

g) Access Roads

The Contractor and the affected landowner must collaborate on the planning and construction of new access routes and the repair or upgrading of existing routes.

Access to the site must be controlled such that only vehicles and persons directly associated with the work gains access to the site.

Temporary access roads must not be opened until required and must be restored to its former state as soon as the road is no longer needed.

h) Batching Plants

Concrete must be mixed only in an area demarcated for this purpose. All concrete spilled outside this area, must be promptly removed by the Contractor and taken to a permitted waste disposal site. After all concrete mixing has been completed, all waste concrete must be removed from the batching area and disposed of at an approved dumpsite. Storm water must not be allowed to flow through the batching area. Water laden with cement must be collected in a retention area for evaporation and not allowed to escape the batching area. Operators must wear suitable safety clothing.

i) Chemical toilet facilities should be managed and serviced by a qualified company. No disposal or leakage of sewerage should occur on or near the site.

j) Blasting

Blasting must not endanger public or private property.

Noise mufflers and/or soft explosives must be used to minimize the impact on animals.

All the provisions of the Explosives Act, 26 of 1956 and the Minerals Act, 50 of 1991 must be complied with.

The Contractor must take measures to limit fly rock.

PEM.5.10 Safety

a) Measures must be taken to prevent any interference that could result in flashover of power lines due to breaching of clearances or the collapse of power lines due to collisions by vehicles and equipment.

b) Measures must be taken during thunderstorms to protect workers and equipment from lightning strikes.

c) All tall structures must be properly earthed and protected against lightning strikes.

d) The process of excavation and back filling must be carried out as a sequential process following one another as quickly as possible. Excavations must only remain open for a minimum period of time and during this time they must be clearly demarcated. If excavations place the public at risk these sites must be fenced.

e) The residents directly affected by open trenches must be notified of the dangers. This will be done during the site-specific phase.

PEM.5.11 Waste

PEM 5.11.1 Solid Waste

(a) Littering on site and the surrounding areas is prohibited.

(b) Clearly marked litterbins must be provided on site. The Contractor must monitor the presence of litter on the work sites as well as the construction campsite.

(c) All bins must be cleaned of litter regularly.

(d) All waste removed from site must be disposed at a municipal/permitted waste disposal site.

(e) Excess concrete, building rubble or other material must be disposed of in areas designated specifically for this purpose and not indiscriminately over the construction site.

(f) The entire works area and all construction sites must be swept of all pieces of wire, metal, wood or other material foreign to the natural environment.

(g) Contaminated soil must be treated and disposed of at a permitted waste disposal site, or be removed and the area rehabilitated immediately.

(h) Waste must be recycled wherever possible.

PEM 5.11.2 Liquid Waste

(a) The Contractor must maintain mobile toilets on site.

(b) The Contractor must provide adequate and approved facilities for the storage and recycling of used oil and contaminated hydrocarbons. Such facilities must be designed and sited with the intention of preventing pollution of the surrounding area and environment.

(c) All vehicles must be regularly serviced in designated area within the Contractors camp such that they do not drip oil.

(d) All chemical spills must be contained and cleaned up by the supplier or professional pollution control personnel. Run-off from wash bays must be intercepted.

PEM 5.11.3 Hazardous Waste

(a) No hazardous materials must be disposed of in the field or anyplace other than a registered landfill for hazardous material. Hazardous waste must be stored in containers with tight lids that must be sealed and must be disposed at an appropriately permitted hazardous waste disposal site. Such containers must not be used for purposes other than those originally designed for.

(b) The Contractor must maintain a hazardous material register.

PEM.5.12 Rehabilitation and Site clearance

(a) When all major construction activities are completed, the site must be inspected to determine site-

specific rehabilitation measures. This may be considered as unplanned work e.g. soil rehabilitation due to oil spills.

(b) All temporary buildings and foundations, equipment, lumber, refuse, surplus materials, waste, construction rubble fencing and other materials foreign to the area must be removed.

(c) If waste products cannot be recycled they must be disposed of at a permitted landfill site.

(d) All drainage deficiencies including abandoned pit latrines and waste pits must be corrected.

(e) Cut and fill areas must be restored and re-shaped.

(f) The area must be restored to its natural vegetation condition using indigenous trees, shrubs and grasses as directed by a grassland and/or rehabilitation expert.

(g) Borrow pits must be re-shaped into even slopes and surfaces to blend with the natural terrain and topsoil must be replaced.

(h) The grass mix, shrubs and trees used for rehabilitation must be compatible with the species identified in the site-specific investigation.

(i) Areas compacted by vehicles during construction must be scarified to allow penetration of plant roots and the regrowth of natural vegetation.

PEM.6 MEASUREMENTS AND PAYMENT

No additional payment will be made to the Contractor to comply with the above actions as it will be deemed to be included in the rates tendered.

PROJECT SPECIFICATIONS BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE MBASHE LM OF AMATHOLE DISTRICT.

PARTICULAR SPECIFICATIONS

CONDITIONS APPLICABLE TO ALL PARTICULAR SPECIFICATIONS

USE OF LOCALLY MANUFACTURED MATERIALS AND PRODUCTS

Materials and products manufactured in South Africa shall be used in carrying out the work to which this specification refers unless an imported product is prescribed specifically or when no suitable locally manufactured product for the specific use is available.

APPLICATION OF CLAUSES

All clauses in this specification which describe the materials and methods to be used in carrying out the work specified in the specification of work to be done, or indicated on the drawings, or included in the bills of quantities, or in any detail drawings, or instructions issued by the Engineer to the Contractor during the progress of the work, shall be considered as applying to the performance of the contract.

SAMPLES

The Contractor shall furnish without delay, such samples and/or certificates as called for or may be called for by the Engineer. Materials and/or workmanship not corresponding with approved samples may be rejected.

WATER

Clean, fresh water free from vegetable or organic matter, earth, clay, acid or alkaline substances either in suspension or in solution, other than those used for purification thereof by the responsible authority, shall be used through-out. Where there is any reason to suspect the presence of impurities, the Engineer may require the Contractor to obtain a chemical analysis of the water by a competent analyst at his own cost. Should the water prove unsuitable for use the Contractor must procure water of an approved source.

STANDARD DETAIL DRAWINGS

All standard detail drawings applying to a particular service and referred to in this document, in the specification or in the bills of quantities, may be seen by Tenderers at the office of the Engineer for the carrying out of the work.

SCALE

The scale to which the drawings are prepared is only to be made use of when no figured dimensions are given, either on the drawings or in the specification. Figured dimensions are always to be followed though they may not coincide with the scale of the drawings. Where possible dimensions are to be taken from all relevant existing buildings.

UNITS OF MEASUREMENTS

Units of measurements have been standardised in accordance with “Système International d'Unites" (SI).

INTERPRETATION OF DRAWINGS ETC

Should any part of the drawings, specification or bills of quantities not be intelligible to the Contractor or that the materials or articles to be used in the execution of the works be considered insufficiently described, the Engineer shall be requested in writing to make clear, also in writing, his requirements, failing which the Contractor shall be liable to make, at his own expense, any alterations or substitutions rendered necessary through incorrect interpretation of such drawings, specification or bills of quantities.

DETAILS

Upon receipt of detail drawings for any work the Contractor shall, before putting that work in hand, ascertain that the dimensions given on the Detail Drawings correspond with the dimensions of any work already built which governs the sizes of the work for which the detail is given. In the event of the detail drawings not agreeing with the work already built, the drawings shall be at once returned for alterations as no claim for extra work will be entertained in this respect.

VERTICAL TRANSPORT

Vertical transport for workmen and materials is entirely the responsibility of the Contractor. Permission is to be obtained shafts by the Contractor on shaft(s), make good and clean Contractor wishes to commence.

SOUTH AFRICAN STANDARD SPECIFICATIONS AND CODES OF PRACTICE:

STANDARD SPECIFICATIONS:

SABS 82 Bending Dimensions of Bars for Concrete Reinforcement
SANS 110 Sealing compounds for the building industry, two-component, polysulphide base"
SABS 248 Bituminous Damp-Proof Courses
SABS 312 Red Lead Base Primers for Structural Steel
SABS 471 Portland Cement (ordinary, rapid hardening and sulphate- resisting)
SABS 563 Specifications for Structural Timber
SANS 630 Decorative high gloss enamel paint for interior and exterior use
SABS 678 Primers for Wood for Interior and Exterior Use
SABS 681 Undercoats for Paints
SABS 684 Structural Steel Paint
SABS 723 Wash Primer (Metal Etch Primer)
SABS 763 Hot-dip (Galvanised) Zinc Coatings other than on continuously zinc-coated sheet and wire
SABS 831 Portland Cement 15 (Ordinary and Rapid Hardening)
SABS 920 Steel Bars for Concrete Reinforcement
SABS 934 Hot-dip (Galvanised) Zinc Coatings on Steel Sheet and Strip
SABS 952 Polyolefin film for damp-proofing and waterproofing in buildings
SABS 1024 Welded Steel Fabric for Concrete Reinforcement
SABS 1090 Sand for Plaster and Mortar
SABS 1200 Standardized Specifications for Civil Engineering Construction
SANS 2001-BE1 Construction Works. Part BE1: Earthworks (general)
SANS 2001-BS1 Construction Works. Part BS1: Site Clearance
SANS 2001-CC1 Construction Works. Part CC1: Concrete Works (Structural)
SANS 2001-CC2 Construction Works. Part CC2: Concrete Works (Minor Works)
SANS 2001-CG1 Construction Works. Part CG1: Installation of glazing in window and door frames
SANS 2001-CM1 Construction Works. Part CM1: Masonry walling
SANS 2001-CS1 Construction Works. Part CS1: Structural steelwork
SANS 2001-CT2 Construction Works. Part CT2: Structural timberwork (roofing)
SANS 2001-EM1 Construction Works. Part EM1: Cement plaster
SANS 2001-DP1 Construction Works. Part DP1: Earthworks for buried pipelines and prefabricated culverts
SANS 2001-DP4 Construction Works. Part DP4: Sewers
ISO 3575 Hot-dip (galvanized) zinc coatings on steel sheet and strip (incorporating Amendment 1, February 1970)

CODES OF PRACTICE

SABS 03 The Protection of Buildings against Lightning
SABS 021 Waterproofing of Buildings
SABS 064 Preparation of Steel Surfaces for coating
SABS 0155 Accuracy in building
SABS 0040 The application of the National Building Regulations
SANS 0160 General procedures and loadings to be adopted for the design of buildings
SABS-ISO 9000 Series Quality management systems

STANDARD TEST METHODS

STM 861 Sampling of freshly mixed concrete
STM 862 Slump of freshly mixed concrete
STM 863 Compressive strength of concrete
(IN ALL CASES THE LATEST PUBLICATION OR REVISION SHALL APPLY.)

ACCURACY IN BUILDING WORK

The method of measurement and accuracy of dimensions required for the setting out of structures and for completed building work shall be as described in SABS Code of Practice 0155, unless otherwise specified in this document.

1. EARTHWORKS

1.1. SITE CLEARANCE

Applicable standard: SANS 2001 – Construction Works Part BS1: Site clearance.

SANS 2001-BS1 covers removal of vegetation, fences, posts, litter and building rubble, boulders of size up to 0.15 m^3, and surface and subsurface obstructions, and demolition and removal of structures (including their basements, if any), not directly associated with or incidental to any excavation.

Clear site for the whole area of the ground to be built upon up to a distance of at least 3 m beyond the perimeter of the structure of building(s) and/or extent of steps, pavings, etc to the level as indicated on the drawings.

This operation shall be deemed to include the following activities:

1. The removal and disposal of all trees and bushes (complete with roots), other vegetation, rubbish, hedges, fences, and all other material that might interfere with the construction of other works to designated sites as directed by the Engineer.
2. The removal of all litter, building rubble, rocks and boulders that are lying on the surface to be cleared, or exposed during the clearing operations and disposing thereof to designated sites as directed by the Engineer.
3. The removal and stacking of re-usable materials as specified by the Engineer.
4. The scarifying, loosening and breaking up of hardened areas by ripping or excavation to a depth of 200 mm or otherwise specified by the Engineer.

All topsoil shall be conserved for later use over the cleared area that are to be levelled over the terrain.

The level of the finished earth works shall be as shown on the drawings.

Tree trunks shall be disposed of by stockpiling at a designated area identified by the Engineer.

1.1.1. Grubbing

All stumps and roots larger than 75 mm in diameter shall be removed to a depth of at least 600 mm below the finished level, and at least 100 mm below the original ground level. Where a roadbed or other area has to be compacted, all stumps and roots, including matted roots shall be removed to a depth of at least 200 mm below the cleared surface.

Except in borrow areas, cavities resulting from grubbing shall be backfilled with suitable material and compacted to a density of 90 % of the modified AASHTO maximum dry density or that of the surrounding ground, whichever is the lesser.

1.1.2. Disposal of material

Material obtained from clearing and grubbing and from the demolition of structures shall be disposed of in borrow pits or other suitable places as specified by the Engineer and shall be covered with soil or gravel. Consumable materials on site may be disposed of by means of burning, unless otherwise specified by the Engineer.

All tree trunks and branches of girth exceeding 0,5 m shall be stripped of secondary branches, sawn into transportable lengths and stacked at designated sites, as specified by the Engineer.

Fencing wire shall be neatly wound into rolls or coils and all such wire, together with all fence posts and other reusable material from structures, etc., shall be stacked at sites specified by the Engineer.

All other materials that are to be reused, shall be stacked at sites as specified by the Engineer.

1.1.3. Branches overhanging boundaries

The branches of trees that are to be left standing shall be so trimmed as not to encroach upon the space (of height at least 7 m) vertically above any carriageway or any other designated area.

1.1.4. Conservation of individual trees

Individual trees that, in terms of the scope of work, are identified to be conserved, shall be left standing, uninjured and protected against damage from all construction activities.

1.1.5. Re-clearing of vegetation

If during the period of construction vegetation should again grow on any portion of the site, borrow areas, or other areas that have been cleared in accordance with this specification, re-clearing might be required. Such re-clearing shall include the removal and disposal of grass, shrubs and other vegetation, as in the first clearing operation.

1.1.6. Conservation of topsoil

Where topsoil is required to be conserved as directed by the Engineer, the topsoil together with any grass and other suitable vegetation shall be removed and placed at a designated are as directed by the Engineer. If not used immediately, such topsoil shall be temporarily stockpiled for later use.

1.1.7. Compliance with the requirements

The required levels of compaction shall be established by means of selected fill material replacement.

The density of the backfilling may be compared to the density of the surrounding ground.

1.2. EARTHWORKS (GENERAL)

Applicable standard: SANS 2001 – Construction Works Part BE1: Earthworks (general).

SANS 2001-BE1 covers the excavation, filling, compaction and finishing of general excavations for buildings, carried out with heavy construction equipment or light construction equipment, or by hand.

1.2.1 Notification by Contractors and Excavators

In terms of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), every Contractor shall at least 7 days before he/she commence with the construction work notify the provincial director in writing if the intended construction work will :-

a) Include excavation work;
b) Include working at a height where there is a risk of falling;
c) Include the demolition of a structure; or
d) Include the use of explosives to perform the construction work.

1.2.2 Excavations for foundations and floors

Excavation work shall be so executed that material

a) excavated and that does not contain more than 10% rock or hard fragments retained on a sieve of nominal aperture size 50 mm shall be transported directly to its final position without being stockpiled, and if stockpiling is unavoidable, materials intended for re-use shall be stockpiled separately from the other excavated materials and materials from excavations shall be used in preference to materials from borrow pits or other sources.

After an area has been stripped, excavation of trenches and holes for foundations shall be excavated to the several lengths, widths and levels shown on drawings to which the ground has

to be reduced and then for foundations, footings, etc., to the depths as shown on the drawings or to such other depths as may be directed by the Engineer to ensure a good foundation.

Bottoms of trenches and holes shall be level, with sides trimmed vertical for the full width from top to bottom. The bottoms of trenches shall be stepped as shown but if the stoppings are not shown on drawings or are not otherwise directed on site, the stepping shall be of at least the thickness specified for the concrete footings but shall be adjusted downwards to conform with an exact number of brick courses where necessary. Any excavations taken out to deep shall be made up to correct levels with approved fill material by the Engineer and shall be capable of sufficient compaction to avoid settlement and shall be capable of placement without significant voids all at the Contractor's expense.

The ground under solid floors shall be excavated where necessary and levelled in readiness for the laying of the surface beds.

Before commencing any earthworks, the Contractor shall satisfy himself as to the accuracy of any levels indicated on the drawings as no claim will be entertained at a later date for any allege inaccuracy in such levels.

Degree of accuracy for excavations required is:

a) Position on plan:- pd in plan of any point measured from the nearest grid line ± 35 mm.
b) Dimensions on plan:- pd from the design dimensions ± 50 mm.
c) Foundation level (i.e. level of underside of concrete except floor slab):- pd in level of surface of excavation trimmed to receive concrete ± 50 mm.
d) Level:- pd from designed level with reference to the nearest transferred benchmark of any floor slab ± 15 mm.

Except where provision for working space has been made in the scope of work, each excavated surface on which, or against which, a permanent concrete structure will be placed shall be prepared by trimming to ensure that there is no projection outside the specific tolerance into the excavation profile. Such surface shall be cleaned by hand to remove all loose material.

Immediately before any permanent construction is commenced, the bottom of each excavation shall be cleaned of all loose material, and soft material shall be rammed or removed, as required.

1.2.3 Excavations to reduce levels

The ground outside the buildings shown to be reduced in levels, shall be excavated and levelled or graded to falls as shown on the drawings.

1.2.4 Excavations for working space

Working space for formwork to sides of all concrete, except columns, has been measured only where the concrete face is less than 750mm from the face of the measured excavation.

Working space for formwork to sides of columns has been measured for the width of the column face only where both:

a) the top of the column base is more than 1,5m below the commencing level of the excavation, and
b) the column face is less than 500mm from the face of the measured excavation.

No claim will be considered for any working space for formwork to concrete other than as above described for working space beyond the sides of trench excavations for the building of brick or block walls.

Descriptions of excavations for working space shall be deemed to include any additional risk of collapse so incurred and the returning and compacting of the excavated material as described.

1.2.5 Definitions

Earth shall mean ground that can be removed by hand tools and shall include loose gravel, clay, made up ground, loose or soft shale, loose ouklip and any loose boulders less than 75mm in diameter.

Soft rock shall mean rock that can be loosened by hand, pick or crowbar and includes hard shale, compact ouklip, stone of a similar hardness and boulders from 75mm diameter up to 0,03 cubic metres in volume.

Hard rock shall mean granite, quarzitic sandstone, slate and rock of similar or greater hardness and boulders from over 0,03 cubic metres in volume.

1.2.6 Blasting

No guarantee is given or implied that blasting shall be accepted but should this method of removal be necessary and permitted, the Contractor must take all responsibility and observe all conditions set forth in all Government and Local Authority Regulations and/or bylaws.

1.3. DISPOSAL OF EXCAVATED MATERIAL

1.3.1 Part return

Material from the excavations, after testing by an approved Laboratory, where suitable and approved by the Engineer, is to be returned, filled in and rammed against foundation walls, under floors, steps, etc. as necessary.

No clay shall be used as filling.

1.3.2 Deposit on site

The excess material shall be deposited on site, spread and roughly levelled, where permitted by the Engineer.

1.3.3 Cart away

Surplus material is to be carted away to a suitable dumping site to be found by the Contractor, outside the boundary of the Site. Spoil heaps shall be flattened to present a neat level or graded surface.

1.4. MAINTENANCE OF EXCAVATIONS

1.4.1 Planking, strutting, etc.

Planking, strutting, shoring and temporary sheet piling shall be measured as such only when prescribed.

1.4.2 Risk of collapse:

The Contractor shall maintain all excavated faces exceeding 1,5m deep in accordance with Government Regulations and all excavated faces not exceeding 1,5m deep affecting the safety of work and/or the workmen.

The Contractor shall carry the risk of collapse of excavated faces whether or not he takes any precautions, the nature of which shall be entirely at his own discretion.

1.5. WATER IN EXCAVATIONS

No water shall be allowed to accumulate in any portion of the excavations.

The excavations shall be protected against any water entering them whether by seepage, rains, storms, floods or any other means. Any water found in the excavations shall immediately be removed by pumping or baling.

It is the Contractor's responsibility to keep foundations and excavations water free and the Contractor must supply all pumps etc. that may be necessary for clearing out the water. Water must be cleared in such a way that it cannot seep or flow back into the excavations.

1.6. COMPLETION OF EXCAVATIONS

The Contractor shall give notice, in writing, to the Engineer when the excavations are ready to receive the foundations.

The foundations shall not be laid until the excavations have been approved of, in writing, by the Engineer and they shall not be covered until any variation has been measured.

1.7. FILLING

Filling shall be of approved clean earth in layers not exceeding 150 mm thick, well-watered, rammed and consolidated to at least a density of 90% Modified AASHTO (American Associations of State Highway and Transportation Officials), which will be verified by the Engineer having it tested.

All filling material shall be approved beforehand by the Agent Representative prior to placement. A 60kg sample of the proposed fill is required for this purpose and fourteen days must be allowed for initial sample testing.

Before filling is placed the virgin soil shall be scarified and compacted to at least 90% Modified AASHTO. Each layer of fill must be tested and approved by the Engineer before the next layer is placed and compacted.

a) To defined levels

   The ground outside the building shown shall be made up with earth filling as above, finished level or graded to falls as shown on the drawings, or as directed.

b) To foundations etc.

   Filling to foundations etc. shall be of earth filling as above.

   The filling of areas under solid floors shall be carried out as soon as the foundations and foundation walls have been completed.

c) Thicknesses of compacted material

   Given thickness are those for compacted material.

   The Agent Representative shall keep notes on all filling supplied by the Contractor.

d) Descriptions (prices)

   Descriptions (prices) of all filling including filling supplied by the Contractor from an off-site source, and separately measured, are to include for any necessary stockpiling and multiple handling.

1.8. SURPLUS EARTH

All surplus earth, topsoil and/or other materials from excavations shall be deposited and levelled on the site, or carted away, as directed.

1.9. GRAVEL DRESSING

Gravel dressing to the ground outside the building shall be of approved clean gravel, well-watered and consolidated by rolling with an approved roller to a hard even surface. The dressing shall be of a consolidated 75mm thickness.

1.10. TOPSOILING

On completion of earthworks to the finished level and of backfilling of holes, trenches, etc., the whole surface shall be graded, shaped and compacted to final grades and levels.

Topsoil shall be placed on level and slightly graded areas and shall be lightly compacted by wheeled vehicles or by tamping, and trimmed neatly to the required lines, grades and levels. The final thickness of the topsoil after compaction shall be at least 75 mm.

Where required or directed by the Engineer, grass or other vegetation shall be planted after top soiling has been completed. On completion of planting, the planted area shall be neatly trimmed and well-watered and not allowed to dry out until it is established.

PC 1 MEASUREMENT AND PAYMENT

Item	Unit
PC 1.1 Site Clearing ……...……	square metre (m²)

The unit of measurement shall be the square metre for the area cleared before construction could commence.

The tendered rates shall include full compensation for all labour and plant for the clearing of the Site to get it to an acceptable working terrain.

Item	Unit
PC 1.2 Compacted filling material supplied by the Contractor ……..	cubic metre (m³)

The unit of measurement shall be the cubic metre for the specified filling material selected and supplied by the Contractor from an approved source, deposited, watered and consolidated to specified Modified AASHTO density in layers not exceeding 150mm thick base course under floors, etc.

The tendered rates shall include full compensation for all material, labour and plant for the depositing and compaction of selected filling material into the works.

Item	Unit
PC 1.3 In-place treatment of subgrade material by ripping and compacting to 96% AASHTO ……..……..	cubic metre (m³)

The unit of measurement shall be the cubic metre of in situ material treated in situ. The quantity shall be calculated from the authorized dimensions of the in situ treatment.

Whenever in situ shall consist of ripping to depths. Unless otherwise indicated on the drawings or directed by the engineer, the depth of ripping shall be not less that 150mm. The material shall then be compacted by to the specified density by an approved combination of various rollers.

The tendered rates shall include full compensation for ripping, shaping, scarifying, sizing, knapping, rolling, mixing of in situ and imported material if required, and preparing and compacting the material as specified.

Item	Unit
PC 1.4 Cleaning and shaping existing foundation trenches ....…….....	metre (m)

The unit of measurement shall be the metre length of trench that is shaped and cleaned.

The tendered rates shall include full compensation for all labour and plant for the cleaning, shaping and protecting fibre cable as directed by the Engineers Representative.

Item	Unit
PC 1.5 Prescribed density tests on filling	metre (m)

The unit of measurement shall be the number of density tests executed to determine the compaction density of the backfilled material.

The tendered rates shall include full compensation for all labour and plant for the taking of samples, testing at an approved laboratory and the provision of detailed test results of the compacted filling as directed by the Engineers Representative.

2. CONCRETE, FORMWORK AND REINFORCEMENT

Structural Works
Applicable standard: SANS 2001 – Construction Works Part CC1: Concrete Works (structural).

Minor Works
Applicable standard: SANS 2001 – Construction Works Part CC2: Concrete Works (minor works).

Foundations
Applicable standard: SANS 2001 – Construction Works Part CM2: Strip footings, Pad footings and Slab-on-the-ground Foundations for Masonry Walling

NB: All in situ concrete work (mass and reinforced) shall comply with SABS Specification 1200G ("8. Measurement and Payment" is **not** applicable) supplemented by the clauses in this section. Where SABS Specification 1200G and the clauses in this section are in conflict the clauses in this section shall take precedence.

Where the term "plain concrete" appears in SABS Specification 1200G it shall be read as "mass concrete"

2.1 CEMENT

Cement shall be Portland cement complying with the requirements of SABS Specification 471 complying with SABS Specification 831.

Samples of cement from any one, or from every consignment, may be required by the Representative/Agent for test purposes. Cement in any consignment from which a sample may have been taken for testing shall not be used until it has been approved. Allowance must be made for possible delay in that tests may take 10 days to carry out.

Bags of cement shall be stacked in a waterproof, solidly constructed shed with a central door and a floor rendered damp-proof with a tarpaulin. The bags of cement shall be closely stacked (but not against walls) in order to reduce air circulation in such a manner that the cement is used in the order in which it was received, i.e. first in first out.

Unless otherwise specified in the tender documents the use of ordinary Portland cement blended with ground granulated blast furnace slag complying with SABS Specification 1491, or ordinary Portland Cement blended with Pulverised Fly Ash complying with SABS Specification 1466 will be allowed in certain instances as an alternative, after acceptance of tender, but only with the approval of and at the sole discretion of **the Department**.

2.2 SAND (FINE AGGREGATE)

The fine aggregate shall comply with the requirements of SABS Specification 1083. Other aggregates may be approved if they have a satisfactory history and/or test results.

No aggregate may be used until it has been approved. Samples having a mass of 25 kg (16,5 litre) of the aggregate proposed to be used may be required by the Representative/Agent for test purposes. Samples having a mass of 25 kg shall be forwarded every 3 months during concreting work and also if the source of supply is changed. Allowance must be made for possible delay in that the tests may take 14 days to carry out.

2.3 STONE (COARSE AGGREGATE)

The coarse aggregate shall comply with the requirements of SABS Specification 1083.

No aggregate may be used until it has been approved. Samples having a mass of 25 kg (16,5 litre) of the aggregate it is proposed to use may be required by the Representative/Agent for test purposes. Samples shall be forwarded every three months during concreting work and also if the source of supply is changed. Allowance must be made for possible delay in that the tests may take 14 days to carry out.

NB: Certain fine grained sand and stone originating from the Beaufort Series and Karoo Systems which are known by reputation, local experience or tests, to exhibit excessive shrinkage when used in concrete, may be deemed unacceptable by the Representative/Agent.

A certificate of proof is required from the Contractor that the aggregates are not alkali reactive. The cost of testing and certification are to be borne by the Contractor.

2.4 WATER

The water used shall be fit for drinking.

2.5 CONCRETE

Concrete shall be of the classes given in the following table. The proportions of the ingredients and the nominal size of the coarse aggregate for each class shall be as laid down therein, viz:

Table — Concrete mix proportions for use with 19 mm stone

0	1	2	3	4	5	6	7
Class	**Grade of concrete**	**Cement** kg	**Sand**		**19 mm stone**		**Water** L[b]
			L	Wheelbarrows[a]	L	Wheelbarrows[a]	
	Class 42,5 N or R cement						
A	10	100 (2 bags)	290	4,5	290	4,5	72
B	15	100 (2 bags)	260	4,0	260	4,0	66
C	20	100 (2 bags)	230	3,5	230	3,5	60
D	25	100 (2 bags)	200	3,0	200	3,0	55
E	30	100 (2 bags)	160	2,5	160	2,5	51
	[a] A standard wheelbarrow for concrete (SANS 795 type 5 wheelbarrow) has a capacity of between 60 L and 70 L with no projection of material above the rim of the wheelbarrow. [b] Only sufficient water should be added to produce a workable mix. The quantities of water are for guidance only as the actual quantity required will depend on a number of factors, including the moisture content and quality of the sand and the type of cement used.						

Table — Concrete mix proportions for use with 13 mm stone

0	1	2	3	4	5	6	7
Class	**Grade of concrete**	**Cement** kg	**Sand**		**13 mm stone**		**Water** L[b]
			L	Wheelbarrows[a]	L	Wheelbarrows[a]	
	Class 42,5 N or R cement						
A	10	100 (2 bags)	330	5,0	230	3,5	71
B	15	100 (2 bags)	290	4,5	200	3,0	65

C	20	100 (2 bags)	230	3,5	200	3,0	60
D	25	100 (2 bags)	200	3,0	160	2,5	56
E	30	100 (2 bags)	145	2,0	130	2,5	52
	[a] A standard wheelbarrow for concrete (SANS 795 type 5 wheelbarrow) has a capacity of between 60 L and 70 L with no projection of material above the rim of the wheelbarrow. [b] Only sufficient water should be added to produce a workable mix. The quantities of water are for guidance only as the actual quantity required will depend on a number of factors, including the moisture content and quality of the sand and the type of cement used.						

The strength given in the above table shall be the minimum required at 28 days.

Unless otherwise specified. Class C concrete shall be used for mass concrete and Class E concrete for reinforced concrete.

Maximum concrete slumps acceptable for different types of construction concrete are as follows:

(a) Vibrated reinforced concrete = 50 mm

(b) Unvibrated reinforced concrete = 75 mm

(c) Mass concrete = 75 mm

When so required by the Employer's Agent Representative, and whilst concreting is in progress, the consistency of the mixture shall be ascertained by means of the slump test as later described herein.

2.6 VOLUME BATCHING

The coarse and fine aggregate shall be measured by volume and, unless otherwise directed, cement shall be measured by mass: the volume of a 50 kg bag of cement shall be taken as 33 litre. Suitable measuring boxes for the coarse and fine aggregates shall be provided to the approval of the Employer's Agent Representative.

The proportions given above are approximate only, and should the Employer's Agent Representative consider that the voids in the coarse aggregate require more or less matrix than is formed by the proportions specified, he may vary the quantities of coarse and fine aggregates to obtain the required density and workability of the concrete, provided that the proportion of cement to the total volume of the aggregate shall not be less than that specified.

When the sand is not completely dry, allowance must be made for bulking due to the moisture content. The amount of bulking shall be determined by the Contractor in the presence of the Employer's Agent Representative.

The proportion of water used for mixing concrete shall be determined by the Employer's Agent Representative and once the water-cement ratio has been fixed, it shall be rigidly adhered to. On no account shall the amount of water exceed 34 litres to every bag of cement used. This figure includes the water contained in the sand.

The length of time each batch shall be mixed in the mixing machine shall be decided by the Employer's Agent Representative.

Effective screens shall be provided to protect the mixing of concrete during windy weather.

2.7 WEIGH BATCHING

The proportioning of the coarse and fine aggregates by mass will be permitted, providing the method used is approved by the Engineer.

a) All requests received by the Representative/Agent to make use of weigh batching must be submitted to the Engineer for approval.

b) If the weigh batching process is preferred to volume batching, the proposed mix proportions are to be equivalent to the relevant volumetric mixes as documented previously herein and be based upon a minimum cement content.

c) The following procedures must be complied with:

(i) The Contractor must timeously obtain written approval for the use of weigh batching and submit all information as set out below, with his application.

(ii) The mix transformation from volume to weigh batching shall be carried out at an approved laboratory.

(iii) Weigh batching equipment must be calibrated and a certificate of accuracy must be submitted before such equipment may be used.
On contracts of long duration and/or requiring large quantities of concrete, new calibration certificates may be required every four months.

(iv) The cement to aggregate ratio by volume for the following mixes will apply:
Class C (15 MPa) - c/a = 1:9
Class E (25 MPa) - c/a =1:6

(v) The following cement/water ratios by mass must also be complied with:
Class C (15 MPa) - c/w = 1,30 to 1,35
Class E (25 MPa) - c/w = 1,65 to 1,80

2.8 READY MIXED CONCRETE

Any application to use Ready Mixed Concrete shall be submitted by the Contractor to the Employer's Agent Representative at an early stage for approval by the Engineer. Only suppliers approved by the Engineer will be considered.

2.9 STRENGTH CONCRETE

The Contractor shall be responsible for the design of strength concrete and for the measurement of the constituent materials to produce concrete that complies with the specified requirements.

The Employer's Agent Representative will decide the class and grade designation of the concrete required for each part of the work and determines suitable limitations on the constituent materials and mix proportions in accordance with the said requirements.

(a) Trial mixes:

The Contractor must ensure that samples of the constituent materials of the concrete, together with evidence that they comply with the provisions, are supplied for approval in good time and provide the Engineer with—

i) a statement from an approved independent laboratory of the results of tests, or

ii) an authoritative and acceptable report, or record of the previous use of, and experience with, the material concerned.

The cement, types of aggregate and their origins may not be changed throughout the duration of the contract without giving prior notification to the Employer's Agent Representative who shall

verify that the above requirements are complied with and that the important qualities of the concrete will not be impaired.

(b) Durability:

For each grade of concrete, the Employer's Agent Representative will, notwithstanding strength considerations, specify the cement/water ratio appropriate to the exposure conditions indicated in Table 5, SABS Specification 1200G, Sub-clause 5.5.1.5.

(c) Consistency:

Unless otherwise indicated by the general workability of the concrete, method of transportation, conditions of placement or otherwise specified by the Employer's Agent Representative, the suggested slump values, for different mixes of concrete shall be as specified in Clause 3.4.

(d) Workability:

Ensure that the concrete is of such workability that it can be readily compacted into the corners of the formwork and around reinforcement without segregation of the materials and without excessive "bleeding" of free water at the surface.

2.10 ADMIXTURES TO CONCRETE

The use of admixtures in concrete will only be considered should special circumstances warrant this and then only with the prior written approval of the Employer's Agent Representative. The Contractor shall provide the following information:

(a) The trade name of the mixture, its source and the Manufacturer's recommended method of use.

(b) Typical dosage rates and possible detrimental effects of both under and over dosage.

(c) The expected average air content of freshly mixed concrete containing an admixture which causes air to be entrained when used at the Manufacturer's recommended rate of dosage.

2.11 SLUMP TEST

The apparatus and the method of determination of the slump of freshly mixed concrete shall comply with SABS STM 862.

(a) Apparatus:

(i) A mould in the form of a frustum of a cone and having the following nominal internal dimensions:
Bottom diameter: 200 mm
Top diameter: 100 mm
Height: 300 mm

The mould shall be of a metal (other than brass or aluminium) of side thickness at least 1,6 mm and shall have a smooth internal surface.

The mould shall have suitable base plate and handles to facilitate lifting it from the test specimen in a vertical direction.

(ii) The tamping bar shall have a nominal diameter of 16 mm, a length of 600 mm and with sharp corner rounded off at one end.

(b) Procedure:

The test shall be carried out in an area that is free from vibration and shocks.

Ensure that the internal surfaces of the mould are free from set concrete and are clean and dry.

Place the mould with the bottom on a smooth, horizontal, rigid, non-absorbent surface and hold the mould firmly in place while it is being filled as follows:

(i) Fill the mould in four layers, each thickness approximately one-quarter of the height of the mould. Tamp each layer with 25 strokes uniformly spaced over the cross-section of the mould. Tamp the bottom layer throughout its depth and ensure that when tamping the second and subsequent layers the strokes penetrate into the underlying layer.

(ii) After the top layer has been tamped, strike off the concrete level so that the mould is exactly filled. Clean off any concrete that may have leaked out between the mould and the supporting baseplate surface. Remove the mould from the concrete immediately by slowly and carefully raising it in a vertical direction. This will allow the concrete to subside.

Immediately measure the slump, to the nearest 5 mm, by determining the difference between the height of the mould and the height of the specimen.

If a slump specimen collapses or shears off laterally regard the test as invalid, discard the result and repeat the test.

2.12 CONCRETE TEST CUBES

The apparatus for making and testing of concrete cubes shall comply with SABS STM 863.

(a) Apparatus:

Cubic metal moulds of steel shall be machined and adequately strengthened to resist distortion. The internal distance between faces of a mould shall be 150 mm.

The mould shall be constructed so as to facilitate the easy removal without damage of the moulded specimen.

Each mould shall have a metal base plate which shall be attached to the mould by springs or screws.

When assembling the mould for use, the joints between the sections of the mould, the contact surfaces between the bottom of the mould and the base plate, and the internal faces of the assembled mould shall be thinly coated with a grease or oil that will prevent leakage of water through the joints and adhesion of the concrete to the mould.

The tamper must be a steel bar of length 400 mm and mass 1,8 kg, and having a 25 mm square ramming face.

(b) Sampling and making cubes:

Sampling shall comply with SABS STM 861.

One set of three cubes shall be required for every 40 cubic metres, or part thereof, of concrete cast.

The sample taken from a batch of concrete and sufficient to make three cubes shall be placed in a tray or on a platform and mixed thoroughly.

The moulds shall each be filled in three layers approximately 50 mm thick. Each layer shall be compacted with the tamping rod as previously specified, with at least 35 blows to give full compaction of the concrete.

After the top layer has been compacted, strike off the surface of the concrete with a trowel, level with the top of the mould.

Any small hollows shall be filled in with additional concrete. Cement/sand slurry shall not be worked into the surface.

At this stage, the identity of each sample shall be placed on the moulded cube, by means of a label of absorbent material and not by scouring of the surface of the concrete.

c) Curing cubes on site:

Cover the test cubes in their moulds with an impervious sheet or wet sacking and store indoors in a place that is free from vibration, excessive draughts, cold and direct sunlight.

After 24 hours the cubes shall be demoulded, remarked with a waterproof crayon or marker and placed in a curing tank for seven days before being transported to the laboratory.

The Contractor shall supply the curing tank which shall incorporate a thermostat to control the water temperature at 22 °C to 25 °C and shall be kept within a building.

(d) Testing of cubes:

The testing of all concrete cubes will be done by a laboratory approved by the Employer's Agent Representative in accordance with SABS STM 863.

A suitable testing machine of sufficient capacity having an accuracy and repeatability that comply with the requirements for Grade A machines of BS 1610 "Method for the load verification of testing machines" shall be used to test the compressive strength of each cube.

The Contractor is responsible for the provision of the cube moulds and for timeous delivery of the cubes to the laboratory.

2.13 CONCRETE QUALITY

Should the Contractor dispute any results obtained from concrete test cubes, the concrete represented by the cubes will be considered acceptable if the Contractor, at his own cost, proves to the satisfaction of the Employer's Agent Representative that the estimated actual strength of cores taken from the structure (by an approved independent testing laboratory and determined in accordance with SABS STM 865) is not less than the specified strength. If the concrete fails to meet the strength criteria stipulated, the Employer's Agent Representative may at his sole discretion and in addition to the options listed in SABS Specification 1200G-

(a) accept the concrete subject to approved remedial measures being undertaken by the Contractor at his own cost; or

(b) permit the concrete to remain, subject to reduced payment for lower strength concrete.

2.14 CONCRETING

It is essential that the foreman who has charge of the construction of all concrete work, whether reinforced or not, shall be skilled in this class of work, and shall personally superintend the whole construction, paying special regard to—

(a) the quality, testing and mixing of the materials.

(b) the laying of the material in place and the thorough compaction of the concrete to ensure solidity and freedom from voids;

(c) the construction and removal of formwork; and

(d) the sizes and positions of the reinforcement.

Particular care shall be taken to work concrete against formwork and around reinforcement. Internal vibrators may be used with the approval of the Employer's Agent Representative but external vibrators which act only on the formwork will not be permitted.

Concrete to be reinforced shall be deposited in such quantities as will permit of it being properly compacted around the reinforcement.

The placing of concrete shall be completed within half-an-hour after mixing or within half-an-hour after agitating and within 2,5 hours after mixing in the case of ready mixed concrete. On no account shall concrete be incorporated into the work after it has attained its initial set.

Care shall be taken to prevent, as far as possible, the formation of laitance or scum. Laitance is to be understood to mean the scum of strength less and inert material which forms on the surface of concrete.

Concrete must not be dropped into position from a height greater than 2,5 m unless prior approval is obtained from the Engineer.

If an inclined chute is used for transporting concrete, it shall be of such slope as will ensure a continuous flow of concrete without the use of an excessive quantity of water and without segregation of the aggregates. The chute must be flushed out and properly cleaned before and after each working period. All waste from flushing shall be discharged outside the formwork.

In beams, each portion of a successive layer shall be placed as soon as the concrete below has been properly worked around rods and against formwork. Concreting shall be carried forward in irregular steps, that is to say, one layer shall not be completed over the whole section before the succeeding layer is commenced. Concreting of slabs and beams shall, as far as possible, be carried forward in one operation. When concreting has to be interrupted the concrete shall be left with a level, rough top surface with ends vertical. The concrete shall not be merely sloped down.

On resuming concreting, the old surface shall be roughened and all laitance thoroughly and carefully removed before any new concrete is deposited. This must be carried out by brushing the surface of the concrete while it is still green. Great care must be taken to avoid any weakness at the junction of old and new concrete, and the old surface shall be coated with a thin layer of cement and sand mortar, in the same proportions as that of the adjoining concrete.

While the concrete is setting it shall not be disturbed or shaken by traffic, either on the concrete itself or upon adjoining formwork.

No holes in concrete elements shall be patched or filled in without inspection, instruction and approval of the Engineer.

No concreting shall be carried out when the air temperature is below 4 °C when it is rising and 8 °C when it is falling.

Before concreting is commenced the Contractor shall give the Representative/Agent 24 hours' notice of his intention to do so. On sites further than 200 km from the Representative/Agent, 48 hours' notice must be given.

Concrete surface beds, excluding heavy industrial floors etc. shall be Class C concrete and shall be laid in suitable size panels not exceeding 20 m2 in area and with the length of any panel not exceeding 4,5 m.

Where concrete beams are supported on concrete columns, the columns are to be concreted up to the underside of such concrete beams and then concreted up to the top of the beams, integral with the beams.

NB: Any finish applied to the surface of concrete floors, is to be understood as being additional to the thickness of the concrete described or shown on the drawings.

2.15 CURING AND PROTECTION OF CONCRETE

All concrete shall be protected from contamination, erosion by rain and flowing water, frost, mechanical damage, and vibration and movement that could disrupt the setting or hardening of the concrete and interfere with its bond to the reinforcement.

As soon as it is practicable (including the period before the formwork is removed), all concrete shall be protected from moisture loss for the period necessary for hydration of the cement and hardening of the concrete by one or more of the following methods:

a) ponding the exposed surfaces with water, except where the temperature is below 5 °C;

b) covering the concrete with sand, or mats made of a moisture-retaining material, and keeping the covering continuously wet;

c) continuously spraying the exposed surfaces with water;

d) covering the concrete with waterproof or plastics sheeting firmly anchored at the edges; or

e) the use of a suitable curing compound applied in accordance with the manufacturer's instructions.

NOTE Some curing compounds of finishes, such as toppings, plasters or paints applied to the hardened concrete, inhibit bonding. The compound used should therefore be suitable for the intended finish.

Whichever method of curing is adopted, its application shall not cause permanent staining, contamination or marring of the surface of the concrete. The water used shall comply with the requirements of 3.5.

Curing shall continue for at least the appropriate period given in the Table “Minimum curing periods” or until such time that the concrete in excavations is back filled.

Table — Minimum curing periods

1	2	3
Strength class of cement	**Minimum curing period (**d)	
	Ambient temperature	
	15 °C and higher	**5 °C and lower**
42,5 R or higher	3	6
CEM I and CEM II A-S, A-M, A-V or W	7	14
CEM II B-S, B, V or W or CEM III	10	20
NOTE When the ambient temperature is between 5 °C and 15 °C, the curing period shall be determined by interpolation between the given periods.		

2.16 DESCRIPTIONS (PRICES) OF CONCRETE

Descriptions (prices) of concrete work shall be deemed to include the design of concrete mixes and all testing of concrete and materials other than compressive strength testing of concrete samples from concrete being placed in the works (the Contractor shall only be entitled to payment for those samples and compressive strength tests called for by the Employer’s Agent Representative and which pass the test requirements), handling and depositing (by hoisting or lowering) concrete in the forms, working and packing concrete around reinforcement, all “construction joints” other than “designated joints” as defined in SABS Specifications 1200G which are given separately, shaping tops of concrete components as required and striking off and curing. (Treatment of finished faces of concrete other than striking off and curing are given in separate items.)

Descriptions (prices) of concrete in surface beds cast in panels shall be deemed to include formwork, fillets and the like in forming the panels.

2.17 BUILDING ON CONCRETE FOOTINGS AND BEAMS

No brickwork, stone walling or other structure shall be built on concrete footings until at least three days after placement of the concrete in the case of mass concrete footings and after seven days in the case of reinforced concrete footings or as may otherwise be directed by the Employer’s Agent Representative.

No brickwork, stone walling or other structure shall be built on reinforced concrete beams or similar members until the formwork and all props or supports have been removed.

2.18 CONSTRUCTION JOINTS

Slip joints shall be provided between concrete slabs and beams by levelling up and trowelling smooth the bearing surfaces of brickwork with 3:1 cement mortar and covering the bearings before the concrete is cast, with two layers of one side smooth tempered hardboard, with the smooth sides in contact.

The ends and sides of beams and edges of concrete slabs shall be separated from the brickwork with 10mm thick bitumen impregnated soft board or expanded polyethylene strips placed vertically against the brickwork before the concrete is cast.

Similar slip joints shall be provided between brickwork and concrete lintels cast in situ, but without soft board or expanded polyethylene strips at ends.

Round of all construction joint edges to a radius of 3 mm.

2.19 ISOLATION OR MOVEMENT JOINTS

All movement joints are to be filled in with approved bitumen impregnated soft board or expanded polyethylene strip unless otherwise specified or detailed on drawings. Form similar movement joints where pathways adjoin buildings externally.

2.20 CUTTING, PUNCHING OR HACKING CONCRETE

No reinforced concrete shall be cut or hacked without the sanction of the Employer's Agent Representative.

2.21 FORMING KEY TO CONCRETE FOR PLASTER AND OTHER FINISHES

Where rough formwork has been used, surfaces of concrete to receive plaster and other finishes, shall, immediately after the formwork has been removed, be well wetted and wire brushed whilst the concrete is still green and then slushed over with 2:1 cement grout to form a key for the finish, all to the approval of the Employer's Agent Representative. The slushing is to be allowed to set hard before the finish is applied.

Where smooth formwork is used, surfaces of the concrete to receive plaster and other finishes shall be hacked, on the distinct understanding that hacking of concrete shall be at no extra cost to the Department.

Surfaces of concrete receiving plaster or other finishes shall not be plastered or finished until the Employer's Agent Representative has signified his opinion in writing that the surfaces are suitable to receive plaster or other finishes.

2.22 SLEEVE PIECES, TIES, ETC.

Where it is necessary to leave plugs or holes in beams, slabs or any other reinforced concrete, all such plugs or holes must be situated in positions approved by the Employer's Agent Representative before concreting. Where it is necessary to carry pipes, bolts, wires or any other fittings through reinforced concrete members, approved pipe sleeves must be provided and placed in position before concreting.

Where waste, ventilation, water, heating or other pipes under 100mm diameter pass through concrete slabs and beams, galvanised mild steel sleeve pieces of diameters shown or required shall be cast into such concrete slabs and beams.

Chases shall be formed in edges of slabs or slots shall be formed in the slabs, of sizes required, where two or more pipes pass through together.

All necessary bolts, plugs, brackets, cramps, etc. shall be cast into the concrete as the work proceeds.

Where brickwork abuts against concrete, the brickwork is to be tied to the concrete with galvanised hoop-iron ties 1,6m thick by 32mm wide and approximately 600mm long to every third course of brickwork with one and of each tie cast approximately 150mm deep into the concrete. Where such fixing

is impossible, i.e. where steel formwork is used, ties are to be gun-nailed against concrete with steel nails not less than 38mm long.

2.23 BAGGED FINISH TO CONCRETE

Concrete surfaces to receive bagged finish shall be prepared by removing sharp projections and making good defects with 3:1 cement mortar. Finish by rubbing over the whole area with wet rough sacking and cement grout to obtain an even surface.

2.24 FINISHING OF CONCRETE FOR TROWELLING

Direct-finish of concrete by means of delayed trowelling techniques:

- Level concrete surface by means of straight-edge after vibrating.
- Leave surface undisturbed until bleeding has ceased and surface has stiffened so that foot pressure barely indents the surface (2 – 4 hours).
- Remove bleed water and laitance.
- Hand trowel using pressure, or power trowel.
- Steel trowel to produce a smooth finish, or wood float to produce a slip-free surface.
- Do not add water or neat cement.

2.25 POWER FLOATED FINISH

Power floated finish to floors etc. means that surfaces shall be floated mechanically to a smooth and even finish before the concrete has set. Small areas inaccessible to the machine are to be floated by hand. Under no circumstances is cement mortar to be added while floating the concrete.

2.26 "NO-FINES" CONCRETE

"No-fines" concrete, for grading flat concrete roofs and the like falls, shall be in the proportion of 12 parts 19 iron cubical stone to 1-part cement mixed with 20 litres water per bag of cement and be laid to falls of not less than 15mm per linear metre for mastic asphalt and not less than 20mm per linear metre for sheet roof covering. For heavy load applications special mix designs may be required.

a) Fillets against upstands:

Form triangular fillets, size 75 × 75mm, in corners with walls, kerbs, etc. neatly mitred at angles, stopped where necessary and finished smooth ready to receive waterproofing.

b) To raised floors, bases, etc.:

"No-fines" concrete for raised floors, bases, etc. shall be in the proportions specified. Finish smooth with 3:1 sand/cement screed to receive waterproofing.

2.27 FORMWORK

Formwork shall include all shuttering, casing and centring of wever material required for the laying and forming of concrete floors, slabs, beams, lintels, walls, steps, columns, piers, pilasters and any other concrete work requiring moulds or forms and shall embrace all cleats, battens, fillets, wedges, struts, trestles, braces, props, shores and other requirements of wever material for keeping all in correct position. All materials used for formwork must be suitable and substantial and all joints must be tight enough to prevent leakage of liquid matrix.

All formwork must be designed by the Contractor and if requested to do so, he must submit fully detailed and dimensioned working drawings to the Employer's Agent Representative for checking purposes. Acceptance of the proposals shall not relieve the Contractor of his responsibility for the safety and stability thereof nor for any loss or damage arising out of defective design, materials and/or workmanship.

The formwork must be so constructed that its partial removal can be carried out to the satisfaction of the Employer's Agent Representative and in such stages as are required by the working conditions.

As far as possible, wedges and clamps must be used in preference to nails. All formwork in its various sections for floors, beams, etc. must be so arranged that the whole may be raised or lowered either independently or together with other sections by means of wedges or other approved methods.

Immediately before concreting is begun, the formwork in contact with the concrete must be thoroughly cleaned, wetted and kept damp whilst the concrete is being placed.

Great care must be taken to keep the formwork wedged up to its correct height and this must be checked by taking levels immediately before concreting is commenced and immediately after it has been completed.

All beams shall have a camber of 6 mm to every 3 m of length.

The minimum periods that the formwork to the various parts of the structure is to remain in position after concreting shall be as stated in the following table:

DESCRIPTION	NORMAL CEMENT		RAPID HARDENING CEMENT	
	WEATHER		WEATHER	
	NORMAL	COLD	NORMAL	COLD
Beam sides, walls, unloaded columns	2 days	4 days	1 day	2 days
Slabs with props left under	4 days	7 days	2 days	4 days
Beam soffits with props left under including ribbed slabs	7 days	12 days	3 days	5 days
Removal of slab props	10 days	17 days	5 days	9 days
Removal of beam props	14 days	28 days	7 days	12 days

When determining the stripping time for formwork the weather shall be considered to be "normal" when the temperature is above 18 °C and "cold" when the temperature is between 5° and 10 °C, these being the average daily temperatures of the atmosphere adjacent to the concrete. When the average daily temperature lies between the above values for "normal" and "cold" weather the minimum period for stripping of formwork shall be determined by the Employer's Agent Representative.

Notwithstanding the above minimum periods, formwork may be struck immediately the concrete in the various parts of the structure has attained the crushing strengths required by the Employer's Agent Representative. The crushing strengths must be determined by proper tests, which shall be carried out by the Contractor.

No formwork of any nature whoever shall be struck, either after the elapse of the minimum period stated above or on the attainment of the required crushing strengths of the concrete, without the prior consent of the Employer's Agent Representative. Such consent will not absolve the Contractor of his responsibility for the safety of the structure.

In structures having either in whole or in part, two or more reinforced concrete floors, props shall be provided under the soffits of any beam or slab of any floor which is being used to support the formwork and wet concrete of the floor above, all to the approval of the Employer's Agent Representative. The props shall not be removed until the formwork supporting the concrete of the floor above has been struck.

On no account shall steel formwork be oiled where concrete is to receive plaster.

Formwork is measured to the net surfaces of concrete to be supported, except at intersections of beams with beams, columns, walls, etc. and tops of columns with slabs, beams, etc. where no deductions have been made and descriptions (prices) shall be deemed to include use and waste, except where the formwork is of a permanent nature or is to be left in, fitting together to all required shapes, all cutting, intersections, cambering where required, holes for rods, bolts, pipes and the like, propping, maintaining, keeping damp whilst the concrete is being deposited and removing.

Formwork "left in" and permanent formwork shall be deemed to include leaving in formwork, props, etc.

Descriptions (prices) of formwork to soffits shall be deemed to include propping not exceeding 3,5m high unless otherwise described. Descriptions (prices) of formwork to walls and columns shall be deemed to be not exceeding 3,5m high above bearing level unless otherwise described. Descriptions (prices) of formwork to soffits of solid slabs shall be deemed to be to slabs not exceeding 250 mm thick unless otherwise described.

2.28 SMOOTH FORMWORK

Smooth formwork shall be any material approved by the Representative/Agent which is to be used to leave concrete surfaces smooth when removed and where no other finish is to be applied.

Descriptions (prices) shall be deemed to include for rubbing off all projections at seams etc. after removal of the formwork, making good any defects with 2:1 cement mortar and leaving a smooth surface with all arises slightly rounded, all to the satisfaction of the Representative/Agent.

2.29 DAMP-PROOF UNDER-SURFACE MEMBRANE

Horizontal and vertical damp-proof course materials shall either be the subject of an *Agrément* certificate or comply with one or more of the following standards:

a) SANS 248;

b) SANS 298;

c) SANS 952.

The damp-proof under-surface membrane to be used under concrete floors shall be of a polymer film according to SABS Specification 952 type C (green) 0.25mm thick.

The damp-proof under-surface membrane shall be placed over the full floor area before the concrete floor is casted. The membrane shall be cut straight and square or to shape by the use of sharp instruments.

Joints shall have a minimum overlap of 300mm and sealed with pressure sensitive tape.

2.30 REINFORCING RODS

a) Mild steel:

Mild steel shall comply with the requirements of SABS Specifications 920, Type A or B.

b) High tensile steel:

High tensile steel shall comply with the requirements of SABS Specification 920, Type C or D.

2.31 CONCRETE REINFORCEMENT

2.31.1 ROD REINFORCEMENT:

Bending and hooking of rods shall be done in accordance with SABS Specification 282. Rods shall be bent cold in an effective bending machine, or properly designed rod-bender using a steady pressure and not by hammering.

Diameters, lengths and positions of rods as shown on the drawings must be strictly adhered to. Joints in rods in beams, stars, etc. will be permitted only where shown on the drawings.

Before being placed in position, the rods shall be thoroughly cleaned of all grease, dirt, bituminous material, scale and loose rust.

All distribution rods shall be straight and shall extend at least 150mm into beams or other support.

Unless otherwise shown on the drawings, all joints in reinforcing rods shall be lapped 40 times the diameter of the rod. The laps shall be securely tied with 1,25mm diameter annealed mild steel binding wire.

Reinforcement for piles, column footings, columns and walls shall be tied at every intersection, or as directed or shown on drawings, with similar binding wire.

Reinforcement in beams shall be tied at alternate intersections in a diamond pattern, unless circumstances demand every intersection.

Great care must be taken to retain the reinforcement in its correct position during the entire period of concreting. Blocks of fine concrete, size approximately 40 × 40mm, or plastic spacers shall be provided on the formwork to soffits of beams to ensure that the rods are retained in position and that the concrete covering to the main reinforcing rods is provided. The blocks shall be of the thickness required and shall be placed under the main reinforcing rods at approximately 600mm centres.

Reinforcement in the top of slabs and the like shall be retained in position by means of cradles (stools), formed of steel reinforcing rod as follows:

R10 for height range 100 – 300mm and maximum width of 300mm.

R12 for height range 300 – 500mm and maximum width of 450mm.

Recommended spacing of supports for horizontal bars in slabs:

No further than 600mm apart (cradles ±1000mm c/c in both directions) for bar diameters up to 12mm.

No further than 1000mm apart (cradles ±1 500mm c/c in both directions) for bar diameters of 16mm and over.

Stools are to be placed on the bottom layer of reinforcement, securely retained in position and with correct concrete cover as specified. Cradles are to be securely wired to the slab reinforcement with binding wire. Beam rods in different layers shall be separated by means of steel spacer bars of suitable diameters and lengths.

Double mats in concrete walls shall be kept in their respective positions by means of suitable steel clips as follows:

Recommended spacing of supports for vertical bars in walls:

1 000mm centres in both directions for bars up to 12mm diameter.
1 500mm centres in both directions for bars of 16mm diameter and over.

Supports can be spaced more closely by the design Engineer, depending upon the circumstances.

All stirrups shall be properly fastened to the rods so as to retain their relative positions during the entire period of concreting.

Welding of main rods will not be permitted unless, approval has been given by the Employer's Agent Representative. Spot welding in lieu of wiring may be used to secure rods and stirrups in position.

The concrete covering the main reinforcement, unless otherwise specified, shall not be less than that stated in the following table:

Position	Amount of Cover
Soffit of slabs	The diameter of the rods, but never less than 15mm (mm)
End of beams	40
Soffit of beams	40
Sides of beams	40
Sides of columns	40
Slab (underground cable)	40
Concrete walls	40
Walls (exposed to ground cable)	25
Ground beams	40
Foundations	40
Water retaining structures and	75
within 1km from coast	50

In cases not included in the above table the cover shall not be less than 25mm.

Depending on the condition of exposure and fire resistance requirements, concrete cover can be varied by the design engineer but in no case shall the concrete cover be less than the diameter of rod to be covered.

The cover shall be measured from the face of the concrete to the outside of main reinforcement nearest the face of the concrete, and shall exclude plaster and similar finishing materials.
Three samples of each diameter of reinforcing rods, each approximately 600mm long, must be taken from each consignment of rods of similar diameter for testing.

If any sample is found unsatisfactory, the whole consignment of rods from which the samples were taken will be rejected.

Top reinforcement in cantilever slabs to be kept in position with a first row of stools or chairs 300mm from the beam or support, and thereafter at a maximum of 40 bar diameters under each bar.

The cover blocks, spacers, bars and stools or chairs are to be placed and/or wired in position by the steel fixer.

2.31.2 WELDED STEEL FABRIC REINFORCEMENT:

All welded steel fabric reinforcement shall comply with the requirements of SABS Specification 1024.

The preferred dimensions are as follows:

1	2	3	4	5	6
Fabric Reference Number	Nominal pitch of wires		Nominal diameter of wires		Nominal mass*
	Longitudinal mm	Cross mm	Longitudinal mm	Cross mm	kg/m²
617	200	200	10.0	10.0	6.17
500	200	200	9.0	9.0	5.00
395	200	200	8.0	8.0	3.95
311	200	200	7.1	7.1	3.11
245	200	200	6.3	6.3	2.45
193	200	200	5.6	5.6	1.93
100	200	200	4.0	4.0	1.00
772	100	200	10.0	7.1	7.72
655	100	200	9.0	7.1	6.55
517	100	200	8.0	6.3	5.17
433	100	200	7.1	6.3	4.33
341	100	200	6.3	5.6	3.41
289	100	200	5.6	5.6	2.89

1	2	3	4	5	6
Fabric Reference Number	Nominal pitch of wires		Nominal diameter of wires		Nominal mass*
	Longitudinal mm	Cross mm	Longitudinal mm	Cross mm	kg/m²
278	100	300	6.3	4.0	2.78
226	100	300	5.6	4.0	2.26
133	100	300	4.0	4.0	1.33

*These mass values are based on the wires having mass of 0,00785 kg/mm² per metre of length.

The actual mass of the fabric should not differ from the nominal value by more than 6%.

2.32 DESCRIPTIONS (prices)

Descriptions (prices) for all steel reinforcement to concrete shall be deemed to include cutting and waste, bending, hooked ends, binding at lapping and intersections with annealed wire all as above described, hoisting or lowering and maintaining in position whilst the concrete is being deposited and cover blocks and spacers in accordance with the relevant SABS Codes of Practice.

Descriptions (prices) of standard fabric reinforcement as included in Table 1 of SABS Specification 1024 shall be deemed to include 300mm wide laps.

The mass of binding wire is not included in the mass of the reinforcement and the cost thereof shall be deemed to be included in the prices for the reinforcement.

PC 2 MEASUREMENT AND PAYMENT

Item **Unit**

PC 2.1 Mass Concrete cast in panels on waterproofing and to be level ..... cubic metre (m^3)

The unit of measurement shall be the cubic metre of mass concrete for strip footings, column footings, surface beds cast in panels on waterproofing and slabs to be level.

The tendered rates shall include full compensation for the design of concrete mixes and all testing of concrete and materials other than compressive strength testing of concrete samples from concrete being placed in the works (the Contractor shall only be entitled to payment for those samples and compressive strength tests called for by the Engineer and which pass the test requirements), handling and depositing (by hoisting or lowering) concrete in the forms, working and packing concrete around reinforcement, all "construction joints" other than "designated joints" as defined in SABS Specification 1200G which are given separately, shaping tops of components as required and striking off and curing.

Item **Unit**

PC 2.2 Mass Concrete cast in panels on waterproofing and slabs at a fall ..... cubic metre (m^3)

The unit of measurement shall be the cubic metre of mass concrete for surface beds cast in panels on waterproofing and slabs all at a fall.

The tendered rates shall include full compensation for the design of concrete mixes and all testing of concrete and materials other than compressive strength testing of concrete samples from concrete being placed in the works (the Contractor shall only be entitled to payment for those samples and compressive strength tests called for by the Engineer and which pass the test requirements), handling and depositing (by hoisting or lowering) concrete in the forms, working and packing concrete around reinforcement, all "construction joints" other than "designated joints" as defined in SABS Specification 1200G which are given separately, shaping tops of components as required and striking off and curing.

Item **Unit**

PC 2.3 Reinforced Concrete ..... cubic metre (m^3)

The unit of measurement shall be the cubic metre of reinforced concrete cast in panels on waterproofing.

The tendered rates shall include full compensation for the design of concrete mixes and all testing of concrete and materials other than compressive strength testing of concrete samples from concrete being placed in the works (the Contractor shall only be entitled to payment for those samples and compressive strength tests called for by the Engineer and which pass the test requirements), handling and depositing (by hoisting or lowering) concrete in the forms, working and packing concrete around reinforcement, all "construction joints" other than "designated joints" as defined in SABS Specification 1200G which are given separately, shaping tops of components as required and striking off and curing.

Item **Unit**

PC 2.4 Wooden float top of concrete to be at a slope ..... square metre (m^2)

The unit of measurement shall be the square meter of concrete slabs of the buildings to be wooden floated to be at a slope as directed in the drawings or by the Engineer.

The tendered rates shall include full compensation to wooden float top of concrete to be level, hardwearing, smooth surface in accordance with SABS 0100 Code of Practice.

Item **Unit**

PC 2.5 Steel float top of concrete to be level ..... square metre (m^2)

The unit of measurement shall be the square meter of concrete floors of the buildings to be steel floated to be level as directed in the drawings or by the Engineer.

The tendered rates shall include full compensation to steel float top of concrete to be level, hardwearing, smooth surface in accordance with SABS 0100 Code of Practice.

Item **Unit**

PC 2.6 Expansion joints with 10mm polyurethane sealer between vertical concrete or brick surfaces and column plinths ..... metre (m)

The unit of measurement shall be the metre of 10mm thick and not exceeding 300mm high polyurethane sealer between vertical concrete or brick surfaces as shown on the drawings or directed by the Engineer.

The tendered rates shall include full compensation for the labour and material to manufacture, put in place, and secure in position all expansion joints during the casting of concrete slabs.

Item **Unit**

PC 2.7 Steel reinforcement ..... kilogram (kg)

The unit of measurement shall be the kilogram of steel bar reinforcement mesh to structural concrete work.

The tendered rates for all steel reinforcement to concrete shall be deemed to include cutting and waste, bending, hooked ends, binding at lappings and intersections with annealed wire all as above described, hoisting or lowering and maintaining in position whilst the concrete is being deposited and cover blocks and spacers in accordance with the relevant SABS Codes of Practice. The rate tendered of standard fabric reinforcement as included in Table 1 of SABS Specification 1024 shall be deemed to include 300 mm wide laps. The mass of binding wire is not included in the mass of the reinforcement and the cost thereof shall be deemed to be included in the prices for the reinforcement.

Item **Unit**

PC 2.8 One layer of waterproof sheeting under surface beds ..... …… square metre (m^2)

The unit of measurement shall be the square metre of waterproof sheeting sealed at laps with pressure sensitive tape under surface beds.

The tendered rates for all waterproof sheeting shall include full compensation for all labour and materials, placing of waterproof sheeting below surface beds, cutting and sealing at laps with pressure sensitive tape.

3. MASONRY

Masonry walling (Including brickwork and stone masonry):
Applicable standard: SANS 2001 – Construction Works Part CM1: Masonry Walling.

SANS 2001-CM1 covers requirements for masonry walls, materials, the laying of masonry units in unreinforced and reinforced applications, the building in of door and window frames, holes and chases, the securing of timber roof structures and the fixing of slips.

SCOPE OF MASONRY WORK.

The masonry work shall consist out of the foundation section up to floor level that shall be built with solid burnt clay units in a Stretcher bond where the masonry units to be used shall be locally produced "Clincker Bricks" supplied from Stutt Group in Stutterheim. The building walls shall be built with hollow concrete masonry units in a Stretcher bond, grey of colour and with nominal dimensions.

The foundation floor section of the masonry work shall be face work jointing with recessed joints. The building walls shall be plastered and paint.

All the door and window frames shall be protected by prestressed lintels on top of it as shown in the drawings.

3.1 MATERIALS

3.1.1 LIME

Lime shall be hydrated bedding mortar lime complying with the requirements of SABS Specification 523.

3.1.2 CEMENT

Cement shall be Portland cement complying with the requirements of SABS Specification 471 or PC15 complying with SABS Specification 831.

Samples of cement from any one, or from every consignment, may be required by the Representative/Agent for test purposes. Cement in any consignment from which a sample may have been taken for testing shall not be used until it has been approved. Allowance must be made for possible delay in that tests may take 10 days to carry out.

Bags of cement shall be stacked in a waterproof, solidly constructed shed with a central door and a floor rendered damp-proof with a tarpaulin. The bags of cement shall be closely stacked (but not against walls) in order to reduce air circulation in such a manner that the cement is used in the order in which it was received, i.e. first in first out.

Unless otherwise specified in the tender documents the use of ordinary Portland cement blended with ground granulated blast furnace slag complying with SABS Specification 1491, or ordinary Portland Cement blended with Pulverised Fly Ash complying with SABS Specification 1466 will be allowed in certain instances as an alternative, after acceptance of tender, but only with the approval of and at the sole discretion of the Department. If not so specified in the tender documents the Contractor must demonstrate a saving in favour of the Department together with his alternative tender. The saving offered will be adjudicated by the Engineer/Quantity Surveyor for the service and acceptance of the alternative will be in accordance with the reasonableness thereof.

3.1.3 SAND

Sand shall comply with the requirements of SABS Specification 1090, unless specialist advice is obtained. A sample of 25kg must be delivered to the Employer's Agent Representative for testing purposes.

3.1.4 WATER

The water used shall be fit for drinking.

3.1.5 BURNT CLAY BRICKS

a) Burnt clay bricks shall comply with the requirements of SABS Specification 227, and shall be equal in all respects to the selected samples with nominal dimensions of 222 × 103 × 76 mm.

b) Clay bricks for foundations shall be as described in (a) above, but extra hard burnt and with uniformity of colour and texture. The foundation section shall be built with “Clincker Bricks” approved by the Employer’s Agent Representative.

c) Where bricks with holes are used, the holes in such bricks must only be filled in solid with mortar where specifically specified.

d) All bricks that do not carry the SABS Mark, must be tested in a Laboratory approved by the Employer’s Agent Representative for its strength before approval.

e) Masonry units must comply with the minimum required compressive strengths as set out in the table below:

Table 1 — Compressive strength of masonry units

1	2		3	
Description	**Hollow units**		**Solid units**	
	Compressive strength MPa			
	Average[a]	**Individual**	**Average**[a]	**Individual**
Single-storey construction: on-site manufacture[b] off-site manufacture	 3,0 3,0	 2,4 2,4	 4,0 5,0	 3,2 4,0
Double-storey construction	7,0	5,6	10,0	8,0
Cladding and internal walls in concrete-framed housing units	3,0	2,4	5,0	4,0
[a] The average compressive strength is based on a minimum of five samples based on the gross surface area. [b] On-site manufacture is where units do not require to be transported more than 25 m to the place where they will be built into walls.				

3.1.6 FIREBRICKS

Firebricks shall be of well burnt refractory fireclay, resistant to spalling and cracking and of same size as ordinary bricks.

3.1.7 CONCRETE MASONRY UNITS

a) Concrete masonry units shall comply with the requirements of SANS Specification 1215 and shall be hollow on the inside, gray of colour and with nominal dimensions of 390 × 140 × 190mm or 390 × 190 × 190mm.

3.2 WORKS MORTAR TESTS

3.2.1 SAMPLING

The frequency of sampling will be decided by the Employer's Agent Representative. Sufficient mortar shall be taken from each of the points of laying to prepare a composite sample to make a set of three mortar cubes.

3.2.2 MOULDING

Cube moulds with a nominal size of 100mm, that comply with SABS STM 863 must be used.

Fill each mould with mortar in three equal layers and compact each layer by means of a tamper.

The tamper must be made of hard wood with a flat tamping surface with nominal dimensions of 50 × 25mm and shaped to provide a round stem of approximately 25mm diameter and long enough to afford sufficient hard grip. Immerse the tamper in water for 15 minutes before each use.

Each layer of mortar must be compacted by means of 8 evenly spaced pressing strokes of the tamper. After the final layer has been tamped, the excess mortar must be struck of level with the top edges of the moulds.

3.2.3 CURING

Cover the test cubes (in their moulds) with an impervious sheet followed by wet marring sacks or similar material, and store them in a place free from vibration, excessive draughts and direct sunlight.

After 24 hours mark each cube so that it can be identified. After 48 hours the cubes must be removed from their moulds and placed into water in a curing tank at 22° - 25° C for a minimum period of 7 days before they are transferred to the testing laboratory. Ensure that loss of moisture is prevented during transportation and that they are well protected against damage.

3.2.4 TESTING OF CUBES

The testing of cubes will be done by a Laboratory selected by the Contractor and approved by the Employer's Agent Representative in accordance with SABS STM 863.

3.3 CEMENT MORTAR

Cement mortar shall be composed of 6 parts (by volume) of sand and 1 part (by volume) of cement. The material shall be mixed dry until of uniform colour and then water added and the mixture turned over until the ingredients are thoroughly incorporated. Cement mortar shall be produced in such quantities as can be used before commencing to set as no cement mortar that has once commenced to set shall be used in any way.

Care shall be taken in mixing cement mortar to remove from the mixing machine or platform any old mortar that has already set as such mortar may not be incorporated into any new batch.

3.4 COMPO MORTAR

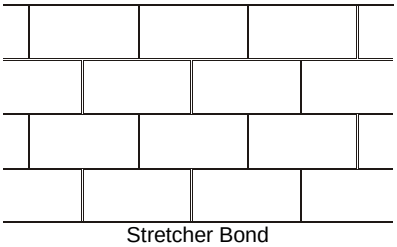
Compo mortar shall be composed of 6 parts (by volume) of sand – depending on the quality of the sand available, 1 part of lime and 1 part of cement (by volume). The lime and sand shall be mixed dry, then wet, before the cement is added, approximately half an hour before using and the adding of the necessary additional water as required.

Compo mortar shall be produced in such quantities as can be used before commencing to set, as no compo mortar that has once commenced to set shall be used in any way.

In all cases the mortar should achieve the minimum required strength (in MPa) for the classes of mortar as set out in the National Building Regulations.

3.5 BRICKWORK

Brickwork, wherever practicable, shall be built in Stretcher bond. No false headers shall be used and none but whole bricks employed, except where legitimately required to form bond.



Stretcher Bond

Brickwork shall be built level and plumb with mortar as specified.

The bricks shall be laid on a solid bed of mortar and all joints thoroughly grouted up solid throughout the whole width of each course.

The brickwork shall be carried up in a uniform manner, no one portion being raised more than 1,2m above another at any one time.

Clay bricks shall be well saturated with water, in the stack or dump, approximately 2 hours before being used. The tops of walls left unfinished shall be wetted before work recommences.

NB: Cement or concrete bricks shall not be wetted.

All rough and fair cutting, cutting of splays, skewbacks, chamfers, etc. shall be properly formed.

Form or leave all necessary openings for pipes etc. and make good after pipes etc. are fixed in position.

3.6 BRICKWORK IN CEMENT MORTAR

a) All brickwork below damp course level, all isolated piers three bricks wide and under, half brick walls and chimney stacks above ceiling level, shall be built in cement mortar as described in 3 above.

b) Brick arches and brick lintels shall be built in cement mortar as described in 3 above in the proportion of 3:1.

3.7 MORTAR JOINTS

Mortar joints to brickwork generally shall be 10mm in thickness with level bedding joints and vertical perpends.

The joints in brickwork receiving plaster, tiling or similar finishes shall be raked out whilst the mortar is soft to form key for the plaster or mortar backing. The depth of the raking out will depend on the condition of the bricks; the rougher the bricks on face the shallower the raking out and the smoother the bricks the deeper the raking out.

The joints in brickwork shall be flushed off where walls are to be bagged, in readiness for the bagging.

3.8 GROUT IN JOINTS IN BRICK FOUNDATION WALLS

All joints in brick foundation walls shall be grouted in solid with 3:1 liquid cement mortar to obviate any crevices for ant (termite) tracks.

3.9 BRICKWORK IN THICKNESSES

Walls built in two or three half brick thicknesses shall only be built where bonded brickwork proves impractical or where required due to prescribed bond of faced brickwork, all tied together with metal ties in accordance with SABS Specification 28, of the Butterfly or Modified PWD Types, of sufficient length

to allow not less than 75mm of each end to be built into the brickwork. Ties shall be evenly spaced at not more than 1m apart to every third course and staggered.

3.10 BRICKWORK IN LININGS

Brickwork linings to concrete shall be tied thereto with 4mm diameter galvanised crimped wire ties bent at ends and of necessary length to allow 75mm to be cast into concrete and 75mm of the other end to be built into brickwork and evenly spaced at no more than 1m apart to every third course and staggered.

3.11 HALF BRICK THICK WALLS

Half brick thick walls shall be built in cement mortar as described in 4.3 above and reinforced with 75mm wide brick reinforcement as described in 4.14 below, 1 row to every 8 course in height, and built 100mm into main connecting walls. The reinforcement shall be lapped 150mm at end joints, where these are necessary, and 75mm at angles.

3.12 CAVITY WALLS

Cavity walls shall be built with two half brick thicknesses of brickwork in stretcher bond with 50mm cavity between and the two thicknesses tied together with 200mm long metal wall ties evenly spaced at not less than the rate of 9 ties per m² of face area. The ties shall comply with the requirements of SABS Specification 28 and be of the Butterfly or Modified PWD Type only.

The brickwork shall be built level and plumb with mortar as specified.

The cavities shall be carried up from 1 course of brickwork below damp course level up to two courses below roof plate level. The brickwork above cavities shall be built solid and where 270mm thick shall be cut and well bonded where possible.

The cavities shall be kept free of all rubbish, mortar droppings and projecting mortar.

The top of walls shall be covered with planks or sacking during wet weather to prevent rain from entering the cavities.

From weep holes in outer skin of external cavity walls by leaving the perpendicular joints open, one every 1m apart in the second brick course below the damp-proof course.

The cavities shall not be ventilated.

At door, window and other openings the cavities shall be stopped 110mm back from jambs of openings with the inner thickness of brickwork returned and stopped against the outer thickness and not bonded to same. A 100mm wide strip of damp proof sheeting as described for damp courses in subsection 3.30 below shall be built into the joint formed between the return and the outer thickness. Each damp-proof strip shall be lapped at least 50mm on to the damp-proof course between the two wall thicknesses of sills and between the two wall thicknesses of lintels.

Sills of windows shall be divided into external and internal thicknesses with strips of damp-proof sheeting as above, built in line with the damp-proof sheeting in jambs and extending 100mm beyond the jambs of openings.

The lintels shall be provided with damp-proof sheeting as described under lintels.

Cavities shall be stopped 1 course below and 1 course above and 110mm from sides of openings for air bricks and the like.

3.13 BEAM FILLINGS

Beam filling shall be half brick thick, built up in mortar as used in the walls below, cut in between roof timbers and carried hard up to underside of roof covering and flushed up with mortar.

3.14 REINFORCED BRICK LINTELS

Reinforced brick lintels shall be built with sound machine made bricks in 3:1 cement mortar with all vertical and horizontal joints filled with solid mortar throughout the required number of courses and to a distance of at least 330mm on either side of the clear opening.

The number of courses in lintels over the various size openings shall be as specified in the table hereunder and reinforcing steel wires or rods shall be built into the first horizontal joint over the bottom course to the number specified in the following table:

Clear or daylight span	Number of Courses	Reinforcement
Not exceeding 1m	4	One row of 75mm wide brick reinforcement as described below, for each half brick width of soffit
Over 1m to 1,5m	6	Ditto
Over 1,5m to 2,5m	7	Three 6,3mm diameter mild steel rods for each half brick width of soffit.
Over 2,5m to 3,0m	8	Ditto

Brick reinforcement shall be of hard drawn mild steel comprising two 2,8mm diameter main wires spaced 75mm apart and 2,5mm diameter cross wires spaced at not exceeding 300mm apart, welded to main wires.
The reinforcing wires and rods shall be of length at least equal to the width of the clear opening plus 300mm at each end. The reinforcement shall be evenly spaced in the brick joints with the outer wires or rods having at least 20mm cover from face of brickwork.

Brick lintels in 270mm thick cavity walls shall be built with inner face of outer thickness, for a depth of three courses above soffit, covered with sheeting as for damp course, the full length of lintels, and space between the two thicknesses for the depth of the sheeting filled in solid with 20 MPa concrete. Where cavities continue above lintels, the sheeting shall be taken up and turned on top of first course of brickwork to inner thickness of wall above the concrete filling in lintels. The sheeting is not required in lintels protected from the weather.

The lintels, except where built over pressed steel door frames and the like, shall be supported on temporary turning pieces of suitable and substantial construction left in position for at least 14 days for long spans (1 to 3m).

3.15 PRESTRESSED LINTELS

Prestressed lintels shall be vibrated concrete reinforced with stressed high tensile steel wires, or of burnt clay blocks with similar reinforcing wires embedded in groves in the blocks in 1:1½ cement/sand mortar, or of other approved form of construction.

Concrete in lintels shall attain a crushing strength of at least 34 MPa at 28 days for ordinary and at 7 days for rapid hardening cement.

The reinforcing wires shall be of ductile high tensile steel wire not less than 4mm diameter and of tensile strength of at least 1 350 MPa and shall be stressed to not less than 850 MPa.

The lintels may be in single width to the thickness of wall or may be in two widths, placed side by side, and shall have a depth of not less than 60mm. top surface of lintels shall be suitably roughened, indented or shaped to give a good bond between the lintels and the mortar for the first course of brickwork above.

Lintels shall have bearings of not less than 225mm on walls at each end.

The number of reinforcing wires in lintels for the various wall thicknesses and spans shall be not less than specified in the table hereunder, and brick courses over lintels of the number indicated in the table and for the full length of lintels shall be built in 3:1 cement mortar with all joints filled solid with mortar, viz:

Nominal wall thickness (mm)	Clear daylight span	Number of wires (in total number of lintels used)	Number of brick courses over lintel
90 – 110	Not exceeding 1,8m	2	3
90 – 110	Over 1,8m to 3m	3	4
180 – 230	Not exceeding 1,8m	6	4
180 – 230	Over 1,8m to 3m	6	4
270	Not exceeding 1,8m	7	4
270	Over 1,8m to 3m	7	5
340	As described for 1 of 230mm plus 1 of 110mm, or 3 of 110mm		

Lintels in 270mm thick cavity walls shall be in two widths with joint between the two arranged directly over the window or frame below, and the brickwork above shall be built in two half brick thickness with inner face of the outer thickness covered with sheeting as for damp-course, the full length and depth of lintels, and taken down between the two widths of pre-stressed lintels. The cavity to height of lintel courses shall be filled with 20 MPa concrete, and where cavities continue above the lintel courses the sheeting shall be taken up and turned on top of first course of brickwork to inner thickness of wall above the lintel course. The sheeting is not required in lintels protected from weather.

3.16 BAGGED FINISH TO BRICKWORK

Bagging to walls is to be carried out after the mortar in joints has set. The wall surfaces shall be rubbed over with wet rough sacking until all joints and crevices are filled up and an even surface is obtained. Cement grout shall be added if necessary to fill the joints and crevices.

3.17 RAKING OUT FOR AND POINTING FLASHINGS

Brick joints shall be raked out where required for fixing cover flashings and flashings, which shall be pointed in 3:1 cement mortar.

3.18 MASTIC POINTINGS

Where steel door and window frames are specified to be pointed with mastic compound they shall be pointed all round externally with an approved waterproofing compound of such composition that it will not stain surrounding surfaces and that it will adhere tenaciously, remain plastic without sagging or running, be capable of accommodating any normal movement of the joint sealed, and will receive paint without “bleeding”. The pointing material shall be forced into the joints, which shall have been previously prepared to receive same, by means of a pressure gun or by other suitable method, all in accordance with the Manufacturer’s instructions.

3.19 BUILDING IN

Ends of timbers, holdfasts, cramps, gratings, air bricks, dowels, etc. shall be built-in cement mortar.

Door and window frames, lift door frames and the like shall be set up in position for building in and securely strutted to prevent distortion whilst the brickwork, lintels, etc. are being built.

Pressed steel door frames shall be grouted in solid at back with cement mortar as the work proceeds.

Wood slips, fixing bricks, hoop iron roof ties, etc. shall be built in as the work proceeds.

3.20 SECURING ROOFS

Roof trusses shall be fixed at each support to walls with ties of 1,6mm thick galvanised hoop iron, 32mm wide, built 750mm deep into brick work or embedded 300mm deep into concrete or wrapped around bottom layer of reinforcing in a reinforced concrete beam and wrapped over truss and fixed with four galvanised nails, 40mm long.

3.21 CRAMPS TO WOOD FRAMES

Wood frames to doors, windows, etc. shall be set up in position for building in as described and built in as the work proceeds with cramps to jambs of 1,6mm thick galvanised hoop iron, 32mm wide, with ends turned 50mm up against stiles of frames and each twice screwed to frame and built 450mm into wall with end turned up into brickwork joint. Cramps shall be built in approximately 0,3m up from bottom and approximately 0,3m down from head of frames and intermediately at not exceeding 0,85m apart. No frame shall have less than two cramps to each jamb irrespective of height.

Cramps to frames in 270mm thick cavity walls shall be cranked as necessary and built into inner and outer thickness of walls alternatively.

3.22 BEDDING AND POINTING

All door, window and similar frames shall be bedded and pointed in 3:1 cement mortar. All wall and floor plates shall be set true and level and bedded in 6:1 cement mortar.

3.23 FACED BRICKWORK

Faced brickwork shall be built fair and pointed with a keyed or recessed joint as specified.

Keyed joint shall mean that the joints are to be pointed with a round jointing tool, well pressed into the joints as the work proceeds.

Recessed joint shall mean that the joints are to be square recessed to a depth of approximately 6mm formed with a rectangular jointing tool well pressed into the joints as the work proceeds.

Facing bricks shall be sorted by the brick manufacturer at his yard or by the Contractor on the site to ensure that proper mixing of the bricks within the colour range of each type of facing being used is obtained. Sudden changes in the general colour of face work in any 1 type of facing brick will not be acceptable.

3.24 FIBRE CEMENT SILLS

Sills shall where in any way possible be in single lengths, cut between reveals, fitted with fixing lugs and solidly bedded in 3:1 cement mortar with a slight projection beyond the finished wall face below.

Internal sills shall be level. External sills shall be set sloping on cut brickwork.

3.25 INSTALLATION OF ELECTRICAL SERVICE

The installation of electrical service, where such service is being provided, will be carried out by a fully qualified electrical sub-contractor, but the Contractor must embed in the concrete, as the work proceeds, all conduits, boxes, etc., which will be fixed in position by the electrician, and must cut all necessary chases and holes in walls for conduits and form recesses in walls for distribution boards, all in the positions directed. Alternatively, distribution boards may be built into walls as the work proceeds, providing prior approval is obtained from the Employer's Agent Representative.

The Contractor shall afford every facility and shall render reasonable assistance to the electricians in carrying out their work and shall make good where necessary, in all trades, after installation has been completed.

Chases, holes and recesses required in walls shall be cut and formed as follows:

- Vertical chase for single conduit;
- Vertical chase for two conduits;
- Vertical chase 150mm wide and 110mm deep for conduits;
- Vertical chase 250mm wide and 110mm deep for conduits;
- Vertical chase 380mm wide and 110mm deep for conduits;

- Vertical chase 560mm wide and 110mm deep for conduits;
- Horizontal chase for single conduit.
- Holkes 25mm diameter, or knocking out bricks and filling space and making good after a pipe has been fixed through a wall.

Recesses for distribution boards

Width mm	Height mm	Depth mm
330	330	110
455	330	110
635	330	110
610	660	110
610	910	110

3.26 CABLE SLEEVES

Provide under buildings where required 100mm diameter plastic pipes as sleeves for electric cable taken up to floor level in cable duct or switch cupboard with easy bends. The pipes shall be as specified for drainage including laying and jointing.

3.27 SPECIAL WORKS

The work in connection with the installation of heating, air conditioning, ventilation, refrigeration, automatic sprinklers, telephone systems will be carried out under separate contracts. In order to facilitate this work the Contractor must act on the instructions of the Employer's Agent Representative with regard to special preparations for fittings, leaving holes and openings, forming chases in floors, walls, etc. for pipes, cables, etc. and for building in pipes, sleeves, pipe clips, bolts, etc. as required or directed.

All cutting of holes through finished floors, walls, etc. after the concrete has set, must be avoided as far as possible. The Contractor must give ample notice to the Employer's Agent Representative who will ascertain the exact positions where pipe sleeves, pipes, pipe clips, etc. are to be fixed.

3.28 PROTECT AND CLEAN DOWN FACE BRICKWORK

All face brickwork, tiling, etc. liable to damage shall be covered up and protected during the progress of the remaining work and any damage done shall be made good to the satisfaction of the Employer's Agent Representative.

All face brickwork, tiling, etc. shall be cleaned down as the work proceeds and shall be covered up with paper, pasted on, or by other approved means where necessary to prevent soiling of the surfaces during the progress of the remaining work. At completion of the works the coverings shall be removed and the surfaces cleaned down to the satisfaction of the Employer's Agent Representative.

Any detergent or other materials used in the cleaning down of face brickwork etc. shall be of such a nature that will not harm adjoining paint and other finishing in any way.

All paving shall be thoroughly cleaned of after laying to remove all traces of mortar and other substances, covered up and protected from damage during the progress of the works and again cleaned off at completion.

3.29 DAMP-PROOF COURSE

The horizontal and vertical damp-proof course shall be of black polyethylene sheeting complying with SABS Specification 952 Type B having embossed surfaces, 0,38mm thick (375 microns) and manufactured in widths of less than 1 000mm.

The damp-proof course shall be the full thickness of walls above foundations, plus the width of floor plates where these occur, and shall be laid without longitudinal joints. At end joints, angles and intermediate junctions the sheeting shall be lapped for 150mm.

Where so required all laps in the damp-proof course shall be sealed over the whole area of laps as recommended by the Manufacturer. Care shall be taken not to tear or otherwise damage the sheeting.

Similar damp-proof course, 120mm wide × 250mm long, shall be laid on sleeper piers under the floor bearers.

Similar damp-proof course, but in unbroken lengths, shall be laid behind all window sills, sealed with an approved bituminous solution to the back of the sills and taken down within the thickness of the wall and under the first full course of external brickwork.

NB: No damp-proof course shall be laid directly below the mortar or other bedding material under window sills.

3.30 DAMP-PROOF MEMBRANE

The damp-proof membrane under surface beds shall, unless otherwise specified, be of green polyethylene sheeting complying with SABS Specification 952 Type C – plain surface – 0,25mm thick (250 microns) and manufactured in widths of 1 000mm and greater, all laid in the widest practical widths to minimise joints, turned up and dressed to load bearing walls and, if applicable lapped with the damp-proof course in the walls. All joints shall be sealed with pressure sensitive tape applied over the leading edge of the joint.

NB: All cutting of plastic membranes shall be carried out using sharp instruments.

PC 3 MEASUREMENT AND PAYMENT

Item	Unit
PC 3.1 Brickwork	square metre (m^2)

The unit of measurement shall be the square metre of face brickwork in cement mortar comprising of 6 parts of sand and 1 part of cement for all foundation walls of the building.

The tendered rates for all burnt clay brickwork shall include full compensation for all labour and materials, the placing of bricks, the cutting of bricks, reinforcing of brick walls, cleaning down and removal of mortar droppings, protection of work against damage and bracing during construction.

Item	Unit
PC 3.2 One layer of 375-micron damp proof course in walls	square metre (m^2)

The unit of measurement shall be the square meter of concrete slabs of the buildings to be wooden floated to be at a slope as directed in the drawings or by the Engineer.

The tendered rates shall include full compensation to wooden float top of concrete to be level, hardwearing, smooth surface in accordance with SABS 0100 Code of Practice.

Item	Unit
PC 3.3 Prestressed fabricated lintels	metre (m)

The unit of measurement shall be the metre of prestressed concrete lintels in lengths not exceeding 3m.

The tendered rates for all prestressed concrete lintels shall include full compensation for all labour and materials, placing of prestressed concrete lintels well fixed at all ends into brick and block walls.

4. CEMENT PLASTER

All cement plasterwork shall comply with the requirements of SANS 2001-EM1 Specification for Construction Works – Cement Plaster.

This part of SANS 2001 covers the application, to masonry and concrete surfaces, of cement plaster which,

a) in its fresh state, is workable, cohesive and has water-retention properties; and
b) in its hardened state, is durable, has sufficient strength to hold paint, withstand local impact and abrasions, is free of unsightly cracking and adheres to substrate.

4.1 CEMENT

Cement, unless otherwise specified, shall comply with the requirements of SANS 50197-1 or SANS 50413-1.

NOTE1 Bags should be clearly marked with the strength grade, cement type and a certification mark, and should provide guidance for plaster as given in table 1.

NOTE 2 Caution should be exercised when class 42,5 R and 52,5 N cements are used in plaster, as the resultant plaster might be brittle.

Bags of cement shall be stacked in a waterproof, solidly constructed shed with a central door and a floor rendered damp-proof with a tarpaulin. The bags of cement shall be closely stacked (but not against walls) in order to reduce air circulation in such a manner that the cement is used in the order in which it was received, i.e. first in first out.

4.2 SAND

Sands shall, unless otherwise specified,

a) comply with the requirements of SANS 1090 for plaster sands, or
b) not contain any organic material (material produced by animal or plant activities) and be such that when 2,5kg of cement is mixed with 12,5kg sand, no more than 2,7 L of water is required to bring the mix to a plastering consistency.

4.3 WATER

Water used shall be fit for drinking.

4.4 PLASTER MIXES

The mix proportions of the cement plaster shall be in accordance with table 1.

Table 1 – Mix proportions for common cements

1	2	3	4
Type	**Common cement**	**Loose sand**	
	kg	L Max.	Number of standard wheelbarrows
External plaster	50	150	2,5
Internal plaster	50	200	3
A standard wheelbarrow for concrete that complies with SANS 795 has a capacity of between 60 L and 70 L			

No admixtures shall be added to the mixes to improve workability or to improve the properties of the finished plaster.

The workability of the plaster can be assessed and improved in the following manner:

a) Place a small quantity of the mix (at plastering consistency) on a non-absorbent surface and form a flattened heap about 100mm high and 200mm in diameter. Place a plasterer's trowel on top of the heap and push the trowel downwards. A mix with adequate workability is one which permits the mix to squeeze out from u8nder the trowel, and allows the trowel to be pushed to within a few millimetres of the underlying surface. An unworkable mix will "lock up" once the trowel has moved a few millimetres and prevent further downward movement of the trowel.

b) The workability, cohesiveness and water retention of a mix may be improved by adding hydrated building lime to the mix.

4.5 MIXING OF PLASTER

Sand shall be securely measured by means of calibrated buckets or wheelbarrows. Cement shall only be measured by mass.

Cement plaster shall be mixed on a surface free on contaminants. Before the addition of any water, the dry ingredients shall be mixed until a uniform colour is achieved, thus ensuring a uniform distribution of the ingredients. Material that is not applied to walls within 2 h of mixing, shall be discarded.

4.6 SURFACE PREPARATION

The surface to which plaster is applied shall be free from oil, dirt and other substances that might affect the bond with the plaster.

Before the application of plaster, the substrate surface shall be tested for suction by spraying a small section of the wall with a fine spray. Should droplets of water run down the surface, a proprietary boding agent, applied to the substrate in accordance with the manufacturer's instructions or a spatter dash layer as described below shall be used to provide a key for the plaster. Should the substrate exhibit excessive suction, the whole wall shall be dampened and allowed to surface dry before the plaster is applied.

Substrates shall be checked for surface roughness. If smooth, the surface shall be either roughened or covered with a spatter dash layer that comprises of one-part cement to one and a half parts of coarse sand, with enough water to provide a sluggish pourable consistency. The application of the spatter dash shall result in the entire substrate having a rough texture with nodules approximately 5mm high and no further than 50mm apart. The spatter dash shall be kept moist for at least 3 days after being applied to a substrate.

The substrate surface shall be checked for planeness before the application of the plaster. Where the substrate surface deviates by more than10mm from a straight edge, the high spots shall either be removed by means of hacking or cutting, or the low areas shall be filled by the application of an undercoat plaster so that the plaster thickness can be achieved.

4.7 PLASTERING

Before any plastering commences, all chases shall be completed and all electrical and plumbing conduits, boxes, etc. shall be fixed in position.

Plaster coats shall be applied in such a manner that the thickness achieved throughout the plastered areas are within the following limits, provided, however, that the total thickness is not in excess of 22mm on masonry substrates, and 16mm on concrete substrates:

a)	**Multicoat plaster:**	
	First undercoat:	8mm to 16mm
	Second undercoat (if any)	6mm to 10mm
	Finishing coat:	5mm to 8mm
b)	**Single-coat plaster:**	10mm to 16mm

a) Multicoat plaster:

Plaster shall not be applied to walls when extreme moisture and temperature conditions might affect the finished work (Plaster is particularly vulnerable to drying winds).

Plastering shall be executed in one operation. Joints in plasterwork may only be provided at intersections between surfaces or at changes in direction. Plaster shall be firmly trowelled onto walls.

Plaster shall be returned into reveals and soffits of openings and all corners shall be true and straight with salient corners slightly rounded.

Plaster shall not be allowed to dry out too quickly and shall be damped by means of a light spray for a period of not less than 3 days after being applied to the substrate. Successive coats of plaster shall only be applied after the substrate coat has hardened sufficiently to bear a new layer or to enable a new layer to adhere to it and limit drying shrinkage crazing and cracking.

Plaster shall be discontinuous across the line of the damp-proof course, a butt joint, a movement joint or at the interface between masonry and concrete elements. The plaster shall be cut back to the substrate with a steel trowel to form a V-joint. The V-joint formed at the intersection of masonry walls with precast concrete flooring soffits shall be filled with an appropriate, elasto-plastomeric sealant.

Joints formed in the walling shall be carried though the plaster. Such joints shall be formed by cutting the plaster approximately 30 minutes after it has been applied. The material within the joints shall be removed to permit the sealing of the joints with an appropriate silicone, polyurethane or polysulphide sealant.

PC 4 MEASUREMENT AND PAYMENT

Item	**Unit**
PC 4.1 15mm thick cement plaster on internal walls …..……	square metre (m²)

The unit of measurement shall be the square metre of 15mm thick cement plaster (3:1) finished with a steel trowel on internal walls.

The tendered rates shall include full compensation for the design of plaster mixes, materials for the cement plaster, labour for handling (by hoisting or lowering) cement plaster, working and plastering of walls including "construction joints" and curing of plaster.

5. METALWORK

5.1 STEEL

All structural steelwork shall be of mild steel complying with the requirements of SABS Code of Practice 0162 for Structural Steel in General Building Construction.

5.2 PRESERVATION OF STEELWORK

All surfaces of structural steelwork are to be thoroughly cleaned of all rust, scale, oil or grease, all in accordance with SABS Code of Practice 064 and then protected against corrosion as follows:

a) Preparatory work:

Steel to be cleaned down in accordance with SABS Code of Practice 064.

All metal surface defects such as laminations and welding spatter shall be removed by grinding. Sharp edges, rags, burrs, etc. shall be rounded off before cleaning. After fabrication, but before erection, all steel surfaces to be scraped and wired brushed to Grade St 2 of Swedish Specification SIS 05 59 00-1967. Steelwork so prepared is not to be touched by bare hands – linen gloves are to be worn. Before priming, the surface shall be vacuum cleaned or dry brushed to remove all dust and debris.

b) Priming:

As soon as possible after surface preparation, the first two coats of red lead (SABS Specification 312, Type 2, Grade 1) or zinc phospe (SABS Specification 1319) primer is to be applied. Each coat is to have a dry film thickness of at least 25 microns for red lead and 30 microns for zinc phospe. A minimum of 24 hours between coats, or as recommended by the Manufacturer. Any damage to the primer during handling or erection is to be prepared by removing any possible rust etc. and patch repaired to make up the original film thickness. All traces of soluble salts and corrosive airborne contaminants shall be thoroughly removed with potable water and allowed to dry prior to finishing.

c) Finishing:

After erection, apply two coats of alkyd structural steel paint complying with SABS Specification 684, Type B, in accordance with the Manufacturer's recommendations. Each coat is to have a minimum dry film thickness of 30 microns.

d) General:

No surface preparation or painting is to be performed in adverse weather conditions.

Edges are to be stripe painted before application of paint over the whole surface. Back to back sections and areas rendered inaccessible for painting after erection are to receive the full paint system before erection or fixing.

5.3 MANUFACTURED STEELWORK: GENERAL:

a) Welded joints:

Welding is to be done electrically in the most up to date manner by skilled workmen and cleaned off on completion.

All welding is to be carried out using welding rods of the same chemical composition as the tubes, rods, bars, etc. to be welded. All exposed welds are to be finished off clean and smooth.

Welding to all exposed edges is to be continuous fillet welding unless otherwise described.

b) Protection:

No scaffolding shall be allowed to rest on or be fixed to steel windows, doors, frames, etc. in any way.

5.4 PRESSED STEEL DOOR FRAMES

Pressed steel door frames shall be of welded “one piece” construction, all in accordance with SABS Specification 1129.

STANDARD STEEL DOOR FRAMES

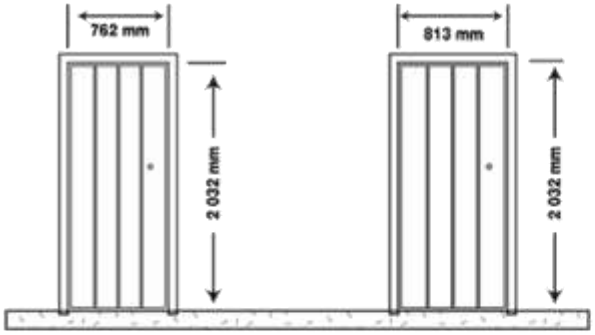
Fanlight Type Frames

Sizes are taken into rebates at head and jambs and to finished floor level. All rebates are up to 44 mm nominal door thickness. Whether inward or outward opening, the “hand” of a single door should be determined by the side on which the hinges are fitted, when viewed from the hinge side.

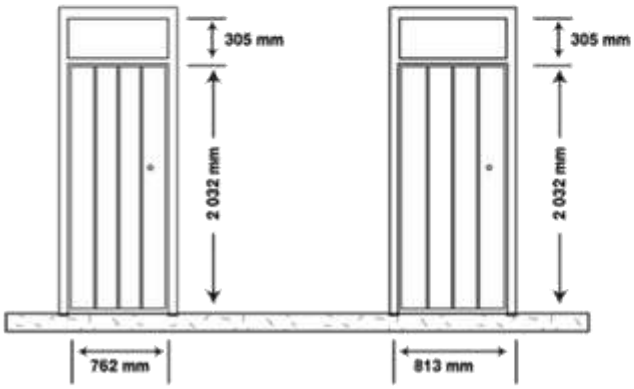
Profiles are as published in SABS Specification N01129 - 1977.

Frames are stocked for two common wall thickness, 115 mm and 230 mm. The 115 mm profile is formed from 1,2 mm steel with single rebate. The 230 mm profile is formed from 1,2 mm steel when double rebated and 1,6 mm when single rebate.

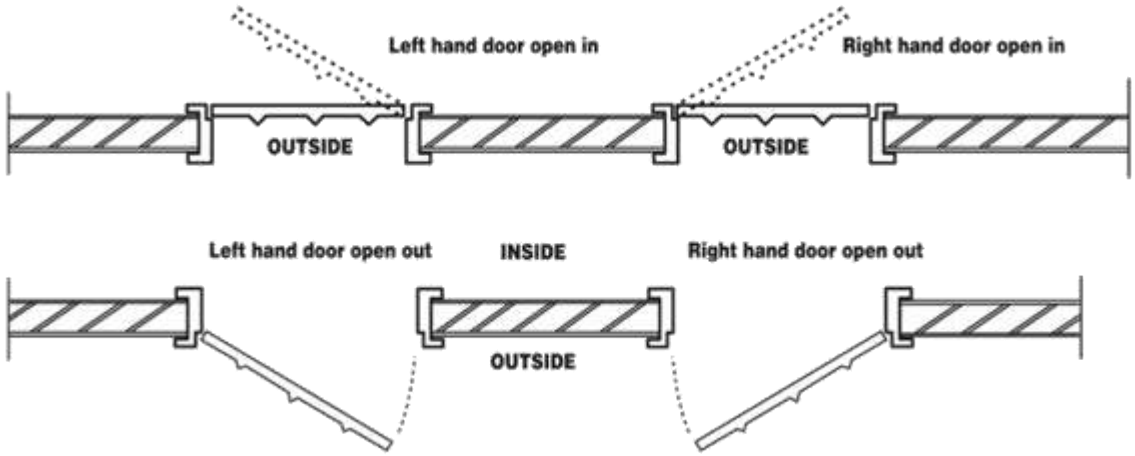
STEEL COMBINATION DOORS AND FRAMES



Widths are into rebates of frames. Heights are from finished floor to head rebate.



Steel panels are braced to give additional rigidity.



5.5 STEEL ROLLER SHUTTERS

Roller shutter doors shall be of approved manufacture, fit flat against surface of opening and consist of curtain, vertical guides and overhead mechanism.

The curtain is to be formed of machine rolled interlocking slats with malleable iron end stocks riveted or spot welded onto alternate ends. The bottom slat is to be fitted with heavy angle iron riveted on and the vertical edges to run in heavy channel guides bolted to wall.

The overhead mechanism is to be enclosed in a canopy formed of sheet steel. The whole is to be primed before leaving the Manufacturer's works.

PUSH UP TYPE: The canopy and curtain shall be manufactured from 0,91 mm thick metal with 50 mm wide slats, for curtain operating on a horizontal steel barrel shaft of ample strength and balanced by a high grade tempered steel adjustable helical spring, mounted on casting with ball bearings and provided

with fusible link, a pair of 100 mm pull handles and a heavy hasp and staple with a 50 mm padlock as Sample 32.

GEAR OPERATED: Gear operated type roller shutter doors shall be manufactured from 1,22 mm thick metal with 75 mm wide slats and operated by means of bevel gears driven by a vertical shaft operated by means of a detachable handle.

5.6 STAINLESS STEEL. ALUMINIUM, BRONZE. ETC.:

5.6.1 GENERAL

The work shall be constructed of the best quality materials (high tensile in the case of extruded aluminium sections), all in accordance with the detail drawings, free from flaws, hammer marks and other defects.

The whole shall be framed together in the strongest possible manner with all joints reinforced as necessary and neatly finished off.

Screws are to be of stainless steel and shall not be visible, except under special circumstances and where used to fix glazing beads.

Glazing beads and other fixing or finishing strips shall be mitred at angles and secured with raised headed screws spaced at not more than 150 mm centres.

Metals, other than stainless steel, used in the fabrication of aluminium work must be kept from direct contact with the aluminium by means of an approved method.

3.2.5 FINISH AND PROTECTION

Surfaces shall be finished as specified and none is to be fixed in position until it has been inspected and approved. Aluminium work, except as otherwise described, is to have a natural anodised finish.

Descriptions (prices) shall be deemed to include coating finished surfaces with a thick coating of lacquer or other approved materials as protection from damage by contact with brick, concrete, plaster, etc.

Finished surfaces shall be cleaned down to a consistent colour and texture equal to a sample approved by the Representative/Agent before any work is commenced.

3.2.6 DESIGN:

No deviation may be made from the general requirements or dimensions, but improvements in construction and design affecting neatness, strength, durability or efficient work may be introduced, but only after approval by the Representative/Agent.

The detail drawings are for guidance only and Tenderers are permitted to offer their own sections, providing they are similar to those detailed. Full particulars and detailed drawings must be submitted with any alternative offer and such drawings and details are to be approved before manufacture is commenced. Every facility must be given for the work to be inspected during manufacture,

5.7 STEEL WINDOWS

a) <u>General requirements:</u>

Stock residential and industrial type steel windows shall comply with the requirements of SABS Specification 727.

Suitable weather bars shall be provided to bottom of opening in and vertically pivot hung ventilators and also to the bottom of all opening out ventilators where they occur above other ventilators and elsewhere as may be required to render the opening sections watertight.

Windows and components, shall before leaving the Manufacturer’s workplace, be cleaned by acid pickling, rinsing and drying all as laid down in SABS Code of Practice 064, to remove all scale, rust,

grease, oil and foreign matter and then be primed with red oxide zinc chromate primer complying with the requirements of SABS Specification 909, applied by dipping or by means of a spray gun.

Windows shall be of “one pietse” construction.

Windows shall be fitted with brass handles, stays, catches and other fittings as later described having a polished finish. The fittings shall be fixed in such a way as to be removable after the windows have been glazed.

After the windows have been built in, but before being glazed, they shall be overhauled, adjusted as necessary and left in good order.

b) Construction:

The various types of windows shall be constructed as follows:

Stock residential type windows:

Stock residential type windows shall be of the types shown on drawings, constructed of standard 25mm mild steel sections with metal not less than 3mm thick.

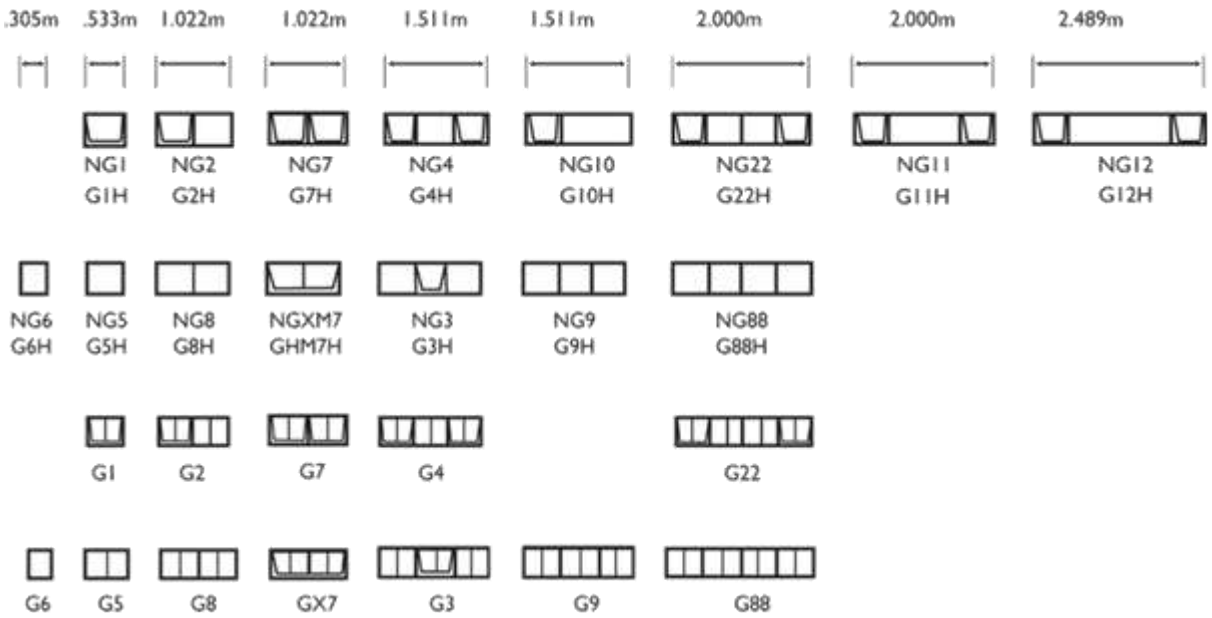
Side hung ventilators:

Each ventilator shall be hung on steel hinges having brass pins complete with casement fastener and sliding stay.

Top hung ventilators:

Each ventilator shall be hung on hinges as above complete with combined fanlight stay and fastener, size 200mm for one pane high ventilators and size 250mm for two pane high ventilators.

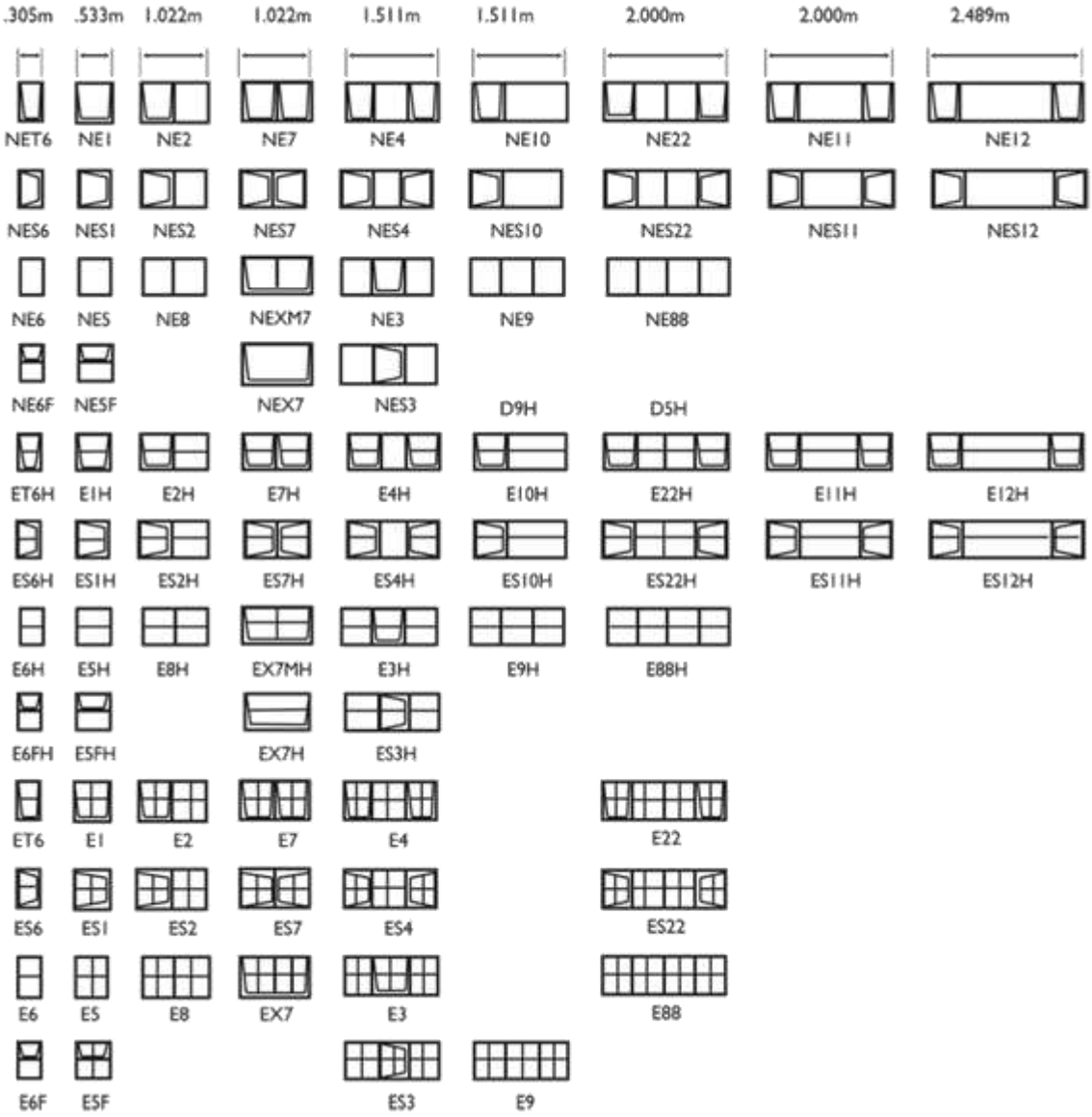
G – TYPE RESIDENTIAL OPEN OUT – HEIGHT 0.359m



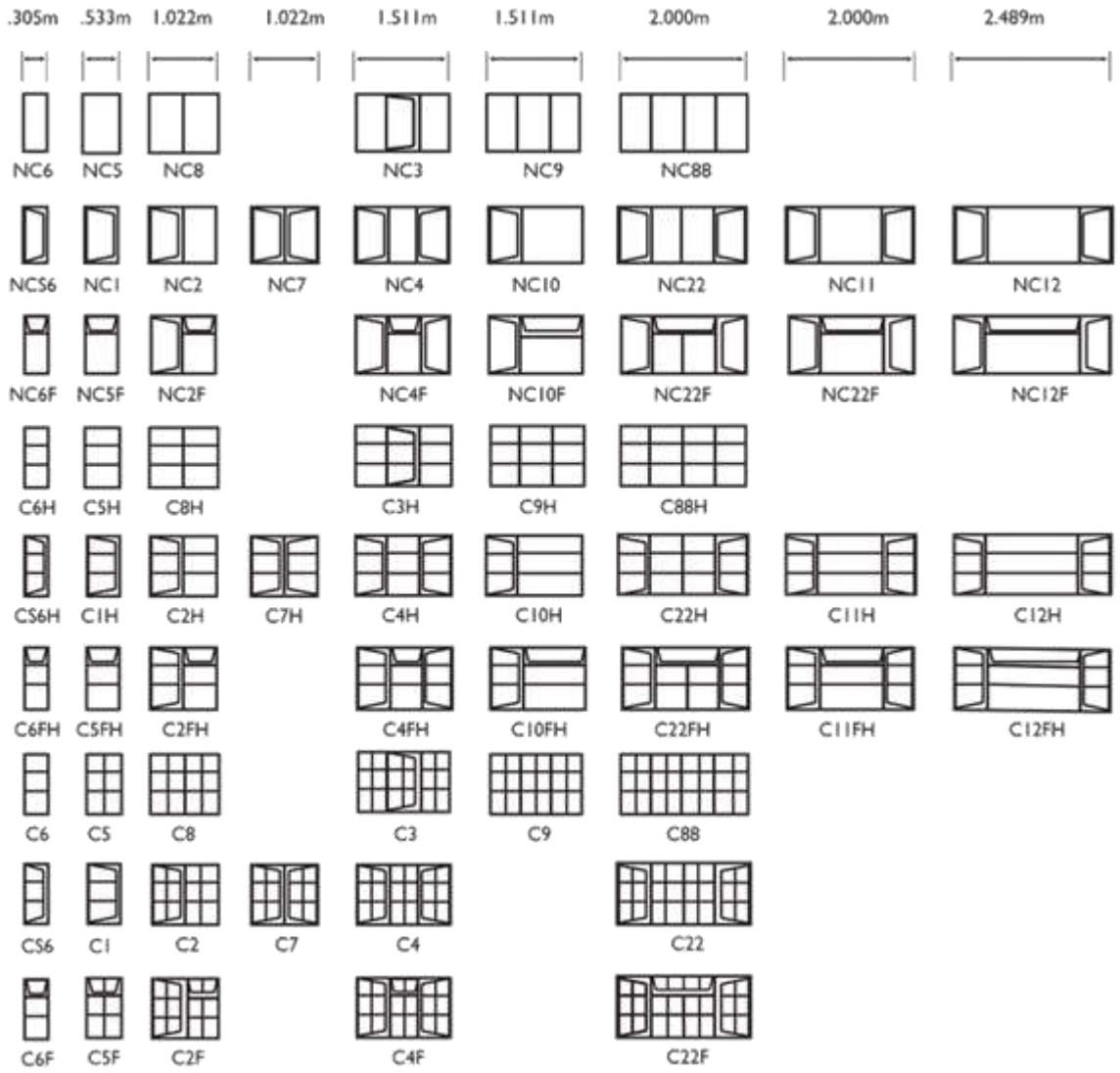
ES TYPE (TOP HUNG)

ES TYPE (SIDE HUNG)

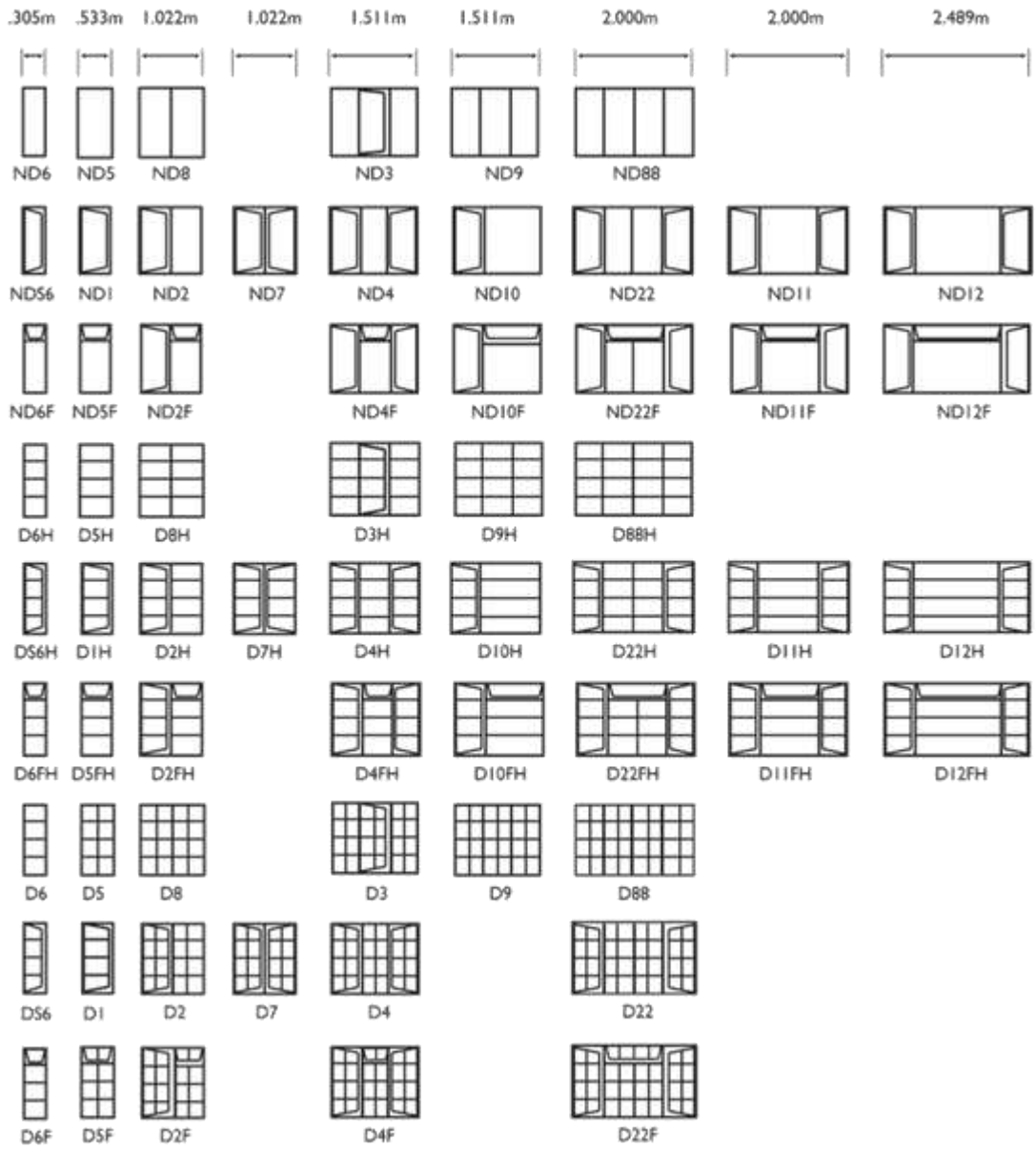
RESIDENTIAL OPEN OUT – HEIGHT 0.654m



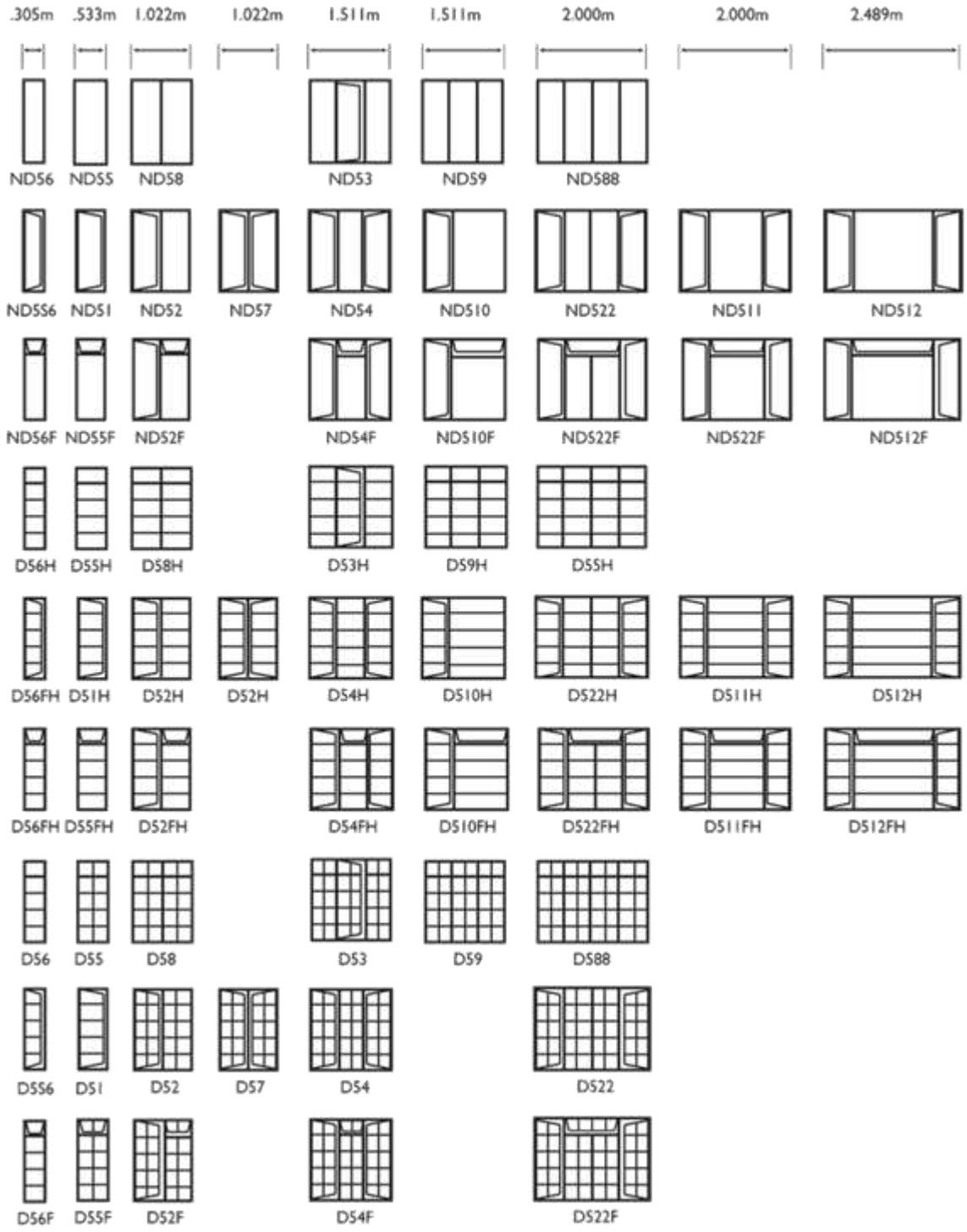
C TYPE RESIDENTIAL OPEN OUT – HEIGHT 0.949m



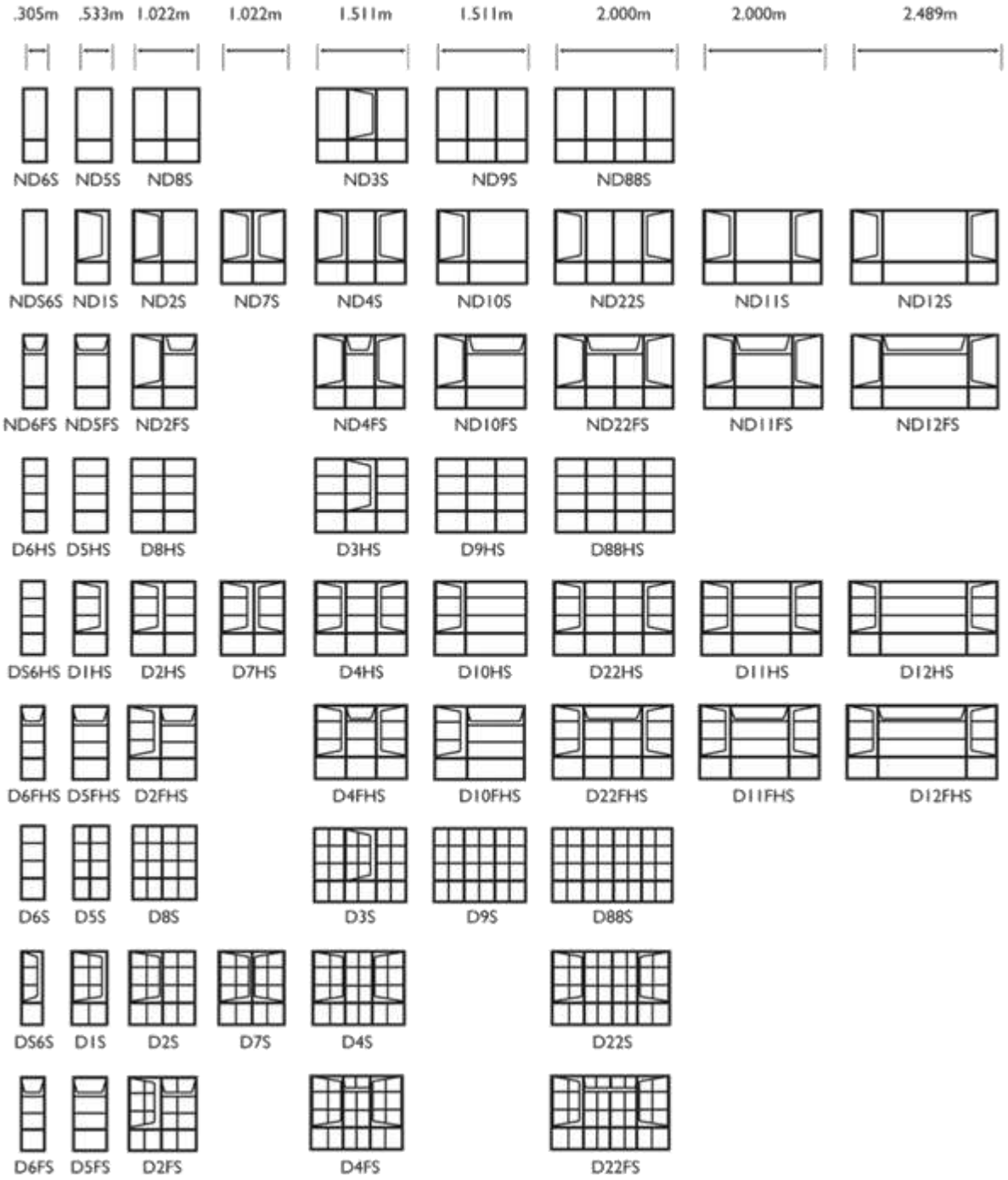
D TYPE RESIDENTIAL OPEN OUT – HEIGHT 1.245m



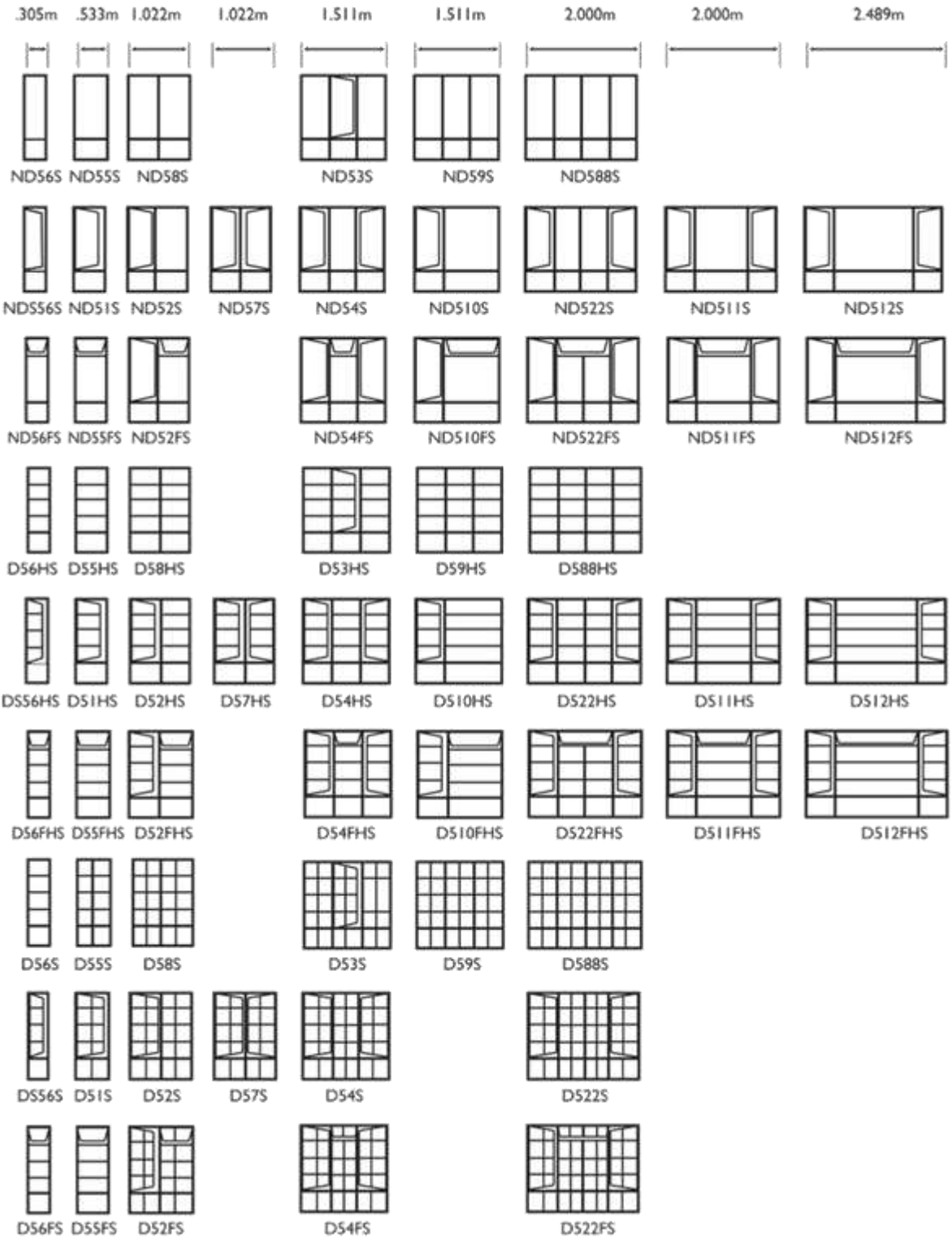
D 50 TYPE RESIDENTIAL OPEN OUT – HEIGHT 1.540m



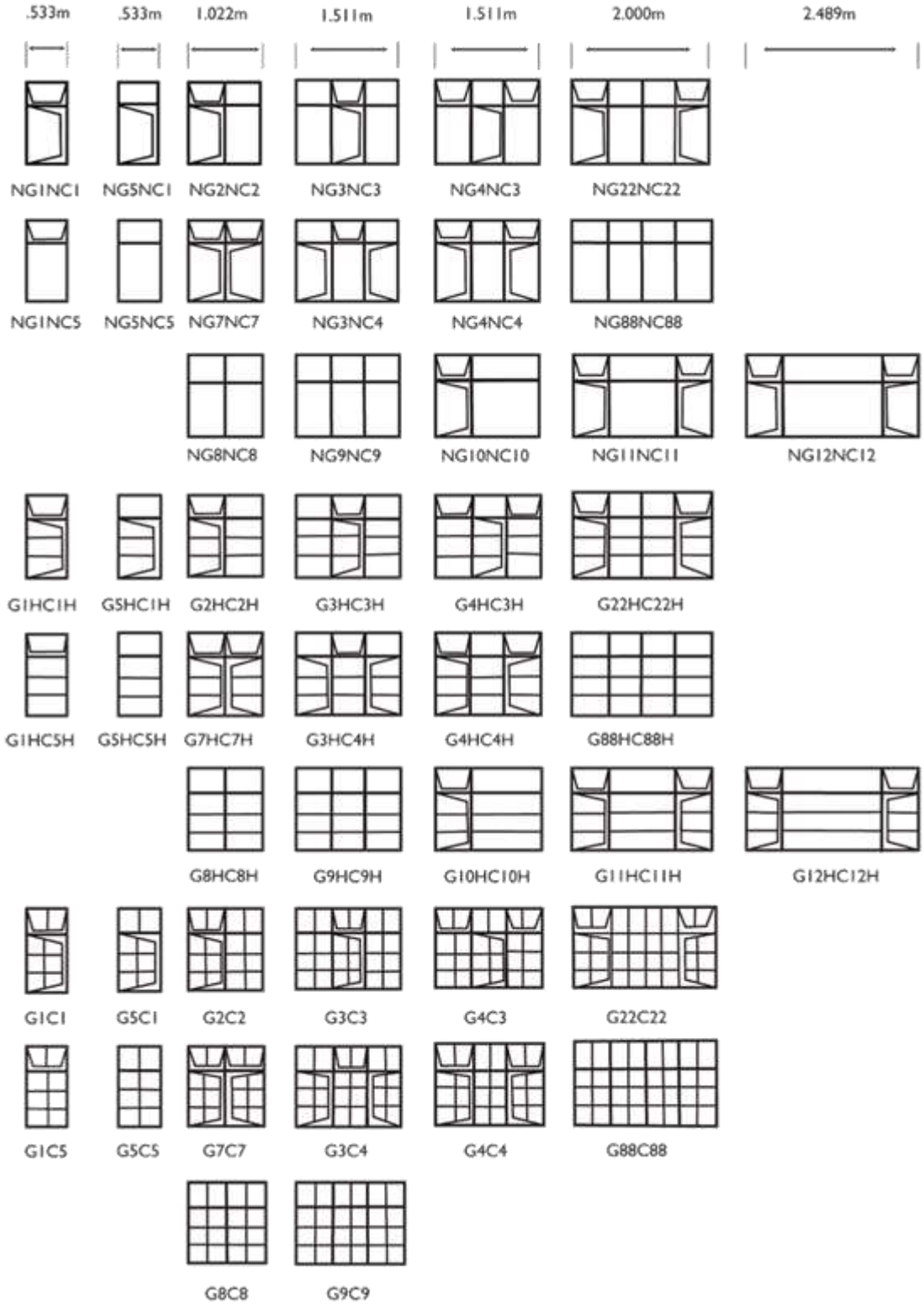
D/S TYPE RESIDENTIAL OPEN OUT – HEIGHT 1.264m



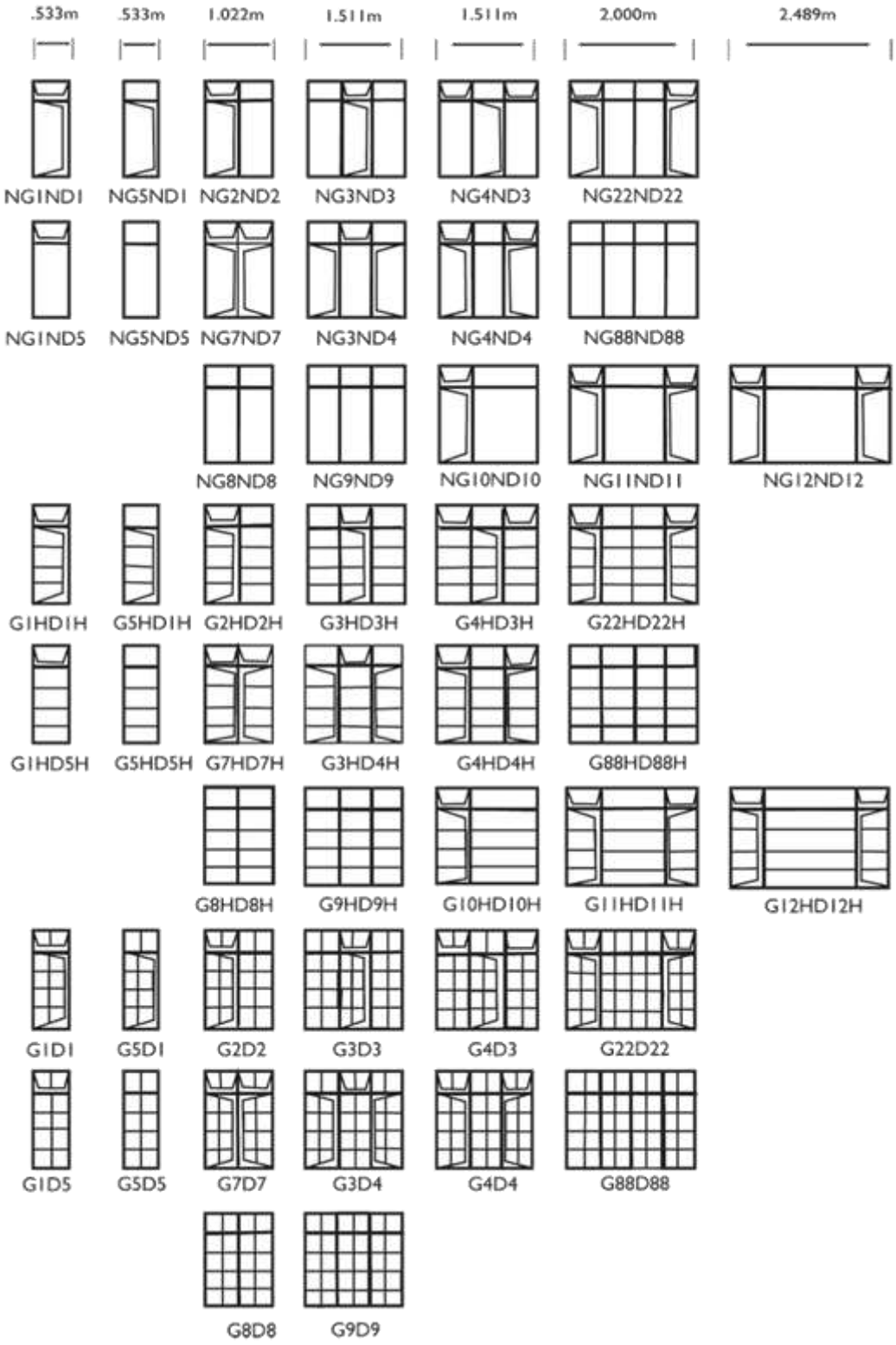
D 50/S TYPE RESIDENTIAL OPEN OUT – HEIGHT 1.559m



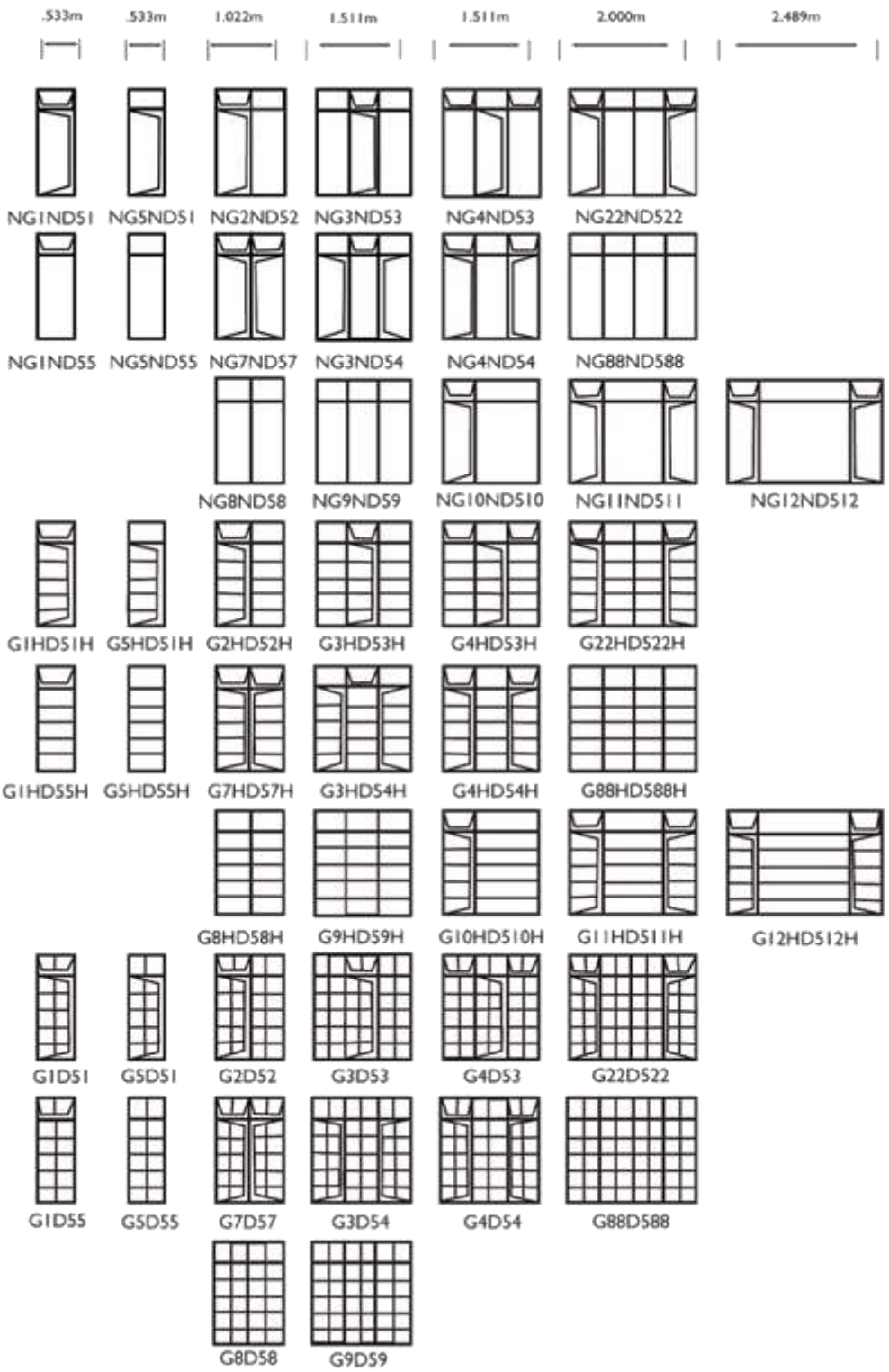
G/C TYPE RESIDENTIAL OPEN OUT – HEIGHT 1.264m



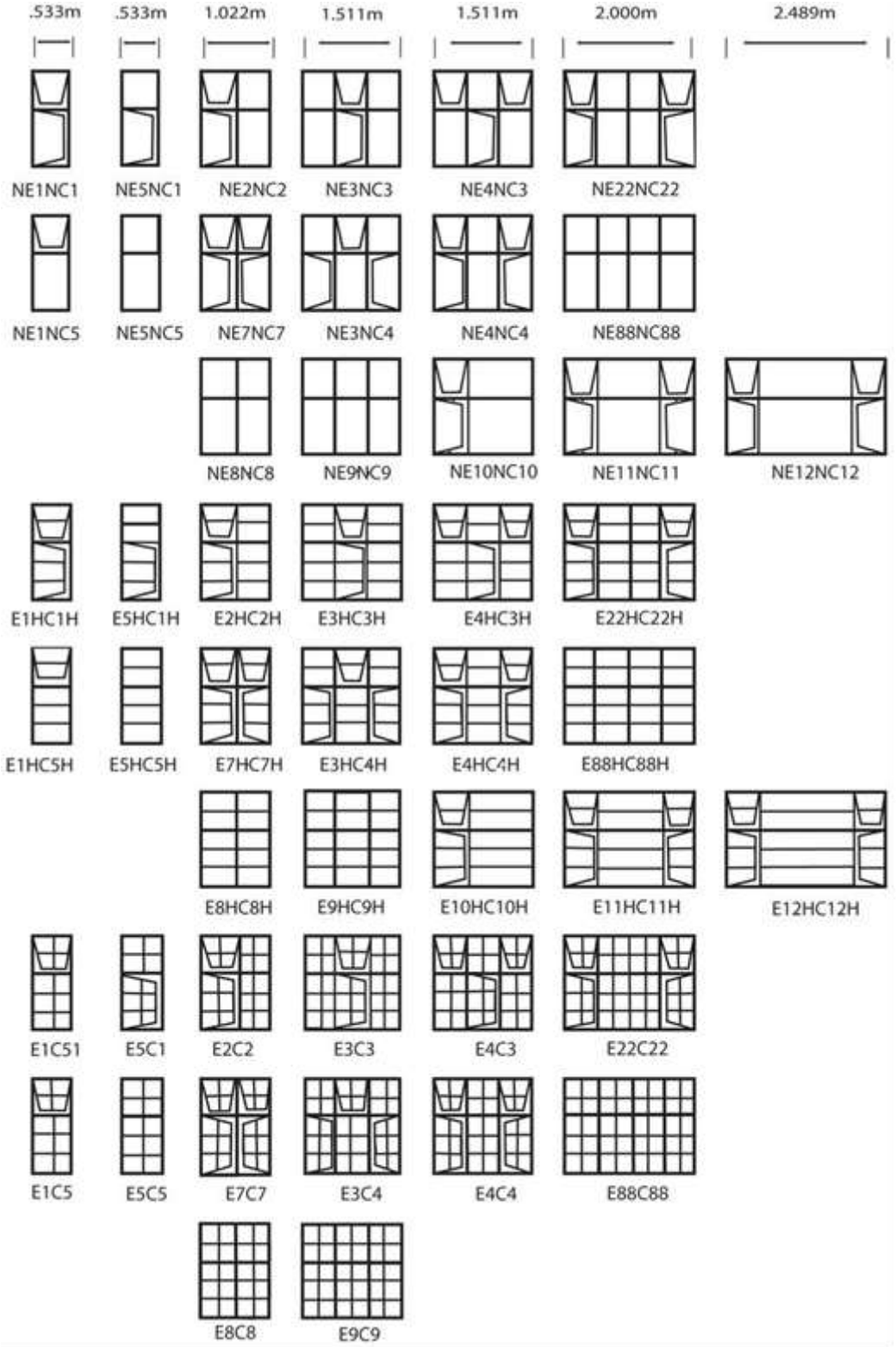
G/D TYPE RESIDENTIAL OPEN OUT – HEIGHT 1.559m



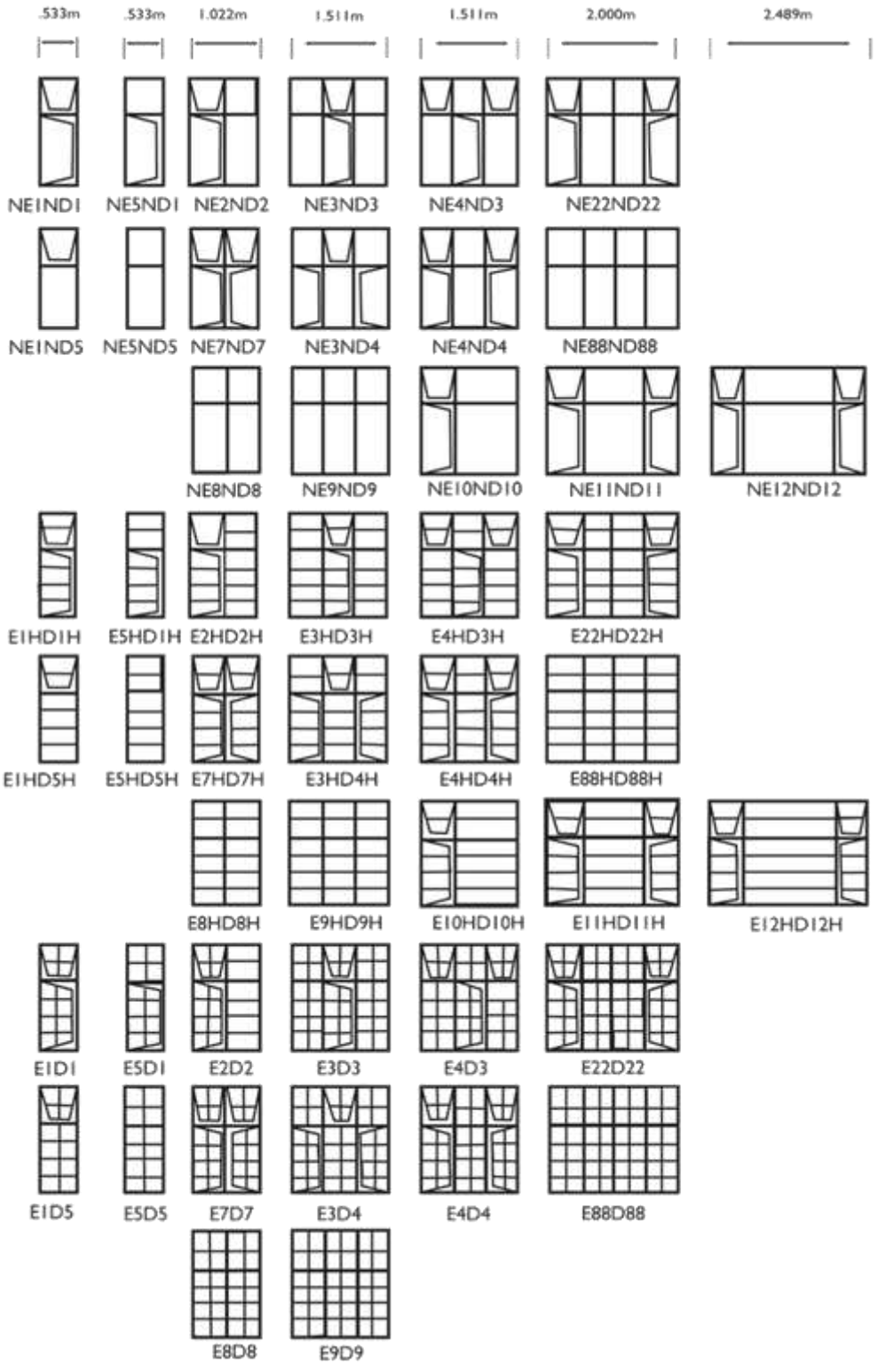
G/D 50 TYPE RESIDENTIAL OPEN OUT – HEIGHT 1,854m



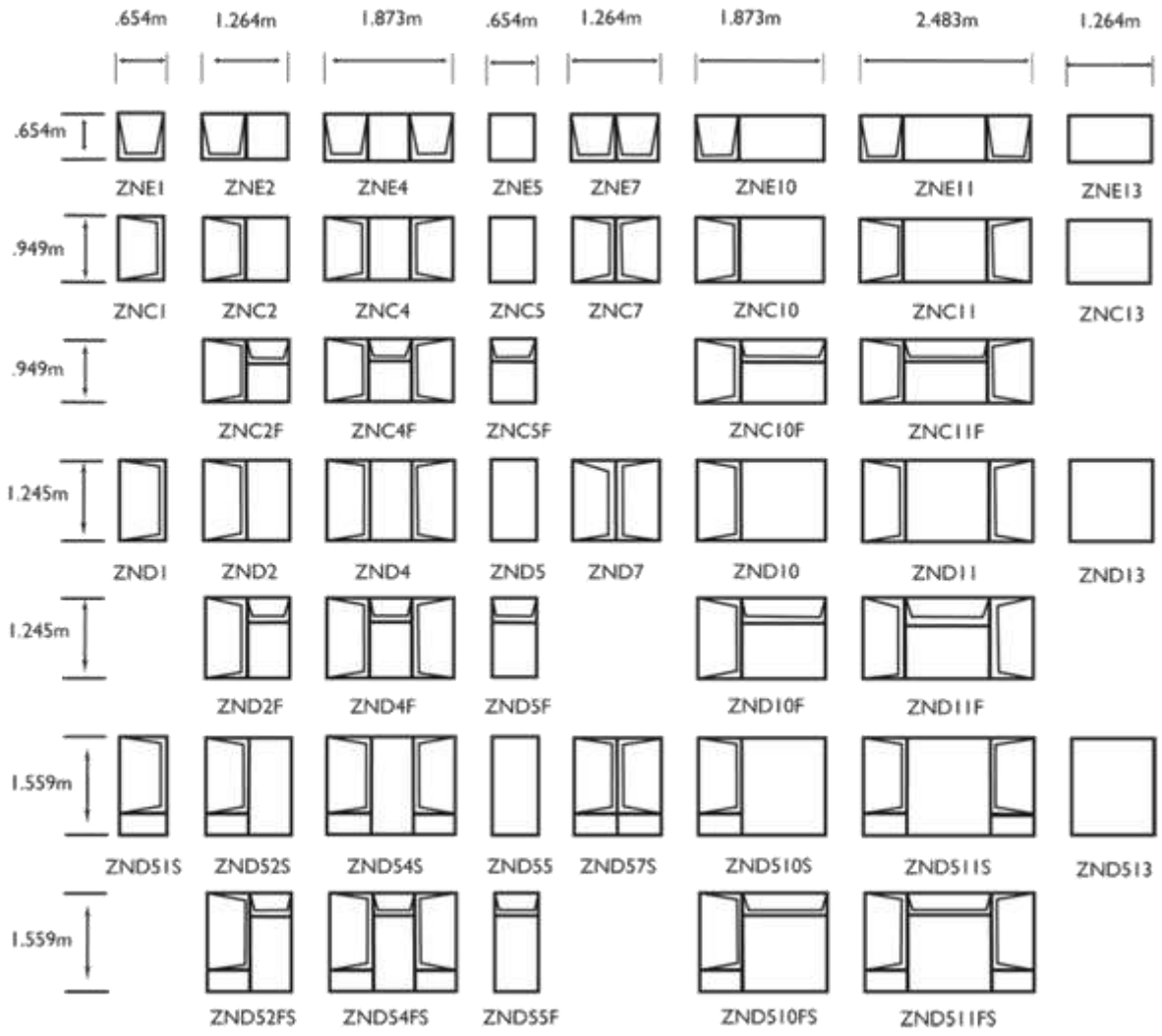
E/C TYPE RESIDENTIAL OPEN OUT – HEIGHT 1.559



E/D TYPE RESIDENTIAL OPEN OUT – HEIGHT 1.854m

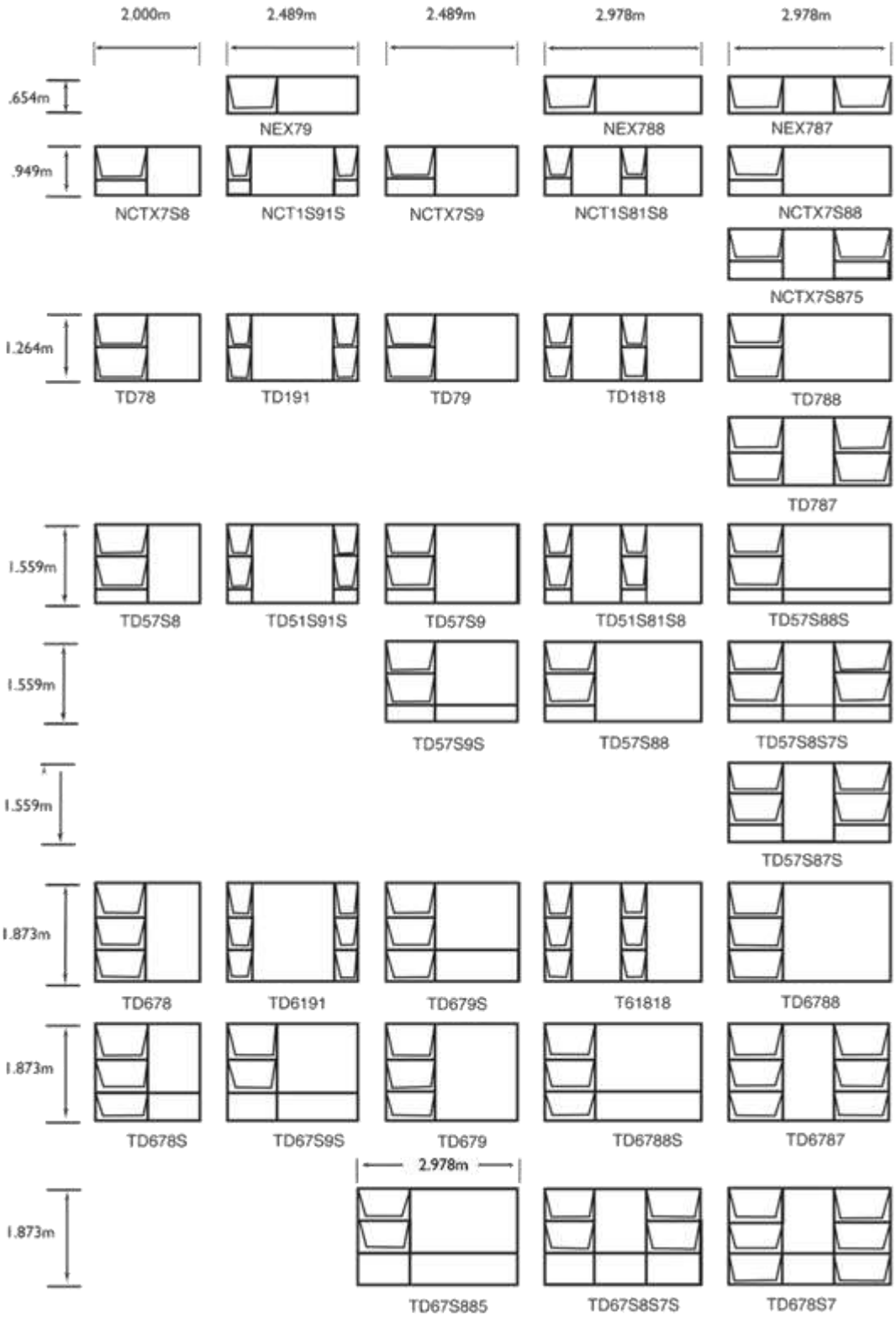


Z TYPRRESIDENTIAL OPEN OUT

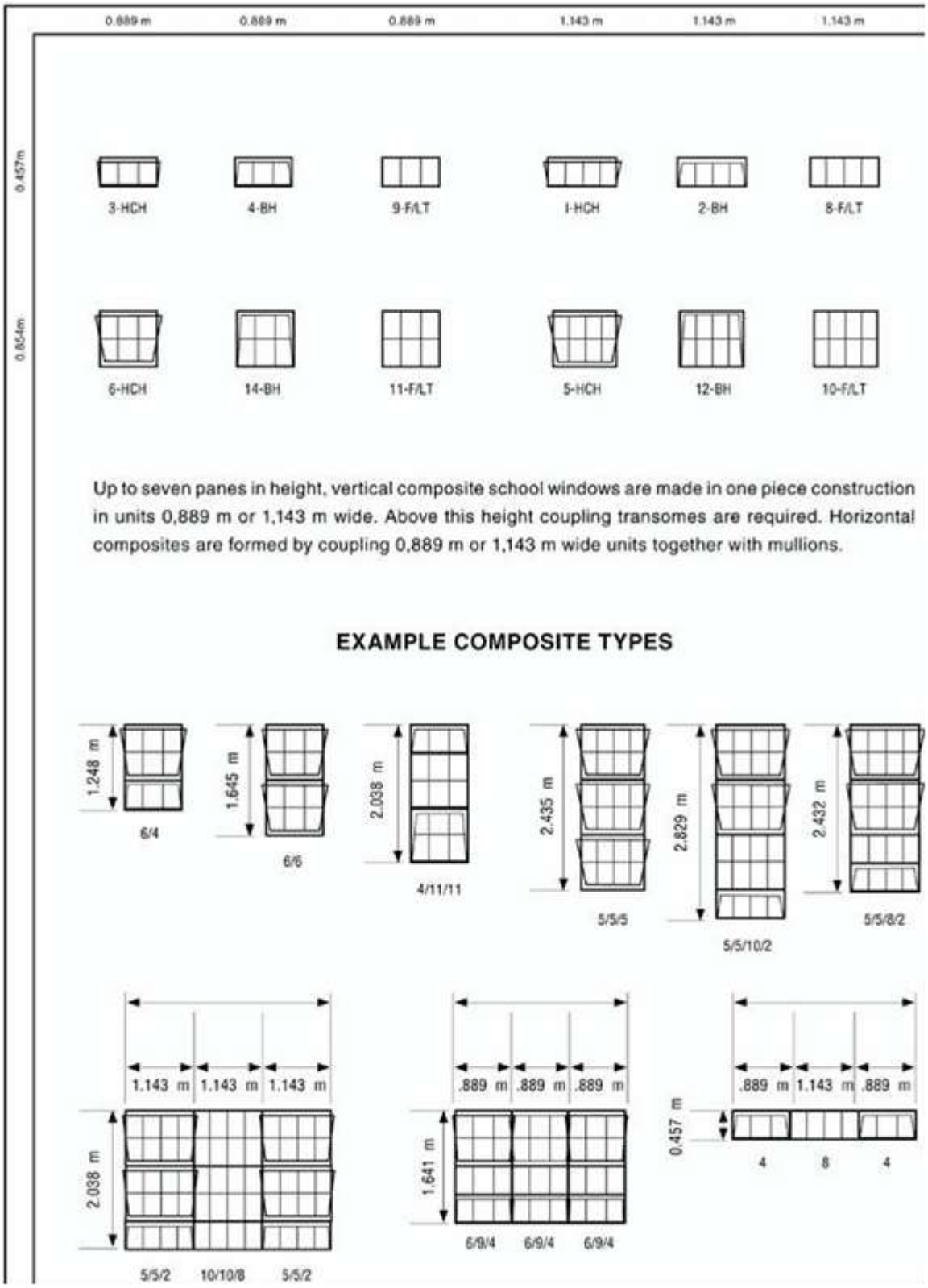


“TD” AWNING TYPE RESIDENTIAL OPEN OUT

"TD" AWNING TYPE RESIDENTIAL OPEN OUT



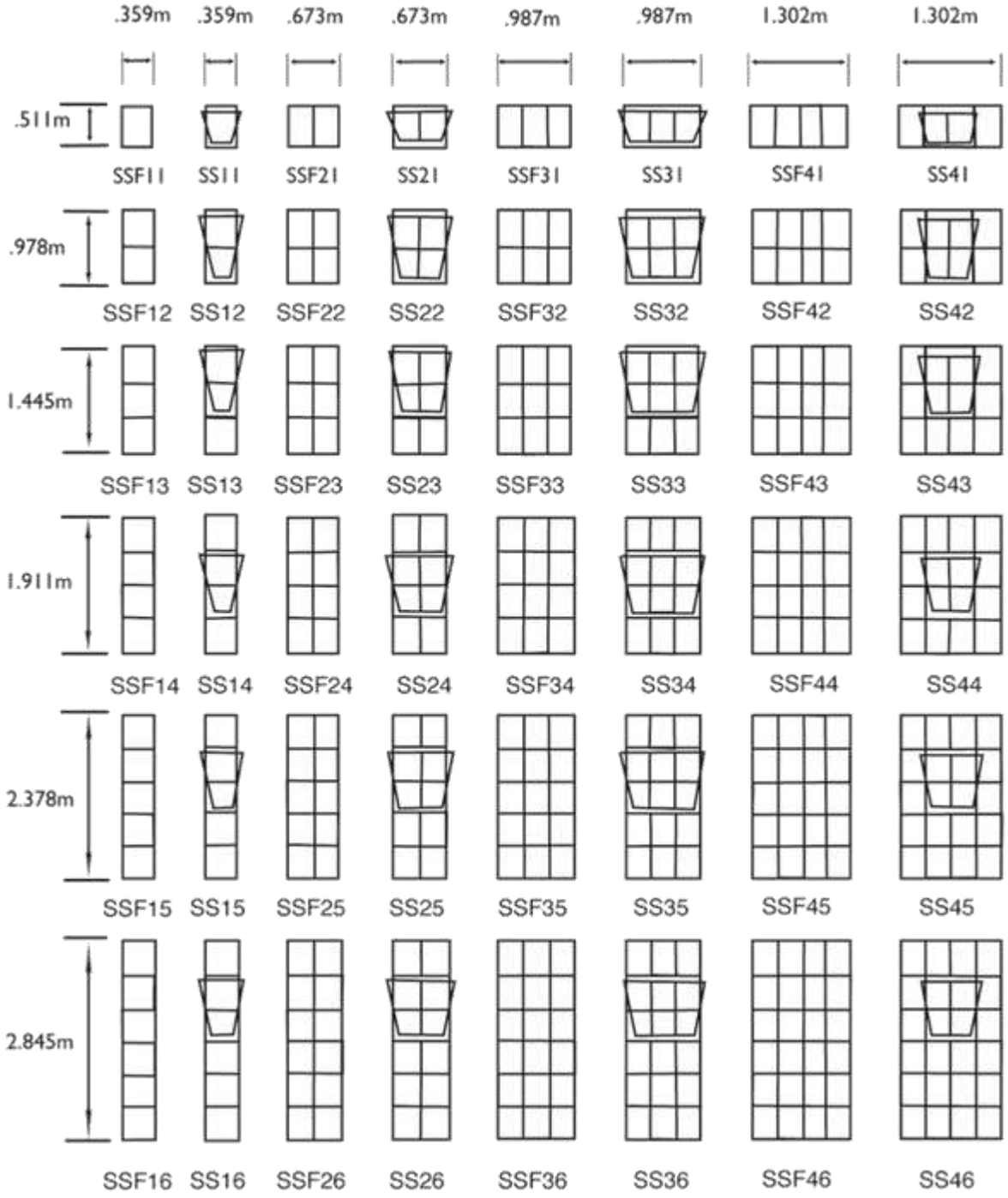
SCHOOL TYPE WINDOWS



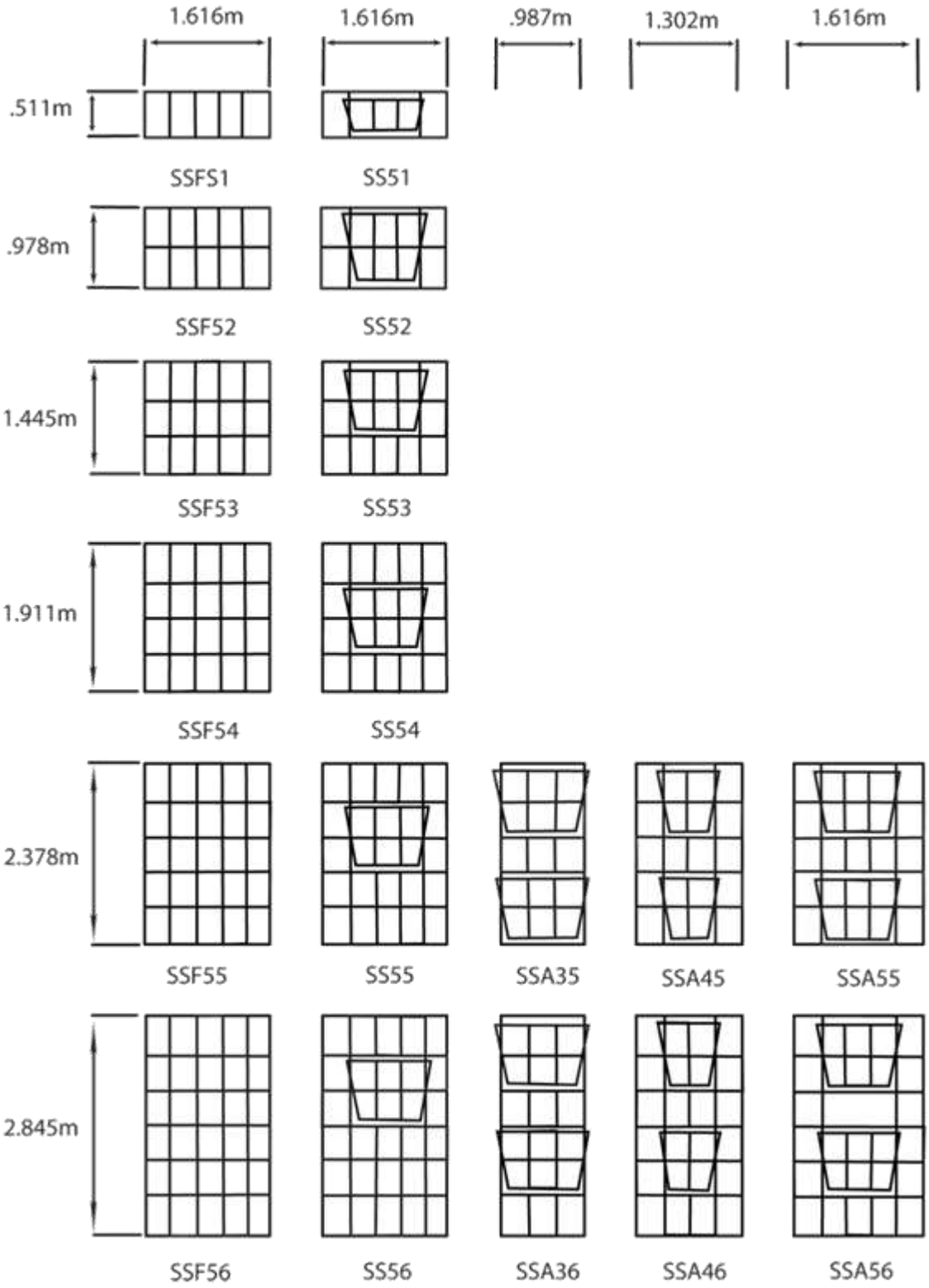
Up to seven panes in height, vertical composite school windows are made in one piece construction in units 0,889 m or 1,143 m wide. Above this height coupling transomes are required. Horizontal composites are formed by coupling 0,889 m or 1,143 m wide units together with mullions.

EXAMPLE COMPOSITE TYPES

"SS" INDUSTRIAL TYPE



"SS" INDUSTRIAL TYPE



5.8 BURGLER BARS TO STEEL WINDOWS

Where windows are fitted with burglar bars, these are to be of standard pattern welded at each intersection, flattened and welded to steel window frame to opening sections only

5.9 GAUZE SCREENS TO WINDOWS

Gauze screens to windows shall be constructed with pressed steel or extruded aluminium frames and filled in with approved fibreglass gauze having 1,5 ×1,5 meshes.

The screens to outward opening ventilators shall be attached to the inside of windows with studs or clips in such a way as to be readily removable, and shall have sliding portions for access to window fasteners etc. screens to top hung ventilators may be hinged for access to fasteners.

Frames to screens of inward opening windows shall be of thicker metal than those to outward opening windows or be of rolled mild steel sections and fixed on outside face of windows with screws and nuts or other approved means.

The screens are to be spray painted with enamel of approved colour and baked on or with natural anodised surfaces to aluminium screens.

PC 5 MEASUREMENT AND PAYMENT

Item	**Unit**
PC 5.1 Steel Windows …..…….…….	Number (No)

The unit of measurement shall be the number of windows for each type installed complete with ironmongery and burglar bars.

The tendered rate for the steel windows shall include full compensation for the supply of all labour and materials, transport of all materials to site, the complete installation of the windows, preparation of the windows for glazing as specified.

Item	**Unit**
PC 5.2 Steel door frames for 230 mm wall ……..…….…….	Number (No)

The unit of measurement shall be the number of 1,6mm thick pressed steel door frame for door size 813mm x 2032mm high suitable for 230mm wall.

The tendered rate for the steel door frames shall include full compensation for the supply of all labour and materials, transport of all materials to site, the complete installation of the doors, preparation of the door frames for the doors as specified.

Item	**Unit**
PC 5.3 Steel door frames for 130 mm wall ……..…….…….	Number (No)

The unit of measurement shall be the number of 1,6mm thick pressed steel door frame for door size 813mm x 2032mm high suitable for 130mm wall.

The tendered rate for the steel door frames shall include full compensation for the supply of all labour and materials, transport of all materials to site, the complete installation of the doors, preparation of the door frames for the doors as specified

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6. INSTALLATION OF GLAZING IN WINDOWS

6.1 MATERIALS

6.1.1 GLASS

Glass in panes not exceeding 0,65m² of surface area shall be clear float glass of "GG" quality (Glazing quality) and of 3mm thickness.

Glass in panes exceeding 0,65m² and up to 1,5m² of surface area shall be clear float glass of "GG" quality (Glazing quality), but of 4mm thickness.

6.1.2 GENERAL PURPOSE PUTTY

Putty shall comply with the requirements of SANS 680

6.1.3 SETTING BLOCKS

Setting blocks shall be rot-proof, non-absorbent and capable of maintaining the requisite edge clearance without presenting local areas of stress to the glass.

6.2 PREPARATION

Before commencing glazing operations, it shall be confirmed that:

a) the fixing of the frame has been completed,

b) protective coatings or tapes have been removed from the frame,

c) rebates are free from obstructions and debris,

d) all surfaces which are to come into contact with the bedding material have been primed or sealed.

The surfaces, which will come into contact with glazing materials, shall be cleaned and dried.

All metal frames shall, before glazing, be painted with an anti-corrosive primer.

Where pane areas exceed 0,3m², the glass shall be placed on one or two setting blocks along the bottom edge. Setting blocks shall be between 25mm and 75mm long, except at the bottom bar of vertically pivoted windows where a single block of length at least 150mm is sufficient.

Glass sheets shall be checked for edge clearances which shall be not less than

a) 3mm for glass of length or width up to 2m, and

b) 5mm for glass of length or width over 2m.

Distance pieces shall be placed on opposite sides of the sheet at centres that do not exceed 300mm, within 50mm of corners and at bead fixing points.

6.3 GLAZING WITH PUTTY

Sufficient bedding putty shall be applied to the rebate to ensure that when the glazing material is pressed into position, the putty is squeezed out around the entire perimeter of the glazing rebate.

The glass shall be positioned that an even bearing is obtained and edge clearances are equal all the way round the pane. The pane shall thereafter be pressed and bedded into the bedding putty until it is at least 3mm from the back of the surface of the rebate.

The front putty shall thereafter be applied and finished off to a splayed finish. The back putty shall be trimmed and finished off to a smooth finish.

Upon completion the putty shall be brushed lightly with a small brush to seal the edges against the glass and the surround.

6.4 MIRRORS

Mirrors shall comply with the requirements of SABS Specification 1236; Class A. unframed mirrors shall have polished edges.

PC 6 MEASUREMENT AND PAYMENT

Item **Unit**

PC 6.1 3mm Clear glass to steel window frames …….…….…… Square metre (m²)

The unit of measurement shall be the square metre of 3mm thick clear glass to window panes exceeding 0,1m² and not exceeding 0,5m².

The tendered rate for the clear glass shall include full compensation for the supply of all labour and materials (including glass, putty, sprigs, pegs or clips), transport of all materials to site, cutting of glass, preparing of putty and the glazing of all window panes in accordance with the specifications and the making good thereof.

7. JOINERY

7.1 GENERAL

All joinery work shall be put in hand immediately the order has been given to commence work; or after receipt of details, where such are to be supplied, and shall be wedged or glued up until just before fixing in the building. Timber stored on the site shall be properly stacked on delivery and adequately protected against extreme weather and exposure to the sun, until required for use.

a) Hardwood:

Hardwood for joinery shall comply with the requirements of SABS Specification 1099, and shall be of Clear Grade and free of sapwood.

b) Softwood:

Softwood for joinery shall comply with the requirements of SABS Specification 1359 and shall be of Clear Grade.

7.2 JOINERY

All exposed softwood timber in joinery which is not to be painted shall be free from large, loose or dead knots, knot holes, checks, splints, wane or other defects, and in joinery which is to be painted shall be free from all defects other than those which can be filled or otherwise made good in such a way as will not impair the paint finish. All exposed hardwood joinery timber shall be free from all knots, knot holes, checks, splints or other defects.

Purpose made joinery shall be manufactured strictly in accordance with detail drawings where these are provided.

Stock joinery shall be of the best quality.

Joinery shall not be primed until it has been inspected and approved.

Skirting shall be in long lengths, close fitted, mitred or scribed at angles and securely fixed with hardened nails driven into the brickwork at not more than 700 mm apart.

7.3 WOODEN DOORS

All doors shall be framed and ledged batten wooden doors for use as yard doors where it will be exposed to the elements and have a paint finish and shall comply with the requirements of SABS Specification 1099, shall be of Clear Grade Hardwood 44mm thick and free of sapwood and bear the “MARK”.

The Contractor shall provide the Employer’s Agent Representative with the full constructional detail of the doors that he proposes to use for approval.
Doors shall be hung on pressed steel door frames.

7.4 HANGING OF DOORS

All doors are to be hung in such a way that the completed door functions smoothly and perfectly.

The clearance gap between door and frame after hanging shall not exceed 2mm (+0mm – 1mm) at sides and head of door. The gap between meeting stiles of doors hung folding shall also comply with the foregoing.

The clearance gap between foot of door and floor may be increased to 6mm (+0mm – 3mm) to accommodate any minor unevenness in the floor surface.

Any door frame found to be distorted or out of plumb shall be reported to the Employer’s Agent Representative before any door is hung to such a frame.

When hung, no strain upon the hinges shall be detectable due to hinge binding. Depending upon the hinges supplied with pressed steel door frames the hanging edge of door may be angled back slightly from the hinge face of door to obviate such binding.

Any door that is too wide or tall to fit the door frame shall be reduced in size by removing material equally from each edge – removing material from one edge only to obtain a fit is unacceptable.

Mortice locks are to be snugly fitted into the mortice with face plate flush with edge of door.

Lever handle door furniture is to be fixed with the back plate parallel to the edge of the door. Ensure that the handles of wever type function smoothly and do not bind.

Screws used for fixing of hinges shall be screwed into holes of suitable sizes.

In addition, prior to the final hanging of any unprotected external door, where such door opens to the outside of the building, both top and bottom concealed edges shall be sealed with not less than two coats of the finish specified for the exposed surfaces of the door. Where the door opens to the inside of the building only the bottom edge of the door shall be so finished.

7.5 PAINTING OF DOORS

All doors shall be painted with one coat oil based wood primer and two coats Polyurethane Enamel paint.

PC 7 MEASUREMENT AND PAYMENT

Item **Unit**

PC 7.1 Semi-solid flush internal quality doors …….……..……..……..…… Number (No)

The unit of measurement shall be the number of semi-solid flush internal quality doors hung to steel frames size 40mm thick x 813 x 2032mm high.

The tendered rate for the semi-solid internal doors shall include full compensation for the supply of all labour and materials, transport of all materials to site, the complete hung of the doors in accordance with the manufacturer's instructions and the making good thereof.

Item **Unit**

PC 7.2 Solid flush external quality doors ……..……..……..…… Number (No)

The unit of measurement shall be the number of Solid flush external quality doors hung to steel frames 40mm thick x 813 x 2032mm high.

The tendered rate for the solid flush external quality doors shall include full compensation for the supply of all labour and materials, transport of all materials to site, the complete hung of the doors in accordance with the manufacturer's instructions and the making good thereof.

8. IRONMONGERY

8.1 IRONMONGERY

All ironmongery shall be of the best quality and shall be approved prior to fixing.

Articles shall be fixed with matching screws.

No keys shall pass a second lock unless master keyed.

Mortice locks shall be DORMA ST 9600 Series II heavy-duty mortice locks or similar.

Door levers shall be DORMA Coastal Series 5300-30 Nosa door levers or similar.

8.2 FIXING

Ironmongery is to be taken as fixed to wood unless otherwise described.

Items described as “plugged” shall be deemed to include screwing to fibre, plastic or metal plugs.

All necessary preparation of pressed steel door frames for the fixing of ironmongery to the frames has been included with the pressed steel door frames.

All screws, nails, bolts, etc. required for completion of the work shall be supplied by the Contractor.

PC 8 MEASUREMENT AND PAYMENT

Item **Unit**

PC 8.1 Three lever heavy-duty mortice lock …….…….…….…….…… Number (No)

The unit of measurement shall be the number of three lever heavy duty mortice locks installed.

The tendered rate for the heavy-duty mortice locks shall include full compensation for the supply of all labour and materials, transport of all materials to site, the complete installation of the mortice locks in accordance with the manufacturer’s instructions and the making good thereof

Item **Unit**

PC 8.2 Galvanised barrel bolt latch …….…….…….…….…… Number (No)

The unit of measurement shall be the number of galvanised barrel bolt latch installed.

The tendered rate for the heavy-duty mortice locks shall include full compensation for the supply of all labour and materials, transport of all materials to site, the complete installation of the mortice locks in accordance with the manufacturer’s instructions and the making good thereof

9. PLUMBING AND DRAINAGE

9.1 GENERAL

9.1.1 REGISTERED PLUMBERS AND DRAIN LAYERS

Only registered plumbers and drain layers shall be employed on any plumbing and drainage work.

9.1.2 EARTHWORKS

All Earth Works for pipelines and drainage shall comply with the specifications as set out in Section 1: Earth Works and also to SANS 2001-DP1 Construction Works. Part DP1: Earth Works for buried pipelines and prefabricated culverts.

Payment for Earth Works will be as set out in the relevant Measurement and Payment Clause for this section.

9.1.3 REINSTATEMENT OF INFRASTRUCTURE

In all cases where existing infrastructure has been removed or damaged during the excavations or laying of pipelines, shall be reinstated to its original condition and to the satisfaction of the Employer's Agent Representative.

9.1.4 RAINWATER DISPOSAL AND PROTECTION AGAINST LIGHTNING

In all cases where existing infrastructure has been removed or damaged during the excavations or laying of pipelines, shall be reinstated to its original condition and to the satisfaction of the Employer's Agent Representative.

a) EAVES GUTTERS (UPVC)

UPVC eaves gutters shall be 125mm × 75mm white UV resistant PVC gutters according to SANS Specifications 967.

Gutters shall be laid to proper falls and be provided with angles, stopped ends and outlet nozzles as required.

Gutters shall be fixed on UPVC brackets and each twice screwed to steel purlin.

Brackets shall be spaced at not exceeding 1m centres.

b) RAIN-WATER PIPES (UPVC)

Rain-water pipes shall be 75 × 75mm UPVC downpipes. Pipes shall be provided with offsets, elbows and shoes as required.

The pipes shall be fixed 25mm clear of finished wall face on holder bats to walls, spaced at not exceeding 1,5m apart.

c) EAVES GUTTERS (METAL)

Sheet iron gutters shall be of galvanised sheet iron of thickness specified in the table hereunder, have beaded edges and with all joints riveted and soldered or bedded with an approved epoxy sealant.

Gutters shall be laid to proper falls and be provided with angles, stopped ends and outlet nozzles as required. Angles shall be strengthened with 50 mm wide strips of 0,60 mm thick galvanised sheet iron soldered over the internal mitres inside the gutters.

Gutters shall be fixed on galvanised mild steel brackets of size specified in the table hereunder, bent to shape of gutters with front end taken up to underside of beaded edge of gutter and each twice screwed to roof timbers. Gutters shall be bolted to brackets at front

with and including 6 mm diameter galvanised gutter bolts, one to each bracket, positioned close to underside of beaded edge of gutter.

Brackets shall be spaced at not exceeding 1 m centres.

The thickness of sheet iron and size of metal from which brackets are made for the various sizes of gutters shall be in accordance with the following table:

Gutter shape	Gutter size not Exceeding (mm)	Sheet thickness (mm)	Size of metal brackets (mm)
Half round	150	0,60	32 × 3,5
Square	125 × 125	0,60	32 × 3,5
Square	175 × 175	0,80	40 × 5
Square	225 × 225	1,00	40 × 6
Rectangular	Width 150 Depth 100	0,60	32 × 3,5
Rectangular	Width 200 Depth 150	0,80	40 × 5
Rectangular	Width 250 Depth 200	1,00	40 × 6

The 5 mm and 6 mm thick brackets shall be hot dip galvanised after fabrication.

d) RAIN-WATER PIPES (METAL)

Sheet iron rain-water pipes shall be of 0,60 mm thick galvanised sheet iron, seamed at back and jointed with slip joints neatly soldered. Pipes shall be provided with offsets, elbows and shoes as required.

The pipes shall be fixed 25 mm clear of finished wall face on galvanised mild steel rain-water pipe brackets spaced at not exceeding 2,4 m apart, and having tails built into walls in 3:1 cement mortar.

e) SEAMLESS RAIN-WATER PIPES (ALUMINIUM)

Dimensions:

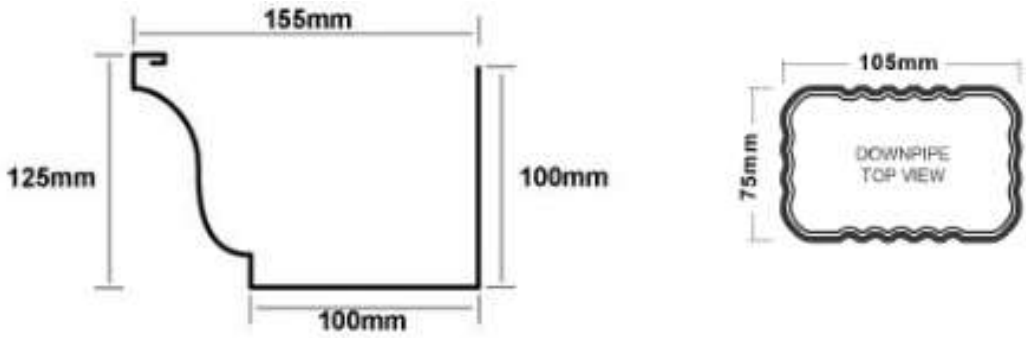

FIG. 1 OGEE GUTTER and DOWN PIPE

The aluminium rainwater goods shall be of seamless corrosion resistant type 3004 grade, pre-painted aluminium. All works will be executed in accordance with the manufacturer's instruction.

Material: Aluminium alloy shall be 0.6mm

Size and dimensions: Gutter to be role formed on site from seamless pre-painted aluminium coil to exact measurement. To be hung by 20mm x 2.5mm internal aluminium brackets at 600mm centres, to be secured with class three tex screws to the facia board.

Gutter size and type: 155mm x 100mm Ogee gutter.

Down Pipe: 105mm x 75mm rectangular fluted aluminium down-pipe manufactured elsewhere.

Stop-ends: mitre joined on the corners, crimped at ends, and sealed at with approved sealer.

f) PROTECTION AGAINST LIGHTNING

The lightning protection shall be in accordance with the latest revision of SABS Code of Practice 03 and must comply with the performance requirements laid down therein.

Ir terminals and down-conductors:

All conductors must be of electrical conductor grade aluminium alloy.

Earthing electrodes:

Earthing electrodes must consist of either extensible copper clad steel rods not less than 12mm diameter driven into the ground or of 50mm² bare copper conductor buried in a trench or a combination thereof. Where extensible earthing rods are used these are to be manufactured from copper clad steel and have a molecular bond between the two metals to prevent the moisture ingress.

Joints:

Where it is necessary to join lengths of circular section conductor, this must be done by crimping and in the case of flat conductor by either double riveting using aluminium rivets, two bolts of at least 6mm diameter and nuts.

Bonds:

Where it is necessary to bond the aluminium conductor to any other metallic surface, this must be done by bolting or riveting.

Conductor guides:

The conductor must be mounted in aluminium alloy guides conforming with the material specification BSS 1476/H/E9, which allow free longitudinal movement of the conductor for expansion and contraction of the system due to temperature variation. The guides must be attached to the structure by screwing and plugging, using two screws, which must be suitably attached.

No part of the conductor system is to come into direct contact with concrete or plaster as this may cause the aluminium to corrode.

The conductor system should be preferably supported in guides so that an air gap exists at all times between the aluminium and concrete/plaster surface, the guides being seated upon plastic or other similar insulating material.

9.2 STORM-WATER DRAINAGE

9.2.1 CONCRETE PIPES

All storm-water drain pipes shall be of concrete complying with the requirements of SABS Specification 677 of SC Type and of Class B quality, all marked as laid down in the specification.

The pipes shall be socketed or have plain ends with loose collars. The loose collars shall be of the same material and manufacture as the pipes.

9.2.2 DRAIN LAYING

Storm-water drains shall be accurately laid to the lines and gradients shown on drawings with pipes of the diameters shown.

Socketed pipes shall be closely fitted together. Joints are to be filled with semi-dry mortar composed of not more than 2 parts fine washed sand and 1-part cement, well caulked in with a steel tool, all as laid down in SABS Code of Practice 058, but without gaskets and fillets.

Where loose collars are used, ends of pipes shall be butted together in stiff 2:1 cement mortar with space between pipes and collars filled with similar mortar and well caulked.

All bends, junctions, etc. for pipes up to and including 150 mm diameter shall be of vitrified clay as for soil and wastewater drains, including cement mortar jointing, but joints shall be without gaskets and fillets. Where one or more of the pipes are over 150 mm diameter, the bends and junctions shall be made with junction boxes as described in Clause 16.19.

Drains of different diameters shall be laid at such levels as will provide for the top of the pipe bores all being at the same level where the drains enter or leave chambers, catch pits and junction boxes, and for the invert of the largest diameter drain being at bottom of the chamber, pit or box.

Level required, with the necessary bends.

Where pipes pass through foundation and similar walls, openings shall be formed in the walls for passage of the pipes.

Pipes shall be built into walls of chambers, catch pits, etc. in 2:1 cement mortar.

9.2.3 JUNCTION BOXES

Bends and junctions in storm-water drains, where one or more of the pipes are over 150 mm diameter, shall be made with junction boxes cast in position in Class C concrete, after the drains are laid. The bottoms and sides of boxes shall be not less than 150 mm thick and sides shall be carried up slightly above top of pipes and finished level on top. Each box shall be covered with an 80 mm thick slab of similar concrete, laid loose.

9.2.4 CATCH PITS

a) TYPE A

Catch pits Type A, shown on drawing "Drainage Details", shall be of size and of depth shown or required, built with 1 brick thick sides of extra hard burnt bricks in 3:1 cement mortar on 100 mm thick Class C concrete bottoms.

Each catch pit shall be fitted with an approved cast iron catch pit grating, of size required to match size of catch pit, set in an approved cast iron frame fitted with lugs and surrounded with a 100 mm thick kerb of Class C concrete, splayed down on top towards pit and finished where exposed with 2:1 cement mortar, trowelled smooth and rounded on salient angles.

b) TYPE B

Catch pits Type B, shown on drawing of "Drainage Details", shall be as described in Sub clause 16.20.1, but kerbs around the gratings shall be of a thickness equal to the overall thickness of the surface channels discharging into catch pits and shall be rounded, sunk and splayed down on top as detailed, hollowed where surface channels connect to kerbs and finished where exposed with cement mortar as for surface channels.

c) TYPE C

Catch pits Type C, shown on drawing of "Drainage Details", shall be of size and depth shown, each formed with 150 mm thick bottom of Class C concrete and 1 brick thick walls built of extra hard burnt bricks in 3:1 cement mortar, fitted with grating constructed with 40 x 12 mm

mild steel framing and 40 x 12 mm mild steel cross bars spaced at 40 mm centres, all welded together and set in rebates formed in kerb of Class C concrete as shown.

Kerbs shall be flush on top with surrounding ground or paving and splay finished with 2:1 cement mortar, trowelled smooth.

d) TYPE D

Catch pit Type D, shown on drawing of "Drainage Details", and as used in prison yards where one or more of the drain pipes entering or leaving the catch pits are 380 mm or more in diameter, shall be as described in Sub clause 16.20.1, but concrete bottoms shall be 150 mm thick and each catch pit shall be fitted with an approved cast iron dished catch pit grating, hinged to a cast iron frame set in the concrete kerb. 20 mm Diameter mild steel bars shall be built in horizontally across drain pipe opening/openings with ends built 100 mm into the brickwork. The bars shall be spaced one course apart with the lowest bar not more than two courses above invert of drain pipe and the uppermost bar not more than 150 mm from the top of the pipe bore.

9.2.5 SURFACE WATER DRAINS

Surface water drains shall be 1500mm wide formed of Class C concrete (cast in situ), not less than 75mm thick at any part, with drains having not less than 1000mm wide and 150mm deep segmental channels.

The drains shall be laid to even and sufficient falls on hard earth bottoms, and the *in situ* drains shall be finished on exposed surfaces with 2:1 cement mortar, trowelled smooth and rounded on salient edges.

All stopped and returned ends, angles, sweeps around gullies, etc. shall be neatly formed.

Drains exceeding 1,8m in length shall be cast in sections not more than 1,8m in length.

9.2.6 STORM-WATER MANHOLES

Manholes shall be provided to storm-water drains where indicated on drawings with 1 brick thick walls of extra hard burnt bricks in 3:1 cement mortar laid on 100 mm thick Class C concrete bottoms. Fit on top with Type 9C cast iron single seal manhole covers, each size (daylight) 600 x 450 mm and mass approximately 39 kg, unless otherwise specified, complying with the requirements of SABS Specification 558 and coated with an approved preservative solution before leaving the Manufacturer's works with frames of covers bedded in 150 mm thick surrounds of Class C concrete, splayed on top and finished with 2:1 cement mortar, trowelled smooth and rounded on salient angles.

Manholes shall be of the types and sizes specified in the table hereunder for the various depths of drains, viz.:

Type	Depth of drain	Size of manhole	
		Length (m)	Width (m)
A B	Under 0,6 m 0,6 m and under 1,5m	0,6 0,9	0,45 0,6

Bottom of manholes and walls to a height of 450 mm or to the top of the pipes entering or leaving the manholes, whichever is the higher, shall be rendered with 3:1 cement plaster. Brickwork above the plaster shall be built to a fair face and neatly struck jointed.

9.3 SOIL AND WASTE-WATER DRAINAGE

9.3.1 PIPES IN GENERAL (FOR DRAINAGE):

a) PIPE CONNECTIONS:

Connections between pipes of different materials shall be formed as described below:

CONNECTION	METHOD OF JOINTING
Between socketed cast iron and vitrified clay pipes and vice versa	Semi-dry caulking cement and 2:1 cement mortar fillet.
Between hubless cast iron pipes and fittings	Approved stainless steel-neoprene "No-Hub" couplings with stainless steel bands and worm drive clamps.
Between mild steel or copper and pipes.	Semi-dray caulking cement and 2:1 vitrified clay cement mortar fillet, or bitumen
Between lead and vitrified clay pipes.	Brass ferrule wiped onto lead pipe and caulked in vitrified clay pipe socket with bitumen or semi-dry caulking cement and 2:1 cement mortar fillet.

b) GENERAL:

Diagonally fixed or unsightly vertical surface mounted waste pipes must not be allowed to spoil the external appearance of buildings at ground floor level.

If other suitable solutions cannot be found, metallic waste pipes up to a maximum of 40 mm in diameter, may be chased into walls by special permission of the Representative/Agent and plastered over or built into floors provided that adequate permanently accessible cleaning eyes are provided.

At ground floor level external "P" traps should be used for soil fittings. Where these become unsightly because of large differences in level or where they are unsightly because they are situated in prominent positions, "S" traps in conjunction with manholes should be employed. Generally, "S" traps should be used with the greatest discretion as they are difficult to clean.

Vertical 100 mm vent pipes at heads of drains should be placed inside lavatories, store rooms or other suitable places.

All other drainage work on buildings higher than single storey should preferable be housed in easily accessible properly designed drainage ducts. If this is not possible, exposed soil and waste water drainage work should be placed inside lavatory accommodation or store rooms, but must be neatly executed with straight lines and without any unsightly bends etc.

Where drainage work in important rooms or spaces is considered to be unsightly it should be encased in a composite timber board duct with suitable access panels.

9.3.2 CLEANING EYES

Cleaning eyes shall be provided to drains in the positions indicated on the drawings by the letters "CE" (or "SO") each formed by inserting junction in the drain, or bend at end of drain, and bringing a branch up to ground level with easy bends, the vertical pipe being of same diameter as the drain, and fitting top of pipe at ground level with approved cast iron access branch and cover with the letters "CE" (or "SO") cast on the cover. The cover shall be set in tallow and secured with non-ferrous metal screws and the branch shall be jointed to socket of clay pipe with jointing as described for drain pipes.

The vertical bends and pipes shall be bedded on and encased in Class C concrete from bottom of trench up to ground level, not less than 100 mm thick at any part and finished on top with 2:1 cement mortar, trowelled smooth and rounded on salient angles.

9.3.3 INSPECTION EYES

Inspection eyes shall be provided to drains in the positions indicated on the drawings by the letters "IE" (or "10") each formed by inserting an access pipe or bend in the drain and each fitted with oblong vitrified clay access lid sealed with bitumen.

When the letters "IE" (or "10") shown on the drawings are enclosed in a square, Class C concrete blocks, each size 350 x 350 x 75 mm, shall be provided at ground level directly over the inspection eyes.

These blocks shall be finished with 2:1 cement mortar, trowelled smooth and the letters "IE" (or "10") formed in the top surface.

9.3.4 GULLIES

Gullies shall be provided to drains where indicated on drawings, each formed with 100 mm diameter vitrified clay gully trap with gully head carried up to not less than 40 mm above finished ground level and provided with 50 mm diameter vertical and/or side inlets as required. Fit head with 190 mm diameter cast iron gully grating, laid loose in the socket.

The trap, vertical pipe and head shall be bedded on and encased in Class C concrete, not less than 100 mm thick at any part, and finished where exposed with 2:1 cement mortar, trowelled smooth, flush with top of gully head and splayed on edges.

9.3.5 UNIVERSAL TRAPS

Universal traps shall be provided to drains where indicated on drawings, each formed with vitrified clay trap and vertical shaft, all of same diameter as drain pipes, jointed together and to drain pipes as described for drains. The vertical shaft shall be carried up to not less than 40 mm above finished ground level and fitted on top with plain cast iron grating laid loose in the socket.

The trap and vertical shaft shall be bedded on and encased in Class C concrete, not less than 100 mm thick at any part, and finished where exposed with 2:1 cement mortar, trowelled smooth, flush with top of vertical shaft and splayed on edges.

9.3.6 URINAL TRAPS

Where urinals connect direct to drains, provide 75 or 100 mm diameter vitrified clay "P" traps under the urinal outlet with 100 mm vitrified clay vertical pipe and where outlet of urinal is 75 mm with 75 mm to 100 mm taper piece, all connected together as described for drain pipes and similarly connected to outlet nozzle of urinal, but with bitumen joint to tail piece of metal outlet grating where urinal is provided with such outlet.

The traps, vertical pipes and taper pieces shall be bedded on and encased in Class C concrete not less than 100 mm thick at any part,

9.3.7 INSPECTION CHAMBERS

Inspection chambers shall be provided to drains where indicated on drawings with 1 brick thick walls of extra hard burnt bricks in 3:1 cement mortar laid on 100 mm thick Class C concrete bottoms. Fit on top with Type 8A cast iron double seal manhole covers as described in Clause 16.36 with frames of covers bedded in 150 mm thick surrounds of Class C concrete, splayed on top and finished with 2:1 cement mortar, trowelled smooth and rounded on salient angles.

Chambers shall be of the types and sizes specified in table hereunder for the various depths of drains, viz:

Type	Depth of drain	Size of Manhole	
		Length (m)	Width (m)
A	Under 0,6 m	0,6	0,45
B	0,6 m to 1,5 m	0,9	0,6

Chambers shall be provided with half-round vitrified clay straight and curved channels, junctions, tapers, etc. as required, joined in 2:1 cement mortar and laid to regular falls, benched up to sides of chambers with Class C concrete, brought up vertically at sides of channels to same level as top of main drains and then sloped up to walls of chambers as shown and finished smooth with 1: 1 cement mortar. All edges of benching, angles, slopes, etc. shall be rounded off.

All pipes shall enter and leave at bottom of chambers.

Internal walls of chambers shall be rendered with 3:1 cement plaster above top of benching.

9.3.8 MANHOLE COVERS

Manhole covers to inspection chambers shall be of cast iron complying with the requirements of SABS Specification 558 and coated with an approved preservative solution before leaving the Manufacturer's works.

The covers shall be of the types, sizes and approximate mass specified in the table hereunder, viz:

TYPE	DESCRIPTION	NOMINAL SIZE (dia)	APPROXIMATE MASS (kg)
2A	Roadway type	550 dia	190
2B	Roadway type with ventilation openings	550 dia	180
8A	Double seal	600 × 450	72
PC	Single seal	600 × 450	39
9D	Single seal	600 × 450	74

9.3.9 SEPTIC TANK AND FRENCH DRAINS

a) SEPTIC TANK

The septic tank shall be constructed strictly as specified on the drawings for the septic tank.

b) FRENCH DRAINS

French drains shall be 0,6 m wide, of length shown and 1,8 m deep below invert of drain pipe where entering the drain. Build cavity chamber, size 300 × 300 mm internally, under end of drain pipe with dry rubble walls, in rough local hard stone, from bottom of trench up to top of drain pipe and fill remainder of trench in up to same level with clean, hard, durable stone, graded from a minimum of 40 mm to a maximum of 80 mm as shown.

The trench above the stone filling, shall be provided with approved bituminous or other suitable sheeting, laid over the stone filling and lapped 75 mm at joints.

Trench shall be filled in above sheeting with approved filling, lightly rammed.

9.3.10 SEWAGE PIPES AND FITTINGS

All sewage pipes and fittings used shall be of the PVC type bearing the SABS mark.

a) TESTING

The whole of the waste water drainage system shall be tested as described hereunder. The Contractor shall provide all necessary testing apparatus, expanding plugs, stoppers, water, smoke composition, any other materials that may be required and all labour required for carrying out tests.

b) PRELIMINARY OR OPEN TEST

All underground drains and fittings shall be tested before being covered in or encased in concrete by means of air pressure.

In carrying out the air test all openings in the drains shall be plugged or sealed and all traps associated therewith filled with water. Pump air into the drains until a manometric pressure of 40 mm is indicated after which, without further pumping, the pressure shall not drop below 25 mm for a period of at least 30 seconds.

The air test may be applied to the drains in one operation or drains may be divided into sections and each section tested separately.

Before carrying out the above test, an internal inspection of the drains shall be made with a torch and mirror in the direction of the flow. The drains shall be free of invert lips and the bore of the pipes shall be straight.

c) FINAL TEST

After the drainage has been completed, all plumbing fittings installed and permanently connected up and trap seals filled with water, a final air test as described in PPS PD 10.1 above, shall be applied to the whole system.

d) DEFECTS TO BE MADE GOOD

Should the drainage system fail to withstand the tests described in 15.23.1 and 15.23.2 above, all defects causing such failure shall be made good and the test repeated until the whole of the work is shown to be thoroughly sound and tight, all to the entire satisfaction of the Employer's Representative.

In making good all defective parts shall be carefully cut out and replaced with new in a proper manner. No patching of pipes, joints or connections will be allowed.

9.4 WATER SUPPLIES, FIRE SERVICE AND SANITARY PLUMBING AND FITTINGS

9.4.1 MILD STEEL PIPES

Mild steel water piping shall be in accordance with SABS Specification 62, galvanised inside and outside with screwed ends and shall be of medium class complete with sockets, ends, elbows, tees, long-screws, back nuts and other fittings as may be required, all complying with the requirements of SABS Specification 509.

Screwed joints shall be made with lead paint and PTFE tape to cold water piping.

Cut ends of pipes shall be reamed out to remove burrs.

Pipes shall be firmly and neatly built in or fixed to walls as directed by the Employer's Agent Representative.

In order that no air may lodge in the pipes, a proper inclination shall be maintained in fixing same.

If practicable, bends shall be used at angles in preference to elbows. If a reduction in the size of the pipe takes place at an angle, the bend or elbow shall be of the size of the inlet or larger pipe.

No surface mounted water piping will be permitted on external wall surfaces except for a short distance of vertical rising main from ground level.

9.4.2 POLYETHYLENE PIPES

Polyethylene pipes shall be in accordance with SANS 4427/ISO 4427 and bear the SABS Mark. The pipe diameters and Class shall be as indicated on the drawings.

Compression joints made with compression fittings shall be used for joining pipes. Take care to use the size of fitting intended specifically for the pipe to be joined. The end of the pipe is inserted into the fitting past the rubber sealing ring and, by turning of a threaded nut, a grip ring is compressed between the fitting and the pipe until it grips the outer surface of the pipe to prevent the pipe from pulling out of the fitting.

Except at points of positive anchorage, ensure that holder-bats, clips, brackets, etc. used to support the pipe do not grip the pipe and that they allow back-and-forth movements caused by temperature changes to take place freely and without risk of abrasion of the pipe.

Ensure that supports provide a flat smooth bearing surface without sharp edges. Firmly mounted all types of manual controls, and valves in particular, to minimize the movement transmitted to the pipe by operation of the control hand wheel or handle.

Where a pipe has side connections, these connections, unless at a point of anchorage, will be subject to any thermal movement of the pipe. Each side connection shall therefore be supported at a point that is far enough away from the main pipe to ensure that excessive lateral bending does not occur in the connection.

Continuous support of the pipe is necessary and the spacing of supports shall not exceed 500mm.

9.4.3 COPPER PIPES

Copper pipes for domestic cold water and gas services in all cases shall comply with the requirements of SABS Specification 460 Class 0, 2 and 3. For applications below ground only Class 2 or 3 shall be used.

Pipework above ground shall be of Class 0 or 2 jointed with capillary soldered fittings. Provision must be made for union coup0lings in strategic places.

All copper pipes shall be jointed with approved capillary solder type fittings, each joint being formed by cutting the pipe-ends, preferably with a pipe cutter. If the tube end, to be soldered, is dirty due to cement, bitumen or tape-gum, it should be mechanically cleaned with steel wool or abrasive paper. After inserting the pipe into the fitting, apply a flame using LPG gas blow lamp to the assembly to heat the tube and fitting for not longer than about 10 seconds. Then remove the flame completely and test the temperature of the joint by placing the wire solder at the mouth of the fitting. If the solder does not melt, remove the solder and heat again with the flame for a few seconds more. If the solder melts freely, hold the solder at about 45° to the mouth of the fitting, allowing it to melt and with steady pressure the solder will be drawn into the joint.

Use only 2mm solid core wire solder. Type 97/3. A careful check should be made to ensure that a ring of solder is visible around the mouth of the fitting.

Fittings and pipes must be wiped clean with a damp cloth after jointing. Joints that have been fluxed should be soldered within 1 hour.

9.4.4 SANITARY FITTINGS

Prices of WC suites shall be deemed to include the following: WC pan, flush valve or 11 litre cistern with flushing apparatus, float valve and flush pipe and all finishing to pipes and cistern.

a) SUNDRY FITTINGS

Toilet roll holders:

Chromium plated brass thief proof toilet roll holder shall be fitted to wall.

Towel rails:

Chromium plated brass or aluminium towel rail with brackets shall be fitted to wall.

b) PEDESTAL WATER CLOSET PANS

Pedestal water closet pans shall be of the wash-down type, approximately 400 mm high, of white glazed fireclay or vitreous china, complying with the requirements of SABS Specification 497.

The pans shall have “P” traps with straight outlets or right or left hand side outlets, as required.

Pans shall be bedded onto the floors in 3:1 cement mortar.

The pans shall be fitted with approved solid hardwood or plastic double flap seats having open fronts and of size and shape required to fit the pans, each attached to the pan with non-ferrous metal fixing bolts.

c) FLUSHING CISTERNS

Low level cisterns shall be of the valve less siphonic type or of the flushing valve type, each with body and removable cover of white glazed fireclay or vitreous china complying with the requirements of SABS Specification 497.

Flush pipes to flushing cisterns shall have an internal diameter of not less than 34 mm for the various lengths of pipe under 1,5 m.

d) WASH HAND BASINS

Wash hand basins shall be of the bracket type with back skirting of white glazed fireclay or vitreous china complying with the requirements of SABS Specification 497 having weir type overflow and fitted with chromium plated grid or slot type overflow.

Basins shall be 558 × 406 mm, each fitted with an approved 32 mm chromium plated brass waste fitting with screwed outlet complete with vulcanite or rubber plug attached to basin with chromium plated chain, two 15 mm chromium plated brass, easy clean pattern, screw down pillar taps where hot and cold water is supplied to basin.

Basins shall be fixed on approved white enamelled cast iron brackets, fixed to walls with M6 bolts, 120 mm long, built into walls in 3:1 cement mortar.

e) WALL MOUNTED BOWL URINALS

Wall mounted urinals shall be of white glazed fireclay or vitreous china type, each approximately 700 × 300 mm in overall size, with back flush entry and secured to wall with not less than two concealed hanger brackets. The urinals shall each be fitted with 38 mm diameter chromium plated domical grating, approved urinal flushing valve complete with push button assembly, spreader and all other necessary chromium plated fittings.

Fit each urinal outlet with a chromium plated bottle trap.

9.4.5 WATER STORAGE TANKS

a) MAIN WATER TANK AND TANK STAND

The main water storage tank connected to the main water supply system shall be a polythene tank mounted on a steel tank stand supplied by the manufacturer of the water tank to ensure that the bottom of the water tank shall be 3,0m above the natural ground level. The polythene water tank shall be manufactured from LLDPE, UV stabilized raw materials, and comply with F&DA regulation 177.1520 for food contact application, and carry a minimum five (5) year manufacturer’s guarantee. The tank size shall be 10 000 litres. The tank must be supplied with at least a 40mm inlet connector at the top, a 40mm outlet connector at the bottom, and a 450mm lid.

The tank stand shall be manufactured from steel and shall be designed and supplied by the tank manufacturer to their specifications.

All water installations must be neat and watertight without any leakages and be tested.

b) RAINWATER HARVESTING WATER TANK AND TANK STAND

The polythene water tanks shall be manufactured from LLDPE, UV stabilized raw materials, and comply with F&DA regulation 177.1520 for food contact application, and carry a minimum five (5) year manufacturer's guarantee. Each tank size shall be 5 000 litres. The tanks must be supplied with at least a 40mm inlet connector at the top, a 40mm outlet connector at the bottom, and a 450mm lid. Each tank must be supplied with a 25mm outlet adaptor at its bottom and 25mm brass tap which comply to SABS Specification 226, securely mounted on the stand.

The tank base shall be constructed as per specifications on the drawing. All specifications applicable under concrete work and masonry work will apply.

All water installations must be neat and watertight without any leakages and be tested. The stand must be constructed to the specification on the plan to a height of at least 0.6m high. The water tank must be securely tied down and mounted on the stand and must have a 25mm tap.

9.4.6 WATER TAPS AND VALVES

All water taps and stop cocks shall comply with the requirements of SABS Specification 226.

Taps for hot water shall be marked with the letter "H" or with the word "Hot" or shall have red colour plastic inserts, and taps for cold water, when both cold and hot taps are provided to a fitting, shall be marked with the letter "C" or with the word "Cold" or shall have green or blue colour plastic inserts.

Ball valves shall comply with the requirements of SABS Specification 752.

9.4.7 FIRE HOSE REELS

30-Meter-long, 20 mm diameter fire hoses that comply with SABS Specifications 988, 1096 and 543 with reels (non-swivel type) that comply with SABS Specification 543, including all valves, nozzles, etc., all to the approval of the Fite Brigade and in accordance with SABS Code of Practice 0400 as specified, must be provided.

Contractor is to fix fire hose reels against walls with 10 mm diameter hook or rag bolts, not less than 150 mm long and build into walls in 3:1 cement mortar.

Centre of fire hose reel to be approximately 2,1 m above floor level.

Provide the reel with an approved slide-over type fibre glass security cupboard or a high impact resistant, UV-stabilised, clear acrylic cover with a numbered twist-action closer seal if so specified.

9.4.8 FIRE EXTINGUISHERS

Supply number and type of fire extinguishers as specified, all in accordance with SABS Code of Practice 0400 and to the approval of the local Fire Brigade.

Hang extinguishers on appropriate approved wall mounted hangers at heights as directed.

All extinguishers to be of the refillable handheld portable types according to the capacities indicated.

a) Dry powder (DCP) extinguishers in accordance with SABS Specification 810.

b) CO2 extinguishers in accordance with SABS Specifications 1151.

c) BCF (1211) extinguishers in accordance with SABS Specification 1511.

Hang the fire extinguishers at an appropriate height against a permanent support.

9.4.9 TESTING OF PLUMBING

The plumbing work shall be tested in accordance with the instructions of the Employer's Agent Representative and any imperfect work shall be taken out and renewed at the cost of the Contractor and again tested until found to be perfect.

9.4.10 TESTING OF WATER RETICULATION AND PIPELINES

Before carrying out the pressure test of water reticulation and pipelines the entire system must be filled with water and all air evacuated.

The test shall be carried out by pressurising the water in the system to one and a half times the expected working pressure that the installation is designed for, by means of a pump. The pressure shall be maintained at that level for a period of at least two hours during which time all pipes, joints and fittings are to be thoroughly inspected.

Any leakages that may appear must be repaired to the satisfaction of the Employer's Agent Representative. When the system is connected to the main water supply and is operational a final inspection must be carried out under normal working pressure and any defects shall be rectified.

PC 9 MEASUREMENT AND PAYMENT

Item **Unit**

PC 9.1 Eaves gutters, on and including gutter brackets at not exceeding 1m centres …….…….. ……. metre (m)

The unit of measurement shall be the metre length of eaves gutters, on and including gutter brackets at not exceeding 1m centres fixed strictly in accordance with the manufacturer's instructions.

The tendered rate for the gutters shall include full compensation for the supply of all labour and materials, transport of all materials to site, cutting of gutters, fixing to roofs in accordance with the manufacturer's instructions and the making good thereof.

Item **Unit**

PC 9.2 Extra over eaves gutter for outlet…….. ……. metre (m)

The unit of measurement shall be the number of eaves gutter outlets fixed strictly in accordance with the manufacturer's instructions.

The tendered rate for the gutters outlets include full compensation for the supply of all labour and materials, transport of all materials to site, fixing to eaves gutters in accordance with the manufacturer's instructions and the making good thereof.

Item **Unit**

PC 9.3 Rainwater downpipes, fixed with and including holder bats to walls at not exceeding 1,5m centres ……..... metre (m)

The unit of measurement shall be the metre length of Rainwater downpipes, fixed with and including holder bats to walls at not exceeding 1,5m centres fixed strictly in accordance with the manufacturer's instructions.

The tendered rate for the rainwater downpipes shall include full compensation for the supply of all labour and materials, transport of all materials to site, cutting of downpipes, fixing to walls in accordance with the manufacturer's instructions and the making good thereof.

Item **Unit**

PC 9.4 5 000 litre Polythene rainwater tank ……..…. number (No.)

The unit of measurement shall be the number of 5 000 litre polythene tanks, fixed onto the tank stands.

The tendered rate for the tanks shall include full compensation for the supply of all labour and materials including connectors, reducers, pipes, elbows, brass tap, etc. for complete rainwater tank, transport of all materials to site, fixing of tanks, pipeline and taps to tank stands in accordance with the manufacturer's instructions and the making good thereof.

Item **Unit**

PC 9.5 Extra over tank stand for rainwater harvest tank ……..... number (No.)

The unit of measurement shall be the number of tank stands constructed according to drawings and specifications.

The tendered rate for the tank stands shall include full compensation for the supply of all labour and materials, transport of all materials to site, construction of tank stands in accordance with the drawings and specifications and the making good thereof.

10. PAINTING

10.1 PREPARATORY WORK FOR PAINTING

All floors shall be swept clean, walls dusted down and surfaces not being painted covered and protected against spotting before any painting is carried out.

On woodwork:

Woodwork being painted shall be well brushed down, knots treated and all surfaces primed, stopped with hard stopping and rubbed down to an even surface ready to receive the paint.

On metalwork:

All metal surfaces being painted, except for structural steelwork, shall be cleaned of all rust, scale and dirt, removed by scraping or with steel wire brushes. All oil and grease shall also be removed and a perfectly clean surface obtained.

New galvanised metal surfaces, which are to be painted, shall be cleaned down as above and given 1 coat of self-etching wash primer complying with the requirements of SABS Specification 723.

Protective coatings on new galvanised metal surfaces, applied by the Manufacturer to prevent storage stain and white rust, shall be completely removed by the use of suitable cleaning agent and the surfaces thoroughly rinsed and allowed to dry before the surfaces are primed.

After removing rust from metalwork those portions so affected shall be treated with an approved rust inhibitor or rust neutralising paint.

On plaster:

All plastered walls, ceilings and such like surfaces being painted shall be filled, where necessary, with suitable or patching plaster and the whole rubbed down ready to receive the finishing.

10.2 SURFACES TO BE DRY

All wall, ceiling and similar plastered surfaces shall be perfectly dry and in a fit state to receive paint finishes, before the application of any paint.

Special care is to be taken when the plaster is specified to be finished with oil based paints.

10.3 PAINTS

a) Plastered walls:

Apply one coat Plaster Primer and two coats Polyurethane Enamel paint (White) to new interior walls.

Apply one coat Plaster Primer and two coats Plascon Wall and All (or similar) paint (White) to new exterior walls.

b) Doors:

Apply three coats Polyurethane Enamel paint (White), lightly sanded between coats.

c) Door- and Window frames:

Apply three coats Polyurethane Enamel paint (White), lightly sanded between coats.

d) Metal works for fixing gutters and welded mesh fence to:

Prime using red oxide zinc chromate primer. Finish with three coats Polyurethane Enamel paint (White).

10.4 APPLICATION OF PAINT

All coats shall be thoroughly dry and where necessary rubbed down before subsequent coats are applied.

Application of paint shall be brush or roller.

10.5 PRIMING

All surfaces normally primed before being painted shall be prepared and primed as described in readiness to receive the specified paint system.

10.6 LEAVE PERFECT

The Contractor shall provide all necessary dust sheets, covers, etc. and shall exercise all necessary care to prevent marking surfaces, walls, floors, glass, electrical fittings etc. and shall keep all parts of the works perfectly clean and free at all times from spotting, accumulation of rubbish, debris or dirt arising from the operations.

The premises shall be left clean and fit for occupation at completion of the work.

PC 10 MEASUREMENT AND PAYMENT

Item	Unit
PC 10.1 Paint one coat undercoat and two coats flexible durable paint on plastered walls ..……..	square metre (m^2)

The unit of measurement shall be the square metre plastered walls to be painted and shall be deemed to include the preparation of the surfaces including filling, stopping, sanding and priming of nail heads and screws all in accordance with the manufacturer's instructions.

The tendered rate for the painting of walls shall include full compensation for the supply of all labour and materials, transport of all materials to site, preparation of the surfaces including filling, stopping, sanding and priming of nail heads and screws and the painting of the walls in accordance with the manufacturer's instructions.

Item	Unit
PC 10.2 Paint three coats flexible durable paint on doors, door frames and windows, lightly sanded in between each coat ……..	square metre (m^2)

The unit of measurement shall be the square metre doors, door frames and windows to be painted and shall be deemed to include the preparation of the surfaces including spot priming defects in pre-primed surfaces, stopping, sanding and applying three coats enamel paint to surfaces all in accordance with the manufacturer's instructions.

The tendered rate for the painting of doors, door frames and windows shall include full compensation for the supply of all labour and materials, transport of all materials to site, preparation of the surfaces including filling, stopping, sanding and priming and the painting of the surfaces with three coats of enamel paint in accordance with the manufacturer's instructions.

11. STRUCTURAL STEELWORK

11.1 STEEL

All structural steelwork shall comply with the requirements of SANS 2001- Part CS1: Specification for Construction Works – Structural steelwork

This part of SANS 2001 covers structural steelwork for buildings and other structures, excluding bridges, offshore structures, mobile equipment (stackers, reclaimers, draglines, cranes, etc.), mine shaft steelwork (buntons and guides) and mining conveyances.

All structural steelwork shall be of mild steel complying with the requirements of SANS 1431.

The dimensions and permissible deviations of all steel profiles shall comply with the requirements of the standards listed in Table 1.

Table 1 – Standards governing dimensional and permissible deviations

1	2
Profile	**Applicable standard**
Angles	EN 10056-2
Hollow sections cold-formed	SANS 657-1
Hollow sections hot-formed	EN 10210-2
I, IPE and H sections	EN 10034
Imperial channels	BS 4-1
Metric channels	DIN 1026-1
Plates, flats and bars	ASTM A 6/A 6Mb
Taper flange I-sections	EN 10024

All steel surfaces shall not be more heavily pitted or rusted than rust grade C of ISO 8501-1.

Surface defects in hot-rolled sections, plates and wide flats revealed during surface preparation, and which are not in accordance with the requirements of SANS 1431, shall be rectified to comply with such requirements.

Surface defects in hot-rolled hollow sections revealed during surface preparation and which are not in accordance with the requirements of EN 10210-1, shall be rectified to comply with such requirements.

11.2 STRUCTURAL STEELWORK

All structural steel shall be hot rolled mild steel. For inland areas, cold rolled steel sections may be used for purlins and side cladding rails only.

Construction methods and the design of steelwork shall be in accordance with the provisions contained in the latest edition of the National Building Regulations: SABS 0400.

Notwithstanding the requirements of the foregoing specifications; materials, workmanship, setting out, erection methods, riveting, bolting, welding, etc. shall be of the best quality, all to the satisfaction of the Employer's Agent Representative.

11.2.1 WELDING CONSUMABLES:

Consumables for use in metal arc welding shall comply with the appropriate standards listed in Table 2.

Table 2 – Approved parent metal-filler weld material combinations for steels acceptable for prequalified welding procedure standards.

1	2	3	4	5	6
Parent metal		Process	Filler weld metal		
Minimum yield strength Mpa	Minimum ultimate tensile strength Mpa		Electrode	Minimum yield strength Mpa	Minimum ultimate tensile strength Mpa
300	450	SMAW - (Shielded metal arc welding)	AWS A5.1 E70XX	365	480
		SAW - (Submerged arc welding)	AWS A5.17 F7XX - EXXX	400	480/680
		GMAW - (Gas metal arc welding)	AWS A5.18 ER70S - X	400	480
		FCAW - (Flux-cored arc welding)	AWS A5.20 E7XT - X	400	480
350 or 355	480	SMAW - (Shielded metal arc welding)	AWS A5.1 E7015, E7016 E7018, E7028	400	480
		SAW - (Submerged arc welding)	AWS A5.17 F7XX - EXXX	400	480
		GMAW - (Gas metal arc welding)	AWS A5.18 ER70S - X	400	480
		FCAW - (Flux-cored arc welding)	AWS A5.20 E7XT - X	400	480

11.2.2 STRUCTURAL FASTENERS:

The mechanical properties of bolts, screws and nuts shall be in accordance with the following standards or as stated on the drawings:

a) Class 4.8, 8.8 and 10.9 bolts and screws: SANS 1700-5-1

b) Class 4 to 11 nuts: SANS 1700-2-2

Bolts, screws and nuts shall comply with the following standards:

a) Bolts: SANS 1700-7-1 or SANS 1700-7-3

b) Screws: SANS 1700-7-4 or SANS 1700-7-5

c) Nuts: SANS 1700-14-2 or SANS 1700-14-3

d) Hot-dip galvanized bolts: SANS 1700-14-9 or SANS 1700-14-11

HOLDING-DOWN (HD) BOLTS:

Holding-down bolts shall be fabricated from round bar that complies with the requirements of SANS 1431 grade 300WA.

WASHERS:

Plain washers shall be in accordance with the provisions of SANS 1700-16-2. Through-hardened washers shall be in accordance with the provisions of SANS 1700-16-3.

11.3 DETAILED DESIGN AND DRAWINGS FOR STRUCTURAL STEELWORK

The Contractor is to employ the services of a registered Structural Engineer to execute the necessary geotechnical investigation of the foundation materials and to design a steel portal frame structure of 23m × 9m × 3m, to prepare a complete set of structural design and shop drawings and submit two sets to the Engineer for approval before the fabrication thereof can commence and execute the full construction inspections during the manufacturing and erection of the portal frame structure including the concrete footings, steel structure, and sheet covering of the roof.

All drawings shall be prepared in accordance with the recognized industry standards i.e. "The South African Institute of Steel Construction publication, ***South African structural steelwork detailing manual.***"

Revised drawings shall have a term added to the drawing and a description in the notes stating the changes that have been made and the date they were made. Furthermore, whenever possible, the most recent revisions to design drawings should be individually highlighted where they occur in the drawing.

Design drawings shall include a general arrangement of the proposed structure with plans, cross sections, elevations and dimensions, indicating all structural members with their respective sizes, material grades and special connections, and shall be sufficiently comprehensive to allow the detailing of all connections. Dimension figures in the drawings shall be deemed to be correct, even if the drawings are not to scale. No dimension shall be obtained from a drawing by scaling or determining the distance between lines or points by electronic means. Where necessary, the architectural or other drawings shall relevant drawings shall also be provided. If applicable the combinations of the forces to be resisted by connections and any cambers, eccentricities and other information required for the design of connections shall be provided.

Holding-down bolt/interface drawings shall show the base location, level, orientation and details of members in contact with concrete or other supporting material, the supporting material as such, and any interface devices such as HD bolts, cast-in items or pockets.

Fabrication drawings shall show all necessary details, dimensions, and all welding and welding inspection requirements to enable fabrication of components. The fabrication drawings shall show details of holes and fittings necessary for lifting and erecting components; such holes and fittings may remain part of the permanent structure. Holes shown in the fabrication drawings shall be as follows:

a) For ordinary bolts and HSFG bolts

Not exceeding 24 mm diameter:	2 mm greater than the bolt diameter.
Greater than 24 mm diameter:	3 mm greater than the bolt diameter.

b) For HD bolts

Less than 24 mm diameter:	6 mm greater than the bolt diameter.
From 24 mm to 36 mm diameter.	10 mm greater than the bolt diameter.

The spacing between holes for fasteners and the distance between holes and edges shall comply with the relevant requirements of SANS 10162-1 and SANS 10162-2.

Holding-down bolt details shall include washers with holes not more than 3 mm greater than the HD bolt diameter; and the size and thickness of a washer shall be appropriate to the bolt diameter and size of the hole.

Any machining requirements shall be clearly indicated in the fabrication drawings. The fabrication drawings shall indicate clearly those locations where holes shall o9nly be made by drilling

Approval of such drawings will not release the Contractor from his responsibility for the accuracy of his drawings. Details of substitutions of profiles and alternative details must be submitted to the Engineer for approval. All designed members shall be of unbroken lengths and no splicing, jointing or welding to make up such lengths will be permitted.

All drawings shall be prepared in accordance with the recognized industry standards i.e. “The South African Institute of Steel Construction publication, ***South African structural steelwork detailing manual.”***

Revised drawings shall have a term added to the drawing and a description in the notes stating the changes that have been made and the date they were made. Furthermore, whenever possible, the most recent revisions to design drawings should be individually highlighted where they occur in the drawing.

After the erection of the steel structure “as erected” drawings shall be provided to the Employer’s Agent Representative. The “as erected” drawings shall consist of one set of paper prints of all drawings which have been marked up after completion and acceptance of the steelwork, to reflect changes that have occurred. Such “as erected” drawings shall include:

a) General arrangement drawings or erection mark drawings,
b) Fabrication drawings,
c) Drawings made after fabrication to show revisions, and
d) The fabrication drawing register

The Structural Engineer shall be a professional person with the required qualifications and registered with the Engineering Council of South Africa (ECSA) as a professional Engineer or Technologist in the required field.

11.4 PRESERVATION OF STRUCTURAL STEELWORK

All surfaces of structural steelwork are to be thoroughly cleaned of all rust, scale, oil or grease, all in accordance with SABS Code of Practice 064 and then protected against corrosion as follows:

a) Preparatory work:

Steel to be cleaned down in accordance with SABS Code of Practice 064.

All metal surface defects such as laminations and welding spatter shall be removed by grinding. Sharp edges, rags, burrs, etc. shall be rounded off before cleaning. After fabrication, but before erection, all steel surfaces to be scraped and wired brushed to Grade St 2 of Swedish Specification SIS 05 59 00-1967. Steelwork so prepared is not to be touched by bare hands – linen gloves are to be worn. Before priming, the surface shall be vacuum cleaned or dry brushed to remove all dust and debris.

b) Priming:

As soon as possible after surface preparation, the first two coats of red lead (SABS Specification 312, Type 2, Grade 1) or zinc phospe (SABS Specification 1319) primer is ro be applied. Each coat is to have a dry film thickness of at least 25 micron for red lead and 30 micron for zinc phospe. A minimum of 24 hours between coats, or as recommended by the Manufacturer. Any damage to the primer during handling or erection is to be prepared by removing any possible rust etc. and patch repaired to make up the original film thickness. All traces of soluble salts and corrosive airborne contaminants shall be thoroughly removed with potable water and allowed to dry prior to finishing.

c) Finishing:

After erection, apply two coats of alkyd structural steel paint complying with SABS Specification 684, Type B, in accordance with the Manufacturer’s recommendations. Each coat is to have a minimum dry film thickness of 30 microns.

d) General:

No surface preparation or painting is to be performed in adverse weather conditions.
Edges are to be stripe painted before application of paint over the whole surface. Back to back sections and areas rendered inaccessible for painting after erection are to receive the full paint system before erection or fixing.

11.5 INSPECTION

The Contractor shall notify the Employer's Agent Representative and design engineer of the completion of the fabrication of steelwork at the Steel Fabricator's works to enable them to make inspections if they so desires.

The Structural Engineer appointed by the Contractor shall be responsible for the construction inspections during the manufacturing (Which shall include but not be limited to workmanship with regard to the material identification, handling of steel, cutting and shaping of steel elements, machining-, dressing- and holing of steel elements, assembly including welding, finishing of steel elements with the required paint cover) and erection of the portal frame structure including the concrete footings, steel structure, and sheet covering of the roof and shall provide the Employer's Agent Representative with a certificate of compliance to the specifications at the completion of the structure.

PC 11 MEASUREMENT AND PAYMENT

Item **Unit**

PC 11.1 Professional fees for the Structural Engineer …….…..…… Prov. Sum

The unit of measurement shall be the Sum Total of the professional fees.

The tendered rates for the professional fees shall be the full compensation of all the professional services required for the detail survey of the terrain, geotechnical investigation for foundation design of concrete footings, detail design of steel structure as per the drawings of the required structure and full construction supervision of the manufacturing and erection of the steel structure. The rates shall include full compensation for all professional fees, traveling time, disbursement costs and the supply of detailed complete set of design and shop drawings and copies thereof for approval, construction supervision and the issue of a certificate of compliance that the structure has been erected to the set specifications.

Item **Unit**

PC 11.2 Steel portal frame structure ……..……Sum

The unit of measurement shall be the Sum Total for the Steel Portal Frame Structure complete with all columns, baseplates, trusses, purlins, galvanized sheet covering, etc.

The tendered rate for the steel portal frame structure shall include full compensation for all materials, including the cutting, waste, manufacturing of elements, baseplates, anchor bolts, bolts and nuts, bracing, purlins, galvanized sheet covering, etc. for the complete steel portal frame structure as per the Structural Employer's drawings delivered at site and erected to the levels as indicated on the drawings. All surfaces of steelwork are to be preserved as prescribed in Clause 6.4 above before leaving the workshop.

Item **Unit**

PC 11.3 Handling fee for PC 11.1 ……..…...… percent (%)

The tendered percentage is a percentage of the amount actually spent under the relevant provisional sum item, which shall include full compensation for the handling cost of the contractor, and the profit in connection with providing the specified service.

12. ELECTRICAL INSTALLATION

12.1 GENERAL

12.1.1 INTRODUCTION

(a) These Standard Specifications cover the general technical requirements for the equipment, materials, installation, testing, commissioning and maintenance of electrical installations for the Department. These requirements shall be read in conjunction with the Documents as specified below.

(b) "Document" shall mean the complete set of contract documents, including the Department's Tender Conditions, Tender Qualifications, the Standard Specification and the Detail Technical Specification including all drawings and variation orders issued in terms of the contract.

(c) "Contractor" shall mean the person, partnership, company or firm appointed for the supply, installation, testing, commissioning and maintenance of the Electrical Installation. In the case of the Electrical Installation being a sub contract, nominated in terms of the Main Contract or otherwise, the word "Contractor" shall also mean "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".

12.1.2 INSTALLATION WORK

(a) The complete installation shall comply with the requirements of this Specification. Should any discrepancies or contradictions exist between this specification and the Detail Technical Specification for the specific installation, then the latter shall take precedence.

In the event of discrepancies between the drawings, specifications and bill of quantities the Employer’s Agent Representative shall decide whether the work as executed shall be re-measured on site or whether re-measurement shall be effected from the working drawings only.

(b) The Employer’s Agent’s Representative 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 obligations in terms of the Documents.

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

12.1.3 REGULATIONS

(a) The installation shall be erected and tested in accordance with the latest issues and amendments of the following Acts and regulations:

- SABS 0142: "Code of Practice for the Wiring of Premises",
- The Occupational Health and Safety Act, 1993 (Act 85 of 1993),
- The Local Government Act 1998 (Act 10 of 1998 (Gauteng), municipal by-laws and any special requirements of the local supply authority,
- The Fire Brigade Services Act 2000 (Act 14 of 2000),
- The National Building Regulations and Building Standards Act 1996 (Act 29 of 1996),

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

(c) It shall be assumed that the Contractor is conversant with the above-mentioned 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, by-law or regulation shall overrule this Document and the Contractor shall immediately inform the Employer's Agent's Representative of such a contradiction. Under no circumstances shall the Contractor carry out any variations to the installation in terms of such contradictions without obtaining the written permission to do so from the Department.

12.1.4 SITE CONDITIONS

Tenderers are advised to visit the site and acquaint themselves with all local conditions pertaining to the execution of the installation before tender closing date. No claims 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 all interested parties.

12.1.5 ARRANGEMENTS WITH THE SUPPLY AUTHORITY

(a) The contractor shall give all notices required by and pay all necessary fees, including any inspection fees, which may be due to the local Supply Authority unless specified to the contrary.

(b) It shall be the responsibility of the Contractor to make the necessary arrangements with the local Supply Authority at his own cost and to supply the labour, equipment and means to inspect, test and commission the installation to the satisfaction of the Local and Supply Authorities.

(c) The Contractor shall supply and install all notices and warning signs that are required by the relevant laws, regulations and/or the Documents.

12.1.6 MATERIAL AND EQUIPMENT

(a) All material and equipment shall conform in respect of quality, manufacture, tests and performance, with the requirements of the South African Bureau of Standards or where no such standards exist, with the relevant current Specification of the British Standards Institution.

(b) All material and equipment shall be of high quality and suitable for the conditions on site. These conditions shall include weather conditions as well as conditions under which materials are installed, stored and used. Should the materials not be suitable for use under temporary site conditions then the Contractor shall at his own cost provide suitable protection until these unfavourable site conditions cease to exist.

(c) The Contractor shall, where requested to do so, submit samples of equipment and material to the Employer's Agent's Representative for approval prior to installation. Samples may be retained in the Employer's Agent's Representative's possession until the contract is completed after which they will be returned.

12.1.7 CONNECTIONS INVOLVING ALUMINIUM (CABLES AND TRANSFORMERS)

As a result of the fact that aluminium flows when subjected to pressure and electrical connections based on this principle thus loses proper contact during the course of time, it should be noted that bolted connections between aluminium and copper or any other metal is not acceptable.

12.1.8 CODES OF PRACTICE OR STANDARD SPECIFICATION

Where reference is made to any Code of Practice or Standard Specification in this document the latest edition or amendment shall be applicable, except where specified to the contrary.

12.2 INSTALLATION AND TERMINATION OF CONDUITS AND CONDUIT ACCESSORIES

12.2.1 GENERAL

1. SCOPE

This section covers the installation of conduits and conduit accessories in buildings and other structures under normal environmental conditions and for system voltages up to 600 V.

1 The following types of conduit installations are included:

(a) Screwed metallic conduit black enamelled and galvanised.

(b) Plain end metallic conduit black enamelled and galvanised.

(c) Non-metallic conduit.

(d) Flexible conduit.

2 Conduits may be installed as follows:

(a) In open roof spaces.

(b) Cast in concrete.

(c) Surface mounted against walls, concrete slabs, etc.

(d) In wall chases.

3 Where conduits are to be installed in concrete, this shall be undertaken while the building work is still in progress. Conduits may only be surface mounted where specified or where the Employer's Representative has given its written consent.

4 Under no circumstances will conduit having a wall thickness of less than 1,6mm be allowed in screed laid on top of concrete slabs.

5 Bending and setting of conduit must be done with special bending apparatus manufactured for the purpose and which are obtainable from the manufacturers of the conduit systems. Damage to conduit resulting from the use of incorrect bending apparatus or methods applied must on indication by the Employer's Representative, be completely removed and rectified and any wiring already drawn into such damaged conduits must be completely renewed at the contractor's expense.

6 Tenderers must ensure that general approval of the proposed conduit system to be used is obtained from the local electricity supply authority prior to the submission of their tender. Under no circumstances will consideration be given by the Employer's Representative to any claim submitted by the contractor, which may result from a lack of knowledge in regard to the supply authority's requirements.

7 For light and socket outlet circuits, the conduit used shall have an external diameter of 20mm. In all other instances the sizes of conduit shall be in accordance with the "Wiring Code" for the specified number and size of conductors, unless otherwise directed in part 2 of this specification or indicated on the drawings.

2. OTHER SERVICES

Conduits may not be installed closer than 150 mm to pipes containing gas, steam, hot water or other materials, which may damage the conduits or conductors. Conduits may not touch pipes of other service installations in order to prevent electrolytic corrosion. Where this is unavoidable, cathodic protection shall be provided.

Conduit and conduit accessories used for flame-proof or explosion proof installations and for the suspension of luminaries as well as all load bearing conduit shall in all instances be of the metallic screwed type.

12.2.2 SCREWED METALLIC CONDUIT

1. GENERAL

   1 In general, screwed steel conduit shall be used in the wiring of buildings.

   2 The installation shall comply with SANS 10142.

2. GALVANISED CONDUIT

   Galvanised conduit and accessories shall be used in the following:

   (a) In damp areas.
   (b) In areas exposed to the weather.
   (c) For all installations within 50 km of the coast.
   (d) In plenum chambers containing humidifying equipment.
   (e) For surface mounted conduit installations in kitchens and boiler rooms.
   (f) In screeds resting directly on soil.
   (g) For connection points to future installations.
   (h) For underground conduit containing earthing conductors.
   (I) In buildings where animals are housed such as cattle, sheep, dogs, etc.

3. TERMINATIONS

   1 Spouted Connections.

   Conduits shall be connected directly to draw-boxes with spouted connections. Conduits shall be screwed tightly home and no threads shall be visible.

   2 Switchboards, Power skirting, etc.

   Conduits shall be terminated by means of a brass female bush and two locknuts in pressed steel switchboards and distribution boxes, cable ducts, power skirting, etc. The conduit end shall only project far enough through the entry hole to accommodate the bush and locknut. Alternatively, the method detailed in 2.3.3 may be used.

   3 Draw-boxes.

   A female bush and two locknuts shall be used to terminate conduits at draw-boxes and outlet boxes without spouts, should there be sufficient room in the box. Where there is insufficient room, a coupling, brass male bush and locknut may be used with sufficient allowance for the reduction of the internal diameter by the male bush.

   4 Holes.

   Holes to accommodate brass bushes shall be large enough to accommodate the bush with a minimum of clearance.

   5 Bush-nuts.

   Bush-nuts for the connection of earth conductors to conduits are not acceptable.

4. SCREWS, BOLTS AND NUTS

   Steel locknuts of thick gauge steel with milled sides shall be used in all cases. Cadmium-plated bolts and nuts shall be used except where the installation is exposed to the weather in which case brass bolts and nuts shall be used. Screws shall be installed in all tapped holes in fittings and accessories to prevent damage to the screw thread by concrete or

plaster. The screws shall be screwed completely down to prevent damage to the thread on the screw.

5. CONDUIT ENDS

Conduit ends shall be cut at right angles to ensure that ends butt squarely at joints. Threads shall not be visible at joints and connections except at running joints. The total length of the thread on the two conduit ends shall not exceed the length of the coupling.

6. JOINTS

All conduit ends shall be reamed and all joints tightly screwed. Only approved couplings shall be used. Running joints with long threads shall be kept to a minimum and locknuts shall be provided to ensure a strong mechanical and a continuous electrical joint. Running joints in screwed conduit are to be avoided as far as possible and all conduit systems shall be set or bent to the required angles. The use of normal bends must be kept to a minimum with exception of larger diameter conduits where the use of such bends is essential.

7. FINISH

All joints shall be painted with red lead to prevent them from rusting in damp areas, areas within 50 km of the coast and in cases where the installation is exposed to the weather for any length of time. Where the galvanising or black paint has been damaged, the area shall first be cleaned and a coat of zinc base paint applied subsequently. Additional coats of paint shall only be applied after the undercoat has completely dried. All surface mounted non galvanised metallic conduit must be painted.

8. CONTINUITY

Mechanical and electrical continuity shall be maintained throughout the conduit installation.

12.2.3 PLAIN END METALLIC CONDUIT

As an alternative to the screwed conduit, plain-end conduit complying with:

- Unthreaded conduit shall be manufactured of mild steel with a minimum thickness of 1,2mm and shall comply with SANS 1065.
- Bending and setting of conduit shall be done with the correct apparatus recommended by the manufacturer of the conduit.
- The Contractor or Supplier shall be responsible for obtaining the approval of local authorities for the use of this system.
- All conduit and accessories used in areas within 50 km of the coast shall be hot-dip galvanised to SANS 32 & 121. In inland areas electro-galvanised or cadmium-plated accessories will be accepted.

1 Bending and setting of plain-end conduit must be done with special benders and apparatus manufactured for this purpose and which are obtainable from the suppliers of the system. Damaged conduit resulting from the use of incorrect bending apparatus shall be completely removed and any wiring already drawn into such damaged conduits shall be completely renewed at the Contractor's expense.

2 Screwed conduit must be used in the following instances:

(a) In flame-proof installations.
(b) Load bearing conduit.
(c) For the suspension of luminaries.
(d) Surface mounted conduit.

3 Plain-end conduit and associated accessories shall be manufactured of mild steel having a minimum thickness of 1,2 mm and shall comply with SANS 1065. Conduit manufactured of lighter gauge material, i.e. 0,97 mm, will not be permitted.

4 All conduit and accessories used in areas within 50 km of the coast shall be hot-dip galvanised to SANS 32 & 121. In inland areas Electro-galvanised or cadmium-plated accessories will be accepted.

12.2.4 NON METALLIC CONDUIT

1. INSTALLATION CONDITIONS

Where specified for a particular service, non-metallic conduit may be installed under the following conditions:

1 All non-metallic conduit shall comply fully with SANS 950 and shall be installed in accordance with Appendix C of the same specification as well as SANS 10142.

2 Insulated heat-resistant boxes shall be used for outlets of totally enclosed luminaries and other fittings where excessive temperatures are likely to occur.

3 Luminaries and other fittings shall not be supported by non-metallic conduit or conduit boxes. These fittings shall be secured to the surrounding structure in a way that is acceptable to the Employer's Agent's Representative. Refer to the standard specification for "INSTALLATION OF LUMINAIRES",

4 The conduit shall be supported and fixed with saddles with a maximum spacing of 1 m, even in roof spaces. (Refer to SANS 10142.) The Contractor shall supply and install all additional supporting timbers required.

5 It shall be possible to rewire the completed installation in the future without undue difficulty.

6 Non-metallic conduit and fittings shall not be used under the following conditions:

(a) Outside a building (unless protected, or sheltered under eaves).

(b) For mechanical load bearing.

(c) Where they may be subjected to temperatures below -10°C or above 70°C for prolonged periods.

(d) As primary electrical insulation.

(e) In areas where they may be subject to mechanical damage.

(f) For applications other than those for which they are designed.

(g) In concrete slab unless specified to the contrary.

2. PAINTING OF CONDUITS

Exposed conduit may be painted with normal oil or PVA paints, but care must be taken to ensure that the paint used does not contain any component that will soften or have any other detrimental effect on the materials from which the conduit and fittings are manufactured.

3. CONNECTING OF CONDUIT TO METAL EQUIPMENT/COMPONENTS

When any part of a non-metallic conduit system has to be connected to metal equipment or components (e.g. switchboard, surface socket-outlet or switch box, existing metallic conduit system, etc.) fittings and joints manufactured specifically for this purpose must be used. Non-metallic conduit must not be threaded to fit metallic connectors.

4. BENDS

In conduit of nominal size not exceeding 25 mm, bends may be made in accordance with par. 17. 2.4.5. In all other cases bends must be achieved by the use of accessories that are introduced into the conduit run. Bends shall comply with SANS 10142.

5. BENDING

Conduit of nominal size up to and including 25mm may be cold bent by hand provided that the radius of the bend is greater than six times the nominal size of the conduit, and that the external angle of the bend does not exceed 90°. The procedure (which involves the use of a bending spring) should be as follows:

(a) Determine the angle through which the conduit is to be bent.

(b) Warm the cold conduit over the length to be bent by rubbing with hands.

(c) Select a bending spring which matches the conduit size and insert in to the conduit at the point where the bend is required.

(d) Bend the conduit slowly with one motion (either with the hands alone approximately 1 m apart, or across the knee) to double the required angle, release the conduit and, when its position is stable, withdraw the bending spring (turning it in an anti-clockwise direction to reduce its diameter) and gently correct the angle.

(e) Install and secure the conduit immediately following bending.

6. ADHESIVE JOINTS

All adhesive joints must be made in a clean dry area. The surfaces of all components to be bonded must be dry and clean.

The insertion depth should be marked on the conduit end and the adhesive applied (by means of a soft clean brush) as quickly as possible to the surfaces to be bonded by brushing lengthwise along the conduit, ensuring that a thin coating of uniform thickness is formed. The joint must be made immediately after the application of the adhesive by pushing the prepared parts squarely together with a twisting motion to the full insertion depth. Care must be taken to avoid squeezing adhesive into the cableway and all excess adhesive must be wiped off.

NOTE: Solvent adhesives contain highly volatile liquids and their containers should not be left open.

7. CUTTING

A fine-tooth hacksaw should be used to cut conduit to the required length. Each cut end should be square and free from swarf, burrs and loose material. When determining the length of conduit to be cut, allowance must be made for the length of couplings or accessories attached to the conduit. Incorrect determination will cause bulging of the conduit or insufficient joint length.

12.2.5 FLEXIBLE CONDUIT

1 In installations where the equipment has to be moved frequently to enable adjustment during normal operation, for the connection of motors or any other vibrating equipment, for the connection of thermostats and sensors on equipment and where otherwise required by the Employer's Agent's Representative, flexible conduit shall be used for the final connection to the equipment.

2 The installation shall comply with SANS 10142.

3 Flexible conduit shall preferably be connected to the remainder of the installation by means of a draw-box. The flexible conduit may be connected directly to the end of a conduit if an existing draw-box is available within 2 m of the junction and if the flexible conduit can easily be rewired.

4 Flexible conduit shall consist of metal-reinforced plastic conduit or PVC-covered metal conduit with an internal diameter of at least 15mm, unless approved to the contrary. In false ceiling voids, flexible conduit of galvanised steel construction may be used. Connectors for coupling to the flexible conduit shall be of the gland or screw-in type, manufactured of either brass or mild steel plated with either zinc or cadmium.

12.2.6 INSTALLATION REQUIREMENTS

1. POSITIONS OF OUTLETS

   All accessories such as boxes for socket-outlets, switches, lights, etc. shall be accurately positioned. It is the responsibility of the Contractor to ensure that all outlets are installed level and square, at the correct height from the floor, ceiling or roof level and in the correct position relative to building lines and equipment positions as specified. It shall be the responsibility of the Contractor to determine the correct final floor, ceiling and roof levels in conjunction with the Main Contractor. Draw-boxes shall not be installed in positions where they will be inaccessible after completion of the installation. Draw-boxes shall be installed in inconspicuous positions to the approval of the Department's representative and shall be indicated on the "as built" drawings.

2. COVER PLATES

   All draw boxes and outlets shall be fitted with cover plates, either as part of the switch or socket assembly or with blank cover plates if unused. Blank cover plates shall match other cover plates in the same area. Flush mounted cover plates in both ceilings and walls shall overlap the draw-box and edges of the recess. If the fixing lugs are substantially deeper than the finished wall surfaces, suitable coiled steel wire or tubes shall be used as spacers.

3. DRAW-WIRES

   Galvanised steel draw-wires shall be installed in all unwired conduits e.g. conduits for future extensions, telephone installations and other services.

4. BENDS

   A maximum of two 90 bends or the equivalent displacement will be allowed between outlets and/or boxes.

   Draw-boxes shall be installed at maximum intervals of 15 m in straight 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 five times the outside diameter of the conduit. (Refer to SANS 10142)

5. WALL SOCKET-OUTLETS

   Where more than one socket-outlet is connected to the same circuit, the conduit shall be looped from one outlet box to the following on the same circuit. Where a metal channel is used, the conduit may be installed from the channel directly to the outlet box on condition that the conductors can be looped from one outlet to the next without making any joints in the wires.

6. LUMINAIRES

   Where the conduit end is used to support luminaries, a ball-and socket type lid shall be fitted to the pendant box in all cases where the conduit is longer than 500 mm. In all other cases a dome lid may be used. Where luminaries are specified which are fixed directly to the

pendant box, the pendant box shall be fixed independently of the conduit installation except where the pendant box is cast into concrete.

7. FLUSH MOUNTED OUTLET BOXES

   The edges of flush mounted outlet boxes shall not be deeper than 10 mm from the final surface. Spacer springs shall be used under screws where necessary.

8. EXCESS HOLES

   All excess holes in draw-boxes or other conduit accessories shall be securely blanked off by means of brass plugs to render the installation vermin proof.

9. DEBRIS

   Care shall be taken to prevent debris or moisture from entering conduits during and after installation. Conduit ends shall be sealed by means of a solid plug which shall be screwed to the conduit end. Conduits shall be cleaned and swabbed to remove oil, moisture or other debris that may be present before conductors are installed. Swabs shall not be attached to the conductors.

10. DEFECTS

    Each length of conduit shall be inspected for defects and all burrs shall be removed. All conduits that are split, dented or otherwise damaged or any conduits with sharp internal edges shall be removed from site. The Contractor shall ensure that conduits are not blocked.

11. WITHDRAWAL OF CONDUCTORS

    To ensure that all electrical conductors are easily withdrawable from conduits and to ensure that there are no joints in the conductors, the Employer's Agent's Representative will have the right to have the conductors of any circuit removed at his discretion. If the conductors are found to be in a satisfactory condition after having been withdrawn, the Department shall bear the cost of withdrawing and re-installing such conductors. If the conductors are found to have been damaged during installation or removal or if joints are found, they shall be replaced and the cost shall be borne by the Contractor.

12.2.7 INSTALLATION IN CONCRETE

1. TIMEOUS INSTALLATION

   In order not to delay building operations, the Contractor shall ensure that all conduits and accessories which are to be cast in concrete are placed in position in good time. The Contractor or his representative shall be in attendance when the concrete is cast.

2. DRAW-BOXES

   Draw-boxes, expansion joints and round ceiling boxes shall be installed where required and shall be neatly finished to match the finished slab and wall surfaces. Ceiling draw-boxes shall be of the deep type. In hollow block slabs, rear-entry draw-boxes shall be used. In columns where flush mounted draw-boxes are installed, the conduits shall be offset from the surface of the column immediately after leaving the draw-box.

3. ELBOWS

   Elbows for conduits of 32mm dia. and smaller and sharp bends will not be allowed in concrete slabs.

4. COVER PLATES

Draw-boxes and/or inspection boxes shall, where possible, be grouped together under a common approved cover plate, and must preferably installed in passages or male toilets. The cover plate shall be secured by means of screws.

5. NEUTRAL AXIS

   All conduits shall be installed as close as possible to the neutral axis of concrete beams, slabs and columns. The conduits shall be rigidly secured to the reinforcing to prevent movement towards the surface of the concrete.

6. FIXING TO THE SHUTTERING

   All conduits, draw-boxes etc. shall be securely fixed to the shuttering to prevent displacement when concrete is cast. Draw-boxes and outlet boxes shall preferably be secured by means of a bolt and nut installed from the back of the box through the shuttering. Fixing lugs may also be used to screw the boxes to the shuttering. Wire will not be accepted for securing boxes to the shuttering where off-shutter finishes are required. Where fibreglass shuttering is used by the Builder, the equipment shall be fixed to the steel only and no holes shall be drilled or made in shuttering. All draw-boxes and outlet boxes shall be plugged with wet paper before they are secured to the shuttering.

   Before any concrete slabs are cast, all conduit droppers to switchboards shall be neatly spaced and rigidly fixed.

7. CONCRETE FLOOR SLABS

   Conduits will not be allowed in concrete floor slabs of boiler rooms (or boiler houses), laundries or other damp areas. All socket outlets and three phase outlets in damp areas shall be supplied from above with galvanised conduit and accessories.

8. EXPANSION JOINTS

   As far as possible, conduits shall not be installed across expansion joints. Where this is unavoidable a conduit expansion joint shall be provided.

9. SCREEDS

   The installation of conduits in floor screeds shall be kept to a minimum. Where conduits are installed in screeds, the top of the conduit shall be at least 20 mm below the surface of the screed. Where the screed is laid directly on the ground, galvanised conduits shall be used. This ruling will always be applicable to the lowest floor of a building. A minimum distance of twice the outside diameter of the conduit shall be left free between adjoining conduits. Conduits shall be secured to the concrete slab at intervals not exceeding 2 m. The Contractor shall ensure that conduits are not visible above the screed where the conduits leave the screed.

10. INSPECTION

    All draw-boxes, conduits, etc. which are installed in concrete shall be cleaned with compressed air and provided with draw-wires two days after removal of the shuttering. Errors that occurred during the installation of the conduits, or any lost draw-boxes, or blocked conduits shall be immediately reported to the Employer’s Agent’s Representative by telephone and confirmed in writing in order that an alternative route can be planned and approved by the Employer’s Agent’s Representative before the additional concrete is cast. Any additional cost shall be for the Contractor's account.

12.2.8 SURFACE INSTALLATIONS AND INSTALLATIONS IN ROOF SPACES

Wherever possible, the conduit installation is to be concealed in the building work; however, where unavoidable or otherwise specified, conduit installed on the surface must be plumbed or levelled and only straight lengths shall be used.

1. APPEARANCE

   (a) All conduits shall be installed horizontally or vertically as determined by the route and the Contractor shall take all measures to ensure a neat installation.

   (b) Where conduits are to be installed directly alongside door frames, beams, etc. that are not true, conduits shall be installed parallel to the frames, beams, etc.

   (c) All labels shall be removed from surface mounted conduit.

2. SADDLES

   Conduits shall be firmly secured by means of saddles and screws and in accordance with SANS 10142. Where saddles are used to secure vertical lengths of conduit connected to surface mounted switch boxes or socket outlet boxes, the saddles shall be spaced so that the intervals between the box and the first saddle, between any two successive saddles and between the last saddle and the ceiling or roof are equidistant. Conduits shall be secured within 150 mm before and after each 90° bend and within 100mm of each outlet box.

3. JOINTS

   Joints will only be allowed in surface conduit lengths exceeding 3,5 m. Threads shall not be visible at joints of completed installations, except where running joints are used. Running joints will be allowed only when absolutely necessary. All running joints shall be provided with locknuts and shall be painted with red lead immediately after installation.

4. ACCESSORIES

   Inspection bends or tee pieces shall not be used. Non-inspection type bends may be used in the case of 32mm or 50 mm diameter conduits. All draw-boxes supporting luminaries or other equipment shall be fixed independently of the conduit installation.

5. OFFSETS

   Where an offset is required at conduit terminations or crossovers, the conduit shall be saddled at the offset.

6. CROSS OVER

   Conduit routes shall be carefully planned to avoid crossovers. Where a crossover is inevitable, one conduit only shall be offset to cross the other. Crossovers shall be as short as possible and shall be uniform. Alternatively, crossovers shall be installed in purpose-made boxes. This method shall be employed on face brick walls and in other circumstances where required by the Department.

7. PARALLEL CONDUIT

   Parallel conduit runs shall be equidistant and saddles shall be installed in line. Alternatively, a special clamp may be used to secure all conduits in unison. In the case of conduits of different diameters, the latter method shall only be used if a purpose-made clamp designed to accommodate the various conduit sizes, is provided.

8. PAINTING OF CONDUIT

   All surface mounted conduits and accessories shall be painted with two coats of a high quality enamel paint or as otherwise specified. The colour shall comply with the colour code specified for the installation or where no code has been specified, shall match the colour of the surrounding finishes.

9. CONDUIT IN ROOF SPACES

1 In open roof spaces (no ceiling) conduits shall run along the wall plates and the rafters. The installation of conduits suspended between the rafters is not acceptable.

2 Conduit in roof spaces shall be installed parallel or at right angles to the roof members and shall be secured at intervals not exceeding 1,5 m by means of saddles screwed to the roof timbers for metallic conduit and 1m for non-metallic conduit.

3 Nails or crumpets will not be allowed.

4 Under flat roofs in false ceilings or where there is less than 900 mm clearance, or in instances where the ceilings are insulated with glass-wool or other insulating material impeding access, the conduit shall be installed in a manner which allows for wiring from below the ceilings.

5 Conduit runs from switchboards shall terminate in fabricated sheet steel draw-boxes installed directly above or in close proximity to the boards.

6 Spare conduits covering the total number of spare ways on switchboards, shall be provided between the boards and the roof draw box.

7 Where non-metallic conduit has been specified for a particular service, the conduit shall be supported and fixed with saddles with a maximum spacing of 450mm throughout the installation. The contractor shall supply and install all additional supporting timbers in the roof space as required.

10. FIXING TO WALLS

Only approved plugging materials such as aluminium inserts, fibre plugs or plastic plugs, etc., and round-head screws shall be used when fixing saddles, switches, plugs etc. to walls. Wood plugs are not acceptable nor should plugs be installed in joints in brick walls.

12.2.9 FUTURE EXTENSIONS

1. OPEN ROOF SPACES

Conduits intended for future switches and socket outlets, shall terminate 40 mm above the tie beams in roof spaces with more than 900 mm free space. The conduit ends shall be threaded and fitted with a coupling and brass plug.

2. CONCRETE SLABS

Conduit ends shall protrude 150 mm from the concrete to facilitate the installation of future extensions above, below or to the side of the concrete slabs. All these conduits shall be connected to a draw-box, which is cast into the concrete within 2 m of the end of the concrete. Conduit ends shall be threaded and fitted with a coupling and brass plug. In cases where holes cannot be drilled through the shuttering to accommodate the conduit end, a deep draw-box with rear entry may be placed over the conduit end.

3. COVER PLATES

Unused boxes for switches and socket-outlets shall be covered with metal cover plates. Unused boxes for luminaries shall be covered with round galvanised metal cover plates, which fit tightly against the finished surface. The cover plate shall overlap the outlet box and recess.

4. GALVANISED CONDUIT

Galvanised conduit shall be installed at all free ends INTENDED for future extensions. The conduit shall be treated with a paint, which will prevent corrosion and white rust.

12.2.10 EXPANSION JOINTS

1 Where conduits cross expansion joints in the structure, approved draw-boxes which provide a flexible connection in the conduit installation shall be installed.

2 The draw-box shall be installed adjacent to the expansion joint of the structure and a conduit sleeve, one size larger than that specified for the circuit, shall be provided on the side of the draw box nearest the joint. The one end of the sleeve shall terminate at the edge of the joint and the other shall be secured to the draw-box by means of locknuts.

3 The circuit conduit passing through the sleeve shall be terminated 40 mm inside the draw-box and in the case of metallic conduit, the conduit end shall be fitted with a brass bush. The gap between the sleeve and the conduit at the joint shall be sealed with 'Pratley Tic-Tac' or equal sealing compound, to prevent the ingress of wet cement. In the case of metallic conduit, an earth clip shall be fitted to the conduit projection inside the draw-box and the conduit bonded to the box by means of 2,5mm² bare copper earth wire and a brass bolt and nut.

4 The end of the other circuit conduit shall be secured to the draw-box by means of locknuts and a brass bush in the case of screwed metallic conduit or a standard bushed adaptor for other conduit types.

5 In the case of metallic conduit, a 2,5mm² bare copper wire shall be installed between the first conduit boxes on either side of the joint, in addition to an earth wire, which may be specified for the circuit. The conduit boxes shall be drilled and tapped and the earth wire shall be bonded to the boxes by means of lugs and brass screws.

6 Suitable steel cover plates shall be screwed to draw-boxes installed along the expansion joint. The cover plates shall be installed before the ceilings are painted.

7 Where a number of conduits are installed in parallel they shall cross the expansion joint of the structure via a single draw-box. A number of draw-boxes adjacent to each other will not be allowed.

12.2.11 CHASES AND BUILDER'S WORK

1 Except where otherwise specified the Builder or Main Contractor shall be responsible for the builder's work related to the installation of conduits, outlet boxes, switchboard trays, bonding trays and other wall outlet boxes and will undertake the necessary chasing and cutting of walls and the provision of openings in ceilings and floors for luminaries and other electrical outlets. The Contractor shall notify the Builder or Main Contractor of his requirements and the responsibility lies with the Contractor to ensure that all builder's work is clearly indicated or marked in accordance with his requirements.

2 Electrical materials to be built in must be supplied, placed and fixed in position by the Contractor when required to do so by the Builder or Main Contractor. The Contractor shall also ensure that these materials are installed in the correct positions.

3 Where no Builder or Main Contractor is available, the Contractor must provide all chases and is required to cover conduits installed in chases by a layer of 4:1 mixture of coarse sand and cement, finished 6 mm below the face of the plaster and roughened. Chases shall be deep enough to ensure that the top of conduits are at least 12 mm below the finished surface of the plaster.

4 Where the Contractor is responsible for the cutting of chases or the building in of conduits and other equipment, he will be held responsible for all damage as a result of this work and will be required to make good to the satisfaction of the Employer’s Agent’s Representative.

This ruling is particularly applicable but not exclusively to the rewiring and renewal of existing installations. Chases shall be made by means of a cutting machine.

5 Under no circumstances shall face brick walls or finished surfaces be chased or cut without the written permission of the Employer’s Agent’s Representative. Where it is necessary to

cut or drill holes in the concrete structure, the prior permission of the Employer's Agent's Representative shall be obtained.

12.3 INSTALLATION OF WIRING CHANNELS, UNDERFLOOR DUCTING AND POWER SKIRTING

12.3.1 RESPONSIBILITY OF THE CONTRACTOR

The Contractor shall supply and install all wiring channels, underfloor ducting and power skirting as specified or as required for the cable, socket outlet and wiring installation including the necessary supports, hangers, fixing materials, bends, angles, junctions, T-pieces, etc. He shall further liaise with the Main contractor to verify the position of holes and access routes through the structure and finishes.

12.3.2 WIRING CHANNELS

1. FIXING

   The Contractor shall supply and install all hangers, supports or fixings for the channels. Channels up to and including 76 x 76 mm shall be supported at maximum intervals of 600 mm and larger channels at maximum intervals of 1 m. Channel runs shall be carefully planned to avoid clashes with other services and to ensure that all covers can be removed after completion of the entire installation. Purpose made clamps, hangers, etc. shall be used as required. Where it is not possible to support the channels at the specified intervals, they shall be supported in a sound manner to the satisfaction of the Department.

2. INSTALLATION IN CONCRETE

   Where channels are cast into concrete, the insert type shall be used. Additional spacer blocks shall be used where necessary to prevent ducts from being deformed while the concrete is cast. Channels shall be filled with polystyrene or other suitable fillers to prevent the ingress of concrete and shall be securely fixed in position to the shuttering.

3. COVER PLATES

   All channels up to and including 127mm width shall have snap-in cover plates of metal or PVC. Cover plates for wider channels shall be of metal and shall be fixed by means of screws at suitable intervals to prevent warping. Cover plates shall be installed over the full length of the channels. Flush mounted wiring channels shall be fitted with overlapping metal cover plates with plastic edge trim to cover irregularities in the wall recess.

4. JOINTS

   Adjoining lengths shall be aligned and securely joined by means of fishplates fixed by mushroom bolts, washers and nuts or connection pieces that are pop-riveted to both adjoining sections. All adjoining sections shall be rectangular and shall butt tightly. Covers shall fit tightly across the joints.

   Where channels cross expansion joints in the structure, suitable expansion joints shall be provided in the channels by means of fishplates pop-riveted or screwed to the channel on one side of the expansion joint and floating freely in the channel on the other side of the expansion joint.

5. SUPPORT FOR CONDUCTORS

   All conductors in inverted cable channels shall be retained by means of metal clips or metal spacer bars at not more than 1m centres. Where vertical duct lengths exceed 5m, conductors installed in the channels shall be secured at intervals not exceeding 5m to support the weight of the conductors. Clamps shall be provided in suitable draw-boxes for this purpose.

6. CONDUIT CONNECTIONS

Conduit connections shall be terminated by means of two locknuts and a brass female bush. Where the channel is wide enough, conduit connections may be made by means of a conduit box and hole through the back or side of the channel. All holes through which conductors pass shall be fitted with bushes or grommets or shall be sleeved.

7. INTERNAL FINISHES

Bends and T-joints shall be constructed to ensure compliance with the allowable bending radii specified in SANS 10142, Appendix D in the case of PVC-insulated cables and conductors and shall comply with the relevant specification in the case of other cables. Burrs and sharp edges shall be removed and the inside edges of the joints shall be lined with rubber cement or other suitable rubberised or plastic compound to prevent laceration of the conductor insulation.

8. VERMIN PROOFING

All cable channels shall be vermin proofed after installation. Holes shall be covered by means of screwed metal plugs or by means of metal strips, which are bolted, or pop-riveted to the channel. Wooden or other plugs which are driven into holes or other temporary plugs or covers are not acceptable.

9. SERVICES

Multiple duct runs or internal metal partitions shall be used where conductors for power, control, communication and other services are present.

12.3.3 UNDERFLOOR DUCTING

1. GENERAL

1 Two or three compartment underfloor ducting as specified shall be supplied and installed in the positions and according to the layouts indicated on the drawings.

2 Three compartment ducting shall have a cross-section of approximately 200 x 32mm, subdivided into three approximately equal compartments, of which the centre compartment shall be used for electrical power distribution with the two outer compartments for telephone and other light current services respectively.

3 Unless specified, each compartment shall be provided with openings (occurring in line) at 1,5 m centres to permit installation of pedestals or recessed outlets in accordance with the design of the system. The openings shall have removable, flush, cover plates and shall have prepared fixing holes for future installation of pedestals or recessed outlets. The centre of the openings shall be offset a distance of 200 mm from the building nodule lines.

2. JUNCTIONS

The underfloor ducting installation shall be provided with flush cross-over, T junction and right angle bend draw-boxes installed in the runs of ducting, generally as indicated on the drawings. The junction boxes shall be complete with cross-over of services. The junction boxes shall have nominal 300 x 300mm removable cover plates secured by means of four countersunk screws.

3. PEDESTAL UNITS

Where the system accommodates floor pedestal units, these shall consist of pressed steel or die cast aluminium units, suitable for either two or three services, as specified in the Detail Technical Specification. Where the pedestals are installed on vinyl tiled or similar floors which will be subject to washing, a matching waterproofing gasket shall be supplied below each pedestal to render the junction waterproof.

4. INSTALLATION

The underfloor ducting, junction boxes, pedestals, outlets and other accessories shall be installed strictly in accordance with the manufacturer's instructions and according to the following procedure:

a) The underfloor ducting shall be installed on a mortar bed, provided by the Plasterer for purposes of levelling the channel to the final floor screed level. The Contractor shall assist the Plasterer in marking out the layout of the ducting to enable the mortar bed to be laid. Final height of the underfloor ducting shall be determined in close liaison with the Builder.

b) After installation of the mortar bed, the components of the underfloor ducting shall be assembled and installed by the Contractor, following which the screeding will be completed.

5. TERMINATIONS

Up bends manufactured by the supplier of the underfloor ducting shall be supplied and installed wherever the ducting is terminated at a switchboard, telephone duct or telephone distribution box or where the ducting terminates behind power skirting.

6. WIRING

1 Power circuit wiring shall be installed in the centre compartment of the underfloor ducting. Sufficient slack shall be provided to allow for the installation of a floor pedestal outlet at each opening in the ducting, whether an outlet is specified at that position or not. This provision shall take the form of loops in the wiring, including the earth wire, wherever the openings occur. The loops shall be pushed back into the channel and the cover plates replaced. In the instances where pedestals/outlets are not installed, these provisions shall of necessity only be made for the area covered by the circuit and not for the run from the switchboard.

2 The entire underfloor ducting installation shall be effectively earthed and bonded together.

3 Galvanised draw-wires shall be supplied and installed along the entire length of the telephone and light current service compartments of the underfloor ducting. The draw wires shall be interrupted at the junction boxes, with enough slack left coiled up to facilitate the drawing in of cables by others.

7. EXPANSION JOINTS

Where expansion joints in the buildings are crossed by underfloor ducting, expansion joints shall be provided as detailed in 12.2.10.

12.3.4 POWER SKIRTING

1. GENERAL

1 Two or three compartment power skirting as specified shall be supplied and installed in the positions and according to the layouts indicated on the drawings.

2 The top compartment shall be used for power wiring and switched socket outlets, whilst the bottom compartments shall be for telephone and other light current services.

2. MODULE

1 The power skirting shall be manufactured from 1mm (minimum) thick sheet steel or aluminium (as specified) in approximately 2,5m lengths.

2 The covers shall be manufactured in modular lengths, as specified in the Detail Technical Specification or otherwise in 1 m lengths and shall be secured to the wall channel by means of toggle or swivel nuts. Snap-in covers are also acceptable.

3 At the building module lines, covers of specified length or otherwise in 250 mm lengths shall be installed, against which partition walls may be installed, thereby trapping these covers. The removable modular covers shall be installed between these "fixed" covers.

4 Each modular cover associated with the power compartment shall be punched and prepared for the installation of either a 13A or a 16A, 3-pin standard flush switched socket outlet, whether any is specified or indicated for that module or not. Where socket outlets are not installed, the punched holes shall be blanked off with a metal blanking plate, painted the same colour as the power skirting and installed at the back of the covers. These blanking plates shall be easily removable to permit future installation of socket outlets.

5 Unless otherwise specified, no provision shall be made on the covers of the telephone or light current services compartments for the installation of sockets.

6 Factory-made end covers shall be installed at the ends of all runs of power skirting. All internal and external bends or offsets shall be factory-made and shall be installed to provide a neat and workmanlike appearance.

3. PAINTING

The power skirting shall be painted in a colour as specified in the Detail Technical Specification. Aluminium power skirting shall be anodised. The power skirting channels and covers shall be individually wrapped or packed to protect them against damage in transit and before installation.

4. SOCKET-OUTLETS

1 Standard 13 A or 16 A, 3-pin flush switched socket outlets (100 x 50 mm nominal size) shall be supplied and installed in the positions indicated on the drawings and as specified in the Detail Technical Specification.

2 The switched socket outlets shall be secured to the channel by means of suitable brackets.

3 After installation of the modular front covers, they shall be screwed to the socket outlets to ensure proper alignment between the two components. Separate standard covers need not be provided for the socket outlets.

5. CONDUIT FEEDERS

1 Conduits for the circuit wiring to the power skirting shall be installed in the floor slab and shall terminate in flush conduit or boxes, behind the power skirting and installed to match the height of the power, telephone and light current services compartments of the skirting.

2 The wiring/cables shall pass through large diameter holes cut in the rear of the power skirting. The holes shall be suitably bushed or trimmed to prevent damage to the wiring or cables.

3 Alternatively, conduits feeding to the telephone compartment may be terminated in boxes facing upwards in the floor slab immediately below the power skirting, with suitable bushed or trimmed openings being provided through the bottom of the power skirting duct for the cables to pass through. (Applicable only where the power skirting occurs at floor level).

6. POWER SKIRTING AT DOORWAYS

Where a section of power skirting is interrupted by a doorway, bridging conduits shall be installed to interconnect the power skirting sections. Where conduits are not specifically indicated, a minimum of 1 x 32mm bridging conduit shall be installed for each of the power, light current and telephone compartments.

7. CLEANING

Prior to fitting front covers, the power skirting shall be thoroughly cleaned to remove all dust and rubble and damage to paintwork where this has occurred, shall be repaired.

12.4 INSTALLATION OF CABLE TRAYS AND LADDERS

12.4.1 GENERAL

Cable trays and cable ladders complying with the Department's specification shall be supplied and installed where specified and/or where generally suitable for cable distribution.

12.4.2 RESPONSIBILITY OF THE CONTRACTOR

The Contractor shall supply and install all cable trays and/or ladders as specified or as required by the cable routes including the necessary supports, clamps, hangers, fixing materials, bends, angles, junctions, reducers, T pieces etc. He shall further liaise with the Main Contractor for the provision of holes and access through the structure and finishes.

12.4.3 SUPPORTS

Cable tray supports shall consist of two steel hangar rods, at least 8mm in diameter, on both sides of the tray with a substantial steel cross-member on the underside of the tray and bolted to the rods. Alter-natively, cable trays may be cantilevered from walls on suitable brackets.

12.4.4 SPACING OF HORIZONTAL SUPPORTS

1 Horizontal trays shall be supported at the following maximum intervals:

(a) 1,2 mm to 1,6 mm thick metal with 12mm to 19 mm return trays - 1m maximum spacing
(b) 2,5 mm thick metal trays with 76 mm return - 1,5m spacing.
(c) Cable ladders with 76mm side rail of 2mm thickness and with cross rungs - 1,5m spacing
(d) Metal cable ladders other than c) above, including site manufactured angle iron types - 1m spacing
(e) 3 mm thick PVC trays with 40mm return - 1m maximum spacing

(f) 4 mm thick PVC trays with 60mm return - 1,5m maximum spacing

2 In addition to the above spacing on the longitudinal run, trays and ladders shall be supported at each bend, offset and T-junction.

12.4.5 JOINTS

1 Joints shall be smooth and without projections or rough edges that may damage the cables. The Contractor will be required to cover joints with rubber cement or other non-hardening rubberised or plastic compounds if in the opinion of the Department joints may damage cables.

2 Joints shall as far as possible be arranged to fall on supports. Where joints do not coincide with supports, joints shall be made by means of wrap-around splices of the same material as the tray and at least 450mm long. The two cable tray ends shall butt tightly at the centre of the splice and the splice shall be bolted to each cable tray be means of at least 8 round head bolts, nuts and washers. Splices shall have the same finish as the rest of the tray.

3 Splices as described above shall be provided at joints, which do coincide with supports if the loaded tray sags adjacent to the joint due to the interruption of the bending moment in the tray.

12.4.6 FIXING TO SUPPORTS

Trays shall be bolted to supports by at least two round head bolts per support. Bolts shall be securely tightened against the tray surface to avoid projections which might damage cables during installation.

12.4.7 FIXING TO THE STRUCTURE

1 Where installed on concrete or brick, the supports for cable trays and ladders shall be securely fixed by means of at least 2 heavy-duty, expansion type anchor bolts. Cantilevered trays shall be supported by a minimum of two 6mm diameter expansion bolts per support.

2 It is the responsibility of the Contractor to ensure that adequate fixing is provided since cable trays and ladders that work loose shall be rectified at his expense. The fixing shall take into account site conditions that prevail during installation.

3 Where installed on vertical steelwork, cable trays and ladders shall be fixed by means of 6mm diameter bolts and nuts.

4 On horizontal steelwork, use may alternatively be made of "CADDY" type fasteners.

5 Horizontal trays and ladders shall in general be installed 450 mm below slabs, ceilings, etc. to facilitate access during installation of cables.

6 Multiple runs shall be spaced at least 300 mm apart unless a different spacing is specified in the Detail Technical Specification.

12.4.8 INSTALLATION OF CABLES

Cables shall be installed adjacent and parallel to each other on the trays, and snaked slightly to allow for expansion. Cables shall present a neat appearance and shall under no circumstances be bunched. Cables shall be clamped at maximum intervals of 3 m when installed on horizontal trays and at maximum intervals of 600 mm when installed on vertical trays.

12.4.9 EARTHING

Metal trays and ladders shall be bonded to the earth bar of the switchboard to which the cables are connected. Additional bare copper stranded conductors or copper tape shall be bolted to the tray or ladder where the electrical continuity cannot be guaranteed. These additional conductors or tapes shall always be installed in outdoor applications and in coastal regions.

12.4.10 CORROSION

PVC trays shall be used in corrosive atmospheres. All supports shall be adequately protected against corrosion, preferably with a powder coated paint finish.

12.5 FIXING MATERIALS

12.5.1 RESPONSIBILITY

It is the responsibility of the Contractor to position and securely fix conduits, ducts, cables and cable channels, switchboards, fittings and all other equipment or accessories as required for the Installation. The Contractor shall provide and fix all supports, clamps, brackets, hangers and other fixing materials.

12.5.2 FINISHING

All unpainted supporting steelwork installed by the Contractor shall be wire brushed and given one coat of rust-resisting primer, followed by one coat of high quality enamel paint before any other equipment is fixed.

12.5.3 STRUCTURAL STEEL

Supports, brackets, hangers, etc. may only be welded to structural steel members where prior permission of the Employer's Agent's Representative has been obtained. "CADDY" or similar fasteners may be used to fix equipment to structural steel members.

12.5.4 SCREWS AND BOLTS

Where holes exist in equipment to be fixed, bolts and fixing screws as specified shall be used. Where sizes are not specified, the largest bolt or screw that will fit into the hole shall be used.

12.5.5 WALL PLUGS

Where the fixing holes in brick or concrete walls are smaller than 10mm dia. and where the mass of the equipment is less than 10kg, wall plugs may be used to fix conduits, cables and other equipment. Fibre or plastic plugs shall be used. Wooden Plugs are not acceptable. Aluminium plugs may be used in face bricks. Plugs installed in joints between bricks are not acceptable. A masonry drill of the correct size shall be used to drill holes for plugs. Round-headed screws of the correct diameter to match the specific plug shall be used throughout.

12.5.6 ANCHOR BOLTS

Where the fixing holes are 10mm and larger or where the mass of the equipment is 10kg, equipment shall be fixed by means of expanding anchor bolts or by means of bolts cast into the concrete or built into walls.

12.5.7 GALVANISED EQUIPMENT

Brass screws bolts and nuts shall be used to fix galvanised equipment.

12.5.8 SHOT FIRED FIXING

1 Materials such as metal cable ducts or channels may be fixed against walls and concrete slabs by means of the shot-fired fixings.

2 The Contractor shall ascertain whether this method of fixing will carry the weight of the material including conductors, cables and other items of equipment to be installed later. Should it be found that the method of fixing is inadequate and supports tend to loosen, the Contractor will be required to fix the material by an alternative method to the satisfaction of the Employer's Agent's Representative.

3 Where the shot-fired method is used, warning signs shall be placed at all entrances leading to the area where this work is in progress. The Contractor shall take all reasonable precautions to prevent accidents. Refer also to The Occupational Health and Safety Act.

4 Nails and explosive charges recommended by the manufacturer shall be used throughout.

12.5.9 CLAMPS AND BRACKETS

Clamps and brackets used to fix or support equipment such as cable trays, ducts, etc. shall be of a purpose made type suitable for the specific application.

12.6 WIRING

This section covers wiring in approved wire-ways for electrical installations in buildings or other structures under normal environmental conditions for 50 Hz systems not exceeding 600 V.

12.6.1 TYPE OF CONDUCTORS

PVC-insulated or equivalent, stranded copper conductors and bare stranded or green PVC-insulated copper earth conductors shall be used exclusively. Only where cables are specified or in instances where the exceptions stipulated in SANS 10142 are applicable, may the Contractor deviate from this requirement.

12.6.2 WIRE-WAYS

1 All unarmoured conductors shall be installed in conduits, cable channels (trunking) or power skirting and shall under no circumstances be exposed. Cable channels and power skirting shall be of metal construction unless specifically approved to the contrary.

2 Tenderers must note that common wire-ways will only be permitted for relatively light current-carrying conductors such as lighting and socket-outlet circuits. Heavy current-carrying conductors such as feeders to distribution boards and large power points, must be installed in separate conduits or wire-ways.

12.6.3 ORDER OF WORK

Wiring shall only be carried out after the wire-way installation has been completed, but before painting has commenced. Debris and moisture shall be removed from the wire ways prior to the installation of the conductors.

12.6.4 CIRCUITS

Conductors that are connected to different switchboards, shall not be installed in the same wire way. The wiring of one circuit only will be allowed in a 20 mm dia. conduit with the exception of the wiring from switchboards to fabricated sheet metal boxes close to switchboards in which case more than one circuit will be allowed. For larger conduit sizes the requirements of SANS 10142, shall be met.

12.6.5 LOOPING AND JOINTS

A loop-in wiring system where conductors are looped from outlet to outlet, shall be employed. Joints in conductors shall be avoided as far as possible but where it becomes unavoidable, joints will be accepted in cable channels only and not in conduits. Joints shall be soldered or shall alternatively consist of approved ferruling, properly covered with heat-shrink sleeves. The use of PVC insulation tape is not acceptable.

12.6.6 GROUPING OF CONDUCTORS

In cases where the conductors of more than one circuit are installed in the same wire way, the conductors of each separate circuit (including earth conductor) shall be taped at intervals of 1m with PVC insulation tape. The conductors of different circuits shall however remain separate in order that any given circuit can be withdrawn. Conductors entering switchboards or control boards shall be grouped and bound by means of plastic or metal bands (not tape).

12.6.7 CABLE TRAYS

Conductors may only be installed directly on cable trays if specifically approved by the Department. In these cases, cable trays shall be at least 2m above walkways or working areas. Conductors of the same circuit shall be grouped in the same manner as described in the previous paragraph. All the conductors on the cable tray shall then be tied down securely to the cable tray at intervals of 2m or less by means of plastic or metal bands (not tape).

12.6.8 DRAWING IN OF CONDUCTORS

When conductors are drawn through conduit, care shall be taken that they are not kinked or twisted. Care shall also be taken that the conductors do not come into contact with materials or surfaces that may damage or otherwise adversely affect the durability of the conductor.

12.6.9 THREE-PHASE OUTLETS

1 With the exception of three-phase outlets, circuits connected to different phases shall not normally be present at lighting, switch or socket outlet boxes. Where this is unavoidable, barriers shall be provided between terminals or connections of the various phases and the box shall be suitably labelled internally to indicate the presence of three phase voltages.

2 A neutral conductor shall be installed to all three phase outlets intended for equipment connection, whether sockets or isolators, irrespective of whether the particular equipment normally requires a neutral or not.

12.6.10 VERTICAL CONDUIT INSTALLATION

Conductors installed in vertical wire-ways shall be secured at intervals not exceeding 5m to support the weight of the conductors. Clamps shall be provided in suitable draw boxes for this purpose.

12.6.11 CONNECTIONS

The insulation of conductors shall only be removed over the portion of the conductors that enter the terminals of switches, socket outlets or other equipment. When more than one conductor enters a terminal, the strands shall be securely twisted together. Under no circumstances shall strands be cut off.

12.6.12 EARTHING CONDUCTORS

1 When earth continuity conductors are looped between terminals of equipment, the looped conductor ends shall be twisted together and then soldered or ferruled to ensure that earth continuity is maintained when the conductors are removed from a terminal.

2 The installation shall be earthed to comply with SANS 10142.

3 The installation shall be bonded to comply with SANS 10142.

12.6.13 COLOURS

The colours of conductor insulation shall comply with SANS 10142. The colours of conductors for sub-circuits shall as far as possible correspond with the colour of the supply phase. The colours of conductors for wiring to two-way and intermediate switches shall preferably differ from the colour of phase conductors.

12.6.14 SINGLE POLE SWITCHES

Single pole switches shall be connected to the phase conductor and not to the neutral conductor.

12.6.15 SIZE OF CONDUCTORS

Where conductor sizes are not specified, the following minimum conductor sizes shall be used:

Lighting circuits: -	1,5mm² and 2.5mm² copper earth conductor
Socket outlet circuits: -	2,5mm² and 2,5mm² copper earth conductor.
Bell circuits: -	1,5mm²
Stove circuits: -	10mm² and 6mm² copper earth conductor
Clock circuits: -	1,5mm²

12.6.16 PARTITIONS

1 When wiring is installed in removable partitions, the vertical and/or horizontal metal supports of the walls may be utilised for wiring on condition that:

(a) the conductors are not exposed,

(b) the metal supports are properly earthed,

(c) a separate bare earth continuity conductor is drawn in together with the current carrying conductors and is earthed to the metal parts of the switches and/or the socket outlets, and

(d) conductors are installed in the metal and non-inflammable sections of the partitions.

2 Conductors enclosed in a copper braiding (harness wiring) may be installed in removable partitions. The braiding can be used as earth continuity conductor. The wiring shall be joined

to the conduit (or cable) installation by interconnecting the conductor and the earth conductors in a draw-box using suitable ferrules and heat-shrink sleeves or screwed terminals.

12.7 INSTALLATION OF CABLES

This section covers the installation of cables for the distribution of power in buildings, other structures and in ground for system voltages up to 11 kV, 50 Hz.

12.7.1 GENERAL

1 CABLE TYPES

(a) All cables and jointing and termination accessories used for power distribution shall comply with the requirements of the regulations of legislation listed in PPS EI 1.3.

(b) Cables with copper conductors shall be used throughout unless otherwise specified or approved.

(c) All unarmoured cables shall be installed in metal trunking, sleeves or conduit unless clearly specified to the contrary.

(d) XLPE Cables shall only be used in exceptional circumstances with the written permission of the Employer's Representative.

2 COMPETENCE OF PERSONNEL

It is a definite requirement that the Contractor shall only employ personnel fully conversant with cable manufacturer's recommendations for joining and terminating cables.

12.7.2 IDENTIFICATION OF CABLES

1 Cables shall be identified at all terminations by means of punched metallic bands or marked with labels or tags. (Refer also to SANS 10142).

2 The use of PVC tape with punched characters is not acceptable.

3 The identification numbers of cables shall be shown on "as built" drawings of the Installation.

12.7.3 TRENCHING

1. GENERAL

1 The Contractor shall be responsible for all trenching excavations unless specified to the contrary.

2 The Contractor shall, before trenching commences, familiarise himself with the routes and site conditions and the procedure and order of doing the work shall be planned in conjunction with the general construction programme for other services and building requirements.

3 The Contractor shall acquaint himself with the position of all the existing services such as stormwater pipes, water mains, sewer mains, gas pipes, telephone cables, etc. before any excavations are commenced. For this purpose, he shall approach the Employer's Agent's Representative, the local municipal authority and any other authority which may be involved, in writing.

4 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.

5 The Contractor shall take all the necessary precautions and provide the necessary warning signs and/or lights to ensure that the public and/or employees on site are not endangered.

6 The Contractor shall ensure that the excavations will not endanger existing structures, roads, railways, other site constructions or other property.

2. MECHANICAL EXCAVATORS

1 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.

2 The use of power driven mechanical excavators shall be subject to the approval of the Employer's Agent's Representative. 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. BLASTING

1 No guarantee is given or implied that blasting will not be required.

2 Should blasting be necessary and approved by the Employer's Agent's Representative, 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.

4. ROUTES

1 Trenches shall connect the points shown on the drawings in a straight line. Any deviations due to obstructions or existing services shall be approved by the Employer's Representative beforehand.

2 The Department 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.

3 The removal of obstructions along the cable routes shall be subject to the approval of the Department.

5. SHORING AND WATERLOGGING

1 The Contractor shall provide shoring for use in locations where there is a danger of the sides of the trench collapsing due to waterlogging or other ground conditions. Refer to the Occupational Health and Safety Act.

2 The strength of shoring must be adequate for site conditions prevailing and the shoring must be braced across the trench.

3 The Contractor shall provide all pumps and equipment required to remove accumulated water from trenches. Water or any other liquid removed shall be disposed of without any nuisance or hazard.

6. TRENCHING

1 Trenching shall be programmed in advance and the approved programme shall not be departed from except with the consent of the Employer's Agent's Representative.

2 Trenches shall be as straight as possible and shall be excavated to the dimensions indicated in this specification.

3 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 backfilling.

4 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 backfilling on completion of cable laying.

5 Surplus materials shall be removed from site and disposed of at the cost of the Contractor.

6 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.

7 In the event of damage to other services or structures during trenching operations the Contractor shall immediately notify the Employer's Representative and institute repairs.

8 Prior to cable laying the trench shall be inspected thoroughly and all objects likely to cause damage to the cables either during or after laying shall be removed.

9 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 Employer's Agent's Representative shall be notified before installing the cables. The Employer's Agent's Representative will advise on the course of action to be taken.

10 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, they shall be replaced by a person qualified to do so.

7. DIMENSIONS OF TRENCHES

1 Cable trenches for one or two cables shall not be less than 300 mm wide and need not be more than 450 mm wide. This dimension shall be valid for the total trench depth.

2 The width shall be increased where more cables are installed to allow for the spacing stipulated.

3 Where trenches change direction or where cable slack is to be accommodated, the Contractor shall ensure that the requirements of the relevant SANS Specification regarding the bending radii of cables are met when determining trench widths.

4 Trench depths shall be determined in accordance with cable laying depths and bedding thickness.

5 Payment will be made on a volumetric excavation rate calculated on the basis of the given maximum dimensions or the actual dimensions, whichever is the lesser.

8. JOINT HOLES

Where cable joints are required to be made in the course of a cable run, a joint hole shall be excavated of sufficient size to enable the cable jointer to work efficiently and unimpeded.

9. BEDDING

1 The bottom of the trench shall be filled across the full width with a 75mm layer of suitable soil sifted through a 6mm mesh and levelled off.

2 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.

3 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.

4 After cable laying a further layer of bedding shall be provided to extend to 75 mm above the cables.

5 The bedding under joints shall be fully consolidated to prevent subsequent settling.

10. CABLE SLEEVES

1 Where cables cross under roads, railway tracks, other service areas, etc. and where cables enter buildings, the cables shall be installed in Polyethylene (6mm thickness), asbestos cement pipes or earthenware pipes. Pitch fibre and PVC pipes are not acceptable because of the adhesion that occurs after a period of time between the pipe and the sheathing or outer serving of the cables.

2 Pipes shall be joined in accordance with the manufacturer's instructions.

3 Sleeves shall cross roads and railway tracks at right angles.

4 Sleeves shall have a minimum diameter of 100mm. They shall extend at least 2m beyond the tracks of a railway line or of the outermost tracks where there is more than one line. In the case of roads, the sleeves shall extend at least 1m beyond the road edge or kerb on both sides of the road.

5 All sleeves shall be graded 1:400 for water drainage.

6 Cable sleeves shall be installed to the spacing and depths stated in paragraph 4 below.

7 Galvanised metallic sleeves up to and including 76mm dia. shall be supplied and installed by the contractor.

8 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.

11. BACKFILLING

1 The Contractor shall not commence with the backfilling of trenches without prior notification to the Employer’s Agent’s Representative 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.

2 For high voltage cables (1 kV to 11 kV) a coloured plastic marking tape shall be installed 400 mm above the cable. The tape shall be yellow, marked with the words "ELECTRIC CABLE/ELEKTRIESE KABEL" in red. These markings shall not be more than 1m apart from centre to centre.

3 Backfilling shall be undertaken with soil suitable to ensure settling without voids. The maximum allowable diameter of stones present in the backfill material, is 75mm.

4 The Contractor shall have allowed in his tender for the importation of suitable backfill material if required.

5 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.

6 On completion, the surface shall be made good to match the surrounding area.

7 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.

12. CABLE MARKERS (FOR HV CABLES ONLY, EXCEPT WHERE OTHERWISE SPECIFIED)

1 Cable markers shall be provided along all HV cable routes but need only be provided along LV cable routes where specified.

2 Cable markers shall consist of concrete blocks in the shape of truncated pyramids, approx. 300mm high, 150 x 150mm at the top and 250 x 250mm at the bottom.

3 Brass plates shall be cast into the tops of the blocks in such a manner that they cannot be prised loose. The wording "ELECTRIC CABLE/ELEKTRIESE KABEL" shall be stamped on the brass plates as well as direction arrows and the cable voltage rating.

4 Cable markers shall be installed on the surface along all the underground routes and shall project 35 mm above normal ground level unless the projected markers could be a hazard to pedestrian or other traffic in which case they shall be installed flush with the surface.

5 Cable markers shall be installed at the beginning and end of a cable run (e.g. where a cable enters a substation or building), at all changes of direction, above all joints, above cable pipe entries and exits and at intervals not exceeding 50 m along the cable route.

6 The position of cable markers shall be indicated on the "as built" drawings.

12.7.4 INSTALLATION OF UNDERGROUND CABLES

1. INSTALLATION DEPTHS

1 Cables shall be installed at the following minimum depths below final ground level:

Up to 11kV: 8OOmm

2 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.

3 The above depths shall apply to the top layer where cables are installed in layers.

4 The Contractor may only deviate from the above depths provided prior authority in writing has been obtained from the Employer’s Agent’s Representative. In this event the cables shall be protected with a suitable concrete covering.

5 The depth of cable pipes or ducts beneath railway lines or roads shall be not less than 1,1 m below the formation level.

2. CABLE SPACINGS

1 Cables installed in the same trench shall be laid parallel to each other with the following spacing between cables (LV: up to 1 kV; HV: 1 kV to 11 kV):

LV/LV	:	2 cable diameters
LV/HV	:	150mm minimum
HV/HV	:	150mm minimum
LV/HV/PILOT	:	1 cable diameter

2 Where HV and LV cables have to be installed in the same trench, both shall be laid at a depth of 800 mm and then covered with 200mm of soil. The soil shall then be compacted, and then backfilled layer by layer and compacted until the trench is completely backfilled.

3 Cables for telephones, communication systems and other low voltage systems (less than 50 V) shall be separated from power cables by at least 1m. All control or pilot cables without a lead sheath and steel armouring shall be laid at least 300mm from power cables.

4 Cables shall not be buried on top of each other unless layers are specified. The minimum spacing between layers shall be 200mm.

3. CABLE LAYING

1 Except where ducts, tunnels or pipes are provided, cables shall be laid directly in the ground.

2 The cable shall be removed from the drum in such a manner that the cable is not subjected to twisting or tension exceeding that stipulated by the cable manufacturer.

3 Cable rollers shall be used as far as possible to run out cables. Rollers shall be spaced so that the length of cable in the trench will be totally suspended during the laying operation and sufficiently close to prevent undue sagging and the cable from touching the ground. Rollers shall also be placed in the trench in such a manner that they will not readily capsize.

4 Cable rollers shall have no sharp projecting parts liable to damage the cables.

5 Where cables have to be drawn around corners, well-lubricated skid plates shall be used. The skid plates shall be securely fixed between rollers and shall constantly be examined during cable laying operations.

6 Where cables have to be drawn through pipes or ducts, a suitable cable sock shall be used and particular care shall be exercised to avoid abrasion, elongation or distortion of any kind. In the case of oil filled cables, a cable sock may never be used. Special eyes giving access to the interior of the cable, must be utilised.

7 The maximum allowable tension when pulling a cable, is 70 N/mm2 of conductor area.
8 It will be assumed that the price or rates contained in the tender includes for the installation of cables in pipes and ducts or below existing or newly installed services.

9 The Department shall be informed timeously of the intention to carry out all cable laying operations to allow an inspection of the works by the Employer's Agent's Representative if so required.

12.7.5 INSTALLATION OF CABLES IN CONCRETE TRENCHES

1. GENERAL

This paragraph covers the installation of cables in building trenches, service ducts, etc. The trenches, ducts, etc. inside buildings will be constructed and installed by others.

2. INSTALLATION

Cables shall be installed in one of the following ways:

(a) On horizontal cable trays.

(b) On horizontal metal supports with suitable clamps.

(c) On vertical cable trays or metal. supports fixed to the side of the trench. The cables shall be clamped in position.

Cables shall not be bunched and laid on the floor of the building trenches.

3. COVERS

1 The covering of concrete trenches shall as a rule fall outside the scope of the electrical installation. The Contractor shall however be responsible for the cutting or drilling and smoothing of holes for cables through chequer plates, concrete or other coverings as required.

2 Cables shall enter and exit the trench through sleeves protruding 300mm beyond the covering. The sleeves shall be permanently secured in position and the open space between the cable and sleeves shall be sealed with a non-hardening, watertight compound.

4. FILLED TRENCHES

1 Where specified, floor trenches shall be filled with fine crusher sand (no river or see sand).

2 If a sand filling is specified, the cables shall be fixed to non-corroding supports.

3 Sand-filled trenches other than in substations shall be covered in one of the following ways:

(a) Reinforced concrete covers.

(b) Sand and cement screed.

(c) Removable chequer plates.

4 Method (a) above shall be used where vehicular traffic may be encountered over trenches. Unless otherwise specified allowance for a mass of 2 tons shall be made.

12.7.6 FIXING OF CABLES TO TRAYS OR STRUCTURES

1. INSTALLATION

Cables may be installed in one of the following ways:

(a) On horizontal cable trays.
(b) Against vertical cable trays with suitable clamps.
(c) Against horizontal or vertical metal supports or brackets with suitable clamps.
(d) On clamps which are fixed to the structure.

2. CLAMPS

Suitable clamps (cleats) which will secure cables without damage shall be used. Metal clamps or drilled hard wood blocks shall be used. Clamps shall consist of adjustable metal wings which clamp to a metal support, or consist of two halves that are bolted together. The correct clamp size to fit the cable shall be used. Cables of different sizes nay only be fixed by a common clamp when the clamp is specially made to accommodate the various cables.

3. SPACING OF SUPPORTS

Two methods of supporting cables are found in practice. The most generally known method is the restrained installation where the distance between supports is small enough to prevent any noticeable sag in the cable. The alternative method is the unrestrained installation where the distance between supports should be great enough to ensure that there will be obvious sag in each span between supports.

4. SPACING OF SUPPORTS OF UNRESTRAINED CABLES

Large single core cables shall always be installed according to this method. Generally, single core cables with conductors exceeding a cross sectional area of 185mm² should be supported at spacing in excess of 2m since the sag between supports will safely accommodate any thermal expansion.

Reducing the spacing between the supports to 1,5m or less shall be avoided at all costs, as expansion cannot be taken up by a change of sag and chances of sheath failure become considerable.

5. SPACING OF SUPPORTS OF RESTRAINED CABLES

   Additional cleats shall be installed at each bend or offset in the cable run. The maximum distance between supports or cleats for multi-core control cables shall be 20 times the outside diameter of the cable with a maximum spacing of 550mm for unarmoured cables and 30 times the outside diameter of the cable with a maximum spacing of 900mm for armoured cables. Spacing of supports for cables for high voltage lighting shall be in accordance with Table 8 of SANS 10142. A minimum of 20mm ventilation clearance shall be maintained between cables and the wall to which they are cleated.

12.7.7 GROUPING AND SPACING OF CABLES IN BUILDINGS AND STRUCTURES

1. SPACING CORRECTION FACTORS

   Cables shall as a rule be spaced two cable diameters apart, for which no grouping correction factor need be applied.

2. CABLES ON DIFFERENT LEVELS

   Where parallel cable runs are installed at different levels (e.g. on parallel cable trays) and where the spacing of the layers is not specified, a minimum spacing of 300mm shall be maintained.

3. SINGLE CORE CABLES

   Where single core cables are installed along a three-phase circuit, the cables shall be installed in trefoil formation and bound together at 300mm intervals.

4. HIGH VOLTAGE CABLES

   High voltage cables shall be separated from other cables and services throughout the installation and shall as far as possible be installed in separate floor trenches, pipes or metal channels. Where this is not feasible a minimum spacing of 500 mm shall be maintained.

5. CABLES FOR OTHER SERVICES

   Cables for telephones, communication systems and other low voltage systems (less than 50 V) shall be separated from power cables. In building ducts a physical barrier shall be provided between power cables and cables for other services. Where armoured cables are used for such other services, they shall be installed on separate cable trays or shall otherwise be at least 1m away from power cables. Where unarmoured cables are used for these other services, they shall be installed in separate conduits or metal channels.

TABLE 1: MAXIMUM SPACING OF SUPPORTS FOR RESTRAINED CABLES

Cross-Sectional Area of Cable Conductors (mm^2)	MAXIMUM SPACING OF SUPPORTS (CLEATS) (mm) FOR RESTRAINED CABLES			
	Wire Armoured Cables		Other than Wire Armoured Cables and Unarmoured Cables	
	Horizontal Cable Routes	Vertical Cable Routes	Horizontal Cable Routes	Vertical Cable Routes
1,5	450	750	300	400
2,5	450	750	300	400
4,0	600	750	300	400
6,0	600	750	300	400
10,0	750	900	400	450
16,0	750	1000	400	550
25,0	900	1000	450	550
35,0	900	1000	450	550
Bigger than 35,0	900	1000	450	550

For larger cables the spacing shall be 10 x outside diameter of the cable.

12.7.8 TERMINATION AND JOINTING OF CABLES

1. GENERAL

1 Cable ends shall be terminated with glands or in cable boxes with the associated accessories such as clamps, shrouds, etc. complying in all respects with the Employer's Agent's Representatives instructions.

2 Connection of cables to switchgear shall always be effected in such a way that the various phases, seen from the front of the switchgear will be in the following positions:

No. 1 conductor: left (red) (A)
No. 2 conductor: centre (white) (B)
No. 3 conductor: right (blue) (C)

3 Exposed armouring shall be covered with bitumen-based paint.

4 All cable ends shall be supplied with the necessary earth connection.

5 A channel or other approved means of support shall be provided to remove mechanical stress from the glands.

6 Cable cores shall be marked with heat-shrunk sleeves where necessary to identify the phases. Refer to SANS 10142.

7 The current-carrying capacity and breakdown voltage of the cable end shall be the same as for the complete cable.

8 Cables shall be terminated in accordance with the recommendations laid down by the manufacturers of the cables and glands employed.

2. TERMINATION OF PVC INSULATED CABLES

1 Cable ends shall be terminated by means of adjustable glands.

2 The glands shall be fitted in accordance with the cable and gland manufacturer's instructions.

3 The correct size and type of gland shall be used for the particular cable and application.

3. CONNECTION OF CABLE CONDUCTORS

1 Suitable lugs shall be used, preferably solidly sweated to the cable conductor ends. Lugs may be crimped, using mechanical or pneumatic tools designed for this purpose, on condition that evidence is submitted that the method used complies with the performance requirements of BS 4579, Part 1 : "COMPRESSION JOINTS IN COPPER".

2 Contact surfaces shall be thoroughly cleaned and smoothed and fixing bolts shall match the hole size of the lug.

3 Cables that are connected to clamp type terminals where the clamping screws are not in direct contact with the conductor, need not be lugged but the correct terminal size shall be used.

4 Ferrules shall be used as far as possible where cable conductors are connected directly to equipment with screws against the conductor strands.

5 When cutting away insulation from cable conductors to fit into lugs, care shall be taken that no strands are left exposed. Under no circumstances may any of the conductor strands be cut away to fit into lugs.

4. JOINTS

1 Joints in cable runs will not be allowed unless specified in the Detail Technical Specification or authorised by the Employer's Agent's Representative.

2 Jointing shall be carried out strictly in accordance with the manufacturer's instructions and by personnel competent in jointing the types of cables used.

3 During outdoor jointing operations, the joint bays shall be adequately covered by tents of waterproof material suitably supported. Where necessary a trench shall be excavated around the bay to prevent the ingress of moisture. The sides of the hole shall be draped with small tarpaulin or plastic sheeting to prevent loose earth from falling in during jointing operations.

4 The joint shall not impair the anti-electrolysis characteristics of the cable.

5 The Contractor shall notify the Employer's Agent's Representative timeously of the day on which jointing is to be carried out in order than an inspection may be arranged if so required. Any cable joint not inspected by the Employer's Agent's Representative because of insufficient notice being given, shall be opened for inspection and redone at the discretion of the Employer's Agent's Representative at the cost of the contractor.

6 LV cable joints shall be of the epoxy-resin type.

7 Joints shall be fully water and air tight and shall be free of voids and air pockets.

8 The crossing of cores in joints will not be permitted under any circumstances.

12.7.9 TESTING

1 Each cable shall be tested after installation in accordance SANS 1507 (up to 1 kV) and SANS 97 (up to 11 kV) as well as the requirements of the Local and Supply Authorities.

2 LV Cables shall be tested by means of a suitable megger at 1 kV and the insulation resistance shall be tabulated and certified.

TABLE 2

Cable Rating (kV)	TEST VOLTAGE (Applied for 15 minutes) (kV)				
	Paper-insulated cables				XLPE-insulated cables
6,6 11	Between conductors		Conductors to sheath		Conductors to screen
	AC (r.m.s)	DC	AC (r.m.s)	DC	DC
	12 20	18 30	12 20	18 30	11 18

High Voltage test with DC to 2kV for 1 minute only. Discharge cable slowly via discharge stick (1 minute). Clamp all conductors to earth for 24 hours.

3 HV Cables shall be high voltage tested in accordance with Table 2 and the exact leakage current shall be tabulated and certified.

4 The Contractor shall make all arrangements, pay all fees and provide all equipment for these tests. The cost of testing shall have been included in the tender price.

5 The Contractor shall notify the Employer's Agent's Representative timeously so that a he/she may witness the tests.

6 On completion of the tests on any cable, the Contractor shall without delay, submit three copies of the certified Test Reports to the Employer's Agent's Representative.

12.7.10 MEASUREMENTS

1 All measurements for payments shall be made jointly by the Employer's Agent's Representative and the Contractor and the Contractor shall obtain the signature of the Employer's Agent's Representative including approval of such measurements.

2 No allowance shall be made for the breaking away of the trench sides, other earth movements or for trenches excavated in excess of the stipulated dimensions.

3 The classification shall be as follows:

Very hard rock shall mean rock that can only be excavated by means of explosives.

Hard rock shall mean granite, quarzitic sandstone, slate and rock of similar or greater hardness, solid shale and boulders in general requiring the use of jack hammers and other mechanical means of excavations.

Soft rock and earth shall mean rock and earth that can be loosened and removed by hand-pick and shovel.

4 Where very hard rock and hard rock are encountered, the prior approval of the Employer's Agent's Representative shall be obtained before proceeding with the excavation. This requirement is stipulated in order to afford the Employer's Agent's Representative the opportunity to determine whether an alternative cable route is justified.

5 All cable lengths indicated in the Detail Technical Specification and/or shown in the cable route drawings shall be regarded as estimates and are given for tendering purposes only. The successful tenderer shall measure actual cable lengths on site before ordering.

6 The final price for the supply and installation of all cables will be adjusted, on the basis of the actual lengths of installed cables, in accordance with the unit rates quoted at the time of

tendering. Cable lengths shall be measured on site to the nearest 500mm for this purpose and surplus cable will not be paid for.

12.7.11 COMPLETION

1 The Department reserves the right to inspect the installation at any stage during the course of construction. Such inspections will however not deem the portions inspected as being complete or accepted and the Contractor shall remain responsible for completing the installation fully in accordance with the Contract Documents.

2 The Contractor shall carry out a final "as built" survey of the cable routes and present to the Department "as built" route plans of the complete installation. The following information shall be reflected on the plans or submitted as separate schedules with the plans:

(a) Overall length of each cable.

(b) Locations of all joints (if any) in relation to permanent reference points. Dimensions shall be shown and the method of triangulation i.e. two dimensions to each joint, shall be used.

(c) Identification of each cable.

3 The works will be deemed to be incomplete until all tests have been conducted successfully and all "as built" drawings and schedules have been handed to the Department.

12.8 INSTALLATION OF LIGHT SWITCHES AND SOCKET-OUTLETS

12.8.1 GENERAL

1. STANDARDS

Light switches and socket outlets shall comply with the Department's quality specification for "LIGHT SWITCHES", Section 10 and UNSWITCHED AND SWITCHED SOCKET OUTLETS", Section 11. Surface or flush mounted boxes and cover plates, complying with the Department's quality specification for "CONDUIT AND CONDUIT ACCESSORIES", Section 1, shall be provided.

2. POSITION OF OUTLETS

Switches and socket-outlets shall be accurately positioned in accordance with the drawings. It is the Contractor's responsibility to ensure that all outlets are installed level and square, at the correct height from the floor and at the correct position relative to building lines and equipment positions as specified. It is the Contractor's responsibility to determine the correct final floor level and ceiling level in conjunction with the Main Contractor.

3. COVER PLATES

All switches and socket-outlets shall be fitted with standard metal cover plates. The colour of cover plates shall be as specified or shall otherwise match the surrounding finishes as closely as possible. Unless specified to the contrary, ivory cover plates shall be installed on painted walls. Cover plates in the same area shall have the same colour. Flush mounted cover plates shall overlap the draw-box and edges of the recess. Cover plates shall under no circumstances be cut unless authorised by the Department.

4. ESCUTCHEON PLATES

Where flush mounted switches or socket-outlets are installed in special wall finishes e.g. wood or board panels, acoustic tiles or other cladding, etc. and where the wall finishes must be cut to accommodate the switch, it may be necessary to fix an escutcheon plate to the wall to cover the cut-outs. The escutcheon plate shall fit closely around the outlet boxes and shall be fixed independently of the boxes and cover plates. Bevelled cover plates shall be fixed to the outlet boxes and shall fit firmly against the escutcheon plate.

5. APPEARANCE

The sides of adjacent switches, plugs, push-buttons etc. shall be parallel or perpendicular to each other and uniformly spaced. A common escutcheon plate shall be placed around flush mounted outlets and accessories where the standard cover plates do not cover the cut-outs in the finishes.

6. DEEP BOXES

Where switch or socket-outlet boxes have been set deep, spiral type steel wire spacers shall be used to fix the yoke of the switch or socket.

12.8.2 INSTALLATION OF SOCKET OUTLETS

1. MOUNTING HEIGHT

Unless specified to the contrary, socket-outlets shall be installed at the following heights above finished floor level, measured to the centre of the outlet:

Flush mounted in general:	300mm
Showrooms, shops, servant's quarters:	1,4m
Domestic kitchens, tea kitchens:	1,05m
Commercial kitchens:	1,4m
Factories, workshops, garages:	1,4m

2. WALLS

In cases where socket-outlets must be mounted at a nominal height of 300mm and where the lower portion of the wall consists of face bricks and the upper portion is plastered, the outlets shall be installed in the plastered portion of the wall. If however the plastered portion of the wall commences 500mm or more above floor level the outlets shall be installed in the face bricks. Where a wall has different surface finishes the outlets shall be installed within the same finish and not in the dividing lines between the different wall finishes. All outlets shall be installed at least 150mm away from door frames.

12.8.3 INSTALLATION OF LIGHT SWITCHES

1. MOUNTING

Light switches shall be installed 1,4m above finished floor level unless specified to the contrary. Mounting heights given shall be measured from the finished floor level to the centre of the switch. All single switches shall be installed with the long side of the toggle vertical.

2. DOORS

Unless specified to the contrary, switches adjacent to doors shall be installed on the side containing the lock. If the position of the lock is not shown on the drawings, the position shall be verified before the switch-box is installed. Switch boxes in brick or concrete walls shall be installed 150mm from the door frame. Light switches installed in partitions or door frames shall be of the type designed for that purpose.

3. WALLS

Where the lower portion of a wall is face brick and the upper portion plastered, light switches shall be installed wholly in the plaster provided that the lower edge of the plaster is not higher than 1,6m above the finished floor level. In general, where different wall finishes are used in the same area. Switches shall be installed within the same finish and not on the dividing lines between finishes.

4. PARTITIONS

Light switches installed in partitions shall preferably be of the type designed to be accommodated in the partition construction. Switches installed in the metal supports do not require switch boxes. Switches may not be flush mounted in partition walls without switch boxes.

12.8.4 WATERTIGHT SWITCHES

Switches that are exposed to the weather or are installed in damp areas, shall be of the watertight type.

1. MULTIPLE SWITCHES

Where several switches are required in one position, multi-lever switches in a common switch box shall be provided wherever possible. All circuits wired into this box shall be on the same phase in order that voltages in excess of 250 V are not present in the box. Where it is not possible or practical to do this, barriers shall be installed and a label shall be prominently displayed within the box stating that voltages in excess of 250 V are present.

12.9 PHOTO ELECTRIC DAYLIGHT SENSITIVE SWITCH FOR OUTSIDE LIGHTING

1. INSTALLATION

1 The outside lighting of each individual building i.e. light circuits marked "T" on the drawings, shall be controlled by photo-electric daylight sensitive switches.

2 The positions of the switches as indicated on the drawings are provisional and the exact positions shall be confirmed with the Employer's Agent's Representative on site.

3 Individual outside lighting circuits on a building may be connected directly to the daylight sensitive switch.

4 Where two or more lighting circuits are to be controlled by a single daylight sensitive switch, a contactor actuated by the unit shall be provided in the switchboard.

5 A by-pass switch enabling the lights to be turned on at any time, shall be provided.

2. CONSTRUCTION

1 The unit shall comprise a photo cell, thermal actuator and change-over switch. The cover of the unit shall be manufactured from a tough, durable material providing protection against tampering. The cover shall have good weathering properties. It shall be ultraviolet-resistant and shall not deteriorate when exposed to sunlight for prolonged periods.

2 The unit shall be of the wall mounting type and shall be supplied complete with a suitable bracket.

3 The operational level shall be factory pre-set for "ON" at a light level of approximately 54 lux and "OFF" at approximately 108 lux. Voltage variations shall not materially affect the operational levels.

4 A time delay of not less than 15 seconds shall be provided to prevent the unit from functioning due to short period changes in illumination.

5 The unit shall be effectively safeguarded against voltage surges by means of a suitable surge protector which shall preferably form an integral part of the unit.

12.10 INSTALLATION OF LUMINAIRES

12.10.1 POSITIONS

The mounting positions of luminaries shall be verified on site. All luminaries shall be placed symmetrically with respect to ceiling panels, battens, beams, columns or other architectural features of the space unless otherwise indicated. The layout as shown in the Documents shall generally be adhered to but any discrepancies or clashes with structural or other features must be referred to the Department, before commencing erection of the installation.

12.10.2 COVER PLATES

Cover plates shall be fitted over all draw-boxes and outlets intended for luminaries that are not covered by the luminaries' canopy, lamp-holder, ceiling rose or similar accessories.

12.10.3 FIXING TO DRAW BOXES

Where an outlet box or draw-box provides the necessary support for some luminaries, all luminaries with the exception of fluorescent luminaries mounted against ceilings, shall be fixed directly to the box. Fluorescent luminaries and luminaries with a mass in excess of 10kg shall however be suspended independently of the outlet box.

12.10.4 HANGERS AND SUPPORTS

Where provision has not been made for the fixing of luminaries, the Contractor shall supply the necessary supports, hangers, conduit extensions, angle brackets or any other fixing method approved by the Department.

12.10.5 SUSPENDED LUMINAIRES

The necessary hangers shall be provided where luminaries which are of the non-suspension type have to be fixed below false ceilings or roof slabs. The use of 20mm conduits fixed to the roof slab or ceiling is preferred. Provision shall be made for adjustments to enable the levelling of luminaries. Suspended conduits shall be fixed to the ceiling by means of screwed dome lids, bolts and nuts. Ball-and-spigot type dome lids shall be used where conduit lengths exceed 600mm. Wiring shall be installed in the conduit hangers.

12.10.6 SUSPENDED WIRING CHANNELS

Luminaries (especially fluorescent luminaries) may also be suspended from ceilings by means of suspended metal channels. The metal channel may be supported by conduits or threaded rods. Should metal rods be utilised, these shall be screwed to anchor bolts fixed in the roof slab. Wiring shall either be installed in conduits fixed to the metal channel or in the metal channels and covered with a suitable cover plate. Purpose-made clamps shall be used to fix the luminaries to the cable channel.

12.10.7 CEILING BATTENS

Where wooden blocks are used to suspend luminaries, ceiling battens shall not be cut. The wooden blocks shall be cut to fit around battens and shall be screwed to the ceiling. Battens may however be cut where fluorescent or incandescent luminaries with metal canopies have to be installed against a false ceiling.

12.10.8 GLASS-BOWL LUMINAIRES

Unless specified to the contrary, suspended glass-bowl luminaries shall be installed with the underside at least 2,1 m above finished floor level.

12.10.9 FLUORESCENT LUMINAIRES FIXED TO CONCRETE SLABS

Fluorescent luminaries to be installed directly against concrete slabs or walls shall be securely fixed to the outlet box and at two additional points. Shot-fired fixings are not acceptable. Where approved, fluorescent luminaries may be installed against metal wiring channels in which the wiring is housed. The channel fixing may in this case be shot-fired. Purpose-made fluorescent fixing adaptors shall be used to fix luminaries to cable channels.

12.10.10 FLUORESCENT LUMINAIRES FIXED TO CEILINGS

1 In all cases where luminaries are fixed to false ceilings, the Contractor shall ensure that the ceiling is capable of carrying the weight of the luminaries before commencing installation. Should any doubt exist in this regard, the matter shall be referred to the Employer's Agent's Representative.

2 In cases where the weight of the luminaire is not carried by the ceiling but by a support or other suspension method, provision shall be made to prevent relative movement between the ceiling and luminaire, ceiling rose or connection point.

3 Surface mounted fluorescent luminaries shall fit firmly against the ceiling brandering without leaving gaps between luminaire and ceiling. The luminaire shall be fixed directly to the ceiling by means of brass plated round-head wood screws and washers.

4 In the case of tiled ceilings with exposed or concealed T-section supports, surface mounted luminaries shall be fixed only to the tiles by means of butterfly screws or bolts with nuts and washers. The tiles shall be suitably reinforced.

5 Luminaries may alternatively be fixed to metal cross-pieces resting in the ceiling tees.

6 Drilling of holes in ceiling tees to support luminaries will not be allowed.

7 Luminaries shall be fixed in neat relation to the ceiling lay-out.

12.10.11 CONTINUOUS ROWS OF LUMINAIRES

In cases where fluorescent luminaries are installed in tandem, only one connection outlet need be supplied per circuit. All luminaries shall be coupled to one another by means of nipples or brass bushes and locknuts to ensure that wiring is not exposed and that earth continuity is maintained. Luminaries on the same circuit may be wired through the channel formed by the luminaire bodies. In this case silicon-rubber insulated conductors shall be used and internal connections shall be made at porcelain terminal blocks. "SCREW IT" or similar connectors may only be used if prior permission is obtained from the Department. The wiring for any other circuits or outlets, even though these may be in the same row, may not be installed through the luminaire bodies. The Contractor shall ensure that continuous rows are straight and parallel to the relevant building lines.

12.10.12 RECESSED LUMINAIRES

1 Where recessed luminaries are specified, the Contractor shall maintain close liaison with the ceiling Contractor. In the case of tiled ceilings, the luminaries shall preferably be installed while the metal supports are being installed and before the tiles are placed in position. The Electrical Contractor shall be responsible for the co-ordination of the cutting of ceiling tiles with the other contractors concerned.

2 All mounting rings and other accessories shall fit closely into cut-outs to ensure a proper finish.

3 In all false ceilings where wiring channels are used, recessed luminaries shall be connected to the wiring channels by means of unswitched 5 A socket-outlets

4 The following requirements shall be adhered to:

(a) Socket outlets used shall be of 5 A minimum rating.

(b) The connector cord attached to the luminaire may not exceed 3m in length and shall consist of 1,5mm² minimum, 3-core, PVC-insulated flexible cord.

(c) The 5A socket-outlets shall be positioned such that they are not more than 600mm above the false ceiling.

12.10.13 SPECIAL CEILINGS

In cases where special ceilings e.g. aluminium strips, decorative glass, metal leaves, etc. are to be installed, the Contractor and the Manufacturer of the ceiling shall agree upon the method of fixing of luminaries in the ceiling.

12.10.14 BULKHEAD LUMINAIRES

Surface mounted bulkhead luminaries shall not be screwed directly to conduit ends. The conduit shall terminate in a round draw-box at the top or rear of the luminaire. The PVC-insulated conductors shall terminate in a porcelain terminal strip in the draw-box. Silicon-rubber-insulated conductors shall be installed from the terminal strip to the luminaire lamp-holder. "SCREW-IT" or similar connectors may only be used if prior permission is obtained from the Department.

12.10.15 TYPE OF CONDUCTOR

PVC-insulated conductors, unless protected by an approved heat-resistant sheathing, shall not be used where the temperature of the insulation is likely to exceed 70°C. In unventilated luminaries or luminaries capable of housing incandescent lamps over 60W, the interconnecting wiring from the lamp-holder to the circuit wiring shall consist of silicon-rubber insulated conductors. Silicon-rubber insulated conductors shall be used exclusively in the case of high bay fittings. Refer also to the provisions of SANS 10142.

12.10.16 WIRING OF LAMPHOLDERS

The central terminal of Edison Screw (E.S.-type) LAMP-HOLDERS shall be connected to the phase conductor and the screwed housing to the neutral conductor.

12.10.17 HIGH BAY LUMINAIRES

1 High bay luminaries shall be securely suspended from the roof structure.

2 The luminaries nay be fixed to suspended wiring channels containing the wiring on condition that:

(a) rigid channels with a maximum width of 42 mm be used,

(b) the channels are supported at intervals that will prevent sag or warp and

(c) the channels are large enough to accommodate the wiring.

3 Luminaries may be suspended from metal roof trusses with the aid of "CADDY" or similar fasteners.

4 Luminaries shall preferably be connected to enswathed 5A socket outlets. Silicon-rubber insulated flexible cord shall be used exclusively to connect the luminaire to the outlet.

5 A safety chain to keep the luminaire from falling when loosened shall be provided.

12.11 CONNECTIONS TO EQUIPMENT

12.11.1 GENERAL

This section covers the final electrical connections to switchboards and various equipment in general electrical installations under normal environmental conditions for system voltages up to 600 V.

12.11.2 CONNECTIONS TO SWITCHBOARDS

1. CONDUIT ENTRIES

   1 Where sufficient space for conduit entries as well as adequate space for future conduit entries is available, conduits may be terminated directly on the switchboard.

   2 Alternatively, conduits connected to switchboards shall terminate in a common fabricated sheet steel draw-box installed in the vicinity of the switchboard. In open roof spaces this draw-box shall be placed in a roof space of not less than 900mm clearance.

   3 Lighting and socket-outlet circuits may be separately grouped in common conduits or metal ducts (trunking) from the distribution board to the draw-box. The drawbox shall be of sheet steel with a minimum thickness of 1,6mm and shall be fitted with a removable cover plate.

2. FLUSH MOUNTED SWITCHBOARDS

   Where flush mounted switchboards are required, the recessed switchboard tray shall be built into the brick or concrete wall. All conduits from the floor or roof shall be fully recessed and shall be bonded directly to the tray by means of locknuts on both sides and the ends of the conduits fitted with a brass bush.

3. SURFACE MOUNTED SWITCHBOARDS

   Where surface mounted switchboards are specified but where the conduits can be fully recessed, the conduit shall be connected to a recessed connection box installed behind the switchboard. An opening with the same dimensions as the connection box shall be cut in the back of the switchboard and fitted with a suitable grommet.

4. SPARE CONDUITS

   Where conduits from a switchboard run into a false ceiling space above the board, a minimum of two 25mm and two 20mm spare conduits shall be installed into the ceiling space immediately above the board.

5. CABLE CONNECTIONS

   1 Where underground cables are to be connected to switchboards, it shall be the responsibility of the Contractor to ensure that metal, earthenware, asbestos-cement or other approved sleeves are built in correctly to enable installation and connection of the cable to the switchboard.

   2 PVC or pitch fibre sleeves are not acceptable.

   3 Sleeves shall tie installed with a fall from inside to outside of the building to facilitate drainage. The sleeves shall be sealed with a non-hardening compound after installation of the cables to render the installation vermin proof and waterproof.

   4 A metal cable channel with removable metal cover plate shall be installed by the Contractor and shall extend from the switchboard to the floor or into the ceiling void as required. The channel shall coincide with the position of sleeves. The channel shall be flush mounted except in the case of surface mounted switchboards and then only with the permission of the Employer’s Agent’s Representative.

   5 The cable channel shall be large enough to permit the installation of cable glands and future cables, particularly where spare sleeves have been provided.

   6 The colour of the channel cover shall match that of the associated switchboard.

6. CABLE TRENCHES

Where cables in floor trenches have to be connected to wall mounted switchboards, approved sleeves or conduits shall be installed from the side of the trench to the bottom of the switchboard. These sleeves shall be positioned and fixed before the concrete is cast.

12.12 EARTHING

This section covers the earthing of electrical installations in buildings or other structures. The total earthing system of any electrical installation shall be in complete accordance with SANS 10142.

12.12.1 GENERAL RECOMMENDATIONS ON THE PRACTICAL INSTALLATION OF EARTH ELECTRODES

1. REQUIREMENTS OF AN EFFECTIVE EARTH

1 An effective earth must prevent dangerous over voltages arising between metallic structures, frames, supports or enclosures of electrical equipment and the ground during fault conditions.

2 An effective earth must be able to permit fault currents of sufficient magnitude to flow so as to operate protective devices to isolate the fault before damage can occur.

3 The ohmic resistance of an effective earth must be low enough to ensure that the step potential on the ground in the vicinity of the earthing point is within safe limits under fault conditions i.e. a voltage gradient not exceeding 40 V/m for fault durations exceeding 1s.

2. TYPES OF EARTH ELECTRODES

Three types of earth electrodes are suitable:

1 Trench Earths

Trench earths comprise a bare copper or galvanised iron conductor laid at a minimum of 800mm below ground level, usually when underground cables are installed. This type of earth electrode provides a relatively large contact area between electrode and surrounding ground, makes contact with a variety of types of soil and soils of varying moisture content enroute and is economical to install.

2 Spike Earths

Spike earths comprise rods of bare copper, copper-coated steel, stainless steel or galvanised steel designed for the purpose of penetrating ground to depths of up to several metres. A low resistance earth may sometimes be obtained by driving multiple spikes at some distance from each other in order to provide parallel paths.

In hard or rocky ground, it is usually necessary to drill holes into which earth spikes are inserted and then packed with soft soil.

3 Foundation Earths

Foundation earths comprise bare copper or galvanised iron conductors laid under the foundations of buildings, miniature substations, distribution pillars, bases of wooden, concrete or steel poles and structures. Because soil under foundations usually retains moisture, foundation earths are located to take advantage of this favourable condition. Furthermore, they are economical to install.

3. MATERIALS FOR EARTH ELECTRODES

1 Bare copper, either in stranded, strip or rod form, is considered the most suitable general purpose material for earth electrodes. Its main disadvantage is its cost and susceptibility to theft.

2 Bare galvanised iron and steel, either in stranded, strip or rod form, has a satisfactory record of survival in non-aggressive soils and is more economical than copper.

3 Bare aluminium is unsuitable as electrode material.

4. CORROSION

Because galvanised ferrous metals corrode sacrificially to copper, galvanised iron and steel electrodes should not be buried in close proximity to bare copper.

12.12.2 TECHNICAL REQUIREMENTS OF NEUTRAL EARTHING

The following relevant aspects have been extracted from the "AMEU CODE OF PRACTICE FOR THE APPLICATION OF NEUTRAL EARTHING ON LOW VOLTAGE DISTRIBUTION SYSTEMS."

1. DISTRIBUTION SYSTEMS

Multiple Earthed Neutral (MEN) and Protective Multiple Earthing (PME) systems.

Distribution equipment associated with transformer substations that are either ground mounted or pole mounted and fed by underground cable or overhead line, with or without an earth continuity conductor, (ECC), should be installed, connected and earthed in accordance with the following requirements:

(a) Where the resistance to earth of the HV equipment earth is 1 ohm or less, it is permissible to earth the LV neutral to the HV earth electrode.

(b) Where the HV equipment earth exceeds 1 ohm the LV neutral shall be earthed at a minimum distance of 6m from the HV equipment earth (i.e. 6m from the HV electrode/s and also from any earthed metalwork connected thereto).

(c) Notwithstanding the requirements of (a) above, where transformers are associated with HV overhead lines, it is considered good practice to separate the HV and LV earth electrodes. The minimum earth separation should be 6m or one LV span.

(d) The overall resistance to earth of the neutral of an LV distributor or distribution system must not exceed 10 ohms.

(e) The LV neutral may be connected to other supply neutrals, earth electrodes, cable sheaths and armouring and these connections used to obtain the required earthing value of 10 ohms or less specified in par. (d). above.

(f) The neutral of underground and overhead LV distributors must be earthed at the remote ends of each distributor.

(g) Where the overall resistance to earth of the neutral of the distribution system exceeds 10 OHMS, the neutral shall be earthed at intermediate positions on the distributor/s to reduce its resistance to earth to below this limit.

(h) The cross-sectional area of the neutral of all LV distributors must not be less than that of a phase conductor.

(i) No circuit-breakers, isolators, fuses, switches or removable links shall be installed in the neutral between the transformer star point and the remote end of any LV distributor or service connection.

(j) All metallic sheathing and armouring of cables and all metalwork associated with meter cabinets, fuse pillars, etc., supporting or enclosing LV cables shall be bonded to the distributor neutral conductor.

(k) Where a Separate Neutral Earth (SNE) cable is part of an MEN or PME system, the armouring and/or metallic sheath and any ECC shall be bonded to the neutral at the supply end of the cable.

(l) To ensure the integrity of the neutral, it is recommended that all connections and joints on or to overhead line conductors be made by compression fittings or, alternatively double bolted connectors.

(m) MEN or PME may be applied to any single LV distributor without alterations to other LV distributors supplied from the same transformer.

2. PROTECTIVE NEUTRAL BONDING (PNB) SYSTEM

Since the neutral is earthed at one point only, the question of multiple earthing does not arise and there is therefore no necessity to meet the MEN/PME technical requirements.

3. SERVICE CONNECTIONS

1 MEN System

The following conditions apply to consumers' service connections as well as service connections to traffic signals, road signs, street lighting and other power-consuming equipment installed in public places:

(a) All service connections must be by means of cable with an insulated phase, an insulated neutral conductor and an ECC.

(b) A single phase service connection comprises a live, a neutral and an ECC.

(c) A polyphase service connection comprises two or three phase conductors, a neutral and an ECC.

(d) The service neutral and ECC must be solidly and separately connected to the distributor neutral at the tee-off point.

(e) The consumer's earthing lead is connected to the Supply Authority's earth terminal which is in turn connected to the ECC in the service cable at the consumer's supply point.

(f) The neutral must not be connected to earth at the consumer's supply point.

(g) If required by the Supply Authority, and earth electrode must be installed at the consumer's supply point.

(h) In a service connection to traffic signals, street light and other power-consuming equipment installed in public places, such equipment is earthed to the ECC of the service connection.

2 PME System

(a) All service connections must be by means of a cable with an insulated phase and an insulated neutral conductor.

(b) A single phase service comprises a live conductor and a neutral.

(c) A polyphase service connection comprises two or three phase conductors and a neutral.

(d) The consumer's earthing lead is connected to the supplier's neutral and to a mandatory earth electrode at the consumer's supply point.

(e) A label must be attached at the consumers supply point on his premises indicating that the installation is part of a PME system.

Note: It is not recommended that the PME system be applied to supply traffic signals, street signs or other power-consuming equipment installed in public places, because the PME system is inherently unsafe under "broken-neutral" conditions.

12.12.3 EARTHING OF A GENERAL ELECTRICAL INSTALLATION

1. GENERAL

   All earth conductors shall be stranded copper with or without green PVC insulation. All earth conductor sizes shall be determined in accordance with SANS 10142, par. 4.6 where the earth does not form an integral part of the cable.

2. SWITCHBOARDS

   A separate earth connection shall be supplied between the earth busbar of the main switchboard and the earth busbar of every sub-switchboard. These connections shall consist of bare or insulated stranded copper conductors installed along the same routes as the supply cables or in the same conduit as the supply conductors. Alternatively, armoured cables with earth continuity conductors included in the armouring may be utilised.

3. SUB-CIRCUITS

   The earth conductors of all sub-circuits shall be connected to the earth busbar in the supply switchboard in accordance with SANS 10142.

4. RING MAINS

   Common earth conductors may be used where various circuits are installed in the same wiring channel in accordance with SANS 10142. In such instances the sizes of earth conductors shall be specifically approved by the Employer's Agent's Representative. Earth conductors for individual circuits branching from the ring main shall be connected to the common earth conductor with T-ferrules or soldered. The common earth shall not be broken.

5. CONNECTIONS

   Under no circumstances shall connection points, bolts, screws, etc. used for earthing be utilised for any other purpose. It will be the responsibility of the Contractor to supply and fit earth terminals or clamps on equipment and materials that must be earthed where these are not provided. Unless earth conductors are connected to proper terminals, the ends shall be tinned and lugged. Lugs may be crimped, using mechanical or pneumatic tools designed for this purpose, on condition that evidence is submitted that the method used complies with the performance requirements of BS 4579, Part 1: "COMPRESSION JOINTS IN COPPER."

6. NON METALLIC CONDUIT

   Where non-metallic conduit is specified or allowed, stranded copper earth conductors shall be installed in the conduits and fixed securely to all metal appliances and equipment, including switch boxes, socket-outlet boxes, draw-boxes, switchboards, luminaries, etc. The securing of earth conductors by means of self-threading screws will not be permitted.

7. FLEXIBLE CONDUIT

   An earth conductor shall be installed in all non-metallic flexible conduit. This earth conductor shall not be installed external to the flexible conduit but within the conduit with the other conductors. The earth conductor shall be connected to the earth terminals at both ends of the circuit.

8. WATER PIPES

   Metal cold water mains shall be bonded to the earth busbar in the Main Switchboard by solid 15 x 2mm copper strapping. All other hot and cold water pipes shall be connected by 12 x 0,8mm perforated or solid copper strapping (not conductors) to the nearest switchboard. The strapping shall be fixed to the pipe work by brass nuts and bolts and against walls be brass screws at 150mm centres. In all cases where metal water pipes, down pipes, flues, etc. are positioned within 1,6 m of switchboards, an earth connection consisting of copper strapping shall be installed between the pipe work and the board. In vertical building ducts accommodating both metal water pipes and electrical cables, all the pipes shall be earthed at each switchboard.

9. ROOFS

   Where service connections consist of overhead conductors, all metal parts of roofs, gutters and down pipes shall be earthed. One bare 10mm² copper conductor shall be installed over the full length of the ceiling void, fixed to the top purlin and connected to the main earth conductor of each switchboard. The roof and gutters shall be connected at 15m intervals to this conductor by means of 12 x 0,8mm copper strapping (not conductors) and galvanised bolts and nuts. Self-tapping screws are not acceptable. Where service connections consist of underground supplies, the above requirements are not applicable.

12.13 INSPECTIONS, TESTING, COMMISSIONING AND HANDING OVER

12.13.1 PHYSICAL INSPECTION PROCEDURE

1 Once the Contractor has completed the installation, written notice shall be given to the Employer's Agent's Representative in order that a mutually acceptable date can be arranged for a joint inspection.

2 During the course of the inspection, the Employer's Agent's Representative will compile a list of items (if any) requiring further attention. A copy of this list will be provided to the Contractor who will have a period of 7 days in which to rectify the offending items of the installation.

3 The Contractor shall then provide written notice that he is ready for an inspection of the remedial work to the offending items.

4 This procedure will continue until the entire installation has been correctly completed to the satisfaction of the Employer's Agent's Representative.

12.13.2 TESTING AND OPERATIONAL INSPECTION PROCEDURE

1 In addition to the above the Contractor shall have the complete installation tested and approved by the local authorities where applicable.

2 Subsequent to the above testing and approval, the Contractor shall in the presence of the Employer's Agent's Representative test all circuits with respect to:

   (a) Phase balance.

   (b) Insulation level.

   (c) Polarity.

3 Upon completion of the installation and within 3 months of the handover date, the Contractor shall provide and make available a recording voltmeter to record the voltage at three locations in the complex over a period of 48 hours each. These locations will be nominated by the Employer's Agent's Representative.

12.13.3 "AS BUILT" DRAWINGS

1 As each portion of the work is completed, the Contractor shall provide the Employer's Representative with as built drawings showing the exact location measured from fixed points of all cables, transmission lines, each outlet point, etc.

2 In addition a complete reticulation diagram showing all supply cables and switchboards shall be provided behind a plastic cover in the substation or adjacent to the Main Switchboard if not located in a substation.

3 The installation will not be regarded as complete until all of the above requirements listed in 1, 2 and 3 above have been met.

12.14 SCHEDULE OF MATERIALS

12.14.1 LOW VOLTAGE RETICULATION AND DISTRIBUTION

12.14.1.1 Supply, delivery and installation of PVC PVC SWA ECC PVC type cables, with stranded copper conductors and earth continuity conductors (Installation rate to include for installation in wire ways, trays, ducts, trenches, etc. and for the provision of flameproof labels) (Excavations measured elsewhere).

Electrical Sub-Contractor to calculate the size of the cable to be sufficient for all the electrical installation requirements.
18 m × 2-Phase 3 core cable

12.14.1.2 Low Voltage Earthing

Allow for the bonding of the electrical installation

12.14.1.3 Earth Spikes

Supply, delivery and installation of earth spikes including all fastening materials, lugs, etc.

12.14.1.4 Electrical Distribution Board

Allow for the supply, delivery to site, installation of flush mounted sub-electrical distribution board unit, incl. fixing goods & lockable hinged doors.

12.14.1.5 Switches

Supply, delivery to site, installation of two lever, two-way light switches, including outlet boxes, covers and surrounds mounted to brick walls.

Supply, delivery to site, installation of one lever, one-way light switch, including outlet boxes, covers and surrounds mounted to brick walls.

12.14.1.6 Luminaires

Supply, delivery to site, installation of Norland / JB 258 / C21 / ECG / Steel fluorescent luminaires fixed to roof structure, including all fixing materials and terminations.

58 W linear fluorescent, cool white, 26 mm spare lamps to be handed to the Client.

12.14.1.7 Socket Outlets

Supply, delivery to site, installation of 16 ampere, double socket outlet, including outlet box cover and surround, mounted to brick wall.

12.14.1.8 Earth Leakage Unit

Supply, delivery to site, installation of earth leakage unit, including wiring.

12.14.1.9 Circuit Breakers

Supply, delivery to site, installation of moulded case circuit breakers, including wiring to busbars / main circuit breaker:

One (1) for 2-each Socket Outlets
One (1) for 2-each Socket Outlets
Three (3) for Luminaires (One for each set of lights per side of the building, one for office and store room together)

12.14.1.10 Isolators

Supply, delivery to site, installation isolators, including covers and surrounds, mounted to outlet boxes as per requirement for electrical installation.

12.14.1.11 Insulated Wiring

Supply, delivery to site, installation of wiring, fixed onto steel structure with suitable securing / fastening material.

12.14.1.12 Excavations

Excavate for cable trenches, including temporary support for sides, keeping excavation dry, bedding material, backfilling and compaction to specification of trench size 800 mm (deep) × 600 mm (wide).

In earth or pickable ground
Soil requiring the use of pneumatic tools and aids

PC 12 MEASUREMENT AND PAYMENT

Item **Unit**

PC 12.1 Electrical design, drawings and material list …… Sum

The unit of measurement shall be the sum for the electrical design, drawings and material list for the complete installation.

The tendered rate shall be for the Registered Electrician / Electrical Engineer to do the detail design of the electrical installation, preparation of electrical installation drawings and the preparation of a detailed material list of materials to be used for the installation. The design, drawings and material list must be approved by the Employer's Agent's Representative before any electrical installation work can commence.

Item **Unit**

PC 12.2 Connection to ESKOM / Municipal electrical network …… Sum

The unit of measurement shall be the Sum for the Low Voltage electrical connection to the identified ESKOM / Municipal electrical network, including cabling and terminations of the installation.

The tendered rate for the supply, delivery and installation of low voltage PVC PVC SWA ECC PVC type cables, with stranded copper conductors and earth continuity conductors (Installation rate to include for installation in wireways, trays, ducts, trenches (including excavations), cable terminations with all

fastening materials, glands, shrouds, lugs, insulating materials etc. and for the provision of flameproof labels).

Item **Unit**

PC 12.3 Main-Electrical distribution board …… Sum

The unit of measurement shall be the sum for the complete main-electrical distribution board.

The tendered rate shall allow for the supply, delivery to site, installation of flush mounted unit, incl. fixing goods & lockable hinged doors, as specified in Project Specification and depicted on single line diagrams from the electrical installation designer including all circuit breakers, isolators and earth leakage as the design drawings.

Item **Unit**

PC 12.4 Internal electrical wiring …… Sum

The unit of measurement shall be the sum for the complete internal wiring installed.

The tendered rate shall be for supply, delivery and installation of PVC sheathed, PVC insulated multi-core wiring with stranded copper conductors i.e. "twin and earth", drawn into wireways, or laid onto cable tray with suitable securing / fastening.

Item **Unit**

PC 12.5 Light switches …… Number (No.)

The unit of measurement shall be the number of light switches installed.

The tendered rates for supply, delivery and installation of light switches, including covers and surrounds, mounted to outlet boxes.

Item **Unit**

PC 12.6 Luminaries (light fittings) …… Number (No.)

The unit of measurement shall be the number of light fittings installed.

The tendered rates for supply, delivery and installation of light fittings, either fixed to round conduit boxes cast into brickwork or conduit boxes supported to ceiling / roof structure or mounted in recessed ceiling grid, including all fixing materials and terminations including covers and surrounds, mounted to outlet boxes.

Item **Unit**

PC 12.7 Socket outlets …… Number (No.)

The unit of measurement shall be the number of socket outlets installed.

The tendered rates for supply, delivery and installation of socket outlets, excluding outlet boxes, but including covers and surrounds, mounted to outlet boxes, power skirting, flush floor ducting and / or under-screed ducting.

Item **Unit**

PC 12.8 "As-Built Drawings" …… Sum

The unit of measurement shall be the sum for the complete As-Built Drawings.

The tendered rate shall be for provision to the Employer's Agent's Representative with as built drawings showing the exact location measured from fixed points of all cables, transmission lines, each outlet point,

etc. In addition, a complete reticulation diagram showing all supply cables and switchboards shall be provided behind a plastic cover adjacent to the Main Switchboard. The installation will not be regarded as complete until all of the above requirements have been met.

13. CEILINGS AND TRAPDOORS

13.1 BRANDERING TO CEILINGS

Brandering not exceeding 65 mm in width shall be of South African softwood complying with the requirements of SABS Specification 653. Brandering exceeding 65 mm in width shall be in accordance with SABS Specification 563. All brandering shall bear the standardization mark of the South African Bureau of Standards.

The brandering shall be securely spiked up to the supporting timbers with 90 mm wire nails. Cross brandering shall be cut in between the longitudinal brandering, all securely skew nailed to same with 90 mm wire nails. The sizes and spacing of brandering for the various types of ceilings shall be as follows:

13.1.1 GYPSUM PLASTER BOARD

Size 38 x 38 mm, fixed parallel to the ceiling boards at centres not exceeding 450 mm for 900 mm wide boards and 600 mm for 1200 mm wide boards. In the other direction brandering shall be spaced at 450 mm centres for both 900 and 1 200 mm wide boards. Brandering shall also be fixed around edges of ceilings where required for fixing cornices.

Size 38 x 38 mm, at not exceeding 450 mm centres in one direction at right angles to the supporting timbers where metal H-section jointing strips are to be used.

13.1.2 GYPSUM PLASTER BOARD WITH PLASTER FINISH

Size 38 x 38 mm, at not exceeding 400 mm centres in one direction at right angles to the supporting timbers, and around edges of ceiling where required for fixing cornices.

13.1.3 FIBRE BOARD

Size 38 x 50 mm, at all joints between ceiling boards where joints between the boards are close butted or do not exceed 6 mm wide or size 38 x 76 mm where joints between the boards exceed 6 mm wide and elsewhere size 38 x 38 mm, fixed parallel to the ceiling boards at not exceeding 450 mm centres for 900 mm wide boards or 400 mm centres for 1 200 mm wide boards. Brandering in other direction shall be spaced at 900 mm centres for both 900 and 1 200 mm wide boards. Brandering shall also be provided around edges of ceilings where required for fixing cornices.

13.2 COVERING TO CEILINGS

13.2.1 GYPSUM PLASTER BOARD

Gypsum plaster board shall be 6,4 mm thick gypsum board complying with the requirements of SABS Specification 266.

The boards shall be nailed to the brandering with 2 mm diameter galvanised or cadmium plated clout headed nails, 40 mm long, spaced at not more than 100 mm centres at edges of boards and 150 mm centres along the intermediate brandering.

Cover strips to joints in gypsum plaster board ceilings shall be of plaster board as for ceilings, 50 mm wide, with smooth machined edges, neatly jointed and fixed with 2 mm diameter galvanised or cadmium plated clout headed nails, 40 mm long, spaced at not more than 150 mm centres.

Where brandering has been installed at right angles to ceiling boards metal H-section jointing strips shall be the acceptable means of distinguishing joints between boards.

The ceiling boards shall be in 900 or 1 200 mm widths layed out and with fixing commencing at the centre line of the ceiling. Ceiling boards shall only be cut down the length to form infill panels against walls, where such panels shall not be less than 300 mm wide and shall be in single lengths to the width of ceilings wherever possible.

13.2.2 GYPSUM PLASTER BOARD WITH PLASTER FINISH

Gypsum plaster board ceilings with flush plaster finish shall be of gypsum plaster board as described in Subclause 13.2.1, but nails shall be spaced at not more than 100 mm centres along the lines of the brandering.

Joints between boards shall be covered with wire or self-adhesive strips of brown paper scrim tape, all in accordance with the Manufacturer's instructions.

13.2.3 FIBRE CELLULOSE BOARD

Fibre cellulose board for ceilings shall be 6 mm thick insulation board complying with the requirements of SABS Specification 803 and of flat unpressed type.

The boards shall be nailed to the brandering with 2 mm diameter galvanised or cadmium plated clout headed nails, 40 mm long, spaced at not more than 100 mm centres at edges of boards and 150 mm centres along the intermediate brandering.

The joints between the boards shall be covered with 25 mm plastic cover beads pushed in at each side of the boards.

13.3 CORNICES TO CEILINGS

Gypsum plaster board:

Gypsum plaster board cove cornices to ceilings shall comply with the requirements of SABS Specification 622 and shall be of 76 mm girth as specified, all nailed through the ceiling boards to the brandering and to walls at not exceeding 300 mm centres with 2 mm diameter galvanised or cadmium plated clout headed nails, 40 mm long, or fixed to walls with hardened steel nails driven into the brickwork with heads flush with surface.

Cornices shall be scribed at internal angles, mitred at external angles and shall be in long lengths with splayed heading joints where necessary.

Fixing of cornices by means of an approved adhesive is acceptable, but this method of fixing shall be carried out in strict accordance with the Manufacturer’s instructions.

13.4 TRAPDOORS IN CEILINGS

Openings for trap doors in ceilings shall be trimmed with 38 × 100 mm timbers, all securely spiked to the supporting timber trusses. The framework for the trap door shall be formed out of 38 × 50 mm softwood, properly spiked to supporting timbers and trimmers. The size of the opening shall be 650 × 650 mm.

Trap doors shall be formed with skeleton frame of brandering as for ceilings, covered on underside with ceiling boards and hung on a pair of 75 mm steel butts. Soffits of trap doors shall be flush with soffit of ceiling when closed and flap back 180° on to top of the brandering when opened closed trap doors shall rest on 50 × 19 mm softwood fillets all around opening, mitred at angles and securely fixed to soffit of ceiling.

Any trap door larger than 650 × 650 mm shall be provided with brandering along the centre, securely spiked to the skeleton frame.

13.5 CEILING INSULATION

All ceiling insulation materials shall comply with SABS Specification 1381.

Ceilings shall be insulated with approved resin bonded glass fibre or rock mineral wool insulation, not less than 75 mm thick in blanket form manufactured for the insulation of ceilings and laid in single thickness. The insulation shall be cut to size to closely fit between walls, ceiling joints, rafters, etc. and laid over brandering.

PC 13 MEASUREMENT AND PAYMENT

Item **Unit**

PC 13.1 Ceiling board …… Square metre (m²)

The unit of measurement shall be the square metre ceiling board supplied and installed.

The tendered rate for the ceiling board shall include full compensation for the supply and delivery to site, cut to size and installation of ceilings, including of all labour and materials, transport of all materials to site, the complete installation of the ceiling, preparation of the ceiling to receive the ceiling insulation as specified as well as the cornice to the ceiling.

Item **Unit**

PC 13.2 Gypsum cornice to ceiling …… metre (m)

The unit of measurement shall be the metre length of gypsum cornice supplied and installed.

The tendered rate for the gypsum cornice shall include full compensation for the supply and delivery to site, cut to size and installation of cornice, including of all labour and materials, transport of all materials to site, the complete installation of the cornice, making good of the cornice to the ceiling.

Item **Unit**

PC 13.3 Glass fibre ceiling insulation …… Square metre (m²)

The unit of measurement shall be the square metre of glass fibre ceiling insulation supplied and installed.

The tendered rate for the glass fibre ceiling insulation shall include full compensation for the supply and delivery to site, cut to size and installation of insulation material, including of all labour and materials, transport of all materials to site, the complete installation of the insulation and the making good thereof.

14. FENCING

The ClearVu fence shall be installed according to the manufacturer's specification upon approval by the department's engineer.

PC 14 MEASUREMENT AND PAYMENT

Item	Unit
PC 14.1 Installation of fence …..…….…….…….

15. STEEL AND POLYCARBONATE ROOF AND SIDE COVERINGS

15.1 GENERAL

Profiled metal sheet roof coverings shall comply with the following minimum requirements:

a) Galvanised metal roof sheets shall have a minimum thickness of 0,8mm for roofs of 4° - 14° pitch inclusive and 0,6mm for roof pitches of 15° and upwards.

b) Polycarbonate roof sheets shall be of a high quality with a co-extruded layer of UV stabilised polymer on both sides to create a weather resistant surface UV2. The roof sheets shall comply to standards UL94 (Class V-3), BS476 – Part 7 (Class 1Y), ASTM D1929 (Pass minimum of 450 °C), comply with ISO 3795.

c) Roof trusses shall be spaced at not exceeding 1,2 m centres, except where the pitch is 12° or less, when the spacing may not exceed 1 m centres.

d) Purlins shall be spaced at not exceeding 1,0 m centres for roof pitches of 4° to 30° inclusive and at 1,2 m maximum for roofs having pitches of 31° and greater.

e) Unless otherwise specified in this section, profiled metal roofing sheets shall be used and fixed all in accordance with SABS Code of Practice 0237.

f) Roof sheets shall have galvanised coating of Z150 quality for inland areas and Z275 quality for coastal areas.

g) Chromadek roof sheets shall have galvanized coating of Z275 quality.

h) All necessary cutting of sheets shall be properly performed. Cut edges at sides of valleys and where otherwise exposed shall be perfectly straight.

i) Drive screws will be permitted.

j) The Contractor is to submit a certificate, signed by the Merchant, stating that the galvanised roof covering supplied complies with the required thickness specified.

k) Roof sheets shall be single lengths to each slope of the roof.

15.2 PROFILES

15.2.1 STEEL CORRUGATED SHEETS

Corrugated galvanised iron roofing sheets shall comply with SABS Specification 934 with corrugations 17,5 mm deep at 76 mm centres giving an effective width of approximately 610 or 762 mm between the crests of the outermost corrugations respectively, all coated with zinc having a mass of not less than that indicated in the following table for the three classes of galvanising specified:

g/m² of surface area	
Average	Individual (Minimum)
600	510
450	385
275	235

At exposed verges of roofs the iron shall be finished with neatly formed rolls. The sheets shall have side laps of not less than one and a half corrugations. The minimum end laps for the different roof slopes shall be in accordance with the following table:

Slope of roof	End lap (mm)
Greater	150
30°	175
25°	200
20°	225
Smaller	300

15.2.2 STEEL RIB BOX (IBR) SHEETS

a) Box Rib (IBR) roofing sheets shall be used with ribs of 36mm deep and 172mm pitches.
b) All roof sheets shall be hot dip galvanised in accordance with SANS 3575/SANS 14713, coating grade Z275 quality for coastal areas and Z150 quality for inland areas.

15.2.3 POLYCARBONATE RIB BOX (IBR) SHEETS

a) Polycarbonate Box Rib (IBR) roofing sheets shall be used with ribs of 36mm deep and 172mm pitches and sheet thickness of 1,2 mm.
b) The roof sheets shall comply to standards UL94 (Class V-3), BS476 – Part 7 (Class 1Y), ASTM D1929 (Pass minimum of 450 °C), safety compliance with ISO 3795

15.2.4 CHROMADEK STEEL RIB BOX (IBR) SHEETS

a) Chromadek Box Rib (IBR) roofing sheets shall be used with ribs of 36mm deep and 172mm pitches.
b) All roof sheets shall be hot dip galvanised in accordance with SANS 3575/SANS 14713, coating grade Z200. Colour coated to choice on the one side and standard backing coat on the other side.

15.3 INSULATION

Prior to the laying of roof sheets, the roof structure shall be covered with an approved insulation underlay having a non-combustible reflective foil finish on upper surface and a layer of plastic on the underside all bonded to a substrate of kraft paper having synthetic reinforcing, all as described in SABS Specification 1381.

The insulation underlay shall be laid longitudinally and pulled taut over the top edges of the rafters and then nailed thereto with galvanised clout nails. Working from the eaves level upwards, a minimum overlap of 150 mm shall be allowed to ensure complete protection.

Roofs shall be left perfect, clean and watertight on completion and all eaves and valley gutters shall be cleaned out.

Valleys shall be of open or closed construction as follows:

(a) Open valleys: a strip of underlay approximately 1 m wide shall be laid along the whole length of the valley and nailed into position with clout nails close to the edges of the valley boards farthest from the centre line of the valley. Provide metal valley lining as described in Clause 10.6, ensuring that it extends at least 50 mm beyond the edges of the tiling, all securely fixed along both edges. Matching roof tiles/slates shall be neatly cut to the line of the valley and laid to project over the edges of the valley lining by at least 50 mm. A gap of at least 50 mm shall be provided down the centre line of the valley between the edges of the tiles.

(b) Closed valleys: all constructed as for open valleys except that the sheets are to be cut in such a manner that when laid they form a butt joint closing valley.

15.4 RIDGING (METAL)

15.4.1 FOR CORRUGATED ROOFING

Galvanised iron ridging for ridges and hips of corrugated iron covered roofs shall be 0,60 mm thick (after galvanising), coated with zinc of mass as specified for roofing iron in the table in Subclause 15.2.1.

The ridging shall be 450 mm girth with roll top and bent down edges, lapped 225 mm at heading joints; cut, properly lapped and fitted at intersections of ridges, hips and valleys; and beaten into corrugations of roofing iron to close openings. Roll shall be closed at feet of hips and at gable ends.

Ridging shall be fixed with screws to wood purlins and hook bolts to steel purlins using washers under heads and nuts, all as described for fixing corrugated iron roofing, but spaced at not exceeding 300 mm centres.

15.4.2 FOR RIB-TROUGH ROOFING

Galvanised iron ridging for ridges of IBR roof shall be 0,60mm thick (after galvanising), coated with zinc of grade Z275.

The ridging shall be 450mm girth with roll top and bent down to edges, lapped 225mm at the heading joints, cut, properly lapped and fitted at intersections of ridge and provided with serrated closers.

Ridging shall be fixed with hook bolts to steel purlins using washers under heads and nuts and spaced at not exceeding 300mm centres.

15.5 FLAT METAL ROOFS

A flat metal roof is defined as a flat structure covered with profiled metal roofing sheets laid with a fall of between 0° and 4° maximum. The use of such roofs is restricted to relatively small outbuildings/roof areas where no other solution proves viable or possible.

The supporting structure shall be such that any permissible deflection of the covering and/or roof under sustained load of snow or hail in susceptible areas and of heavy rain will not cause the roof to leak.

The profiled steel sheets shall be of an approved type in single lengths preferably using concealed fixing. Where conventional fixing screws are used, these are to be rendered permanently watertight by means of a profiled cover strip held securely in place with the Manufacturer's fixing clips.

Side laps of profiled sheets are to be sealed by permanently welting with a machine.
Purlins are to be spaced at 1,0 m centres maximum.

15.6 LININGS TO VALLEYS

Linings to valleys in troofs shall be of galvanised sheet iron or sheet copper as specified having 225 mm laps at end joints and dressed up and on to purlins at each side of valleys in IBR and Corrugated iron roofs. Linings shall be cut and properly fitted at top and bottom of valleys.

15.7 FLASHINGS

Flashings, where butting against vertical wall or other surfaces, shall be of galvanised steel iron, turned up for at least 100 mm against vertical surfaces and close dressed for not less than 200 mm on top of the roofing iron.

15.8 MAKING GOOD

Roofs, gutters, flashings, etc. shall be carefully examined at completion of the work, any holes or other defects soldered up or otherwise made good and the whole left perfect and watertight.

15.9 ROOF TRIMMINGS

Fascias and barge boards, where prescribed, shall be of pressed fibre cement boards, of section described and in long lengths, butt jointed with 75 mm wide galvanised steel plates four times bolted with galvanised bolts over joints or with standard aluminium jointing strips and bolts

PC 15 MEASUREMENT AND PAYMENT

Item	Unit
PC 13.3 Roof covering with 0,58mm thick Chromadek galvanised IBR roofing sheets Class Z275 fixed to timber purlins ……..	Square metre (m^2)

The unit of measurement shall be the square metre of 0,55mm thick Chromadek galvanised IBR roof sheeting Class Z275, fixed to timber purlins with approved screws in accordance with the manufacturer's instructions.

The tendered rate for the roof covering shall include full compensation for the supply of all labour and materials, transport of all materials to site, the complete erection of the roof sheets in accordance with the manufacturer's instructions and the making good thereof.

PART C4 – SITE INFORMATION

EASTERN CAPE GOVERNMENT
DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM

BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

C4 Site Information

ITEM	DESCRIPTION
Site Location	Keiskamahoek Town opposite main Post Office
GPS co ordinates	32˚ 40' 55.89" S and 27˚ 09' 08.40" E
General geography	Flat terrain
Road conditions	Tarred road and fair gravel road
Site extent	±0.25ha
Site clearance required	Yes
Site soil properties	Unknown, contractor to inspect and verify the suitability
Site vegetation	Trees
Site fenced	No.
Site access	Community / Employees of DRDAR / Animals
Services available	Yes
Accommodation	Provide own
Labour	Negotiate local labour with the community
Storage of materials	Provide own
Security	Provide own
Construction difficulty	Medium difficulty
Plant required	Water tanks, Jack hammers, Compact rollers, whacker, concrete mixer, generator with welder, concrete vibrator.
Equipment / tools required for	Contractor to identify specific tools for various tasks
Transport required	For all materials For all plant, equipment and tools For contractor's personnel
Testing of works	Concrete test cubes for testing of concrete strength; Laboratory testing of compacted area Engineer to oversee testing of the completed Works
Commissioning of works	Contractor to commission and test.

EASTERN CAPE PROVINCIAL GOVERNMENT
DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM

BID FOR THE CONSTRUCTION OF RURAL MARKET AT KEISKAMAHOEK IN THE AMAHLATHI LM OF AMATHOLE DISTRICT.

C.4.2 Schedule of contract Drawings

The following drawings form part of this contract:

DRAWING NUMBER	DESCRIPTION
AR001	Layout Plan
AR002	Building Plan
AR003	Building Layout
EP001	Electricity Plan
CT2208/1	Foundation Layout
CT2208/2	General Arrangement
CT2208/3	Rafter Connection Detail
CT2208/4	Wind Portal and Purlin Detail
CT2208/5	Cross Bracing and Full Size Plate Details
CT2208/6	Bending Schedule

ANNEXURE A
LOCALITY MAP

ANNEXURE B
CLEARVU SPECIFICATIONS AND DRAWINGS

ANNEXURE C
LOCAL CONTENT DECLARATION ITEMS