



CALL FOR BIDS

BID NO: ECDC ECDC/INFRA/34/042024

BID SUBJECT: REFURBISHMENT OF MDANTSANE HI-WAY MALL (N.U.2)

Consisting Of:

- The Tender (Returnable) - This Document**
- The Bills of Quantities - This Document**
- Drawings**
- Specification Document**
- Construction Health and Safety Specification**

BIDDER NAME:

CSD No:

CRS No.:

CLOSING DATE:	06 June 2024
CLOSING TIME:	12h00

.....

Head office: EAST LONDON T: (+27) 043 704 5600 • PORT ELIZABETH T: (+27) 041 373 8260 • QUEENSTOWN T: (+27) 045 838 1910
MTHATHA T: (+27) 047 501 2200 • Satellite offices: KING WILLIAM'S TOWN T: (+27) 043 604 8800 • MOUNT AYLIFF T: (+27) 039 254 0584
BUTTERWORTH T: (+27) 047 401 2700 • ALIWAL NORTH T: (+27) 051 633 3007

INDEX		
Nr	DETAILS	PAGE
SECTION A		
A	Abbreviations	
B	Definitions	
PART T1 – TENDERING PROCEDURES		
T1.1	Tender Notice and Invitation to Bid	
T1.2	Tender Data	
PART T 2 – RETURNABLE DOCUMENTS		
T2.1	List of Returnable Documents	
	Standard Conditions of Tender	
T2.2	Returnable Schedules	
PART C1 – AGREEMENTS AND CONTRACT		
C 1.1	Form of Offer and Acceptance	
C 1.2	Contract Data	
C 1.3	Form of Guarantee	
PART C2 – PRICING DATA (Attachment)		
C2.1	Pricing Instructions	
C2.2	Bill of Quantities	
C2.3	Mechanical Installation – Domestic Water & Heating Equipment Installation	
	Mechanical Installation – Early Warning Fire Detection Equipment Installation	
	Mechanical Installation – Fire Protection Equipment Installation	
	Mechanical Installation – Heating Ventilation & Air Conditioning	
C2.4	Electrical Installation	
PART C3 – SCOPE OF WORK		
C3.1	Scope of Works	
	Conditions of Scope of Work	
C3.4	Health and Safety Specification	
C3.4.1	Baseline Risk Assessment	
PART C4 – SITE INFORMATION/DRAWINGS (SEPARATELY ATTACHED)		

SECTION A: ABBREVIATIONS AND ACRONYMS	
CIDB	Construction Industry Development Board
DTI	Department of Trade and Industry
ECDC	Eastern Cape Development Corporation
EME	Exempt Micro Enterprise
IRBA	Independent Regulatory Board of Auditors
PCCA	Prevention and Combating of Corrupt Activities Act 12 of 2004
PFMA	Public Finance Management Act (Act 1 of 1999)
PPPFA	Preferential Procurement Policy Framework Act (Act 5 of 2000)
QSE	Qualifying Small Enterprise
SABS	South African Bureau of Standards
SANAS	South African National Accreditation System
SARS	South African Revenue Service
SASAE	South African Standard on Assurance Engagements
SCM	Supply Chain Management
SMME	Small, Medium and Micro Enterprises
ToR	Terms of Reference
CSD	National Treasury Central Supplier Database for South African Government
B: DEFINITIONS	
Acceptable tender	Means any tender which, in all respects, complies with the specifications and conditions of tender as set out in the tender document.
Accreditation Body	Means the South African National Accreditation System or any other entity appointed by the Minister from time to time whose function it is to: Accrediting verification agencies Developing, maintaining, and enforcing of Verification Standards.
Affordable	Means (in terms of a PPP-Agreement) that the financial commitments to be incurred can be met by funds: Designated within ECDC's existing budget for the function to which the agreement relates; and Destined for ECDC in accordance with the relevant Treasury's future budgetary projections.
All applicable taxes	Includes value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies.
Bid	Means a written offer or proposal to supply goods and/or provide services, submitted in response to the ECDC's invitation to quote or submit proposals which includes advertised competitive bids, written price quotations or proposals.
Bid Specification	A specification that lays down the characteristics of goods to be procured or their related processes and production methods, or the characteristics of services to be procured or their related operating methods, including the applicable administrative provisions, and a detailed requirement relating to conformity assessment procedures that an entity prescribes and shall include TOR for specialised services.

Black People	Means 'African', 'Indian' and 'Coloured' people who are citizens of the Republic of South Africa by birth; or are citizens of the Republic of South Africa by naturalisation before the commencement date of the Constitution of South Africa Act (1993); or became citizens of the Republic of South Africa after the commencement of the of the Constitution of South Africa Act(1993), but who for the Apartheid policy that has been in place to that date, would have been entitled to acquire citizenship by naturalisation prior to that date.
Specific goal	<p>2.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table in SBD 6.1 as may be supported by proof/ documentation stated in the conditions of this tender:</p> <p>2.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—</p> <ul style="list-style-type: none"> (a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system: or (b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system, then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.
Close Family Member	Shall mean: - member of the same household, parent (including adoptive parent), parent-in-law, son (including adoptive son), son-in-law, daughter (including adoptive daughter), daughter-in-law, step-parent, step-son, step-daughter, brother, sister, grandparent, grandchild, uncle, aunt, nephew, niece, the spouse or unmarried partner with relation to any of the person's above.
Code of Ethics	Refer to the ECDC Code of Ethics for Management and Staff as may be amended from time to time.
Comparative Price	Means the price after the factors of a non-firm price and all the unconditional discounts that can be utilised have been taken into consideration.
Consortium or Joint Venture	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.
Contract	Means the agreement that results from the acceptance of a bid by ECDC.
Designated Sector	Means a sector, sub-sector or industry that has been designated by the DTI in line with national development and industrial policies for local production, where on local produced goods or locally manufactured goods meet the stipulated minimum threshold for local production and content.
Duly Sign	Means a document 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).
Exempt Micro Enterprise (EME)	Means an enterprise with a specified total annual revenue as per Department of Trade and Industry Codes of Good Practice on Broad Based Black Economic Empowerment
Family Member	Means a husband or wife, any partner in a customary union according to indigenous law or any partner in a relationship where the parties live together in a manner resembling a marital partnership or a customary union; and any person related to either one or both persons referred above within the second degree through a marriage, a customary union, or a relationship or the third degree of consanguinity.
Firm Price	Means the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax, which, in terms of the law or regulation, is binding on the contractor and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract.
Fronting	Means a deliberate circumvention or attempted circumvention of the B-BBEE Act and the Codes. Fronting commonly involves reliance on data or claims of compliance based on misrepresentation of facts, whether made by the party claiming compliance or by any other person.
Functionality	Means the measurement according to predetermined norms, as set out in the tender documents, of a service or commodity that is designed to be practical or useful, working or operating, taking into account, among other factors, the quality, reliability, viability and durability of a service and the technical capacity and ability of the tenderer.
Imported Content	Means that portion of the tender price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the bidder or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour or intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock dues, import duty, sales duty or other similar tax or duty at the South African port of entry.
In the service of the state	Means: an employee of any municipality who has a performance contract with the municipality and is employed on a permanent, temporary, or short-term basis. an employee or public servant of any national or provincial government as defined in terms of Public Services Act. a member who – is a councillor of any municipal council as defined in the Local Government Municipal Structures Act (Act No 117 of 1998); is a politician serving in any provincial legislature; or is a politician serving in the National Assembly or the National Council of Provinces, a member of the board of directors of any municipal entity, an employee and a member of a government owned entity as defined in the Public Finance Management Act (Act No 1 of 1999);

	and / or such other meaning ascribed to it by National Legislation from time to time.
Local content	Means a portion of the tender price, which is not included in the imported content, provided that local manufacture does take place.
Non-firm prices	Means all prices other than "firm" prices
Person	Includes a juristic person.
Price Quotation	An estimate describing the product, stating its price, time of shipment, and specifies the terms of the sale and terms of the payment.
Property	Includes all movable and immovable property and intellectual property belonging to ECDC.
Public Private partnership	Means a commercial transaction between ECDC and a private party in terms of which: the private party either performs a function o.b.o. ECDC for a specified or indefinite period or acquires the use of state property for its own commercial purposes for a specified or indefinite period. the private party receives a benefit for performing the function or by utilizing state property, either by way of: compensation from a revenue fund charges or fees collected by the private party from users or customers of a service provider to them; or a combination of such compensation and such charges or fees.
Qualifying Small Entity	Means an enterprise with a specified total annual revenue as per Department of Trade and Industry Codes of Good Practice on Broad Based Black Economic Empowerment
Rand value	Means the total estimated value of a contract in South African currency, calculated at the time of bid invitations, and includes all applicable taxes and excise duties.
Related enterprise	Means an entity controlled by a measured entity whether directly or indirectly controlled by the natural persons who have direct or indirect control over that measured entity or the immediate family of those natural persons.
Service Level Agreement	Shall have the same meaning assigned as "Contract".
Shareholder	Means a person who owns shares in the company and is actively involved in the management of the enterprise or business and exercises control over the enterprise.
State	Means: any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the PFMA any municipality or municipal entity national Assembly or the national Council of Provinces; or parliament.
Stipulated minimum threshold	Means that portion of local production and content as determined by the DTI.
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.

Tender	The same meaning is assigned as 'Bid" above.
Threshold	Shall mean the financial limits on the value of goods or services to be procured as set and prescribed in this policy which shall determine the manner in which these goods and services will be procured.
Total revenue	Means the total income of an entity from its operations as determined under South African Generally Accepted Accounting Practice.
Trust	Means the arrangement through which the property of one person is made over or bequeathed to a trustee to administer such property for the benefit of another person.
Trustee	Means any person, including the founder of a trust, to whom property is bequeathed in order for such property to be administered for the benefit of another person.
Value for Money	Means that the item (public-private partnership agreement) results in a net benefit to EDCD defined in terms of cost, price, quality, quantity, or risk transfer, or a combination thereof.

Part T1: Tendering Procedures

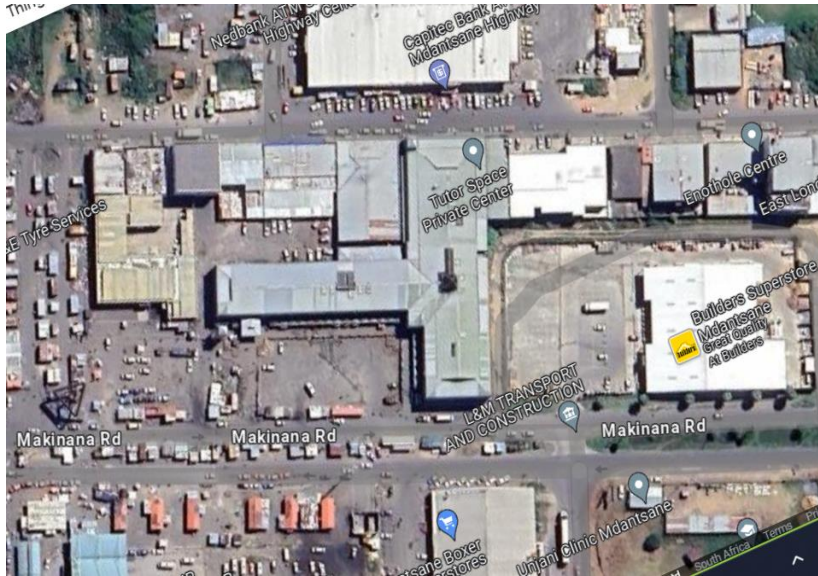
T.1.1

TENDER NOTICE AND INVITATION TO BID

1. Invitation to Bid

Eastern Cape Development Corporation (ECDC) wishes to engage with a suitable contractor with a CIDB Grading of 8GB or Higher for the Refurbishment of Mdantsane Hi-Way Mall, Mdantsane.

The project is situated in N.U.2, Mdantsane, Eastern Cape, South Africa.



Mdantsane Hi-Way Mall: -32.9429822, 27.755987 (Co-ordinates)

A Detailed scope of services is described in Scope of Work Section below.

2. Eligibility to Bid

- a) Bidders should meet the Mandatory Requirements in order to be evaluated T2.1
- b) **It is estimated that bidders should have a CIDB grading of 8GB or Higher.**
- c) Only those tenderers who are registered with the CIDB prior to submissions of bid with a contractor grading equal 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 the above-mentioned grading classes of construction work, are eligible to have their tenders evaluated.**

3. Payment of Bid Document

No payment is due to obtain tender documents.

4. Collection / Availability of Documents

Documents will be available for downloading from the ECDC website at www.ecdc.co.za.

5. Queries on Bid Document

Queries relating to the issue of these documents may be addressed to Ms N Norexe,
E- Mail at tenders@ecdc.co.za and cc_nnorexe@ecdc.co.za

6. Estimated Timeline

Activity		Date	Time
1.	Placing of Advert	Daily Dispatch, E-tender, CIDB, Load on ECDC Website for 21 Days. 10 May 2024	n/a
2.	Compulsory Briefing Meeting	A compulsory briefing meeting to be held at the Mdantsane Hi-Way Mall at N.U.2, Mdantsane on the 22nd of May 2024 starting at 11h00. Co-ordinates: -32.9429822, 27.755987	
3.	Last day of questions	5 days before closing date	16H00
4.	Final date of submission of bids	06 June 2024	12h00
5.	Bid Validity	90 days	

6.1. Briefing Session and Site Location

A compulsory briefing meeting to be held at the Mdantsane Hi-Way Mall at N.U.2, Mdantsane on the 22nd of May 2024 at 11h00AM.

For any enquiries relating to this Bid please email the procurement department at tenders@ecdc.co.za and cc_nnorexe@ecdc.co.za, attention Ms N Norexe.

Communication with the Bidders and any clarity on Queries Bid will be posted on the website at www.ecdc.co.za and will also be communicated to the bidders via email where the Bidder has indicated to ECDC that they are interested in submitting a bid.

Bidders must visit the site to ensure that their proper assessment of the site is done and that the Bill of Quantities is priced correctly.

Bidders must acquaint themselves of the current site conditions, works complexity and associated safety risks.

ECDC will only consider bidders that have attended the briefing meeting.

Telephonic, emailed, telexed, facsimile, and late tenders will not be accepted.

Tenders may only be submitted on the tender documentation that is issued.

Requirements for sealing, addressing, delivery, opening and assessment of tenders are stated in the **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 (January 2019) as published in Government Gazette No 42622, Board Notice 423 of 2019 on the 8th of 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.

Clause number	Tender Data
A.1.1	The employer is Eastern Cape Development Cooperation (ECDC)
A.1.2	<p>The Tender Documents issued by the Employer comprise the following documents:</p> <p>THE TENDER</p> <p>Part T1: Tendering procedures</p> <p>T1.1 - Tender notice and invitation to tender</p> <p>T1.2 - Tender data</p> <p>Part T2: Returnable documents</p> <p>T2.1 - List of returnable documents</p> <p>2.2 - Returnable schedules</p> <p>THE CONTRACT</p> <p>Part C1: Agreements and Contract data</p> <p>C1.1 - Form of offer and acceptance</p> <p>C1.2 - Contract data</p> <p>C1.3 – Form of Guarantee</p> <p>Part C2: Pricing data</p> <p>C2.1 - Pricing Instructions</p> <p>C2.2 - Bill of Quantities</p> <p>C2.3 – Mechanical Installation</p> <p>C2.4 – Electrical Installation</p> <p>Part C3: Scope of work</p> <p>C3 - Scope of work</p> <p>C3.4 - Health and Safety Specification</p> <p>C3.4.1- Baseline Risk Assessment</p> <p>Part C4 : Site Information</p> <p>C4 – Drawings (Separately Attached)</p>

A.1.4	<p>During Tender stage all communication shall be through the Procurement Department for attention: Name: Ms. N Norexe Address: ECDC Head Office at ECDC House Ocean Terrace Park Moore Street Quigney, East London</p> <p>Tel: 043 704 5600 E-mail: tenderes@ecdc.co.za cc nnorexe@ecdc.co.za</p>
A.2.1	<p>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 CIDB Regulations are eligible to have their tenders evaluated.</p> <p>Joint ventures are eligible to submit tenders provided that:</p> <ol style="list-style-type: none"> 1. every member of the joint venture is registered with the CIDB, 2. the lead partner has a contractor grading designation in the GB (General Building Works (GB)) class of construction work; not lower than one level below the required grading designation in the class of works construction works under considerations and possess the required recognition status. 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 GB class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.
A.2.1	<p>Not Applicable for this Bid</p> <p>The following tenderers who are registered with the CIDB, or are capable of being so registered prior to the evaluation of submissions, are eligible to have their tenders evaluated:</p> <ol style="list-style-type: none"> a) contractors who have 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 an 8GB class of construction work; and b) contractors registered as potentially emerging enterprises with the CIDB who are registered in one contractor grading designation lower than that required in terms of a) above and who satisfy the following criteria **

A.2.7	<p>The arrangements for a compulsory clarification meeting are as stated in the Tender Notice and Invitation to Tender.</p> <p>Tenderers must sign the attendance list in the name of the tendering entity. Addenda will be issued to, and tenders will be received only from those tendering entities appearing on the attendance list.</p>
A.2.12	<p>Not Applicable for this Bid</p> <p>Main tender offers are not required to be submitted together with alternative tenders.</p>
A.2.12	<p>No alternative tender offers will be considered.</p>
A.2.12	<p>Not Applicable for this Bid</p> <p>If a tenderer wishes to submit an alternative tender offer, the only criteria permitted for such alternative tender offer is that it demonstrably satisfies the Employer's standards and requirements, the details of which may be obtained from the Employer's Agent.</p> <p>Calculations, drawings and all other pertinent technical information and characteristics as well as modified or proposed Pricing Data must be submitted with the alternative tender offer to enable the Employer to evaluate the efficacy of the alternative and its principal elements, to take a view on the degree to which the alternative complies with the Employer's standards and requirements and to evaluate the acceptability of the pricing proposals. Calculations must be set out in a clear and logical sequence and must clearly reflect all design assumptions. Pricing Data must reflect all assumptions in the development of the pricing proposal.</p> <p>Acceptance of an alternative tender offer will mean acceptance in principle of the offer. It will be an obligation of the contract for the tenderer, in the event that the alternative is accepted, to accept full responsibility and liability that the alternative offer complies in all respects with the Employer's standards and requirements.</p> <p>The modified Pricing Data must include an amount equal to 5% of the amount tendered for the alternative offer to cover the Employer's costs in confirming the acceptability of the detailed design.</p>
A.2.13. 3	<p>One original duly signed (by authorised representative) and completed bid document (hardcopy) MUST be submitted inclusive of the terms and conditions of this bid document with any attachments/annexures /returnable required for this Bid.</p> <p>A PDF soft copy of the duly signed and completed original bid (e.g., PDF format in Flash drive) should be submitted with the Original duly signed and completed hardcopy bid document however non-submission of a soft copy will not result in the Bid being disqualified.</p> <p>ECDC will not be responsible if your bid is not submitted on time. All bid documents are to be completed in permanent black ink.</p> <p>No alterations of the Bid Document will be allowed.</p> <p>No correction fluid will be allowed. Corrections should be initialled.</p>

A.2.13.5	Valid originally firmly bound signed complete tender document (by authorized representative) must be placed in the Bid Box on or before the final date and time of submission.
A.2.15.1	<p>The employer's details and address for delivery of tender offers and identification details that are to be shown on each tender offer package are:</p> <p>a) Location of tender box:</p> <p>Bid Reference Number: ECDC/INFRA/34/042024</p> <p>Project Name: REFURBISHMENT OF MDANTSANE HIGHWAY MALL</p> <p>Delivered at Physical Address: ECDC Head Office at ECDC House, Ocean Terrace Park, Moore Street, Quigney, East London.</p> <p>Bids/Tender offers must be submitted on or before the final date and time of submission of bids as indicated in the Tender Notice and invitation to Tender.</p> <p>It is the Bidders responsibility to ensure that all the documents are received on time. The bid box is open on weekdays between 08h00 and 16h30</p>
A.2.13.6 A.3.5	<p>Not Applicable for this Bid</p> <p>A two-envelope procedure is required.</p>
A.2.13.9	Telephonic, email, telegraphic, telex, email, or facsimile tender offers will not be accepted.
A.2.15	The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.
A.2.16	The tender offer validity period is 90 days.
A.2.18	<p>Not applicable to this bid</p> <p>The tenderer shall, when requested by the Employer to do so, submit the names of all management and supervisory staff that will be employed to supervise the Labour-Intensive portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirements.</p> <p>Tenders to submit the associated names being part of the returnable documents failure to submit can result in the tender being eliminated.</p>
A.2.19	<p>Access shall be provided for the following inspections, tests, and analysis:</p> <p>The site is available for viewing the location of the works.</p>
A.2.20	The tenderer is required to submit with his tender a letter of intent from an approved insurer undertaking to provide the Performance Bond to the format included in Contract Data/Contract of this procurement document.
A.2.22	<p>Not Applicable for this Bid</p> <p>Return all retained tender documents within 28 days after the expiry of the validity period.</p>

A.2.23	<p>The tenderer is required to submit with his tender:</p> <p>1) Tax Compliance</p> <p>Bidders must ensure compliance with their tax obligations.</p> <p>In Bids where Consortia/Joint venture/Sub-Contractors are involved; each party must submit a separate proof of Tax Compliance Status.</p> <p>The bidders' Tax status will be verified on the CSD prior to the bid award and where the preferred bidders is not compliant, 7 working days will be granted for remedy, failing which the bidder will be disqualified.</p>
A.3.1.1	<p>The Employer will respond to requests for clarification received up to 5 working days before the tender closing time.</p>
A.3.4	<p>Opening of the Bids</p> <p>There will be NO PUBLIC OPENING of the Bids received; however, the list of bids received may be published on the ECDC website and will be sent to the bidders that have submitted bids via email.</p> <p>There will be no discussions with any Bidder/Interested Party that Submitted Proposals/ Bids until evaluations have been complete. Any subsequent discussions shall be at the discretion of ECDC.</p>
A.3.11.1	<p>The financial offer will be reduced to a comparative basis.</p>
A.3.11.2	<p>Not Applicable for this Bid</p> <p>The procedure for the evaluation of responsive tenders is Method 1.</p>

A.3.11.3 Evaluation Criteria

This bid is subject to the Preferential Procurement Policy Framework Act and the Preferential Procurement Regulations 2022 as applicable to provincial government business enterprises as listed under schedule 3(D) of the Public Finance Management Act and the ECDC Procurement Policy as amended from time to time.

The procedure for evaluation of tenders is as follows:

<p>Stage 1</p>	<p>Service Providers are to meet all the Mandatory Requirements to be evaluated further. Failure to submit the Mandatory Requirements as required will result in the bid being disqualified.</p> <p>Involves a valuation of local production and content (goods) only. At this stage Bidders must meet the minimum threshold for local production and content as determined by the DTI for local content before they will be evaluated in terms of preferential procurement points.</p> <p>Bidders to complete the Declaration for Local Production and Content for Designated Sectors and Local Content Declaration: Summary Schedule (Annex C)</p>
<p>Stage 2</p>	<p>Functionality: Involves an evaluation of Functionality only – At this stage Bidders must score a minimum score of 70% (49/70) for functionality (services) to be evaluated for Stage 3 (Preferential procurement points).</p>
<p>Stage 3</p>	<p>Preferential Procurement points: Price: Points will be calculated for price on the relevant prices in accordance with the preference point system, 90/10.</p>

Functionality Criteria	Maximum number of points
Completed Similar Projects	30
Experience and Qualifications of the Key Personnel	30
Assessment of Financial Capability	10
Maximum possible score for functionality (M_s)	70

A.3.11.3	<p>The evaluation criteria and maximum score in respect of each of the criteria are as follows: (Details on Functionality Evaluation are on T2.1)</p> <p>Functionality shall be scored by not less than three evaluators in accordance with the Functionality Criteria Evaluation below.</p> <p>The minimum percentage to be achieved for functionality is 70% (or 49/70 points).</p>
A.3.13	<p>Tender offers will only be accepted if:</p> <ul style="list-style-type: none"> a) the tenderer is Tax Compliant <ul style="list-style-type: none"> ✓ tenderers must ensure compliance with their tax obligations. ✓ in Bids where Consortia/Joint venture/Sub-Contractors are involved; each party must submit a separate proof of Tax Compliance Status. ✓ the tenderer Tax status will be verified on the CSD prior to the bid award and where the preferred bidder is not compliant, 7 working days will be granted for remedy, failing which the bidder will be disqualified. b) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation. c) is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement. d) the tenderer has not: <ul style="list-style-type: none"> i) abused the Employer's Supply Chain Management System; or ii) failed to perform on any previous contract and has been given a written notice to this effect. e) the tenderer is able, in the opinion of the employer, to perform the contract free of conflicts. f) the employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2003, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely. g) the tenderer 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. h) the tenderer has the legal capacity to enter the contract. i) the tenderer 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; j) the tenderer complies with the legal requirements, if any, stated in the tender data; and
A.3.17	<p>The number of paper copies of the signed contract to be provided by the employer is one (1).</p>

Part T2: Returnable documents

T2.1 - List of returnable documents

T2.2 - Returnable schedules

T2.1 - List of returnable documents

This tender applies to both the (a) Skills Development Standard and the (b) Indirect Targeting Standard. Although in the case of these two standards there are no returnable documents, tenderers are sensitised that the proforma documents as listed below, shall be completed by the successful contractor after award of the contract within the stipulated period. (The proforma documents are provided in the tender data for information purposes only).

- Form A 1 List of Recognised Skills Development Agencies,
- Form A 2 Baseline Training Plan,
- Form A 3 Project Interim Report,
- Form A 4 Supervisor Agreement,
- Form A 5 Project Completion Report.
- Project Interim Report,
- Project Completion Report and Declaration

1. Evaluation Criteria

This bid is subject to the CIDB and Preferential Procurement Policy Framework Act and the Preferential Procurement Regulations 2022 as applicable to provincial government business enterprises as listed under schedule 3(d) of the Public Finance Management Act and the ECDC Procurement Policy as amended from time to time.

The procedure for evaluation of tenders is as follows:

Stage 1	<p>Service Providers are to meet all the Mandatory Requirements in order to be evaluated further. Failure to submit the Mandatory Requirements as required will result in the bid being disqualified.</p> <p>Stage 1 involves a valuation of local production and content (goods) only. At this stage Bidders must meet the minimum threshold for local production and content as determined by the DTI for local content before they will be evaluated in terms of preferential procurement points.</p> <p>Bidders to complete the Declaration for Local Production and Content for Designated Sectors and Local Content Declaration: Summary Schedule (Annex C)</p>
Stage 2	<p>Functionality: Involves an evaluation of Functionality only – At this stage Bidders must score a minimum score of 70% (49/70) for functionality (services) in order to be evaluated for Stage 3 (Preferential procurement points).</p>
Stage 3	<p>Preferential Procurement points: Price: Points will be calculated for price on the relevant prices in accordance with the preference point system, 90/10.</p>

1.1. MANDATORY LIST OF TENDER RETURNABLES

Service Providers are to meet all the Mandatory Tender Requirements in order to be evaluated further for Stage 1. Failure to submit the Mandatory Requirements as required will result in this bid being disqualified.

Description	Disqualification if not submitted with Bid Document or Bidder is found to be Non- Compliant at the Time of Bid Close	Mandatory Requirement for Award
<p>1. Bidders must be registered on the National Treasury Central Supplier Database (CSD). The following information will be verified on the National Treasury Central Supplier Database:</p> <ul style="list-style-type: none"> • Business Registration including details of directorship and membership, - The bidders' Business Registration Status will be verified on the CSD prior to the bid award and where the preferred bidder's status is under deregistration, 7 working days will be granted for remedy, failing which the bidder will be disqualified. • ID Number, • Government Employee • Tender Defaulting and Restriction Status. Should the Tender be a restricted supplier or a defaulting supplier they will be disqualified. <p><u>Onus on the Service Provider</u> Onus is on the Service Provider to make sure that all these are active and compliant on the CSD at the time of bid closing and tender award. ECDC will verify if the Service Provider has been registered on CSD. Service Provider to submit CSD Number as required in the Cover Page. It is the responsibility of the Service Provider to ensure that the correct CSD Number is provided.</p>	<p style="text-align: center;">Yes</p>	<p style="text-align: center;">Yes</p>

	<p>If Service Provider is not registered on CSD by the time of closing of the bid, they will not be considered for evaluation.</p> <p><u>Directors in the Service of State</u></p> <p>Where a person within the Bidding Entity is an Employee of the State, Bidder should</p> <ol style="list-style-type: none"> a. submit a signed letter on a letter head from their Accounting Officer/Accounting Authority (AO/AA of the Government Institution where they are employed) stating that they are not prohibited from conducting business with the State in terms of Section 8 of the Public Administration Management Act, 2012 (Act No.11 of 2014- "The PFMA") b. submit a signed letter on a letter head from their AO/AA granting permission to perform other remunerative work outside of their employment where the PAMA does not apply to such an employee. <p>ECDC reserves the right to verify such information from their AO/AA.</p> <p><u>JV's and Consortium</u></p> <p>Where the Bidder is a JV/Consortium, each firm must be registered on the CSD.</p>		
--	---	--	--

2.	<p>Tax Compliance Requirements:</p> <ul style="list-style-type: none"> • Bidders must ensure compliance with their tax obligations. • The bidders' Tax status will be verified on the CSD prior to the bid award and where the preferred bidders is not compliant, 7 working days will be granted for remedy, failing which the bidder will be disqualified. • In Bids where Consortia/Joint venture/sub-contractors are involved, each party must submit a separate proof of Tax Compliance Status Certificate/SARS Pin Number/CSD Number. 	No	Yes
3.	<p>CIDB Requirements:</p> <p>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 8GB (General Building) or higher class of construction work, are eligible to have their tenders evaluated.</p> <p>Joint ventures are eligible to submit tenders provided that:</p> <ol style="list-style-type: none"> 1. every member of the joint venture is registered with the CIDB; 2. the lead partner has a contractor grading designation in the GB (General Building) class of construction work; not lower than one level below the required grading designation in the class of works construction works under considerations and possess the required recognition status. 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 GB class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations. <p>ECDC will verify whether the Bidders have an active and valid CIDB registration as required above</p>	Yes	Yes
4.	<p>Annexure C – Supplier Information (Completed and Signed by the Delegated Authority) Attach Delegation of Authority</p>	Yes	Yes

5.	Annexure L – C.1.1 Form of Offer and Acceptance Offer (Completed and Signed by the Delegated Authority) Attach Delegation of Authority.	Yes	Yes
6.	Annexure G - (SBD 4): Bidders disclosure. (Completed and Signed by the Delegated Authority) Attach Delegation of Authority.	Yes	Yes
7.	Annexure H: Statement of Consent to Data Processing (Completed and Signed by the Delegated Authority) Attach Delegation of Authority.	No	Yes
8	<p>Declaration with regards to Company /Firm Location</p> <p>Attach a proof of address to claim points for the Eastern Cape base locality as the specific goal as advised in the tender / quotation qualifies the company/firm for the PPR of 2022 preference points claim.</p> <p>Failure to submit the declaration and proof of address for each JV / Consortium member may result in awarding of 0 (zero) points preference points under Eastern Cape Locality.</p> <p>This information will be verified from the FICA documents (Physical Address, Utility Bill, Telephone, Tax Clearance, lease agreement submitted by the bidder).</p> <p>Failure to submit the declaration and proof of address may result in awarding of 0 (zero) points preference points under Eastern Cape locality.</p>	No	Yes
9	<p>Annexure I – (SBD 6.1.): Preferential Points Claim (Signed and Completed).</p> <p>CSD report will be used to confirm other specific goals listed in Table 1 of the SBD 6.1 document.</p> <p>Failure to submit the preference points claim and proof of address may result in awarding of 0 (zero) points preference points under Eastern Cape locality.</p>	No	No

10	<p>Duly signed Letter of Authority MUST be submitted authorising the individual to sign on behalf of the bidder if:</p> <p>a) If there are more than one Owner/ Director / Shareholder / Member / Trustee etc. OR</p> <p>b) If there is only one Director / Shareholder / Member / Trustee / Owner etc. and they are not the one completing the bid document.</p> <p>Note: The Letter of Authority MUST be signed by all directors of the Bidder (or a signed Board Resolution authorising the signatory will be accepted).</p>	Yes	Yes
11.	<p>ANNEXURE J (which includes local content annexures C, D & E): Declaration of Local Content (SBD 6.2) (Completed and Signed by the Delegated Authority) Attach Delegation of Authority</p>	Yes	Yes
12.	<p>Priced Bills of Quantities completed in black ink.</p>	Yes	Yes
<p>The following will be applicable to Joint Ventures/Consortium</p>			
	<p>Consortium/Joint Venture Agreement to enter in a Consortium / Joint Venture signed by all Consortium Members who are Duly Authorized.</p>	Yes	Yes
	<p>Resolution of the Board of Directors to enter into a Consortium or Joint Venture from each member firm of the Consortium/Joint Venture for this Bid.</p>	Yes	Yes
	<p>Letter of Authority of Signatory (individual) authorizing the Signatory to sign on behalf of the Consortium/JV.</p> <p>The Letter of Authority should be from each member firm and must be signed by all directors of each member firm (or Board Resolution will be accepted).</p>	Yes	Yes
	<p>Declaration with regards to Company /Firm Location</p> <p>Attach a proof of address to claim points for the Eastern Cape base locality as the specific goal as advised in the tender / quotation qualifies the company/firm for the PPR of 2022 preference points claim.</p> <p>Failure to submit the declaration and proof of address for each JV / Consortium member may result in awarding of 0 (zero) points preference points under Eastern Cape Locality.</p> <p>This information will be verified from the FICA documents (Physical Address, Utility Bill, Telephone, Tax Clearance, lease agreement submitted by the bidder).</p>	Yes	No
<p>It must be noted that the scoring of joint ventures/consortia on</p>			

<p>a proportional basis applies to bids for both the acquisition of goods and services and income generating contracts.</p> <p>Failure to submit the declaration and proof of address may result in awarding of 0 (zero) points preference points under Eastern Cape locality.</p>		
<p>Annexure I – (SBD 6.1.): Preferential Points Claim (Signed and Completed).</p> <p>CSD report will be used to confirm other specific goals listed in Table 1 of the SBD 6.1 document.</p> <p>Failure to submit the preference points claim and proof of address may result in awarding of 0 (zero) points preference points under Eastern Cape locality.</p>	No	No

KINDLY NOTE THAT, FAILURE TO SUBMIT THE REQUIRED MANDATORY DOCUMENTATION WITH THE BID WILL RESULT IN YOUR BID BEING DISQUALIFIED WITHOUT FURTHER CONSIDERATION.

Bidders shall take note of the following conditions:

1. The successful bidder will be required to submit a Letter of Good Standing from the Compensation Commission within 14 days after award and before the contract can be signed.
2. Performance Guarantee to be submitted within 14 days after award.
3. The Bid Validity period is 90 days.
4. An approved and project specific Health and Safety file within 14 days upon appointment.
5. A Proposed Project Execution Plan & Program to proceed with works with occupied buildings within 14 days upon appointment.
6. Submission of a Construction Works Insurance for all works upon appointment.
7. No correction fluid to be used and all errors to be initialled.
8. Tenderers to complete and sign annexures C, D and E even if they claim 100% of local content.

Queries relating to the issue of these documents may be addressed in writing to:

Ms N Norexe
tenders@ecdc.co.za or nnorexe@ecdc.co.za

1.2. STAGE 1: EVALUATION OF LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS AND LOCAL CONTENT DECLARATION

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 ECDC Supply Chain Management Policy, 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 ECDC Supply Chain Management policy makes provision for the promotion of local production and content.
- 1.2 ECDC Supply Management Policy prescribes that in the case of designated sectors, tenders must be advertised 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.
- 1.3 Where necessary, for tenders referred to in paragraph 1.2 above, a three stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage functionality with a minimum threshold of 70% and third stage of price and specific goals.
- 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 = $\left[1 - \frac{x}{y}\right] \times 100$
Where
- 1.6 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.

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.thedti.gov.za/industrial_development/ip.jsp at no cost.

2. The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid: 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 table 1 below.

Bidder that fails to meet the minimum stipulated threshold for local production and content will be unacceptable and will not proceed to stage 2.

.....

SIGNATURE(S) OF BIDDERS(S)

DATE:

ADDRESS:

.....

.....

WITNESSES:

1.

2.

ANNEXURE J: SBD 6.2 – Declaration Certificate For Local Production And Content for Designated Sector Note: Mandatory Requirement. Failure to complete and Sign this document will result in the bid being non responsive.

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 ECDC Supply Chain Management Policy, 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 ECDC Supply Chain Management policy makes provision for the promotion of local production and content.

1.2 ECDC Supply Management Policy prescribes that in the case of designated sectors, tenders must be advertised 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.

1.3 Where necessary, for tenders referred to in paragraph 1.2 above, a three stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage functionality with a minimum threshold of 70% and third stage of price and specific goals.

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) as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = \frac{x}{y} \times 100$$

Where

- x imported content
- y bid price 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, one week (7 calendar days) prior to the closing date of the bid as indicated in paragraph 4.1 below.

The SABS approved technical specification number SATS 1268:2011 is accessible on <http://www.thedfi/industrialdevelopment/ip.jsp> at no cost

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

2. Definitions

- 2.1 “bid”** includes advertised competitive bids, written price quotations 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,
- 2.5** where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;
- 2.6 “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).
- 2.7 “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
- 2.8** which costs are inclusive of the costs abroad, 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;
- 2.9 “Local content”** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;
- 2.10 “Stipulated minimum threshold”** means that portion of local production and content as determined by the Department of Trade and Industry; and
- 2.11 “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 in the execution part of a project in terms of the contract

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

Table 1

Designated Sector /Sub-sector/ Industries	Minimum threshold for local content
Steel Products	100%
Plastic Products	100%
Cement (All classes)	100%

3. **Does** any portion of the services, works or goods offered have any imported content?
(Tick Applicable Box)

YES	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, one week (7 calendar days) prior to the closing date 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:

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	
Yen	
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 the meeting the stipulated minimum threshold for local content, the DTI must be informed accordingly in order for the DTI to verify and consultation with the AO/AA provide directive in this regard.

**LOCAL CONTENT DECLARATION 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)**

IN RESPECT OF BID No. ECDC/INFRA/34/042024

ISSUED BY: (Procurement Authority / Name of Institution):

NB

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.

Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thdti.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.

Declaration D and E should be kept by the Bidder 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:

The facts contained herein are within my own personal knowledge.

I have satisfied myself that

- 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

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 and information contained in Declaration D and E which has been consolidated in Declaration C above :

Bid price, excluding VAT (y)	R
Imported content (x)	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 / 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 Preferential Procurement Regulations, 2017 promulgated under the Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

NAME: _____

SIGNATURE: _____ **DATE:** _____

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

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

The below listed declarations are attached in the next three pages that follow;

- **Declaration C SATS 1286.2011**

- Local Content Declaration – Summary Schedule

- **Declaration D SATS 1286.2011**

- Imported Content Declaration – Supporting Schedule to declaration C

- **Declaration E SATS 1286.2011**

- Local Content Declaration _- Supporting Schedule to declaration C

- Bidders should first complete annexure D, after completing annexure D, bidders should complete annexure E and then consolidate the information on annexure C.
- Annexure C should be submitted with the with the bid documentation on the closing date in order to substantiate the declaration made on annexure J.
- The successful bidder is required to continuously update annexures C, D and E with the actual for the duration of the contract.
- Bidders should obtain copies of certificates of trading the subject materials from manufactures/suppliers and attach them in the bid document in order to substantiate annexure J above.

NB: Tenderers to complete and sign annexures C, D and E even if they claim 100% of local content

Templates of Declarations C, D and E follow:

Annex C

(C1) Tender No.	ECDC/INFRA/34/042024		
(C2) Tender description:	Refurbishment of Mdantsane Hi-Way Mall		
(C3) Designated product(s)	Steel, Cement, Plastic Pipes		
(C4) Tender Authority:	Eastern Cape Development Corporation		
(C5) Tendering Entity name:			
(C6) Tender Exchange Rate:	USF	EU	GBP
(C7) Specified local content %			

Note: VAT to be excluded from all calculations

Tender item No's (BoQ reference)	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)
(C8)		(C10)	(C11)	(C12)	(C13)	(C14)	(C15)
STEEL PRODUCTS							
ROOFS, STRUCTURAL STEELWORK, ETC							
6/19	155mm Brick mesh reinforcement in walls						100,00%
1/20	1.60mm Galvanised hoop iron tie 30mm wide x 450mm long						100,00%
6/20	12mm Diameter dowel 200mm long						100,00%
7/21	8mm Diameter bars						100,00%
8/21	10mm Diameter bars						100,00%
9/21	12mm Diameter bars						100,00%
10/21	16mm Diameter bars						100,00%
11/21	20mm Diameter bars						100,00%
5/22	155mm Brick mesh reinforcement in walls						100,00%
1/24	Roof covering						100,00%
2/24	Narrow flute serrated closer including polybutton						100,00%
3/24	Ditto, at valley						100,00%
4/24	Broad flute serrated closer including polybutton						100,00%
5/24	Ditto, at hip						100,00%
6/24	Cover flashing						100,00%
7/24	Ditto, but stepped						100,00%
8/24	Sidewall flashing 462mm girth						100,00%
9/24	Gable flashing 462mm girth						100,00%
10/24	Valley gutter 462mm girth						100,00%
11/24	Headwall flashing 462mm girth						100,00%
12/24	Ridge capping 462mm girth						100,00%
13/24	Hip capping 462mm girth						100,00%
1/25	Cover flashing 462 mm girth						100,00%
9/25	Roof covering						100,00%
10/25	Side cladding						100,00%
11/25	Drip flashing 231mm girth						100,00%
12/25	Bottom trim 462mm girth						100,00%
13/25	Corner trim 462mm girth						100,00%
1/26	Side cladding						100,00%
3/27	225 x 75 x 20 x 2.5mm cold formed lipped channel purlins						100,00%
1/28	Ditto, fixed as hip rafter						100,00%
2/28	70 x 70 x 6mm Angle iron truss bracing						100,00%

CONTINUES ON NEXT PAGE

Tender Qty	Total tender value	Total exempted imported content	Total Imported content
(C16)	(C17)	(C18)	(C19)
66 m			
No 100			
No 60			
0.8 t			
0.5 t			
0.8 t			
0.5 t			
0.4 t			
1353 m2			
4916 m2			
456 m			
148 m			
148 m			
290 m			
125 m			
139 m			
139 m			
10 m			
74 m			
125 m			
152 m			
145 m			
456 m			
155 m2			
1203 m2			
394 m			
222 m			
77 m			
394 m			
6.54 t			
1.39 t			
0.70 t			

Annex C

3/28	70 x 70 x 6mm Angle iron in sede trusses								
4/28	90 x 90 x 6mm Angle iron in sede trusses							100,00%	
5/28	70 x 70 x 6mm Angle iron in girder trusses							100,00%	
6/28	90 x 90 x 6mm Angle iron in girder trusses							100,00%	
7/28	120 x 120 x 8mm Angle iron in girder trusses							100,00%	
8/28	Plates, angles, cleats, brackets, connections, bolts, washers							100,00%	
9/28	150 x 50 x 20 x 2.5mm Cold formed lipped channel purlins							100,00%	
10/28	150 x 50 x 20 x 2.5mm Cold formed lipped channel cladding rails							100,00%	
11/28	16mm Diameter sag rods							100,00%	
12/28	50 x 50 x 6mm Angle iron horizontal bracing							100,00%	
1/29	50 x 50 x 6mm Angle iron framework							100,00%	
2/29	IPE 180 beam							100,00%	
3/29	Plates, angles, cleats, brackets, connections, bolts, washers							100,00%	
4/29	Expanded mesh canopy ceiling as Mentex 70/VEM325A							100,00%	
	ABLUTIONS								
6/42	80mm Brick mesh reinforcement in walls							100,00%	
7/42	155mm Ditto							100,00%	
1/44	Pull handle Dorma DPH301C							100,00%	
2/44	Cylinder deadlock as d=Dorma D037D-SS							100,00%	
3/44	65mm Europrifile five pin double cylinder as Dorma DDC206301							100,00%	
4/44	Door closer as Dorma TS73V PA DC PAB SL							100,00%	
5/44	Door stop as Dorma DDS-SS-017							100,00%	
6/44	Hat and coat hook with rubber buffet as Dorma DHC-SS-031B							100,00%	
7/44	Soap dispenser as Ticra PHTIC22							100,00%	
8/44	Lockable stainless steel toilet roll holder as TR5							100,00%	
10/44	Hand dryer as Ticra PHTIC09							100,00%	
11/44	Paraplegic flush valve back rail as Dorma DGR-151-55							100,00%	
12/44	Paraplegic glab back rail as Dorma DGR-152-SS							100,00%	
13/44	150 x 300mm Sign as Dorma DSS-130M							100,00%	
14/44	150 x 300mm Sign as Dorma DSS-131F							100,00%	
15/44	150 x 300mm Sign as Dorma DSS-131P							100,00%	
1/45	150 x 300mm Push plate Dorma DPP-430-CR-SF							100,00%	
2/45	813 x 900 x 1.6mm Thick satin finished grade 18/8 stainless steel kick plate							100,00%	
3/45	Frame for door size 813 x 2032mm							100,00%	
4/45	Frame for door size 1013 x 2032mm							100,00%	
5/45	Frame for door size 813 x 2032mm							100,00%	
	REPLACEMENT OF FIRE DOORS AND ROLLER SHUTTER DOORS								
5/52	Class B two fire door size 813 x 2032mm							100,00%	
6/52	Ditto, size 1613 x 2032mm							100,00%	
1/53	Serranda Series 1500/8 galvanised powder coated steel electric operated slatted roller shutter door size 5.00 x 2.60m							100,00%	
2/53	Ditto, size 5.00 x 3.00m							100,00%	
1/59	Stainless steel grease trap as type GTS7L/s							100,00%	
2/59	Inspection chamber size 900 x 900 x not exceeding 1000m deep							100,00%	
3/59	Ditto, exceeding 1000mm and not exceeding 2000mm deeo							100,00%	
4/59	Inspection chamber size 1000mm diameter x not exceeding 1000mm deeo							100,00%	
5/59	Ditto, exceeding 1000mm and not exceeding 2000mm deeo							100,00%	
6/59	Ditto, exceeding 2000mm and not exceeding 3000mm deep							100,00%	
4/60	32mm Straight reducer							100,00%	
5/60	75mm Ditto							100,00%	
6/60	160mm Ditto							100,00%	
7/60	32mm Bend							100,00%	
8/60	75mm Bend							100,00%	
9/60	160mm Bend							100,00%	
10/60	32mm Tee							100,00%	
11/60	75mm Tee							100,00%	
12/60	150mm Tee							100,00%	

0.68 t									
0.84 t									
0.54 t									
1.04 t									
2/79 t									
2.32 t									
3.48 t									
7.44 t									
0.24 t									
0.51 t									
4.24 t									
5.06 t									
3.15 t									
344 m2									
562 m									
703 m									
no 11									
no 11									
no 11									
no 11									
no 11									
no 28									
no 12									
no 30									
no 10									
no 2									
no 2									
no 4									
no 4									
no 2									
no 11									
no 11									
no 6									
no 2									
no 30									
no 10									
no 2									
no 1									
no 2									
no 4									
no 1									
no 2									
no 9									
no 2									
no 4									
no 2									
no 10									
no 5									
no 2									
no 6									
no 3									
no 2									

Annex C

1/61	32mm Reducing tee					100,00%
2/61	75mm Ditto					100,00%
3/61	160mm Reducing tee					100,00%
	<u>PLASTIC PRODUCTS</u>					
	<u>ROOF, STRUCTURAL STEELWORK, ETC</u>					
6/22	Waterproofing on flat roofs					100,00%
7/22	Ditto on tops and sides of parapet walls					100,00%
1/23	Sealing edges to brickwork or concrete					100,00%
2/23	Dress waterproofing in fullbore outlet and seal					100,00%
1/30	110mm Diameter rainwater pipes fixed to walls including brackets					100,00%
2/30	Extra for shoe/bend					100,00%
3/30	100mm Fullbore side outlet including joint to pipe					100,00%
	<u>ABLUTIONS</u>					
8/42	Gunplas Brikgrip DPC in walls					100,00%
6/46	40mm pipes					100,00%
7/46	50mm pipes					100,00%
8/46	110mm pipes					100,00%
9/46	40mm pipes					100,00%
10/46	50mm pipes					100,00%
11/46	40mm pipes					100,00%
1/47	50mm Ditto					100,00%
2/47	50mm Straight reducer					100,00%
3/47	110mm Ditto					100,00%
4/47	110mm Pan connector					100,00%
5/47	110mm Bent pan connector					100,00%
6/47	40mm Bend					100,00%
7/47	50mm Bend					100,00%
8/47	110mm Bend					100,00%
9/47	40mm Inspection eye bend					100,00%
10/47	50mm Ditto					100,00%
11/47	110mm Ditto					100,00%
12/47	40mm Junction					100,00%
13/47	50mm Ditto					100,00%
14/47	110mm Ditto					100,00%
15/47	40mm Inspection eye junction					100,00%
16/47	50mm Ditto					100,00%
1/48	110mm Ditto					100,00%
2/48	50mm Inspection eye reducing junction					100,00%
3/48	110mm Ditto					100,00%
4/48	50mm UPVC vent valve					100,00%
5/48	110mm Ditto					100,00%
6/48	32 x 40mm Chromium plated bottlr trap					100,00%
7/48	40 x 40mm Ditto					100,00%
	<u>PLUMBING AND DRAINAGE IN GROUND</u>					100,00%
1/55	160mm Pipe laid in and including trenches not exceeding 1.00m deep					100,00%
2/55	Ditto, exceeding 1.00mm and not exceeding 2.00mm deep					100,00%
7/56	110mm pipe laid in and including trenches not exceeding 1.00m deep					100,00%
8/56	160mm Ditto					100,00%
1/57	110mm pipe laid in and including trenches exceeding 1.00 and not exceeding 2.00m deep					100,00%
2/57	160mm Ditto					100,00%
3/57	160mm pipe laid in and including trenches exceeding 2.00m and not exceeding 3.00m deep					100,00%
4/57	160mm Straigh reducer					100,00%
5/57	110mm Bend					100,00%
6/57	160mm Bend					100,00%
7/57	110mm Inspection eye bend					100,00%

CONTINUES ON NEXT PAGE

no 1			
no 10			
no 2			
72 m2			
59 m2			
53 m			
no 4			
29 m			
no 12			
no 4			
22 m2			
10 m			
52 m			
110 m			
8 m			
65 m			
4 m			
8 m			
no 4			
no 3			
no 25			
no 5			
no 4			
no 55			
no 8			
no 3			
no 19			
no 8			
no 2			
no 19			
no 17			
no 4			
no 6			
no 5			
no 2			
no 6			
no 4			
no 4			
no 10			
no 10			
20 m			
55 m			
71 m			
38 m			
47 m			
290 m			
62 m			
no 2			
no 64			
no 3			
no 2			

Annex C

8/57	160mm Ditto						100,00%
9/57	110mm Junction						100,00%
10/57	160mm Ditto						100,00%
11/57	110mm Inspection eye junction						100,00%
12/57	160mm Ditto						100,00%
13/57	110mm Inspection eye reducing junction						100,00%
14/57	160mm Ditto						100,00%
8/58	UPVC gulley trap						100,00%
9/58	110mm Diameter UPVC ABC rodding eye cover						100,00%
10/58	160mm Ditto						100,00%
1/60	32mm Pipes laid in and including trenches not exceeding 1.00m deep						100,00%
2/60	75mm Ditto						100,00%
3/60	160mm Ditto						100,00%
<u>CEMENT PRODUCTS</u>							
<u>ROOF, STRUCTURAL STEELWORK, ETC</u>							
4/19	Footings cast against excavated surfaces						
2/20	Reinforced cement concrete 25MPa/19mm Stone in slabs						100,00%
3/20	Reinforced cement concrete 30MPa/19mm Stone in columns						100,00%
7/29	Average 60mm thick to roof slab graded to falls to outlet						100,00%
8/29	Cement plaster on walls including flush columns and beams						100,00%
9/29	Cement plaster on concrete ceilings						100,00%
10/29	Cement plaster on narrow widths						100,00%
1/46	30mm Thick screed on floors						100,00%
2/46	30mm Thick screed on floors in patches						100,00%
3/46	Cement plaster on walls including flush columns and beams						100,00%
4/46	Ditto, in patches						100,00%
5/46	Narrow widths						100,00%
3/55	375mm Reinforced concrete pipes laid in and including trenches not exceeding 1.00m deep						100,00%
4/55	Ditto, exceeding 1.00 and not exceeding 2.00m deep						100,00%
5/55	Ditto, exceeding 2.00 and not exceeding 3.00m deep						100,00%
6/55	Stormwater kerb inlet manhole size 1160 x 1160 x exceeding 1000 and not exceeding 2000mm deep						100,00%

no 1			
no 1			
no 1			
no 19			
no 4			
no 2			
no 23			
no 16			
no 3			
no 1			
40 m			
174 m			
112 m			
2 m3			
19 m3			
0.5 m3			
72 m2			
706 m2			
84 m2			
20 m2			
5 m2			
32 m2			
456 m2			
23 m2			
15 m2			
21 m			
289 m			
43 m			
no 1			

Signature of Tenderer from Annex B

Date: _____

(C20) Total tender value R

(C21) Total Exempt imported content R

(C22) Total Tender value net of exempt imported content R

(C23) Total Imported content R

(C24) Total local content R

(C25) Average local content % of tender

Annex D

Imported Content Declaration - Supporting Schedule to Annex C

(D1) Tender No.	ECDC/INFRA/34/042024	0	0	0	Note: VAT to be excluded from all calculations
(D2) Tender description:	Refurbishment of Mdantsane Hi-Way Mall	0	0	0	
(D3) Designated Products:	As before (Annex C)				
(D4) Tender Authority:	ECDC				
(D5) Tendering Entity name:					
(D6) Tender Exchange Rate:	Pula	EU		GBP	

A. Exempted imported content

Tender item no's	Description of imported content	Local supplier	Overseas Supplier	Calculation of imported content						Summary	
				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	Tender Qty	Exempted imported value
(D7)	(D8)	(D9)	(D10)	(D11)	(D12)	(D13)	(D14)	(D15)	(D16)	(D17)	(D18)
(D19) Total exempt imported value										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						Summary	
				Foreign 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	Tender Qty	Total imported value
(D20)	(D21)	(D22)	(D23)	(D24)	(D25)	(D26)	(D27)	(D28)	(D29)	(D30)	(D31)
(D32) Total imported value by tenderer										This total must correspond with Annex C - C 21	

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						Summary	
				Foreign 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	Quantity imported	Total imported value
(D33)	(D34)	(D35)	(D36)	(D37)	(D38)	(D39)	(D40)	(D41)	(D42)	(D43)	(D44)
(D45) Total imported value by 3rd party										This total must correspond with Annex C - C 21	

D. Other foreign currency payments

Type of payment	Local supplier making the payment	Overseas beneficiary	Calculation of foreign currency payments		Tender Rate of Exchange	Summary of payments
			Foreign currency value paid			
(D46)	(D47)	(D48)	(D49)	(D50)		(D51)
(D52) Total of foreign currency payments declared by Tenderer and/or 3rd party						This total must correspond with Annex C - C 23
(D53) Total of imported content & foreign currency payments - (D32), (D45) & (D52) above						

Signature of Tenderer from Annex B

Date: _____

Annex E

Local Content Declaration - Supporting Schedule to Annex C

(E1) Tender No.	ECDC/INFRA/34/042024	Note: VAT to be excluded from all calculations
(E2) Tender description:	Refurbishment of Mdantsane Hi-Way Mall	
(E3) Designated products:	As before (Annex C)	
(E4) Tender Authority:	ECDC	
(E5) Tendering Entity name:		

Local Products (Goods, Services and Works)	Description of items purchased (E6)	Local suppliers (E7)	Value (E8)
	STEEL PRODUCTS		
	ROOFS, STRUCTURAL STEELWORK, ETC		
	155mm Brick mesh reinforcement in walls		
	1.60mm Galvanised hoop iron tie 30mm wide x 450mm long		
	12mm Diameter dowel 200mm long		
	8mm Diameter bars		
	10mm Diameter bars		
	12mm Diameter bars		
	16mm Diameter bars		
	20mm Diameter bars		
	155mm Brick mesh reinforcement in walls		
	Roof covering		
	Narrow flute serrated closer including polybutton		
	Ditto, at valley		
	Broad flute serrated closer including polybutton		
	Ditto, at hip		
	Cover flashing		
	Ditto, but stepped		
	Sidewall flashing 462mm girth		
	Gable flashing 462mm girth		
	Valley gutter 462mm girth		
	Headwall flashing 462mm girth		
	Ridge capping 462mm girth		
	Hip capping 462mm girth		
	Cover flashing 462 mm girth		
	Roof covering		
	Side cladding		
	Drip flashing 231mm girth		
	Bottom trim 462mm girth		
	Corner trim 462mm girth		
	Side cladding		
	225 x 75 x 20 x 2.5mm cold formed lipped channel purlins		
	Ditto, fixed as hip rafter		
	70 x 70 x 6mm Angle iron truss bracing		
	70 x 70 x 6mm Angle iron in sede trusses		
	90 x 90 x 6mm Angle iron in sede trusses		
	70 x 70 x 6mm Angle iron in girder trusses		
	90 x 90 x 6mm Angle iron in girder trusses		
	120 x 120 x 8mm Angle iron in girder trusses		
	Plates, angles, cleats, brackets, connections, bolts, washers		
	150 x 50 x 20 x 2.5mm Cold formed lipped channel purlins		
	150 x 50 x 20 x 2.5mm Cold formed lipped channel cladding rails		
	16mm Diameter sag rods		
	50 x 50 x 6mm Angle iron horizontal bracing		
	50 x 50 x 6mm Angle iron framework		
	IPE 180 beam		
	Plates, angles, cleats, brackets, connections, bolts, washers		
	Expanded mesh canopy ceiling as Mentex 70/VEM325A		
	ABLUTIONS		
	80mm Brick mesh reinforcement in walls		
	155mm Ditto		
	Pull handle Dorma DPH301C		
	Cylinder deadlock as d=Dorma D037D-SS		
	65mm Europrifile five pin double cylinder as Dorma DDC206301		
	Door closer as Dorma TS73V PA DC PAB SL		
	Door stop as Dorma DDS-SS-017		
	Hat and coat hook with rubber buffet as Dorma DHC-SS-031B		
	Soap dispenser as Ticra PHTIC22		
	Lockable stainless steel toilet roll holder as TR5		
	Hand dryer as Ticra PHTIC09		
	Paraplegic flush valve back rail as Dorma DGR-151-55		
	Paraplegic grab back rail as Dorma DGR-152-55		
	150 x 300mm Sign as Dorma DSS-130M		
	150 x 300mm Sign as Dorma DSS-131F		
	150 x 300mm Sign as Dorma DSS-131P		
	150 x 300mm Push plate Dorma DPP-430-CR-SF		
	813 x 900 x 1.6mm Thick satin finished grade 18/8 stainless steel kick plate		
	Frame for door size 813 x 2032mm		
	Frame for door size 1013 x 2032mm		
	Frame for door size 813 x 2032mm		
		Continues on next page	

Annex E

REPLACEMENT OF FIRE DOORS AND ROLLER SHUTTER DOORS		
Class B two fire door size 813 x 2032mm		
Ditto, size 1613 x 2032mm		
Serranda Series 1500/8 galvanised powder coated steel electric operated slatted roller shutter door size 5.00 x 2.60m		
Ditto, size 5.00 x 3.00m		
Stainless steel grease trap as type GTS7L/s		
Inspection chamber size 900 x 900 x not exceeding 1000mm deep		
Ditto, exceeding 1000mm and not exceeding 2000mm deeo		
Inspection chamber size 1000mm diameter x not exceeding 1000mm deeo		
Ditto, exceeding 1000mm and not exceeding 2000mm deeo		
Ditto, exceeding 2000mm and not exceeding 3000mm deeo		
32mm Straight reducer		
75mm Ditto		
160mm Ditto		
32mm Bend		
75mm Bend		
160mm Bend		
32mm Tee		
75mm Tee		
150mm Tee		
32mm Reducing tee		
75mm Ditto		
160mm Reducing tee		
PLASTIC PRODUCTS		
ROOF, STRUCTURAL STEELWORK, ETC		
Waterproofing on flat roofs		
Ditto on tops and sides of parapet walls		
Sealing edges to brickwork or concrete		
Dress waterproofing in fullbore outlet and seal		
110mm Diameter rainwater pipes fixed to walls including brackets		
Extra for shoe/bend		
100mm Fullbore side outlet including joint to pipe		
ABLUTIONS		
Gunplas Brikgrip DPC in walls		
40mm pipes		
50mm pipes		
110mm pipes		
40mm pipes		
50mm pipes		
40mm pipes		
50mm Ditto		
50mm Straight reducer		
110mm Ditto		
110mm Pan connector		
110mm Bent pan connector		
40mm Bend		
50mm Bend		
110mm Bend		
40mm Inspection eye bend		
50mm Ditto		
110mm Ditto		
40mm Junction		
50mm Ditto		
110mm Ditto		
40mm Inspection eye junction		
50mm Ditto		
110mm Ditto		
50mm Inspection eye reducing junction		
110mm Ditto		
50mm UPVC vent valve		
110mm Ditto		
32 x 40mm Chromium plated bottlr trap		
40 x 40mm Ditto		
PLUMBING AND DRAINAGE IN GROUND		
160mm Pipe laid in and including trenches not exceeding 1.00m deep		
Ditto, exceeding 1.00mm and not exceeding 2.00m deep		
110mm pipe laid in and including trenches not exceeding 1.00m deep		
160mm Ditto		
110mm pipe laid in and including trenches exceeding 1.00 and not exceeding 2.00m deep		
160mm Ditto		
160mm pipe laid in and including trenches exceeding 2.00m and not exceeding 3.00m deep		
160mm Straigh reducer		
110mm Bend		
160mm Bend		
110mm Inspection eye bend		
160mm Ditto		
110mm Junction		
160mm Ditto		
110mm Inspection eye junction		
160mm Ditto		
110mm Inspection eye reducing junction		
160mm Ditto		
Continues on next page		

Annex E

UPVC gully trap		
110mm Diameter UPVC ABC rodding eye cover		
160mm Ditto		
32mm Pipes laid in and including trenches not exceeding 1.00m deep		
75mm Ditto		
160mm Ditto		
CEMENT PRODUCTS		
ROOF, STRUCTURAL STEELWORK, ETC		
Footings cast against excavated surfaces		
Reinforced cement concrete 25MPa/19mm Stone in slabs		
Reinforced cement concrete 30MPa/19mm Stone in columns		
Average 60mm thick to roof slab graded to falls to outlet		
Cement plaster on walls including flush columns and beams		
Cement plaster on concrete ceilings		
Cement plaster on narrow widths		
30mm Thick screed on floors		
30mm Thick screed on floors in patches		
Cement plaster on walls including flush columns and beams		
Ditto, in patches		
Narrow widths		
375mm Reinforced concrete pipes laid in and including trenches not exceeding 1.00m deep		
Ditto, exceeding 1.00 and not exceeding 2.00m deep		
Ditto, exceeding 2.00 and not exceeding 3.00m deep		
Stormwater kerb inlet manhole size 1160 x 1160 x exceeding 1000 and not exceeding 2000mm deep		
(E9) Total local products (Goods, Services and Works)		

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

(E13) Total local content
This total must correspond with Annex C - C24

Signature of Tenderer from Annex B

Date: _____

2.1. STAGE 2 - FUNCTIONALITY

Involves an evaluation of Functionality only – At this stage Bidders must score a minimum score of **70%** for functionality (services) to be evaluated for stage 3 (Preferential procurement points).

Bidder to note the following for Functionality Evaluation:

- a) Adequate proof supporting the points claimed must be provided. (e.g., documents, agreements, qualifications, previous experience, certifications, etc.)
- b) Failure to submit relevant information with supporting document and adequate proof may result in ECDC not being able to allocate points for the Evaluation Criteria outlined below.

Table 1: Functionality Evaluation Criteria – Stage 2

EXPERIENCE (Read with Schedule T.2.2.2(a) requirements)	Allocated Points
(Bidder to submit a reference letter for each general buildings works project completed.)	
5 or more acceptable reference letters	30
4 or less than 5 acceptable reference letters	20
3 or less than 4 reference letters	15
2 or less than 3 acceptable reference letters	10
Less than 2 acceptable reference letters	0
<u>Document to be submitted for points allocation</u>	
The Bidder must demonstrate that they have the relevant experience in general building works by submitting completed T.2.2.2 (a) reference forms or reference letters of completed Building Works (Read with Schedule T.2.2.2(a) requirements)	
Reference letter should indicate the following:	
<ul style="list-style-type: none"> • Signature of the client or Client's Letter head or Client Stamp • Company name, contact person, contact details (telephone number and email address) • Value of the project • Description Works carried out • Works have been completed on time /within the stipulated contract period • Good or better quality of workmanship • Assessment of the quality of work performed 	
EXPERTISE (CV's & Certified Copies of Qualifications of Key Personnel to be included in Returnable)	
Construction Manager with relevant tertiary qualifications from a Built Environment Faculty (National Diploma or Higher)	
10 years or more experience on building contracts	15
5 years but less than 10 years' experience on building contracts	10
3 years but less than 5 years on building contracts	5
Less than 3 years' experience on building contracts	0
Construction Supervisor with relevant Built Environment qualifications (N6 or higher)	
10 years or more experience on building contracts	10
5 years but less than 10 years' experience on building contracts	5
3 years but less than 5 years on building contracts	3
Less than 3 years' experience on building contracts	0

Safety Officer with valid SACPCMP registration as a Construction Health and Safety Officer	
5 years or more post registration experience on building contracts	5
3 years but less than 5 years' post registration experience on building contracts	3
1 years but less than 3 years' post registration experience on building contracts	2
Less than 1 years' post registration experience on building contracts	0
<u>BANK RATING/LETTER OF INTENT FROM FINANCIAL INSTITUTION</u>	
Submission of a letter of intent from a financial institution or Bank Rating of Code A or Code B	10
Submission of a letter of intent or a Bank Rating of Code C or Code D	5
No letter or Bank Rating submitted from a financial institution.	0
TOTAL MAXIMUM ACHIEVEABLE POINTS	70
MINIMUM POINTS REQUIRED	49

- a) Only bids that have achieved the minimum qualifying score for functionality will be evaluated further in terms of preferential procurement points (Stage 3).
- b) All bids that fail to achieve the minimum score will be disqualified.
- c) The minimum qualifying score (in a percentage) for functionality shall be calculated as follows:

$$P_s = \frac{S_o}{M_s} \times 100 \quad \text{Where:}$$

P_s = percentage scored for functionality by bid under consideration

S_o = Total score for bid under consideration

M_s = Maximum possible score

The percentages of each panel member shall be added and divided by the number of panel members to establish the average percentage obtained by each bidder for functionality.

3.1 Stage 3 – Preference Procurement Point - Evaluation Criteria

Preference points for this bid shall be awarded for price and the specific goal. The maximum points for this bid are allocated as follows:

CRITERIA	POINTS
Price	90
Specific Goal	10
TOTAL POINTS	100

- c) Points awarded for price based will be based on the 90/10 Preference point systems
- d) The points scored by the tenderer/bidder for Price will be added to the points scored for ECDC specific goal to obtain the bidder’s total points scored out of 100 points.
- e) In the event that two or more bids have scored equal total points, the successful bid will be the one scoring the highest number of preference points for ECDC specific goal.
- f) However, when functionality is part of the evaluation process and two or more bids have scored equal points including equal preference points for specific goal, the successful bid must be the one scoring the highest score for functionality.
- g) Should two or more bidders/tenderers be equal in all respects, the award shall be decided by the drawing of lots.
- h) The bidder obtaining the highest number of total points will be awarded the contract.
- i) Points scored will be rounded off to the nearest 2 decimal places.
- j) Price**
 - (i) The lowest acceptable bid will score 90 points for price.
 - (ii) The following formula will be used to calculate the points out of 90 for price in respect of the bid/tender.
 - (iii) Preference points for price shall be calculated after prices have been brought to a comparative basis taking into account all factors of non-firm prices and all unconditional discounts.

DETAILS	90/10 PREFERENCE POINT SYSTEM
Rand value (competitive bids or quotations) all applicable taxes included.	<ul style="list-style-type: none"> • Equal and above R50 million, inclusive of all applicable taxes.
Formulae	$P_s = 90 \left(1 - \frac{P_t - P_{min}}{P_{min}} \right)$ <p> Ps = Points scored for comparative price of bid / offer under consideration Pt = Comparative price of bid / offer under consideration Pmin = Comparative price of lowest acceptable bid / offer </p>

Annex A

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 (January 2019) as published in Government Gazette No 42622, Board Notice 423 of 2019 on the 8th of August 2019 (See www.cidb.org.za).

A.1 General

A.1.1 Actions

A.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 A.2 and A.3, timeously and with integrity, and behave equitably, honestly, and transparently, comply with all legal obligations and not engage in anticompetitive practices.

A.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.

A.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.

A.1.2 Tender Documents

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

A.1.3 Interpretation

A.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.

A.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.

A.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 fulfil 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) in compatibility 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 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.

A.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.

A.1.5 Cancellation and Re-Invitation of Tenders

A.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.

A.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

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

A.1.6 Procurement procedures

A.1.6.1 General

Unless otherwise stated in the tender data, a contract will, subject to A.3.13, be concluded with the tenderer who in terms of A.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.

A.1.6.2 Competitive negotiation procedure

A.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 A.3.4, the employer shall announce only the names of the tenderers who make a submission. The requirements of A.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.

A.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 A.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.

A.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.

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

A.2 Tenderer's obligations

A.2.1 Eligibility

A.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.

A.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.

A.2.2 Cost of tendering

A.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 comply with requirements.

A.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.

A.2.3 Check documents

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

A.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.

A.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.

A.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.

A.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.

A.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.

A.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.

A.2.10 Pricing the tender offer

A.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.

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

A.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.

A.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.

A.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.

A.2.12 Alternative tender offers

A.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.

A.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.

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

A.2.13 Submitting a tender offer

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.

A.2.13.1 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.

A.2.13.2 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.

A.2.13.3 Sign (Signature by authorized personnel) 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.

A.2.13.4 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.

A.2.13.5 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.

A.2.13.6 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.

A.2.13.7 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.

A.2.13.8 Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the tender data.

A.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.

A.2.15 Closing time

A.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.

A.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.

A.2.16 Tender offer validity

A.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.

A.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.

A.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).

A.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".

A.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.*

A.2.18 Provide other material

A.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), preferencing 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.

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

A.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.

A.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.

A.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.

A.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.

A.2.23 Certificates

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

A.3 The employer's undertakings

A.3.1 Respond to requests from the tenderer

A.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.

A.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.

A.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.

A.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.

A.3.4 Opening of tender submissions N/A

A.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.

A.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 ECDC specific goal and time for completion for the main tender offer only.

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

A.3.5 Two-envelope system

A.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.

A.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.

A.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.

A.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.

A.3.8 Test for responsiveness

A.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.

A.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.

A.3.9 Arithmetical errors, omissions and discrepancies

A.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.

A.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 A.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.

A.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.

A.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.

A.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.

A.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.
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.

A.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.

A.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.

A.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.

A.3.14 Prepare contract documents

A.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 other revisions agreed between the employer and the successful tenderer.

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

A.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.

A.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.

A.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.

A.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.

ANNEXURE B

ADDITIONAL CONDITIONS OF TENDER OF ECDC

Where the CIDB standard condition of tender does not address the following, clauses on the ECDC standard conditions of tender, the ECDC Standard condition of tender will be additional.

1.1 Alteration or withdrawal of Proposals

Bidders may withdraw their proposal by written notification on or before the date Specified for the evaluation of Bids.

1.2 Alternative Bid

Alternative Bids will not be accepted.

1.3 Costs for preparation of Proposals/presentations

The costs incurred by Bidders in respect of the attendance of any briefing or presentation meetings if necessary or costs incurred in preparing any proposal will be borne by the Bidder and the ECDC shall in no way be liable to reimburse such costs incurred.

1.4 Ownership of Proposals and presentations

The ECDC shall on receipt of any proposal relating to this request and submitted in accordance with the procedure set out herein, shall become the owner thereof and the ECDC shall not be obliged to return any proposal.

1.5 Tax Clearance Certificate requirement

It is a condition of all bids inclusive of foreign bidders / individuals) that the South African taxes of the successful bidder must be in order.

The bidders' Tax status will be verified on the CSD prior to the bid award and where the preferred bidder is not compliant, **7 working days** will be granted for remedy, failing which the bidder will be disqualified.

In Bids where Consortia/Joint venture/Sub-Contractors are involved, each party will be verified separately for proof of Tax Compliance Status.

In bids where Consortia / Joint Ventures / Sub-contractors are involved, each party must submit a separate Tax Clearance Certificate. Applications for the Tax Clearance Certificates may also be made via eFiling. In order to use this provision, taxpayers will need to register with SARS as eFilers through the website www.sars.gov.za

1.6 Confidentiality

The entire process of calling for Bids was initiated by the ECDC in terms of its procurement policy and is confidential. All deliberations in respect of the acceptability or otherwise of the

proposals shall be conducted in closed sessions and members of the Evaluation and Procurement Committee and prospective service providers are bound to treat all discussions as highly confidential.

The service provider shall not divulge directly or indirectly to any other person than a person employed by ECDC, make copies or extracts of any of the information obtained during this assignment, while they may have access to ECDC's trade secrets, confidential information which may include, specifications, plans, drawings, pattern, samples, written instructions, notes, memoranda, technical information, know-how or process or method or any other records of whatsoever nature without the written consent of ECDC and shall surrender all these items to ECDC on termination of the assignment or on demand of ECDC.

The service provider shall not be entitled to make use of the information whether for its own benefit or that of others, to make available or derive any profit from any of the information or knowledge specifically related to the business or affairs of ECDC.

Any document shall remain the property of ECDC and shall be returned (all copies) to ECDC on completion of the contract if so required by ECDC.

1.7 Inventions Patent and Copy-Rights

The service provider cedes, assigns and transfers to ECDC all rights, title and interest in and to any and all copyright in all works and inventions which relates to the business of ECDC (which includes, but is not limited to, methodologies and products) which arises within the course and scope of this services will be assigned to ECDC.

The Service Provider shall Provide ECDC the sole and exclusive right to alter and adapt the work.

The service provider shall indemnify ECDC against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the goods or any part thereof by ECDC.

1.8 Ethics

Any attempt by an interested Bidder to obtain confidential information, or enter into unlawful agreements with competitors or influence the various ECDC Procurement Committee's or the ECDC during the process of examining, evaluating and comparing Bids/Proposals or Proposals will lead to the rejection of its bid/quotation/proposal in its entirety.

The Bidder must declare any business or other interests it has with the ECDC or any employee of the ECDC, as per the declaration of interest form annexed hereto marked in Section D; failing which the Bidder shall be automatically disqualified from further participation in the Bid or call for proposals. The disqualification will be applicable at any stage of the bidding and / or engagement process.

1.9 Competition

Bidders and their respective officers, employees and agents are prohibited from engaging in

any collusive action with respect to the bidding process which serves to limit competition amongst bidders.

In general, the attention of bidders is drawn to Section 4(1) (b) (iii) of the Competition Act 1998 (Act No. 89 of 1998) (the Competition Act) that prohibits collusive bidding.

An agreement between, or concerted practice by, firms, or a decision by an association of firms, is prohibited if it is between parties in a horizontal relationship and if a bidder/s is / are or a contractor(s) was / were involved in collusive bidding.

If bidders have reason to believe that competition issues may arise from any submission of a response to this bid invitation they may make, they are encouraged to discuss their position with the competition authorities before submitting response.

Any correspondence or process of any kind between bidders and the competition authorities must be documented in the responses to this invitation to bid.

In this regard bidders are required to complete the Certificate of Independence Bid Determination, failing which the Bidder shall be automatically disqualified from further participation in the Bid or call for proposals. The disqualification will be applicable at any stage of the bidding and / or engagement process.

If a bidder (s) or contractor (s), based on reasonable grounds or evidence obtained by ECDC, has /have engaged in the restrictive practice referred to above, ECDC may refer the matter to the Competition Commission for investigation and possible imposition of an administrative penalty as contemplated in Section 59 of the Competition Act 89 of 1998.

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

1.10 Cancellation of Bid Process

The ECDC shall be entitled, within its sole and entire discretion, to cancel this Bid/Call for Proposals and/or Quotations at any time and shall notify the interested service providers accordingly. The ECDC shall in no way be liable for any damages whatsoever, including, without limitation, damages for loss of profit, in any way connected with the cancellation of this bid. The publication of the bid does not commit the ECDC to appoint any of the qualifying Bidders.

1.11 Interviews

In terms of the bid evaluation process short listed bidders may be interviewed. This will entail the bidder being invited to a venue as determined by the bid committee. All transport and accommodation costs incurred by the bidder will be for the bidders account and will not be reimbursed in any way. Failure to attend a scheduled interview

will lead to immediate disqualification from the bid process. The ECDC reserves the right to appoint a bidder without conducting interviews.

1.12 Contract award

The successful bidder will be notified of the bid award in writing by the Procurement Department.

The acceptance of any proposal shall only be confirmed with the conclusion of a final written signed service level agreement or any other appropriate agreement between the ECDC and the successful Bidder, in terms of which the rights and duties of the parties are recorded, which agreement shall regulate the relationship between the ECDC and the Successful Bidder.

As a guideline regarding the content of the service level agreement, the bidder is referred to the **JBCC Series 2000 Principal Building Agreement For Organs of State Edition 6.2 prepared by the Joint Building Contracts Committee, May 2018**

Until such time that an appropriate agreement has been concluded in writing between the ECDC and the successful Bidder, no rights shall be conferred nor shall any legitimate expectations be conferred to the successful Bidder to carry out the works or services provided for in this Bid.

The ECDC, the Accounting Officer and the Bid Committee (as the case may be) does not bind itself to accept either the lowest (price), highest (points) or any other bid and reserves the right to accept the bid which it deems to be in the best interest of the Institution even if it implies a waiver by the ECDC, the Accounting Officer, or the Bid Committee, (as the case may be) of certain requirements which the ECDC, the Accounting Officer, the Bid Committee, (as the case may be) considers to be of minor importance and not complied with by the bidder.

The ECDC will not entertain any request of feedback before the final awarding of the contract.

1.13 Supplier Due Diligence

ECDC reserves the right to conduct supplier due diligence prior to final award or at any time during the contract period. This may include site visits and requests for additional information.

1.14 Disclaimer

This Bid document has been prepared for the purpose of providing information to interested Bidders. The provision of any additional information about the organization to Bidders, are disclosed and will be made available to enable the prospective Bidders to submit comprehensive proposals.

Interested Bidders are accordingly required to conduct their own due diligence in respect of the ECDC and its business operations and the nature and scope of the services required.



HOTLINE DETAIL Ethics & Fraud Hotline

HOTLINE DETAILS	
Hotline Name:	ECDC Ethics & Fraud Hotline
Contact Number:	0800 116 665
WhatsApp Number:	0860 004 004
Dedicated Email Address:	ecdc@behonest.co.za aidc@behost.co.za
SMS Number:	48691
Free Post	BNT165, Advance Call Pty (Ltd), Brooklyn Square, 0075
Website Link	www.behonest.co.za
Chat	www.behonest.co.za

Whilst all due care has been taken in connection with the preparation of this bid, ECDC makes no representations or warranties that the content of the bid or any information communicated to or provided to Bidder(s) during the bidding process is, or will be, accurate, current or complete. ECDC, and its employees and advisors will not be liable with respect to any information communicated which may not be accurate, current or complete.

If Bidder(s) finds or reasonably believes it has found any discrepancy, ambiguity, error or inconsistency in this bid or any other information provided by ECDC (other than minor clerical matters), the Bidder(s) must promptly notify ECDC in writing of such discrepancy, ambiguity, error or inconsistency in order to give ECDC an opportunity to consider what corrective action is necessary (if any).

Any actual discrepancy, ambiguity, error or inconsistency in the bid or any other information provided by ECDC will, if possible, be corrected and provided to all Bidder(s) without attribution to the Bidder(s) who provided the written notice.

All persons (including Bidder(s)) obtaining or receiving the bid and any other information in connection with the Bid or the Tendering process must keep the contents of the Bid and other such information confidential, and not disclose or use the information except as required for the purpose of developing a proposal in response to this Bid. All persons (including Bidder(s)) obtaining or receiving the bid and any other information in connection with the Bid or the Tendering process must keep the contents of the Bid and other such information confidential, and not disclose or use the information except as required for the purpose of developing a proposal in response to this Bid.

T2.2. - Returnable schedules

T2.2.1 – Declarations

T2.2.2 – Functionality Evaluation Schedules

ANNEXURE C: SUPPLIER INFORMATION/COMPANY ENTERPRISE QUESTIONNAIRE

Note: Mandatory Requirement. Failure to complete and Sign this document will result in the bid being nonresponsive.

Important Note: 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.

Legal Name of Bidder: (Same as CSD)	
Trading Name of Bidder: (Same as CSD)	
Registration Number (Same as CSD)	
Physical Address	
Postal Address	
Contact Person (of the JV if the Bidder is a JV)	
Title/Position in the Firm	
Mobile Number (of the JV if the Bidder is a JV)	
Bidder Telephone Number (of the JV if the Bidder is a JV)	
Facsimile Number	
Email Address of Contact Person (of the JV if the Bidder is a JV)	
Email Address of Bidder (of the JV if the Bidder is a JV)	
VAT Registration Number (Same as CSD)	

Central Supplier Database Number		MAAA	
CIDB Registration Number (CRS Number)			
Are the Accredited Representative in South Africa for the Goods/Services/Works Offered?	<input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes enclose Proof)	Are you a foreign based supplier for the Goods/Services/Works Offered?	<input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, answer the questionnaire Below)
QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS			
Is the Entity a resident of the Republic of South Africa (RSA) Does the Entity have a branch in the RSA?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Does the Entity have a permanent establishment in the RSA?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Does the Entity have any source of income in the RSA		<input type="checkbox"/> Yes <input type="checkbox"/> No	
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 (SARS) and if not register			
<u>VERY IMPORTANT</u>			
Where a person within the Bidding Entity is an Employee of the State, Bidder should			
a. submit a signed letter on a letter head from their Accounting Officer/Accounting Authority (AO/AA of the Government Institution where they are employed) stating that they are not prohibited from conducting business with the State in terms of Section 8 of the Public Administration Management Act, 2012 (Act No.11 of 2014- "The PFMA")			
b. submit a signed letter on a letter from their AO/AA granting permission to perform other remunerative work outside of their employment where the PAMA does not apply to such an employee			
ECDC reserves the right to verify such information from their AO/AA			

SERVICE PROVIDER ACKNOWLEDGEMENT OF REQUEST AND TERMS AND CONDITIONS:

I.....(NAME) HEREBY ACCEPT THE TERMS OF THIS REQUEST FOR BID AND ACKNOWLEDGE THAT I AM APPROPRIATELY DELEGATED TO RESPOND ON BEHALF OF (ATTACH DELEGATION OF AUTHORITY)

.....

(NAME OF BIDDER).

Print Name

Date

Designation

Signature

Annexure D: Location

1	Where is the Bidder's main office?	
	Other offices:	

Annexure G: BIDDER'S DISCLOSURE (SBD4)

Note: Mandatory Requirement. Failure to complete and Sign this document will result in the bid being non responsive.

1. PURPOSE OF THE FORM

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

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

2. Bidder's declaration

2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest¹ in the enterprise, employed by the state? **YES/NO**

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

Full Name	Identity Number	Name of State institution

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

2.2.1 If so, furnish particulars:
.....
.....

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

2.3.1 If so, furnish particulars:
.....
.....

3 DECLARATION

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

- 3.1 I have read and I understand the contents of this disclosure;
- 3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;
- 3.3 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium² will not be construed as collusive bidding.
- 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

OFFFMA 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

SIGNATURE OF BIDDER OF DELEGATED AUTHORITY		DATE	
---	--	-------------	--

ANNEXURE H: STATEMENT OF CONSENT TO DATA PROCESSING

In terms of the provisions of the Protection of Personal Information Act, 2013 (Act No. 4 of 2013)

1. I, _____ (full names of the **client/applicant**),

Identity number _____ (**"the applicant"**)

do hereby grant my consent to the Eastern Cape Development Corporation ("the ECDC") and its appointed processor to process my personal data for the purpose of any or all of the undermentioned actions, being the legitimate reasons for processing and/or using my personal data.

2. I accept that my personal information will only be utilized for the purposes it was collected, that the information will only be retained for as long as is necessary and required by law, and that I have the right to view such information at any time, as well as requested correction or deletion of my personal information held by the ECDC.
3. I am aware that I may withdraw my consent at any time by using the relevant Data Subject Consent Withdrawal Form.
4. I herewith consent to the ECDC official / staff member / employee or agent collecting and having access to my personal information.
5. I expressly consent to the ECDC official / staff member / employee or agent to collect and process this information for the purpose of **considering my application for funding / leasing / employment alternatively for considering our bid document.**
6. I expressly consent to the ECDC or its official / staff member / employee or agent having access to my personal information contained in my application for lease, employment, funding, my bid document or any other administrative document required by the ECDC for processing.
7. I expressly consent to the ECDC or its official / staff member / employee or agent using my personal information to communicate with me in person / via telephone / email / video call / fax / WhatsApp / any form of social media.
8. I expressly consent that the ECDC or its official / staff member / employee or agent may discuss any of my personal information with any of its officials / staff members / employees or agents that may at any stage of my application be involved in considering same and forward any such information to any ECDC relevant committee or forum.
9. I expressly consent to the ECDC or its official / staff member / employee or agent **handing over any outstanding accounts to debt collection third parties (applicable to properties/development finance and business support unit).**
10. I expressly consent to the ECDC or its official / staff member / employee or agent handing over my personal information for purposes of verification of my credit profile or record, references or any purpose required in terms of the law.

SIGNATURE of the DELEGATED AUTHORITY		DATE	
---	--	-------------	--

SBD 6.1

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

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

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

1. GENERAL CONDITIONS

- 1.1 The following preference point systems are applicable to invitations to tender:
- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
 - the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 Principle applicable for this tender /quotation is:

- a) The value of this bid is estimated to exceed R50 000 000 (all applicable taxes included) and therefore the applicable preference point system for this tender is the **90/10** preference point system.

1.3 Points for this tender shall be awarded for:

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

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

	POINTS
PRICE	90
SPECIFIC GOALS	
51% and above black owned enterprise	05
Eastern Cape Based Supplier	02
51 % and above woman owned enterprises.	02
51 % and above youth owned enterprises	01
Total points for Price and SPECIFIC GOALS	100

1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this

tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

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

2. DEFINITIONS

“**tender**” means a written offer in the form determined by an organ of state in response to an invitation to

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

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

2.3. POINTS AWARDED FOR PRICE

3.1.1 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

$$P_s = 80 \left(1 - \frac{P_t - P_{min}}{P_{min}} \right) \quad \text{or} \quad P_s = 90 \left(1 - \frac{P_t - P_{min}}{P_{min}} \right)$$

Where

- P_s = Points scored for price of tender under consideration
- P_t = Price of tender under consideration
- P_{min} = Price of lowest acceptable tender

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

2.4.1. POINTS AWARDED FOR PRICE

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

$$\begin{array}{ccc} \mathbf{80/20} & \mathbf{or} & \mathbf{90/10} \\ \mathbf{\frac{P_s}{max} = 80 \left(1 + \frac{P_t - P}{P_{max}} \right)} & \mathbf{or} & \mathbf{P_s = 90 \left(1 + \frac{P_t - P_{max}}{P_{max}} \right)} \end{array}$$

Where:

- P_s = Points scored for price of tender under consideration
- P_t = Price of tender under consideration
- P_{max} = Price of highest acceptable tender

3. POINTS AWARDED FOR SPECIFIC GOALS

3.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:

3.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—

(c) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or

(d) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,

then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

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

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

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

The specific goals allocated points in terms of this tender	Number of points allocated (90/10 system) (To be completed by the organ of state)	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)
SPECIFIC GOALS				
51% and above black owned enterprises	05			
Eastern Cape Based Supplier	02			
51 % and above woman owned enterprises.	02			
51 % and above youth owned enterprises	01			

DECLARATION WITH REGARD TO COMPANY/FIRM

3.3. Name of company/firm.....

3.4. Company registration number:
.....

- 3.5. TYPE OF COMPANY/ FIRM
- Partnership/Joint Venture / Consortium
 - One-person business/sole propriety
 - Close corporation
 - Public Company
 - Personal Liability Company
 - (Pty) Limited
 - Non-Profit Company
 - State Owned
- Company[TICK APPLICABLE BOX]

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

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have —
 - (a) disqualify the person from the tendering process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
 - (e) forward the matter for criminal prosecution, if deemed necessary

.....
SIGNATURE(S) OF TENDERER(S)

SURNAME AND NAME:

DATE:

ADDRESS:

.....

.....

.....

T2.2 .2- Functionality Evaluation Schedules

T2.2.2a: SIMILAR PROJECTS COMPLETED SUCCESSFULLY WITH REFERENCE LETTERS

Note: Mandatory Returnable Schedule. Failure to submit as required will result in the bid being nonresponsive.

Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Bidders are required to provide a schedule of similar work in complexity that was successfully completed with contactable references as per the attached forms below.

OR

Submit a reference letter that indicates the following

Signature of the Client

On Clients Letter Head or Client Stamp

Company Name, contact person, contact details (telephone number and email etc)

Value of the Project

Scope of works carried out

Works have been completed on time/within stipulated contract period

Good or better workmanship



Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Sir/Madam,

We are in the process of evaluating _____ for the above project.

Tenderers Company Name

They have listed you as a reference. Please evaluate the contractor's performance on the criteria listed below by ticking the appropriate boxes. This form to be submitted with the bid. If you have any questions, please do not hesitate to contact us.

NAME OF EMPLOYER	NAME OF PROJECT	CONTRACT PERIOD	VALUE OF WORK

1. KNOWLEDGEABLE IN THE FIELD IN WHICH THIS BID RELATES TO

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

2. TIME PERFORMANCE

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

3. FINANCIAL PERFORMANCE

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

4. WAS THE WORKS COMPLETED SATISFACTORY?

YES / NO (please circle)

If no, please provide details below:

Project Manager/Principal Agent: _____ **Place company stamp below:**

Tel: _____

E-mail Address _____

Signature: _____ Date: _____



Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Sir/Madam,

We are in the process of evaluating _____ for the above project.

Tenderers Company Name

They have listed you as a reference. Please evaluate the contractor's performance on the criteria listed below by ticking the appropriate boxes. This form to be submitted with the bid. If you have any questions, please do not hesitate to contact us.

NAME OF EMPLOYER	NAME OF PROJECT	CONTRACT PERIOD	VALUE OF WORK

1. KNOWLEDGEABLE IN THE FIELD IN WHICH THIS BID RELATES TO

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

2. TIME PERFORMANCE

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

3. FINANCIAL PERFORMANCE

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

4. WAS THE WORKS COMPLETED SATISFACTORY?

YES / NO (please circle)

If no, please provide details below:

Project Manager/Principal Agent: _____ Place company stamp below:

Tel: _____

E-mail Address _____

Signature: _____ Date: _____



Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Sir/Madam,

We are in the process of evaluating _____ for the above project.

Tenderers Company Name

They have listed you as a reference. Please evaluate the contractor's performance on the criteria listed below by ticking the appropriate boxes. This form to be submitted with the bid. If you have any questions, please do not hesitate to contact us.

NAME OF EMPLOYER	NAME OF PROJECT	CONTRACT PERIOD	VALUE OF WORK

1. KNOWLEDGEABLE IN THE FIELD IN WHICH THIS BID RELATES TO

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

2. TIME PERFORMANCE

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

3. FINANCIAL PERFORMANCE

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

4. WAS THE WORKS COMPLETED SATISFACTORY?

YES / NO (please circle)

If no, please provide details below:

Project Manager/Principal Agent: _____ **Place company stamp below:**

Tel: _____

E-mail Address _____

Signature: _____ Date: _____



Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Sir/Madam,

We are in the process of evaluating _____ for the above project.

Tenderers Company Name

They have listed you as a reference. Please evaluate the contractor's performance on the criteria listed below by ticking the appropriate boxes. This form to be submitted with the bid. If you have any questions, please do not hesitate to contact us.

NAME OF EMPLOYER	NAME OF PROJECT	CONTRACT PERIOD	VALUE OF WORK

1. KNOWLEDGEABLE IN THE FIELD IN WHICH THIS BID RELATES TO

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

2. TIME PERFORMANCE

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

3. FINANCIAL PERFORMANCE

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

4. WAS THE WORKS COMPLETED SATISFACTORY?

YES / NO (please circle)

If no, please provide details below:

Project Manager/Principal Agent: _____ Place company stamp below:

Tel: _____

E-mail Address _____

Signature: _____ Date: _____



Reference No 5

Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Sir/Madam,

We are in the process of evaluating _____ for the above project.

Tenderers Company Name

They have listed you as a reference. Please evaluate the contractor's performance on the criteria listed below by ticking the appropriate boxes. This form to be submitted with the bid. If you have any questions, please do not hesitate to contact us.

NAME OF EMPLOYER	NAME OF PROJECT	CONTRACT PERIOD	VALUE OF WORK

1. KNOWLEDGEABLE IN THE FIELD IN WHICH THIS BID RELATES TO

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

2. TIME PERFORMANCE

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

3. FINANCIAL PERFORMANCE

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
5	4	3	2	1

4. WAS THE WORKS COMPLETED SATISFACTORY?

YES / NO (please circle)

If no, please provide details below:

Project Manager/Principal Agent: _____ Place company stamp below:

Tel: _____

E-mail Address _____

Signature: _____ Date: _____

T2.2.2 b – Construction Method Statement

Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Work Organization Program and Scheduling

Bidder to provide a Detailed Gantt Chart (Works Breakdown Structure Program) Showing:

- **Summary tasks**
- **Indicating a Critical Path**
- **Time-lines within the project period**

Work organization program and scheduling to be attached here

T2.2.2 c – Key Personnel Qualifications

(Construction Manager)

Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Attach documents & Certified Copies of Qualifications here

**T2.2.2 f – Key Personnel Qualifications
(Construction Supervisor)**

Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Attach documents & Certified Copies of Qualifications here

T2.2.2 f – Key Personnel Qualifications

(Construction Health and Safety Officer)

Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Attach documents & Certified Copies of Qualifications here

T2.2.2 f – Key Personnel Qualifications

(Artisan)

Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Attach documents & Certified Copies of Qualifications here

T2.2.2 g – Key Personnel

(Skilled Staff)

Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Attach documents & Certified Copies of Qualifications here

T2.2.2 h – Key Personnel Experience
(Semi-Skilled Support Staff)

Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Attach documents & Certified Copies of Qualifications here

T2.2.2 i – Company Experience

T2.2.2 I – Bank Confirmation/Letter of Intent

Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Provide a Letter of intent from a financial institution or Bank Rating Certificate

Attach document here

T2.2.2 J – Scope of Works and Detailed Specifications

Note: Mandatory Returnable Schedule. Failure to submit as required will result in the bid being non-responsive.

Project title:	REFURBISHMENT OF MDANTSANE HI-WAY MALL
Bid No:	ECDC/INFRA/34/042024

Tenderer herewith confirms by signing below that he has read and understands the full scope of works and associated detailed specifications of this contract.

The client will not entertain any additional amount claimed due to a lack of understanding the full spectrum of the works.

Company Name:
.....
.....

Tenderer
Name:.....Signature.....Date.....

Company Authorised/
Accountable Person
Name:.....Signature.....Date.....

Company Stamp:

THE CONTRACT

Part C1: Agreements and Contract data

C1.1 - Form of Offer and Acceptance

C1.2 - Contract Data

C1.3 - Form of Guarantee

C1.1 - Form of offer and acceptance

Annexure L:

C.1.1 FORM OF OFFER AND ACCEPTANCE OFFER

Note:

Mandatory Requirement. Failure to complete and Sign this document will result in the bid being nonresponsive.

OFFER

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

PROJECT: REFURBISHMENT OF MDANTSANE HI-WAY MALL

Bid No: ECDC/INFRA/34/042024

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

By the representative of the Tenderer, deemed to be duly 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:

R..... (in figures)

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

Rand (in words)

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 Service Provider in the conditions of Contract identified in the Contract Data.

THIS OFFER IS MADE BY THE FOLLOWING LEGAL ENTITY: (cross out block which is not applicable)

Company or close corporation:

.....
..... And:
whose registration number is:

.....
.....
And: whose income tax reference number
is:.....

Trading under the name and style of:

<p>AND WHO IS:</p> <p>Represented herein, and who is duly authorized to do so, by:</p> <p>Mr/Mrs/Ms:</p> <p>..... </p> <p>In his/her capacity as:</p> <p>..... </p>	<p>Note:</p> <p>A resolution/power of attorney, signed by all the directors/ members/ partners of the legal entity must accompany this offer, authorizing the representative to make this offer.</p>
--	---

SIGNED FOR THE TENDERER:

Name of Representative	Signature	Date

SIGNED BY WITNESS:

Name of Representative	Signature	Date

The tenderer elects as its *domicillium citandi et executandi* in the Republic of South Africa, where any and all legal notices may be served, as (physical address)

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

Other contact details of the tenderer are:

Telephone no

:.....
.....

Cellular phone no

:.....
.....

Fax no

:.....
.....

Postal address

:.....
.....

Banker

:.....
.....

Branch

:.....
.....

ACCEPTANCE

By signing this part of this form of offer and acceptance, ECDC accepts the bidder's offer. Acceptance of the bidder's offer shall form an agreement between the ECDC and the bidder 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 the contract to be concluded.

- Agreements and Contract Data, (which includes this Agreement)
- Pricing data
- Scope of work.
- Site information and drawings and documents or parts thereof, which may be incorporated by reference into the volumes above.

Deviations from and amendments to the documents listed in the bid data and any addenda thereto as listed in the bid schedules as well as any changes to the terms of the offer agreed by the bidder and ECDC during this process of offer and acceptance, are contained in the schedule of deviations attached to and forming part of this agreement. No amendments to or deviations from said documents are valid unless agreed by both parties.

The bidder shall within two weeks after receiving a completed copy of this agreement, including the schedule of deviations (if any), contact the ECDC's Legal Department to arrange documentation to be provided in terms of the conditions of contract identified in the contract. 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 bidder receives one fully completed original copy of this document, including the schedule of deviations (if any). Unless the bidder within five working days of the date of such receipt notifies the employer in writing of any reason why he cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the parties.

Signed for the ECDC:

Name of representative	Capacity	Date
.....		
Address	Signature	

Witnessed by:

Name of witness	Signature	Date

Schedule of deviations

Notes:

1. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
2. A Tenderer's covering letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid becomes 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 document 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 document 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	

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

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

Signed for the ECDC

Name of Representative	Capacity	Signature

Signed by Bidder:

Name of Representative	Capacity	Signature

C1.2 - Contract data

C.1.2 Contract Data

The Conditions of Contract are the **JBCC Series 2000 Principal Building Agreement (Edition 6.2, May 2018)**, published by the Joint Building Contracts Committee Inc. Copies of these documents may be obtained from the **Association of South African Quantity Surveyors (011) 315 4140, the Master Builders Association (011)205 9000, the South African Association of Consulting Engineers (011) 463 2022 or the South African Institute of Architects (011) 486 0684.**

It will be a condition of contract that:

- The contractor shall achieve in the performance of the contract the Contract Skills Development Goal (CSDG) established in the cidb Standard for Developing Skills through Infrastructure Contracts, published in Gazette Notice No.48491 of 28 April 2023.
- The contractor shall achieve in the performance of the contract the Contract Participation Goals (CPG) relating to the engagement of targeted enterprises as established in the cidb Standard for Indirect Targeting for Enterprise Development through Construction works Contracts, published in Gazette Notice No.36190 of 25 February 2013
- The main contractor shall provide a minimum Contract Participation Goal (CPG) of 5% of the total project value and develop targeted enterprises in two agreed developmental areas as per clause 3.2.1 of the Indirect Targeting Standard (Gazette Notice No.36190 of 25 February 2013).

Each item of data given below is cross-referenced to the clause in the JBCC Principal Agreement to which it mainly applies.

Part 1: Data provided by the Employer

JBCC Clause	Data	
A 1.0 [1.1]	Works :	
	Project Name :	REFURBISHMENT OF MDANTSANE HI-WAY MALL
	Reference Number:	ECDC/INFRA/34/042024
	Works Description :	Refurbishment of Mdantsane Hi-Way Mall – Consisting of the following works; Demolition of existing hawker stalls and provision of new, Conversion of existing public ablutions into retail space on the first floor, Conversion of existing retail space into tenant ablutions on the first floor, Conversion of existing retail space into public ablutions on the first floor, Conversion of existing retail space into tenant ablutions on the ground floor, Conversion of existing retail space into public ablutions on the ground floor, Structural roof modification including new roof sheeting and side cladding, New windows, New gutters and downpipes, New roller shutter doors at the three existing entrances, New ceilings, Replacement of underground services – water, sewer, and stormwater, Replacement/reinstating tarmac/concrete after installation of new services, Full replacement of M&E services inclusive of Power and Lighting, Ventilation, Internal wet services, firefighting reticulation, and equipment, Internal domestic water reticulation to public and tenant toilets only, New early warning fire detection system, New lift in existing lift shaft
A 2.0 [1.1]	Site :	
	Erf/ Stand Number	10436
	Township/ Suburb	Mdantsane (N.U.2)
	Site Address	Coordinates: -32.9429822, 27.755987

	Local Authority	BUFFALO CITY METROPOLITAN MUNICIPALITY
A 3.0 [1.1]	Employer :	
	Official Name of Organ of State /Public Sector Body	Eastern Cape Development Corporation (ECDC)
	Business registration number	Co.Act 2 of 1997
	VAT/GST number	446 018 0955
	Country	South Africa
	Telephone number	043 704 5787
	E-mail	gcowley@ecdc.co.za
	Mobile number	073 902 9222
	Postal address	P.O Box 11197, Southernwood, 5213
	Physical address	ECDC, Ocean Terrace Park, Moore Street, Quigney, East London, 5201

A 4.0 [1.1]	Principal Agent and Architect:		
	Name	Brinkman Ndayi McAll (Pty) Ltd	
	Legal entity of above	Brinkman Ndayi McAll (Pty) Ltd	
	Practice number	PB 0111	
	Country	South Africa	
	Contract Person	Arinda Swart	
	Telephone number	041 585 2125	
	Mobile Number	081 271 2606	
	E-mail	arindas@bnm.co.za	
	Postal address	Suite 1, Lyndon, 114 Park Drive, Gqeberha	
	Physical address	Suite 1, Lyndon, 114 Park Drive, Gqeberha	
A 5.0 [1.1]	Agent (1) :	Discipline :	Quantity Surveyor
	Name	Pulana Baxter & Associates CC	
	Legal entity of above	Pulana Baxter and Associates CC	
	Practice number	151 656 42	
	Country	South Africa	
	Contract Person	Inga Jakavula	
	Telephone number	043 721 0984	
	Mobile Number	073 019 1810	
	E-mail	inga@pba.co.za	
	Postal address	Postnet Suite 32, P.O Box 432, East London, 5200	
	Physical address	30 Chamberlain Road, Berea, East London, 5241	
A 6.0 [1.1]	Agent (2) :	Discipline :	Civil Engineer
	Name	SMEC South Africa (Pty) Ltd	
	Legal entity of above	SMEC South Africa (Pty) Ltd	
	Practice number	CU2018071	
	Country	South Africa	
	Contract Person	Juan Kampman	
	Telephone number	041 363 6777	
	Mobile Number	082 628 2871	
	E-mail	Juan.Kampman@smec.co.za	
	Postal address	P.O Box 35089, Newton Park, Gqeberha, 6055	
	Physical address	7 Mangold Street, Newtown Park, Gqeberha, 6045	

A 7.0 [1.1]	Agent (3) :	Discipline :	Structural Engineer
	Name	ZNM Consulting Engineers (Pty) Ltd	
	Legal entity of above	ZNM Consulting Engineers (Pty) Ltd	
	Practice number	1090	
	Country	South Africa	
	Contract Person	Mzukisi Mashaba	
	Telephone number	087 350 4035	
	Mobile Number	079 895 0558	
	E-mail	mzukisi@znmeng.co.za	
	Postal address	8a Bonza Bay Road, Beacon Bay, East London	
	Physical address	8a Bonza Bay Road, Beacon Bay, East London	
A 8.0 [1.1]	Agent (4) :	Discipline :	Mechanical Engineer
	Name	RNA Consulting Engineers	
	Legal entity of above	RNA Consulting Engineers (Pty) Ltd	
	Practice number	711	
	Country	South Africa	
	Contract Person	Travis Warne	
	Telephone number	043 742 0041	
	Mobile Number	083 381 8985	
	E-mail	travisw@rnaconsulteng.co.za	
	Postal address	Postnet Suite: 136, Private Bag X3, Beacon Bay, East London	
	Physical address	11 Bonza Bay Road, Beacon Bay, East London, 5241	
A 9.0 [1.1]	Agent (5) :	Discipline :	Electrical Engineer
	Name	RNA Consulting Engineers	
	Legal entity of above	RNA Consulting Engineers (Pty) Ltd	
	Practice number	711	
	Country	South Africa	
	Contract Person	Toby Nzuzza	
	Telephone number	043 742 0041	
	Mobile Number	072 437 6531	
	E-mail	toby@rnaconsulteng.co.za	
	Postal address	Postnet Suite: 136, Private Bag X3, Beacon Bay, East London	
	Physical address	11 Bonza Bay Road, Beacon Bay, East London, 5241	

A 10.0 [1.1]	Agent (6) :	Discipline :	Health & Safety Agent
	Name	SHEHAWK Consultants CC	
	Legal entity of above	African Helical Pile & Anchor Company	
	Practice number	CHSA/128/2022	
	Country	South Africa	
	Contract Person	Barinda Gretton	
	Telephone number	082 460 9891	
	Mobile Number	082 460 9891	
	E-mail	Barinda@shehawk.co.za	
	Postal address	84 12 th Avenue, Gonubie, East London, 5200	
	Physical address	84 12 th Avenue, Gonubie, East London, 5200	

PART B - CONTRACT INFORMATION

JBCC Clause	Data			
B 1.0 [1.1]	Definitions :			
	Bills of quantities: System/Method of measurement	The Bills of Quantities were drawn up in accordance with the Standard System of Measuring Builders Work, Seventh Edition, 2015		
B 2.0 [2.1]	Law, regulations and notices :			
	Law applicable to the works, state country [2.1]	The governing law is the law of the Republic of South Africa The parties consent to the jurisdiction of the Bhisho High Court Office for the purposes of this clause.		
B 3.0 [3.2]	Offer and Acceptance :			
	Currency applicable to this agreement [3.2]	South African Rand (ZAR)		
B 4.0 [5.0] [5.2]	Documents :			
	The original signed agreement is to be held by the principal agent [5.2], if not, indicate by whom	Employer		
	[5.6] Number of copies of construction information issued to the contractor at no cost [5.6]	3 Sets of complete documents		
	Documents comprising the agreement	The documents forming the agreement are to be taken as mutually explanatory of one another and for the purpose of interpretation, the priority of the documents shall be in accordance with the following sequence: the Form of Offer and Acceptance (a) The Schedule of Deviations (b) This Contract Data; (c) The standard JBCC building agreement Ed 6.2 May 2018 (For Organs of State) (d) The Drawings (e) The Specifications (f) The Bills of Quantities. If an ambiguity or discrepancy is found in the documents, the Principal Agent shall issue any necessary clarification or instruction		
	Contract drawings	Contract drawings are contained in Part C4 (Separately Attached).		
B 5.0 [6.0] [6.2]	Employer's Agent :			
	Authority is delegated to the following agents to issue contract instructions and perform duties for specific aspects of the works [6.2]	Principal Agent to issue all Contract Instructions		
	[6.3] Principal agent's and agents' interest or involvement in the works other than a professional interest [6.3]	N/A		
B6.0 [10.0]	INSURANCES :			
	Insurances by Contractor Yes/No? Yes <input type="checkbox"/>		Amount including tax	Deductible amount including tax
	[10.1.1]	Contracts works insurance to be effected by: CONTRACTOR	Contract sum plus 20%	with deductible of 5%
	[10.1.2]	Supplementary/special insurance to be effected by: CONTRACTOR	Contract sum plus 20%	with deductible of 5%
	[10.1.3]	Public liability insurance to be effected by: CONTRACTOR	R 20 000 000.00	with deductible of 5%
	[10.1.4]	Removal of lateral support insurance to be effected by: Not applicable	N/A	N/A
	[10.1.5]	Other insurances to be effected by: Not applicable	N/A	N/A

B7.0 [12.1] [12.1.2]	Obligations of the employer:		
	Existing premises will be in use and occupied [12.1.2]		Yes/No? Yes
	If Yes, description	The building will remain operational and open for trade during business hours for the duration of the construction period. As such Sectional Completion will be stipulated in the contract data with five (5) sections being anticipated – starting with the first storey, doing one wing at a time and then proceeding with work in the ground storey. To enable this, specialised scaffolding, hoarding and a very detailed Health and Safety plan will be required. The contractor will also be expected to assist with the decanting of the tenants during construction to enable work to take place in the various areas	
	Restriction of working hours [12.1.2]		Yes/No? No
	If Yes, description	N/A	
[12.1.3]	Natural features and known services to be preserved by the contractor [12.1.3]		Yes/No? No
	If Yes, description	N/A	
[12.1.4]	Restrictions to the site or areas that the contractor may not occupy [12.1.4]		Yes/No? Yes
	If Yes, description	Designated areas open for trade.	
[12.1.10]	Supply of free issue [12.1.10]		Yes/No? No
	If Yes, description	N/A	
B8.0 [14.0]	Nominated Subcontractor's:		
	Yes/no?	No	If yes, description of specialisation
	Specialisation 1		N/A
B9.0 [15.0]	Selected Subcontractor's:		
	Yes/no?	No	If yes, description of specialisation
	Specialisation 1		N/A
B10.0 [16.0]	Direct Subcontractor's:		
	Yes/no?	No	If yes, description of extent of works
	[12.1.11]	Extent of works [12.1.11]	N/A
B11.0 [20.1]	Description of sections:		
	Sectional work completion?		Yes If yes, description of sections
	Section No.1		North/South Wing (First Floor) and enabling works
	Section No.2		East/West Wing (First Floor)
	Section No.3		North/South Wing (Ground Floor)
	Section No.4		East/West Wing (Ground Floor)
	Section No.5		Balance of Works (Demolition of hawker stalls/provision of new and replacement of underground services)
B12.0 [12.1.5]	Possession of site:		
	Intended date of possession of the site Refer B17.0 [12.1.5; 12.2.22]		Possession of site shall be given to the Contractor after submission by the Contractor of the documents indicated in the Form of Offer and Acceptance and approval of the Contractor's Safety, Health and Environmental Plan and receipt of DOL Permit.
[19.0]	Practical Completion (Works as a whole):		
[19.3]	Yes/No?		No

[12.2.7]	The date for practical completion shall be the period as indicated below from the date of possession of the site by the contractor [12.2.7; 24.1]	N/A		
[24.0]	Penalty:			
[24.1]	Penalty for late completion [24.1]	N/A		
[19.0]	Practical Completion (Sectional):			
[19.3]	Yes/No?	Yes		
	Period for inspection by the principal agent [19.3]	Section 1	10 Working Days	
		Section 2	10 Working Days	
		Section 3	10 Working Days	
		Section 4	10 Working Days	
		Section 5	10 Working Days	
[12.2.7]	The date for practical completion shall be the period as indicated below from the date of possession of the site by the contractor [12.2.7; 24.1]	Section 1	6 (Six) Calendar months from possession of site (excluding annual builders' holiday)	
		Section 2	12 (Twelve) Calendar months from possession of site (excluding annual builders' holiday)	
		Section 3	18 (Eighteen) Calendar months from possession of site (excluding annual builders' holiday)	
		Section 4	24 (Twenty-Four) Calendar months from possession of site (excluding annual builders' holiday)	
		Section 5	24 (Twenty-Four) Calendar months from possession of site (excluding annual builders' holiday)	
[24.0]	Penalty:			
[24.1]	Penalty for late completion [24.1]	Section 1	R 9 000.00 excl. VAT per calendar day	
		Section 2	R 9 000.00 excl. VAT per calendar day	
		Section 3	R 9 000.00 excl. VAT per calendar day	
		Section 4	R 9 000.00 excl. VAT per calendar day	
		Section 5	R 9 000.00 excl. VAT per calendar day	
[12.2.7]	Criteria to achieve practical completion not covered in the definition of practical completion	All relevant C.O. C's to be issued prior to practical completion.		
B13.0 [21.0]	Defects liability period:			
	Extended defects liability period: Refer B17.0 [21.13]		Yes/No	Yes

	If yes, description of applicable elements	13.1 Electrical Equipment and Installation. 13.2 Mechanical Equipment and Installation. 13.3 13.4 13.5		
B14.0 [25.0] [25.2]	Payments:			
	Date of month for issue of regular payment certificates [25.2]	The interim payment certificate is to be issued by the 25th day of each month		
[25.3.4;26.9.5]	Contract price adjustment / Cost fluctuations [25.3.4; 26.9.5]	Yes, the contract value shall be adjusted according to CPAP. The base month for the application of CPAP is the month of closing of the tender.		
	If yes, method to calculate	Haylett Formula		
	Employer shall pay the contractor within: [25.10]	Thirty (30) Calendar days		
B15.0 [30.0] [30.3.1;30.10]	Dispute resolution:			
	Adjudication [30.6.1; 30.10] Name of nominating body	N/A		
[30.6.2]	Applicable rules for adjudication [30.6.2]	N/A		
[30.7.4;30.10]	Arbitration [30.7.4; 30.10] If Yes, name of nominating body * If No, then dispute will be referred to litigation	<input type="checkbox"/> Yes/No?	<input type="checkbox"/> Yes	
		The dispute resolution body shall be the Association of Arbitrators (Southern Africa).		
[30.7.5]	Applicable rules for arbitration [30.7.5]	N/A		
B16.0	JBCC® General Preliminaries - Selections:			
	[P2.2]	Provisional bills of quantities [P2.2]	Yes/No?	Yes
[P2.3]	Availability of construction information [P2.3]	Yes/No?	Yes	
[P3.1]	Previous work - dimensional accuracy - details of previous contract(s) [P3.1]	N/A		
[P3.2]	Previous work - defects - details of previous contract(s) [P3.2]	Emergency Contract		
[P3.3]	Inspection of adjoining properties - details [P3.3]	Building next to the Gym (Sharing a wall with the Mall)		
[P4.1]	Handover of site in stages - specific requirements [P4.1]	N/A		
[P4.2]	Enclosure of the works - specific requirements [P4.2]	Hoarding must be priced for under this clause in the Preliminaries Bill and no claims for additional hoardings will be entertained.		
[P4.3]	Geotechnical and other investigations - specific requirements [P4.3]	NO		
[P4.5]	Existing premises occupied - details [P4.5]	YES		
[P4.6]	Services - known - specific requirements [P4.6]	N/A		
[P8.1]	Water [8.1]	By Contractor	Yes/No?	No
		By Employer	Yes/No?	No
		By Employer - metered	Yes/No?	Yes
[P8.2]	Electricity [8.2]	By Contractor	Yes/No?	No
		By Employer	Yes/No?	No

		By Employer - metered	Yes/No?	Yes
[P8.3]	Ablution and welfare facilities [8.3]	By Contractor	Yes/No?	Yes
		By Employer	Yes/No?	No
[P8.4]	Communication facilities - specific requirements [P8.4]		N/A	
[P11.1]	Protection of the works - specific requirements [P11.1]		N/A	
[P11.2]	Protection / isolation of existing works and works occupied in sections - specific requirements [P11.2]		N/A	
[P11.5]	Disturbance - specific requirements [P11.5]		N/A	
[P11.6]	Environmental disturbance - specific requirements [P11.6]		N/A	

B17.0	<p>Changes made to JBCC® documentation</p>
1.1	<p>Definitions</p> <p>AGREEMENT: The completed Form of Offer and Acceptance, the completed JBCC® Principal Building Agreement and JBCC® contract data for organs of state and other public sector bodies, the contract drawings, the priced document and any other documents reduced to writing and signed by the authorised representatives of the parties</p> <p>CONSTRUCTION PERIOD: The period commencing on the date of possession of the site by the contractor and ending on the date of practical completion</p> <p>CONTRACT DATA FOR ORGANS OF STATE AND OTHER PUBLIC SECTOR BODIES: The document listing the Organs of State and other Public Sector Bodies' requirements and the project specific information</p> <p>INTEREST: The interest rates applicable on this contract, whether specifically indicated in the relevant clauses or not, will be the rate as determined by the Minister of Finance from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No 1 of 1999), calculated as simple interest, in respect of debts owing to the State, and will be the rate as determined by the Minister of Justice and Constitutional Development from time to time, in terms of section 1(2) of the Prescribed Rate of Interest Act, 1975 (Act No 55 of 1975), calculated as simple interest, in respect of debts owing by the State</p> <p>PRINCIPAL AGENT: The person or entity appointed by the employer and named in the contract data for organs of state and other public sector bodies. In the event of a principal agent not being appointed, then all the duties and obligations of a principal agent as detailed in the agreement shall be fulfilled by the employer's representative as named in the contract data for organs of state and other public sector bodies</p>
3.0	<p>Offer and Acceptance</p> <p>Amend 3.3 to read as follows:</p> <p>This agreement shall come into force on the date as stated on the Form of Offer and Acceptance and continue to be of force and effect until the end of the latent defects liability period [22.0] notwithstanding termination [29.0] or the certification of final completion [21.0] and final payment [25.0]</p>
6.0	<p>Employer's Agents</p> <p>Add the following as 6.7:</p> <p>In terms of the clauses listed hereunder, the employer has retained its authority and has not given a mandate to the principal agent. The employer shall sign all documents in relation to clauses 4.2, 14.1.2, 14.1.4, 14.4.1, 14.6, 23.1, 23.2, 23.3, 23.7, 23.8, 26.1, 26.7, 26.12 and 28.4</p>
9.0	<p>Indemnities</p> <p>9.2.7: Add the following to the end of the first sentence: "... due to no fault of the contractor"</p>
10.0	<p>Insurances</p> <p>Add the following as 10.1.5.1:</p> <p>Hi Risk Insurance</p> <p>In the event of the project being executed in a geological area classified as a "High Risk Area", that is an area which is subject to highly unstable sub-surface conditions that might result in catastrophic ground movement evident by sinkhole or doline formation the following will apply:</p> <p>10.1.5.1.1 Damage to the works</p> <p>The contractor shall, from the date of possession of the site until the date of the certificate of practical completion, bear the full risk of and hereby indemnifies and holds harmless the employer against any damage to and/or destruction of the works consequent upon a catastrophic ground movement as mentioned above. The contractor shall take such precautions and security measures and other steps for the protection of the works as he may deem necessary</p> <p>When so instructed to do so by the principal agent, the contractor shall proceed immediately to remove and/or dispose of any debris arising from damage to or destruction of the works and to rebuild, restore, replace and/or repair the works, at the contractor's own costs</p> <p>10.1.5.1.2 Injury to persons or loss of or damage to property</p> <p>The contractor shall be liable for and hereby indemnifies and holds harmless the employer against any liability, loss, claim or proceeding arising at any time during the period of the contract whether arising in common law or by statute, consequent upon personal injuries to or the death of any person whomsoever resulting from, arising out of or caused by a catastrophic ground movement as mentioned above</p> <p>The contractor shall be liable for and hereby indemnifies the employer against any and all liability, loss, claim or proceeding consequent upon loss of or damage to any moveable, or immovable property, or personal property, or property contiguous to the site, whether belonging to or under the control of the employer or any other body or person whomsoever arising out of or caused by a catastrophic ground movement, as mentioned above, which occurred during the period of the contract</p> <p>10.1.5.1.3</p> <p>It is the responsibility of the contractor to ensure that he has adequate insurance to cover his risk and liability as mentioned in 10.1.5.1.1 and 10.1.5.1.2. Without limiting the contractor's obligations in terms of the contract, the contractor shall, within twenty-one (21) calendar days of the date of possession of the site, but before commencement of the works, submit to the employer proof of such insurance policy, if requested to do so</p> <p>10.1.5.1.4</p> <p>The employer shall be entitled to recover any and all losses and/or damages of whatever nature suffered or incurred consequent upon the contractor's default of his obligations as set out in 10.1.5.1.1; 10.1.5.1.2 and 10.1.5.1.3. Such losses or damages may be recovered from the contractor or by deducting the same from any amounts still due under</p>

	this contract or under any other contract presently or hereafter existing between the employer and the contractor and for this purpose all these contracts shall be considered one indivisible whole
11.0	Securities Amend 11.10 to read as follows: There shall be no lien or right of retention held by any contractor in respect of the works executed on site
12.0	Obligations of the Parties Amend 12.1.5 to read as follows: Give possession of the site to the contractor within ten (10) working days of the contractor complying with the terms of 12.2.22 12.2.2: Not applicable Add the following as 12.2.22: Within fifteen (15) working days of the date of the agreement submit to the principal agent an acceptable health and safety plan, required in terms of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993)
19.0	Practical Completion 19.5: Delete the words "subject to the contractor's lien or right of continuing possession of the works where this has not been waived"
21.0	Defects Liability Period and Final Completion Add the following as 21.13: The ninety (90) calendar days defects liability period for the works [21.1] is replaced with a period of three hundred and sixty-five (365) calendar days in respect of the listed applicable elements
25.0	Payment 25.7.5: Not applicable 25.10: Delete the words "and/or compensatory interest " 25.14.2: Not applicable
27.0	Recovery of Expense and/or Loss 27.1.5: Not applicable
29.0	Termination Add the following after 29.1.3: or where ... 29.1.4: The contractor's estate has been sequestrated, liquidated or surrendered in terms of the insolvency laws in force within the Republic of South Africa 29.1.5: The contractor has engaged in corrupt or fraudulent practices in competing for or in executing the contract
NEW	The contractor shall achieve in the performance of the contract the Contract Skills Development Goals (CSDG) established in the CIDB Standard for Developing Skills through Infrastructure Contracts (published in GN 43495 of 3 July 2020)
NEW	The contractor shall achieve in the performance of the contract the Contract Participation Goals (CPG) related to the engagement of targeted enterprises as established in the CIDB Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts (published in GN 36190 of 25 February 2013)

C TENDERER'S SELECTIONS

C 1.0 Securities [11.0]

Guarantee for construction: Select Option A or B

Option A	Guarantee for construction (variable) by contractor [11.1.1]
Option B	Guarantee for construction (fixed) by contractor [11.1.2]
Guarantee for payment by employer [11.5.1; 11.10]	Not applicable
Advance payment, subject to a guarantee for advance payment [11.2.2; 11.3]	Not applicable

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

Year 1 contractor's annual holiday period	start date	13 December 2024	end date	05 January 2025
Year 2 contractor's annual holiday period	start date	12 December 2025	end date	04 January 2026
Year 3 contractor's annual holiday period	start date		end date	

C 3.0 Payment of preliminaries [25.0]

Contractor's selection

Select Option A or B

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

Payment methods

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

Lump sum contract

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

C 4.0 Adjustment of preliminaries [26.9.4]

Contractor's selection

Select Option A or B

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

Provision of particulars

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

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

Adjustment methods

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

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

Option B	<p>The adjustment of preliminaries shall be based on the number of calendar days extension to the date of practical completion to which the contractor is entitled with an adjustment of the contract value [23.2; 23.3] as compared to the number of calendar days in the initial construction period [26.9.4]</p> <p>The adjustment shall take into account the resources as set out in the detailed breakdown of the preliminaries for the period of construction during which the delay occurred</p>
----------	--

Failure to provide particulars within the period stated

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

Lump sum contract

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

C1.3 – Form of Guarantee

Part C2: Pricing data

C2.1 - Pricing instructions

C2.1 - Pricing instructions

C2.1: Pricing Instructions

The contractor shall determine the Contract Skills Development Goals (CSDG), expressed in Rand, which shall not be less than the contract amount multiplied by a percentage (%) factor given in Table 2 in the Standard for the applicable class of construction works.

The requirements of the CIDB B.U.I.L.D. Programme with respect to Indirect Targeting for Enterprise Development is set at a minimum contribution of 30% of the project's contract value towards development support. This is the support that the successful tenderer must provide on this contract. (As per cidb Standard for Indirect Targeting for Enterprise Development through Construction works Contracts, published in Gazette Notice No.36190 of 25 February 2013).

The requirements of the CIDB B.U.I.L.D. Programme with respect to the Standard for Skills Development is set at a minimum development support of 0.50% of the project's subtotal. (As per cidb Standard for Developing Skills through Infrastructure Contracts, published in Gazette Notice No.48491 of 28 April 2023).

The contractor shall determine the contract skills participation goals, expressed in Rand, which shall not be less than the sub-total multiplied by a percentage factor given in Table 2 in the Standard for the applicable class of construction works. This is indicated by the percentage factor in the Final Tender Summary section. Minimum Contract Skills Development Goal (CSDG) sum = General Building GB (0.50%) x Subtotal of the tender amount.

The Employer shall determine the amount to be paid to the Enterprise Development Co-ordinator for the Contract Participation Goal (CPG) on the contract and this amount shall be stated under the section Enterprise Development as a Provisional Sum in the Preliminaries and Generals (P&G's).

The contractor shall be paid as follows: These are recommended rates, client may change depending on the location of the project, complexity etc.). These rates must be stated by the client in the P&Gs so that all tenderers have the same rate and not result in a tenderer being disadvantaged.

1. Needs analysis and enterprise development plan per Targeted Enterprise - R5000.00 (five thousand rands) per targeted enterprise.
2. Mentoring and interim reporting per Targeted Enterprise - R20 000.00 (twenty thousand rands) per quarter; and
3. Project completion report per Targeted Enterprise - R5000.00 (five thousand rands) per targeted enterprise.

C2.1.1 PREAMBLE TO THE SCHEDULE OF PRICES

C2.1.1.1 **All** prices shall be quoted in the currency of the Republic of South Africa and will be held to be firm unless otherwise stated, in which case sufficient information must be afforded at the time of tendering to indicate the basis on which payment shall be adjusted.

C2.1.1.2 The Tenderer shall enter a price against each item in the schedule of prices. If the Tenderer fails to enter a price against any item in the schedule of prices the relevant cost for such item shall be regarded as being covered by other prices in the schedule of prices.
Should an item specifically be excluded from the offersubmitted, such tender will be

regarded as non-responsive and not be considered.

- C2.1.1.3 The prices quoted against each item of these schedules shall cover the full inclusive cost of everything required for the execution of the work under the item plus an apportionment of any cost involved in meeting the obligations and liabilities imposed by the conditions of contract and in complying with the specifications.
- C2.1.1.4 The prices quoted for the supply of plant and equipment shall include for all handling, loading, transporting and of-loading required for the delivery of the plant and equipment to the site, including in the case of of-site storage for double handling at the store.
- C2.1.1.5 The prices quoted for erection and installation shall include for all handling, loading, transporting and of- loading, to take plant and equipment to place on site where required, erection, installation, painting, commissioning, operating, testing, adjusting, handing over in proper working order and upholding for a period of 12 months, all as specified.
- C2.1.1.6 Any additional charges in connection with of-site storage which there may be over and above the prices quoted in the various sections of these schedules of prices shall be set out in detail by the Tenderer.
- C2.1.1.7 The tendered rates and amounts must exclude Value Added Tax (VAT) but must include all levies, other taxes and duties on items to which they apply. Separate provision has been made in the Tender Summary for the purpose of VAT.
- C2.1.1.8 Amounts allowed for contingencies will be spent in part or as a whole at the sole discretion of the Principal Agent.
- C2.1.1.9 Schedule of Prices shall be completed and signed in **black ink**. Corrections must be done by deleting, rewriting and initialling next to the amendment.
- C2.1.1.10 **The Bills of Quantities are not to be used for the purpose of ordering materials**

C2.2 - Bill of Quantities

(See Attached)

Item No	Quantity	Rate	Amount
<u>BILL NO. 1</u>			
<u>PRELIMINARIES</u>			
<u>BUILDING AGREEMENT AND PRELIMINARIES</u>			
The JBCC Principal Building Agreement For Organs Of State (Edition 6.2 - May 2018) prepared by the Joint Building Contracts Committee shall be the applicable building agreement, amended as hereinafter described			
The JBCC Principal Building Agreement contract data form an integral part of this agreement			
The JBCC General Preliminaries (May 2018) published by the Joint Building Contracts Committee for use with the JBCC Principal Building Agreement (Edition 6.2 - May 2018) shall be deemed to be incorporated in these bills of quantities, amended as hereinafter described			
The contractor is deemed to have referred to the abovementioned documents for the full intent and meaning of each clause			
The clauses in the abovementioned documents are hereinafter referred to by clause number and heading only			
Where any item is not relevant to this agreement such item is marked N/A signifying 'not applicable'			
Where standard clauses or alternatives are not entirely applicable to this agreement such amendments, modifications, corrections or supplements as will apply are given under each relevant clause heading and such amendments, modifications, corrections or supplements shall take precedence notwithstanding anything to the contrary contained in the abovementioned documents			
<u>PREAMBLES FOR TRADES</u>			
The General Preambles for Trades 2008 published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained			
Carried to Collection			
Bill No. 1 PRELIMINARIES			
		R	

Supplementary preambles and/or specifications are incorporated in these bills of quantities to satisfy the requirements of this project. Such supplementary preambles and/or specifications shall take precedence over the provisions of the General Preambles

The contractor's prices for all items throughout these bills of quantities shall take account of and include where applicable for all of the obligations, requirements and specifications given in the General Preambles and in any supplementary preambles and/or specifications

STRUCTURE OF THIS PRELIMINARIES BILL

Section A:

A recital of the headings of the individual clauses in the aforementioned JBCC Principal Building Agreement

Section B:

A recital of the headings of the individual clauses in the aforementioned JBCC General Preliminaries

Section C:

Any special clauses to meet the particular circumstances of the project

PRICING OF PRELIMINARIES

Should the contractor select Option A in the contract data for the adjustment of preliminaries, the amounts entered against the relevant items in these preliminaries are to be divided into one or more of the three categories provided namely fixed (F), value related (V) and time related (T)

SECTION A: PRINCIPAL BUILDING AGREEMENT

Interpretation (A1-A7)

1 Clause 1.0 - Definitions and interpretation

Bills of quantities

The Bill of Quantities have been drawn up in accordance with the Standard System of Measuring Building Work as amended published and issued by the Association of South African Quantity Surveyors - Seventh Edition, 2015

Carried to Collection

Bill No. 1
PRELIMINARIES

R

Pricing of bills of quantities

The contractor is to allow opposite each item for all costs in connection therewith. All prices to include, unless otherwise stated, for all materials, fabrication, conveyance and delivery, unloading, storing, unpacking, hoisting, labour, setting, fitting and fixing in position, cutting and waste (except where to be measured in accordance with the standard system of measurement), patterns, models and templates, plant, temporary works, returning of packaging, duties, taxes (other than Value Added Tax), imposts, establishment charges, overheads, profit and all other obligations arising out of this agreement. Value Added Tax (VAT) is to be separately stated on the summary page of these bills of quantities

Items left unpriced will be deemed to be covered in prices against other items throughout these bills of quantities and no claim for any extras arising out of the contractor's omission to price any item will be entertained

Prices for all construction equipment, temporary works, services and other items shall include for the supply, maintenance, operating cost and subsequent removal and making good as necessary

Abbreviated descriptions

The items in these bills of quantities utilise abbreviated descriptions. It is the intention that the abbreviated descriptions be fully described when read with the applicable measuring system and the relevant preambles and/or specifications. However, should the full intent and meaning of any description not be clear, the contractor shall, before submission of his tender, call for a written directive from the principal agent, failing which it shall be assumed that the contractor has allowed in his pricing for materials and workmanship in terms of international best practice

Legal status of contractor

If the contractor constitutes a joint venture, consortium or other unincorporated grouping of two or more persons then:

1. These persons are deemed to be jointly and severally liable to the employer for the performance of this agreement
2. These persons shall notify the employer of their leader who has assigned authority to bind the contractor and each of these persons

Carried to Collection

Bill No. 1
PRELIMINARIES

R

	<p>3. The contractor shall not alter its composition or legal status without the prior written consent of the employer</p>	Item		
1	<p>Clause 2.0 - Law, regulations and notices</p>			
	<p>Law applicable to the works: Republic of South Africa</p>	Item		
2	<p>Clause 3.0 - Offer and acceptance</p>			
	<p>Currency applicable to this agreement: ZAR</p>	Item		
3	<p>Clause 4.0 - Cession and assignment</p>	Item		
4	<p>Clause 5.0 - Documents</p> <p>The original signed agreement is to be held by the East Cape Development Corporation</p> <p>The number of copies of construction information to be issued to the contractor at no cost: 3</p> <p>Documents comprising the agreement:</p> <p>The JBCC® Principal Building Agreement For Organs Of Sate, Edition 6.2 May 2018</p> <p>The JBCC® General Preliminaries for use with the JBCC® Principal Building Agreement, Edition 6.2 May 2018</p> <p>Contract drawings</p> <p>Bills of Quantities (balanced)</p>	Item		
5	<p>Clause 6.0 - Employer's agents</p> <p>The authority of the principal agent to issue contract instructions [17.1] and perform duties for specific aspects of the works is delegated to agents as follows [6.2]</p> <p>Principal Agent and delegated authority</p> <p>Principal agent's and agents interest of involvement in the works other than a professional interest N/A</p>	Item		
6	<p>Clause 7.0 - Design responsibility</p> <p><u>Insurances and securities (A8-A11)</u></p>	Item		
7	<p>Clause 8.0 - Works risk</p>	Item		
	<p>Carried to Collection</p>			
<p>Bill No. 1 PRELIMINARIES</p>			R	

- 1 Clause 9.0 - Indemnities
- 2 Clause 10.0 - Insurances
- 3 Clause 11.0 - Securities

Waiver of lien

It is expected of the contractor to waive his lien in terms of clause 11.10

Extension of waiver of lien

The contractor shall ensure that a waiver of lien is included in all subcontracts and that the works executed on the site are kept free of all liens and other encumbrances at all times [11.10]

Item

Item

Item

Carried to Collection

Bill No. 1
PRELIMINARIES

R

Execution (A12 - A17) }

1 Clause 12.0 - Obligations of the parties

Office accommodation

The contractor shall provide, maintain and remove on practical completion air conditioned office accommodation with suitable tables and chairs for meetings to be held on the site. Such offices shall be kept clean and fit for use at all times [12.2.18]

Notice board

The contractor shall erect in a position approved by the principal agent, maintain and remove on practical completion a notice board recommended by the South African Institute of Architects and as approved by the principal agent listing the names and logos of the employer, the contractor and the professional consultants. No subcontractor or supplier notice boards may be erected unless permission is granted by the principal agent for such notice boards to be erected [12.2.18]

Statutory and other notices

The contractor shall submit and/or comply with all statutory and other notices that may be required by any local or other authority in order not to cause any delay to the commencement of the works by the contractor. The contractor shall pay all deposits or fees in this regard. It is, however, specifically recorded that the employer shall be responsible for the timeous approval of building plans by any local or other authorities and the payment of any fees or charges related thereto

Item

2 Clause 13.0 - Setting out

Item

3 Clause 14.0 - Nominated subcontractors

Item

4 Clause 15.0 - Selected subcontractors

As listed in the Contract Data

Item

Carried to Collection

R

Bill No. 1
PRELIMINARIES

1	<p>Clause 16.0 - Direct contractors</p> <p>Attendance on direct contractors</p> <p>In respect of direct contractors the contractor shall:</p> <ol style="list-style-type: none"> 1. Designate an area for the direct contractor to establish a temporary office and workshop and storage of equipment and materials 2. Allow the user of personnel welfare facilities, where provided 3. Provide water, lighting and single phase electric power to a position within 50m of the place where the direct contract work is to be carried out, other than fuel or power for commissioning of any installation 4. Permit the direct contractor to use erected scaffolding, hoisting facilities, etc provided by the contractor, in common with others having the like right, while it remains erected on the site [16.1] 	Item		
2	<p>Clause 17.0 - Contract instructions</p> <p>Site instructions</p> <p>Instructions issued on site are to be recorded in a site instruction book which is to be supplied and maintained on site by the contractor</p> <p><u>Completion (A18 - A24) }</u></p>	Item		
3	Clause 18.0 - Interim completion	Item		
4	Clause 19.0 - Practical completion	Item		
5	Clause 20.0 - Completion in sections	Item		
6	Clause 21.0 - Defects liability period and final completion	Item		
7	Clause 22.0 - Latent defects liability period	Item		
	<p style="text-align: right;">Carried to Collection</p> <p>Bill No. 1 PRELIMINARIES</p>		R	

1	<p>Clause 23.0 - Revision of the date for practical completion</p> <p>Substitution of materials and goods</p> <p>The removal or substitution of any materials and goods which do not conform to the specification or the contract drawings shall not constitute grounds for the extension of the construction period nor for the adjustment of the contract value [17.1.8; 23.1 & 2]</p>	Item		
2	<p>Clause 24.0 - Penalty for late or non-completion</p> <p><u>Payment (A25 - A27) }</u></p>	Item		
3	<p>Clause 25.0 - Payment</p> <p>Prices submitted</p> <p>Where prices are submitted by the contractor or subcontractor during the progress of the works in respect of contract instructions or in regard to a claim under the terms of this agreement and notwithstanding the fact that such prices may be used in an interim payment certificate, there is to be no presumption of acceptance. Should the principal agent wish to accept any such prices prior to the issue of the certificate of final completion, it shall be in writing</p>	Item		
4	<p>Clause 26.0 - Adjustment of the contract value and final account</p> <p>Fluctuations in costs</p> <p>Contract value shall be adjusted in accordance with CPAP</p> <p>Cost of claims</p> <p>All costs incurred by the contractor in the preparation of claims shall be borne by the contractor. This provision shall not preclude an adjudicator or an arbitrator appointed in terms of this agreement [30.6 & 7] from making a determination on costs</p> <p>Claims from subcontractors</p> <p>The contractor shall review, assess and adjudicate any claims received by him from any subcontractor and thereafter submit same to the principal agent with a recommendation in order to assist the principal agent in adjudicating the claim [26.6]</p>	Item		
Carried to Collection				R
Bill No. 1 PRELIMINARIES				

1	Clause 27.0 - Recovery of expense and/or loss <u>Suspension and termination (A28 - A29)</u>	Item	
2	Clause 28.0 - Suspension by the contractor	Item	
3	Clause 29.0 - Termination <u>Dispute resolution (A30)</u>	Item	
4	Clause 30.0 - Dispute resolution Agreement The required information of the parties and the amount of the contract sum shall be inserted in the agreement for signature of the agreement by the parties Tenderer's selection Before submission of his tender the contractor is to complete the tenderer's selections in the contract data	Item	
	<u>SECTION B: GENERAL PRELIMINARIES</u> <u>Amendments, modifications, corrections or supplements to the General Preliminaries in Section B are recorded in the contract data</u> <u>Definitions and interpretation (B1)</u>		
5	Clause 1.1 - Definitions	Item	
6	Clause 1.2 - Interpretation <u>Documents (B2)</u>	Item	
7	Clause 2.1 - Checking of documents	Item	
8	Clause 2.2 - Provisional bills of quantities	Item	
9	Clause 2.3 - Availability of construction information	Item	
10	Clause 2.4 - Ordering of materials and goods <u>Previous work and adjoining properties (B3)</u>	Item	
11	Clause 3.1 - Previous work - dimensional accuracy	Item	
12	Clause 3.2 - Previous work - defects	Item	
	Carried to Collection		R
	Bill No. 1 PRELIMINARIES		

1	Clause 3.3 - Inspection of adjoining properties	Item	
	<u>The site (B4)</u>		
2	Clause 4.1 - Handover of site in stages	Item	
3	Clause 4.2 - Enclosure of the works	Item	
4	Clause 4.3 - Geotechnical and other investigations	Item	
5	Clause 4.4 - Encroachments	Item	
6	Clause 4.5 - Existing premises occupied	Item	
7	Clause 4.6 - Services - known	Item	
	<u>Management of contract (B5)</u>		
8	Clause 5.1 - Management of the works	Item	
9	Clause 5.2 - Progress meetings	Item	
10	Clause 5.3 - Technical meetings	Item	
	<u>Samples, shop drawings and manufacturer's instructions (B6)</u>		
11	Clause 6.1 - Samples of materials	Item	
12	Clause 6.2 - Workmanship samples	Item	
13	Clause 6.3 - Shop drawings	Item	
14	Clause 6.4 - Compliance with manufacturer's instructions	Item	
	<u>Deposits and fees (B7)</u>		
15	Clause 7.1 - Deposits and fees	Item	
	<u>Temporary services (B8)</u>		
16	Clause 8.1 - Water	Item	
17	Clause 8.2 - Electricity	Item	
18	Clause 8.3 - Ablution and welfare facilities	Item	
19	Clause 8.4 - Communication facilities	Item	
	Carried to Collection		R
	Bill No. 1		
	PRELIMINARIES		

Prime cost amounts (B9)

1 Clause 9.1 - Responsibility for prime cost amounts Item

Attendance on subcontractors (B10)

2 Clause 10.1 - General attendance Item

3 Clause 10.2 - Special attendance Item

General (B11)

4 Clause 11.1 - Protection of the works Item

5 Clause 11.2 - Protection/isolation of existing works and works occupied in sections Item

6 Clause 11.3 - Security of the works Item

7 Clause 11.4 - Notice before covering work Item

8 Clause 11.5 - Disturbance Item

9 Clause 11.6 - Environmental disturbance

Controlling all forms of pollution

The contractor shall be responsible for and take all precautions in controlling by whatever means necessary all forms of pollution emanating from the site during the construction period due inter alia to noise, artificial light, wind-blown sand, dust, deposits of mud, etc.

The contractor is to ensure that all roads which border the site and are used by the contractor during the execution of the works are kept clean and free of any dirt or debris caused by the execution of the works

Item

10 Clause 11.7 - Works cleaning and clearing Item

11 Clause 11.8 - Vermin Item

12 Clause 11.9 - Overhand work Item

13 Clause 11.10 - Tenant installations Item

14 Clause 11.11 - Advertising Item

SECTION C: SPECIFIC PRELIMINARIES

Carried to Collection

R

Bill No. 1
PRELIMINARIES

Specific Preliminaries

1 Warranties for materials and workmanship

Where warranties for materials and/or workmanship are called for, the contractor shall obtain a written warranty, addressed to the employer, from the entity supplying the materials and/or executing the work and shall deliver same to the principal agent on final completion of the contract

The warranty shall state that workmanship, materials and installation are warranted for a specific period from the date of practical completion and that any defects that may arise during the specified period shall be made good at the expense of the entity supplying the materials and/or doing the work, upon written notice

The warranty will not be enforced if the work is damaged by defects in the execution of the works, in which case the responsibility for replacement shall rest entirely with the contractor

Item

2 Overtime

Should overtime be required to be worked for any reason whatsoever, the cost of such overtime is to be borne by the contractor unless the principal agent has specifically authorised, prior to execution thereof, that costs for such overtime are to be borne by the employer

Item

3 Cooperation of the contractor for cost management

It is specifically agreed that the contractor accepts the obligation of assisting the principal agent in implementing proper cost management. The contractor will be advised by the principal agent of all cost management procedures which will be implemented to ensure that the contract value does not exceed the budget

Item

Carried to Collection

R

Bill No. 1
PRELIMINARIES

1 Overloading

The contractor shall take all necessary steps to ensure that no damage occurs due to overloading of any portion of the works or temporary works eg scaffolding, etc. The contractor shall submit details of his proposed loading, storage, plant erection, etc to the principal agent for approval prior to proceeding with such loading, storing or erecting and shall comply with and pay for the principal agent's requirements in connection with the provision of temporary support work, etc. Any damage caused to the works by overloading shall be made good by the contractor at his sole expense

Item

2 Propping of floors below

The contractor is advised that propping of floors below may be required if he wishes to use any areas of completed suspended reinforced concrete slabs for vehicle access, storage of materials and goods and location of plant, scaffolding, etc. The location of these areas and any necessary propping shall be approved by the principal agent and the cost thereof shall be borne by the contractor

Item

3 Testing of flat roof waterproofing for watertightness

Flat roof waterproof areas shall be flooded and kept 'ponded' for at least forty eight hours as a test to ensure the watertightness of the waterproofing and before any further construction work is carried out above the waterproofing

Item

4 Health and safety

Without limiting the generality of the provisions of clause 2.0, the contractor's attention is drawn to the provisions of the Construction Regulations issued in terms of the Occupational Health and Safety Act, 1993 as amended. It is specifically stated that the employer shall prepare a documented health and safety specification for the works and that the employer shall ensure that the contractor has made provision for the cost of health and safety measures during the execution of the works. The contractor shall price opposite this item for compliance with the act and the regulations and the provisions of the aforementioned health and safety specification [2.1]

Item

Carried to Collection

R

Bill No. 1
PRELIMINARIES

1	<p>The contractor shall</p> <ol style="list-style-type: none"> 1. Comply with the health and safety specification for the works 2. Prepare and agree with the health and safety consultant the health and safety plan for the works 3. Cooperate with the health and safety consultant in all respects 4. Manage the compliance of all subcontractors with the regulations and with the health and safety plan and specification 5. Conform to the conditions contained in the employer's health and safety specification 	Item		
2	<p>The principal contractor shall comply with all the requirement of mandatory subcontracting of SMMEs where feasible of up to 15% of their contract value (Including VAT) as stipulated under the SMME subcontracting requirements. The Principal Contractor shall on a fulltime basis closely mentor, manage and supervise all SMMEs and shall manage, guide, and assist each SMMEs in all aspects of management, execution and completion of his/her subcontract. This shall typically include the on-site productivity planning and management of materials, cost management, contract management, Health and Safety management, quality management, communication management and close-out documentation.</p> <p>Provision for pricing of compliance with the aforementioned is made under this clause and it is explicitly pointed out that all requirements in respect of the aforementioned are deemed to be priced hereunder and no additional claims in this regard shall be entertained.</p>	Item		
3	<p>Advertising rights</p> <p>The may elect to contract with advertising agencies for the erection of advertising hoardings, banners, wraps or the like for the duration of the contract. The contractor shall not prevent such an arrangement and will assist in the facilitation of same. The position and type of advertising structure to be agreed with the principal agent so as not to hinder the contractor in meeting his obligations under this agreement</p>	Item		
Carried to Collection				R
Bill No. 1 PRELIMINARIES				

1	<p>Confidentiality</p> <p>The contractor undertakes to maintain in confidence any and all information regarding this project and shall obtain appropriate similar undertakings from all subcontractors and suppliers. Such information shall not be used in any way except in connection with the execution of the works</p> <p>No information regarding this project shall be published or disclosed without the prior written consent of the employer</p>		Item	
2	<p>Media releases</p> <p>All rights of publication of articles in the media, together with any advertising relating thereto or in any way connected with this project, shall vest with the employer. The contractor together with his subcontractors shall not, without the prior written consent of the employer, cause any statement or advertisement connected with this project to be printed, screened or aired by the media</p> <p><u>CIDB BEST PRACTICE PROJECT ASSESSMENT SCHEME (CIDB B.U.I.L.D PROGRAMME)</u></p> <p><u>The Standard for Indirect Targeting For Enterprise Development</u></p>		Item	
3	<p>The Contractor must provide a minimum contribution of five percent of the contract value for development support and comply with the Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts as per board notice 21 of 2013 (No 36910 Government Gazette 25 February 2013) Construction Industry Development Board Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts 29 January 2013</p> <p><u>Enterprise Development Co-Ordinator</u></p>		%	
4	<p>The Contractor attention is drawn to the Enterprise Development Co-Ordinator requirements as defined in the tender document. All requirements of the aforementioned are to be priced hereunder and no additional claims in the this regard will be entertained. The Contractor is to price for providing the Enterprise Development Co-Ordinator</p>	Mnths		
Carried to Collection				R
Bill No. 1 PRELIMINARIES				

CIDB BEST PRACTICE PROJECT ASSESSMENT
SCHEME (CIDB B.U.I.L.D PROGRAMME)

Best Practice Project Assessment Scheme; Assessment
Fee; Projects of Tender Grades 7 to 9

1 The Contractor must price a Best Assessment fee of 0.2
percent of the contract value excluding VAT

%

SUMMARY OF CATEGORIES

Category : Fixed R.....

Category : Value R.....

Category : Time R.....

Carried to Collection

R

Bill No. 1
PRELIMINARIES

Bill No. 1

PRELIMINARIES

COLLECTION

Total Brought Forward from Page No.

Page
No

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

Amount

Carried to Summary

R

Bill No. 1
PRELIMINARIES

Item No	BILL NO. 2	Quantity	Rate	Amount
	<u>ROOFS, STRUCTURAL STEELWORK, ETC</u>			
	<u>ALL TRADES</u>			
	<u>Note:</u>			
	For Preambles see "Model Preambles for Trades" as published by the Association of South African Quantity Surveyors (2008 Edition).			
	<u>FOUNDATIONS</u>			
	<u>Note:</u>			
	Soft rock means all rock excavation except "hard rock" including hard shale, white limestone, mudstone, etc.			
	Hard rock means granite, quartzitic sandstone or rock of similar hardness and prices for excavation in hard rock are to include for blasting or by any other means.			
	Quantities are measured nett - no allowance will be made for bulking.-----			
	<u>EARTHWORKS</u>			
	<u>Trench, Etc. Excavations</u>			
	<u>Excavate In Earth Not Exceeding 2.00m Deep Including Trimming Sides, Levelling And Ramming Bottoms And Deposit On Site In Spoil Heaps For:</u>			
1	Surface trenches	m3	4	
2	Extra over trench, etc excavation in earth for excavation in soft rock	m3	1	
3	Ditto, in hard rock	m3	1	
4	Risk of collapse to sides of trench, etc excavations not exceeding 1.50m deep	m2	14	
	Carried to Collection			R
	Bill No. 2 WORK TO ROOFS, STRUCTURAL STEELWORK, ETC			

		Item	
1	Allow for keeping excavations free from water		
2	Load surplus or unsuitable material from spoil heaps and cart away to a dumping site to be located by the contractor	m3	4
3	Earth filling using imported G7 material in backfilling to trenches,etc and compacted in layers not exceeding 150mm thick to 93% Mod AASHTO density	m3	2
	<u>CONCRETE</u>		
	<u>Note:</u> For convenience reinforcement is measured under concrete, formwork and reinforcement hereafter.		
	<u>Reinforced Cement Concrete 25MPa/19mm Stone In:</u>		
4	Footings cast against excavated surfaces	m3	2
	<u>MASONRY</u>		
	<u>Note</u> Bricks to have a minimum compressive strength of 14MPa and are to be solid clay bricks, ie no openings. Mortar for brickwork to be Class 1 (28 days strength and 14.5MPa minimum)		
	<u>Brickwork In (Class 1) Cement Mortar In:</u>		
5	One brick wall	m2	6
	<u>Sundries</u>		
6	155mm Brick mesh reinforcement in walls	m	66
	<u>CONCRETE</u>		
	Carried to Collection		R
	Bill No. 2 WORK TO ROOFS, STRUCTURAL STEELWORK, ETC		

Testing

1 Allow for preparing and curing set of three concrete test cubes, each size 150 x 150 x 150mm and pay all cost of transport to an approved mechanical laboratory and all testing charges

No 7

Reinforced Cement Concrete 25MPa/19mm Stone In:

2 Slabs including beams and inverted beams

m3 19

Reinforced Cement Concrete 30MPa/19mm Stone In:

3 Columns

m3 0.5

Sundries

4 Cut horizontal chase in existing brick wall size 110mm wide x 220mm high to receive new concrete slab (elsewhere measured)

m 9

5 1.60mm Galvanised hoop iron tie 30mm wide x 450mm long with one end embedded 200mm deep in concrete and other end tacked to formwork and later bent down and built into brickwork as the work proceeds

No 100

6 12mm Diameter dowel 200mm long with bottom end epoxied into top of existing concrete beam including drilling 16mm diameter hole and grouting with Hilti HIT-HY-150 epoxy grout and top end cast into underside of new concrete slab

No 60

Contraction And Expansion Joints

7 Two layers of 3 Ply Malthoid with graphite grease in between in slip joint between concrete and brick surfaces not exceeding 300mm wide

m 45

FORMWORK

Carried to Collection

Bill No. 2
WORK TO ROOFS, STRUCTURAL STEELWORK, ETC

R

Close Rough Formwork (Use And Waste) As Per SABS 1200G 5.2.1.b (Degree Of Accuracy II) To Concrete To:

1	Soffit of slabs not exceeding 3.50m high	m2	51
2	Ditto, exceeding 9.50 and not exceeding 11.00m high	m2	32
3	Sides and soffits of beams not exceeding 3.50m high	m2	9
4	Ditto, exceeding 9.50 and not exceeding 11.00m high	m2	14
5	Side of beam above slab	m2	10
6	Sides of rectangular columns	m2	8

REINFORCEMENT

Mild Steel Rod Reinforcement To Structural Concrete Work

7	8mm Diameter bars	t	0.8
---	-------------------	---	-----

High Tensile Rod Reinforcement To Structural Concrete Work

8	10mm Diameter bars	t	0.5
9	12mm Diameter bars	t	0.8
10	16mm Diameter bars	t	0.5
11	20mm Diameter bars	t	0.4

Budgetary Allowances

12	Provide the budgetary allowance of R 100 000.00 (one hundred thousand rand) for repairwork to existing concrete slabs to be adjusted as required	Item	100,000.00
----	--	------	------------

Carried to Collection

R

Bill No. 2
WORK TO ROOFS, STRUCTURAL STEELWORK, ETC

MASONRY

Note

Bricks to have a minimum compressive strength of 14MPa and are to be solid clay bricks, ie no openings.

Mortar for brickwork to be Class 1 (28 days strength and 14.5MPa minimum)

Demolitions

1	Break down and remove existing one brick parapet walls and cart off site	m2	16
2	Neatly chop off existing 350mm high facebrick corbelling flush with brickwork below and prepare to receive new plaster (elsewhere measured)	m	497

Brickwork In (Class 1) Cement Mortar In:

3	One brick wall	m2	53
4	Ditto, in brick filling	m2	398

Sundries

5	155mm Brick mesh reinforcement in walls	m	1,353
---	---	---	-------

WATERPROOFING

WATERPROOFING TO ROOFS, ETC (PROVISIONAL)

Prime Surfaces And Apply One Layer Derbigum SP4 Torch-On Waterproofing Membrane With 75mm Side Laps And 100mm End Laps Applied All In Strict Accordance With The Manufacturers Instructions And Installed By An Approved Derbigum Contractor Under A Ten Year Guarantee

6	On flat roofs	m2	72
7	On tops and sides of parapet walls	m2	59

Carried to Collection

Bill No. 2
WORK TO ROOFS, STRUCTURAL STEELWORK, ETC

R

1	Sealing edges to brickwork or concrete	m	53
2	Dress waterproofing into Fulbore outlet and seal	No	4
	<u>Sundries</u>		
3	Prepare surface and apply two coats ABE Silvakote to waterproofing	m2	131
	<u>ROOF COVERINGS, ETC</u>		
	<u>DEMOLITIONS</u>		
	<u>Break Up/Down, Take Out, Cut In Where Necessary And Remove From Site And Make Good Where Required</u>		
4	Corrugated iron roof sheeting including bullnose edges, insulation, ridges flashings, etc	m2	5,439
5	Corrugated iron side cladding including flashings, etc	m2	18
6	150 x 150mm Sheet iron eaves gutter	m	34
7	200 x 200mm Sheet iron concealed gutter including front cover flashing	m	497
8	400 x 300mm Sheet iron box gutter	m	30
9	110mm PVC rainwater pipe	m	408

PROFILED METAL SHEETING AND ACCESSORIES

Carried to Collection

Bill No. 2
WORK TO ROOFS, STRUCTURAL STEELWORK, ETC

R

0,53mm Klip-Tite 700 Concealed Fix Roof Sheeting
With AZ200 ColorPlus Finish One Side And Accessories
Fixed To Steel Purlins Or Rails In Single Lengths All In
Strict Accordance With The manufacturer's Instructions

1	Roof covering with pitch not exceeding 25 degrees fixed on top of Ashgrid spacer support system (elsewhere measured) to steel purlins including the required longer screws	m2	4,916
2	Narrow flute serrated closer including polybutton	m	456
3	Ditto, at valley	m	148
4	Broad flute serrated closer including polybutton	m	423
5	Ditto, at hip	m	290
6	Cover flashing 231mm girth including raking out grooves in brickwork and wedging, pointing and sealing in epoxy mortar	m	125
7	Ditto, but stepped	m	139
8	Sidewall flashing 462mm girth	m	139
9	Gable flashing 462mm girth	m	10
10	Valley gutter 462mm girth	m	74
11	Headwall flashing 462mm girth including notching around ribs on one side	m	125
12	Ridge capping 462mm girth including notching around ribs on both sides	m	152
13	Hip capping 462mm girth including notching around ribs on both sides	m	145

Carried to Collection

Bill No. 2
WORK TO ROOFS, STRUCTURAL STEELWORK, ETC

R

1	Cover flashing 462mm girth over gutter (elsewhere measured) fixed along bottom edge to side cladding and along top edge to roof sheeting	m	456
2	Eaves gutter 700mm girth laid to falls on and including approved brackets	m	456
3	Extra for stopped end	No	5
4	Ditto, angle	No	15
5	Ditto, T-intersection	No	1
6	Ditto, outlet for 160mm diameter rainwater pipe including joint to pipe	No	55
7	150mm Diameter rainwater pipe fixed to walls including brackets	m	421
8	Extra for shoe/bend	No	155
<u>0,53mm Zip-Tek 420 Concealed Fix Roof Sheeting With AZ200 ColorPlus Finish One Side And Accessories Fixed To Steel Purlins Or Rails In Single Lengths All In Strict Accordance With The manufacturer's Instructions</u>			
9	Roof covering to canopy in short lengths with pitch not exceeding 25 degrees	m2	155
10	Side cladding in short lengths	m2	1,203
11	Drip flashing 231mm girth	m	394
12	Bottom trim 462mm girth	m	222
13	Corner trim 462mm girth	m	77

Carried to Collection

Bill No. 2
WORK TO ROOFS, STRUCTURAL STEELWORK, ETC

R

0.80mm Zip-Tek 420 Concealed Fix Roof Sheeting With 3004 Aluminium Finish And Accessories Fixed To Steel Purlins Or Rails In Single Lengths All In Strict Accordance With The manufacturer's Instructions

1	Side cladding 1.60m high with perforations for entire height as per attached image fixed at top and bottom to cladding rails including Denso tape to form barrier between steel and aluminium	m	394
---	---	---	-----

1.2mm Thick "Opal 50 Clear" Polycarbonate sheeting to Klip-Tite Profile , Fixed To Steel Purlins In Single Lengths All In Strict Accordance With The Manufacturer's Instructions

2	Roof covering with pitch not exceeding 25 degrees	m2	67
---	---	----	----

ROOF INSULATION AND SPACER SUPPORT SYSTEM

3	135mm Factorylite insulation with reinforced foil both sides laid over purlins at approximately 1.00m centres and on and including galvanised steel straining wires laid taut	m2	4,916
---	---	----	-------

4	Ashgrid spacer support system to suit 135mm thick insulation laid over insulation and fixed to steel purlins all in strict accordance with the manufacturers instructions	m2	4,916
---	---	----	-------

STRUCTURAL STEELWORK

NOTE

All structural steelwork to be fabricated in accordance with SANS 14713 Part 2.

Dimensions and levels to be verified on site prior to manufacture.

Any discrepancies found during site measure to be reported to and resolved by the Engineer prior to manufacture.

All structural steel elements must be inspected by the Engineer prior to transporting to site.

All bolts must be grade 8.8 unless otherwise specified by the Engineer.

Carried to Collection

Bill No. 2
WORK TO ROOFS, STRUCTURAL STEELWORK, ETC

R

All welds to be with E700XX electrodes, according to AWS or similar approved by the Engineer.

All hot rolled structural steel members to be grade S355JR and plates to be grade 300WA.

Purlins and girts to be pre-galvanised.

All structural steelwork inclusive of bolts, nuts, washers, plates, connections, etc., other than purlins & girts to be hot dipped galvanised in accordance with SANS 121 or ISO 1461

All hot dipped members to be drilled, cut, welded, etc., prior to galvanising.

Prices to include for preparation of shop drawings for approval of the Engineer prior to manufacture. A minimum of 7 days must be allowed for checking of shop drawings.

Prices to include for fabrication, cutting, drilling, bending, welding, etc., delivery to site, and hoisting up and erecting into position.

Demolitions

Break Up/Down, Take Out, Cut In Where Necessary And Remove From Site And Make Good Where Required

1	Steel framework including purlins for canopies	m2	387
---	--	----	-----

2	Steel trusses and purlins in north east corner of building where new double pitched roof to be erected (see Engineers drawing No E070-300-001) (area approximately 745m2)		Item
---	---	--	------

The Following In Structural Steel Trusses And Purlins In The North East Corner Where Existing Trusses And Purlins Removed

Pre-Galvanised Members

3	225 x 75 x 20 x 2,5 mm Cold formed lipped channel purlins (pre-punched)	t	6.54
---	---	---	------

Carried to Collection

Bill No. 2
WORK TO ROOFS, STRUCTURAL STEELWORK, ETC

R

1	Ditto fixed as hip rafter	t	1.39
<u>Hot Dipped Galvanised Members</u>			
2	70 x 70 x 6mm Angle iron truss bracing	t	0.70
3	70 x 70 x 6mm Angle iron in side trusses	t	0.68
4	90 x 90 x 6mm Angle iron in side trusses	t	0.84
5	70 x 70 x 6mm Angle iron in girder trusses	t	0.54
6	90 x 90 x 6mm Angle iron in girder trusses	t	1.04
7	120 x 120 x 8mm Angle iron in girder trusses	t	2.79
8	Plates, angles, cleats, brackets, connections, bolts, washers, etc.	t	2.32
<u>The Following In Structural Steel Framework And Cladding Rails To Receive New Side Cladding</u>			
<u>Pre-Galvanised Members</u>			
9	150 x 50 x 20 x 2,5 mm Cold formed lipped channel purlins (pre-punched)	t	3.48
10	150 x 50 x 20 x 2,5 mm Cold formed lipped channel cladding rails (pre-punched)	t	7.44
<u>Hot Dipped Galvanised Members</u>			
11	16mm Diameter sag rods	t	0.24
12	50 x 50 x 6mm Angle iron horizontal bracing	t	0.51
Carried to Collection			
Bill No. 2			
WORK TO ROOFS, STRUCTURAL STEELWORK, ETC			

R

1	50 x 50 x 6mm Angle iron framework	t	4.24		
2	IPE 180 beam	t	5.06		
3	Plates, angles, cleats, brackets, connections, bolts, washers, etc.	t	3.15		
4	Expanded mesh canopy ceiling as Mentex 70/VEM325A fixed to underside of steel purlins	m2	344		
<u>Sundries</u>					
5	Provide the budgetary allowance of R 500 000.00 (five hundred thousand rand) for repairwork to existing structural steelwork to be adjusted as required			Item	500,000.00
6	Prepare surface, pressure clean rust on affected areas, wire brush and double coat with Galfix, then apply two coats red lead oxide primer and two coats enamel paint to existing structural steel surfaces	m2	750		
<u>PLASTERING</u>					
<u>SCREEDS</u>					
<u>Cement Screeds On Concrete</u>					
7	Average 60mm thick to roof slab graded to falls to outlet	m2	72		
<u>EXTERNAL PLASTER</u>					
<u>Cement Plaster On:</u>					
8	Walls including flush columns and beams	m2	706		
9	Concrete ceilings	m2	84		
10	Narrow widths	m2	20		
<u>PLUMBING</u>					
				R	
Carried to Collection					
Bill No. 2					
WORK TO ROOFS, STRUCTURAL STEELWORK, ETC					

RAINWATER GOODS

PVC Gutters And Downpipes

1	110mm Diameter rainwater pipes fixed to walls including brackets	m	29
2	Extra for shoe/bend	No	12

Sundries

3	100mm "Fulbore" side outlet including joint to pipe	No	4
---	---	----	---

Carried to Collection

Bill No. 2
WORK TO ROOFS, STRUCTURAL STEELWORK, ETC

R

Bill No. 2

WORK TO ROOFS, STRUCTURAL STEELWORK, ETC

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

18

19

20

21

22

23

24

25

26

27

28

29

30

Carried to Summary

R

Bill No. 2

WORK TO ROOFS, STRUCTURAL STEELWORK, ETC

Item No		Quantity	Rate	Amount
	<u>BILL NO. 3</u>			
	<u>REPLACEMENT OF CEILINGS</u>			
	<u>Note:</u>			
	For Preambles see "Model Preambles for Trades" as published by the Association of South African Quantity Surveyors (2008 Edition).			
	<u>DEMOLITIONS</u>			
	<u>Break Up/Down, Take Out, Cut In Where Necessary And Remove From Site And Make Good Where Required</u>			
1	600 x 1200mm Suspended ceiling tiles suspended below existing concrete slab including gridwork, cornices, etc	m2	3,563	
2	Ditto, but suspended below existing steel trusses and purlins	m2	3,741	
3	Gypsumboard ceiling and bulkheads suspended below existing concrete slab including gridwork, cornices, etc	m2	930	
4	Ditto, but suspended below existing steel trusses and purlins	m2	909	
	<u>SUSPENDED CEILINGS</u>			
	<u>Note</u>			
	Electrical light fittings, diffusers, panels, etc generally are "lay in" units of the same dimensions as the suspension grid described and allowance must be made accordingly for their support inclusive of any flexibility in setting out that may be required (ceiling panels have not been deducted and pricing is to take cognisance thereof)			
	Carried to Collection			R
	Bill No. 3 REPLACEMENT OF CEILINGS			

600 x 1200 x 9mm Thick Gyprex White Vinylclad Ceiling Panels On White Aluminium Pre-Painted Exposed Tee Suspension System Including Main And Cross Tees, Necessary Hangers, Sub-Grids Where Required, Etc Including Hold Down Clips To Panels

1	Ceilings suspended not exceeding 1.00m below concrete slab	m2	3,503
2	Ceilings suspended below steel purlins at 1.50m centres and steel trusses at 5.00m centres (height of purlins above ceiling level ranges from 1.00m to an extreme height of 5.00m)	m2	3,476
3	Cut 50mm diameter opening in ceiling panel for light fitting, etc	No	120
4	Ditto, but 200mm diameter	No	90
5	Ditto, but 250mm diameter	No	58

600 x 600 x 9mm Thick Gyprex White Vinylclad Ceiling Panels On White Aluminium Pre-Painted Exposed Tee Suspension System Including Main And Cross Tees, Necessary Hangers, Sub-Grids Where Required, Etc Including Hold Down Clips To Panels

6	Ceilings suspended below steel purlins at 1.50m centres and steel trusses at 5.00m centres (height of purlins above ceiling level ranges from 1.00m to an extreme height of 5.00m)	m2	153
---	--	----	-----

9.5mm Thick Gyproc Plasterboard Ceiling Panels On Donn Galvanised Suspension System Including Main And Cross Tees, Necessary Hangers, Sub-Grids Where Required, Etc. Including Skimming Entire Surface All In Strict Accordance With The Manufacturers Instructions

7	Ceilings suspended not exceeding 1.00m below concrete slab	m2	638
---	--	----	-----

Carried to Collection

R

Bill No. 3
REPLACEMENT OF CEILINGS

1	Ceilings suspended below steel purlins at 1.50m centres and steel trusses at 5.00m centres (height of purlins above ceiling level ranges from 1.00m to an extreme height of 5.00m)	m2	648
2	Double stepped horizontal and vertical bulkhead with bottom step size 350 x 200mm high and top step size 250 x 200mm high including any necessary plaster trims and suspended not exceeding 1.00m below concrete slab	m	271
3	Ditto, but suspended below steel purlins and trusses as described above	m	287
4	Single horizontal and sloping bulkhead with horizontal section 250mm wide and sloping section 500mm wide and at 45 degree slope including any necessary plaster trims and suspended not exceeding 1.00m below concrete slab	m	271
5	Ditto, but suspended below steel purlins and trusses as described above	m	287
6	Cut 50mm diameter opening in ceiling panel for light fitting, etc	No	330
7	Ditto, but 200mm diameter	No	36
8	Ditto, but 250mm diameter	No	26
9	Cut 1000 x 1600mm opening in ceiling panel for ventilation unit including fitting any additional framework, etc	No	6
10	Ditto, size 1800 x 1800mm	No	17
	<u>Sundries</u>		
11	SM25 White Aluminium shadowline cornice plugged	m	5,775

Carried to Collection

R

Bill No. 3
REPLACEMENT OF CEILINGS

PARTITIONS, ETC

1 Gyproc 102F60S45 fire resistant wall system formed of one layer of 15mm Rhinoboard Firestop boarding fixed on each side of existing steel trusses complete including any additional framework that may be required, intersections, building up to underside of roof sheeting and flush with suspended ceiling below, raking cutting and waste, cutting around structural steel members, scaffolding requirements, etc

m2

281

Carried to Collection

Bill No. 3
REPLACEMENT OF CEILINGS

R

Bill No. 3

REPLACEMENT OF CEILINGS

COLLECTION

Total Brought Forward from Page No.

Page
No

32

33

34

35

Amount

Carried to Summary

R

Bill No. 3

REPLACEMENT OF CEILINGS

Item No		Quantity	Rate	Amount
	<p><u>BILL NO 4</u></p> <p><u>ABLUTIONS</u></p> <p><u>ALL TRADES</u></p> <p><u>Note:</u></p> <p>For Preambles see "Model Preambles for Trades" as published by the Association of South African Quantity Surveyors (2008 Edition).</p> <p><u>GENERAL CLEANING</u></p>			
1	<p>Clean out existing internal floors of rubbish, dirt, etc including washing down to a clean surface</p>	m2	63	
	<p><u>DEMOLITIONS, ETC</u></p> <p><u>NOTE:</u></p> <p>Tenderers are advised to visit the site and to satisfy themselves, in conjunction with the drawings of the nature and extent of the works to be done.</p> <p>The Contractor is advised to check all dimensions and heights on site affecting the existing buildings against those indicated on the plans as he will be held responsible for all new work being of the correct sizes. Should any discrepancies be found he is to refer them to the Architect for correction before proceeding with the work.</p> <p>Special care is to be exercised not to interfere with any electric light, power or telephone wires and due notice must be given to the Architect for any disconnections that are necessary, and the Contractor is to afford every facility to the Electrician when making new connections.</p> <p>In taking down and removing existing work, the utmost care is to be observed to avoid any structural or other damage to the remaining portion of the building. The Contractor must protect all work not removed, such as walls, floors, doors, windows or other joinery or fittings, etc., from damage during the progress of the work and provide all necessary material for so doing.</p>			
	Carried to Collection			R
	Bill No. 4 NEW PUBLIC AND TENANT TOILETS			

The Contractor will be held solely responsible for any damage to persons or property and for the safety of the portions of the existing buildings throughout the whole of the Contract, and must make good at his own expense any damage that may occur.

The materials to be used and the work to be done are to be similar in all respect to that described for new work in so far as they occur.

Old materials from the pulling down (except such as are described to be re-used or handed over to the Architect) are to become the property of the Contractor. Old materials for re-use are to be carefully taken out, stored and protected from injury and made good as required before being refixed. Old materials described to be handed over are to be carefully removed and neatly stacked on site where directed. The remainder of the old materials and all rubbish are to be immediately carted away and the site left clean and unencumbered. None of the old bricks from the demolition are to be re-used for any new work unless otherwise described or directed.

For the purpose of this contract and to avoid misunderstanding, phrases stated hereunder have been defined and the Contractor is advised to study them as no claim whatsoever will be entertained as a result of him not so doing.

a)"Forming New Openings" shall include all labour and materials forming opening, cut toothings and bonding for and plumbing and flushing up reveals, cutting for and forming precast concrete, or reinforced brick lintol over including necessary turning pieces, reinforcement, etc.

b)"Bricking up Openings" shall include for all preparatory work, cut toothings and bond new brickwork to existing and preparing top of existing surface for raising upon and pinning up new brickwork to underside of existing.

c)"Making Good" shall include all labour and materials required to match existing work and is to include making good new work up to existing and labours to plaster, etc.

d)"Shoring" is not specifically mentioned in each item, however prices are to include for all shoring, needling, strutting, deadwork, etc., required.

Carried to Collection

Bill No. 4
NEW PUBLIC AND TENANT TOILETS

R

ALTERATIONS, ETC

			Item
1	Allow for making good in all trades to existing work damaged or disturbed through alterations with all necessary new materials to match and generally described for new work and leave perfect in every respect.		
	<u>Break Up/Down, Take Out, Cut In Where Necessary And Remove From Site And Make Good Where Required</u>		
2	Half brick wall	m2	135
3	One brick wall	m2	87
4	Timber door and steel frame size 0.90 x 2.10m	No	26
5	Timber skirting	m	114
6	Timber cubicle/reception counter size 3.90 x 1.20m high L-shaped with single entrance	No	1
7	Timber seat size 2.80 x 0.50 x 0.40m high with timber cushion	No	16
8	Timber slats size 300 x 100mm	No	16
9	Ditto, size 1400 x 100mm	No	1
10	Timber shelf 300mm wide	m	6
11	Vinyl tiles to floors and prepare to receive new ceramic tiles (elsewhere measured)	m2	103
12	Carpet to floors and prepare to receive new ceramic tiles (elsewhere measured)	m2	97

Carried to Collection

R

Bill No. 4
NEW PUBLIC AND TENANT TOILETS

1	Vinyl skirting	m	134
2	Drywall partition 2.80m high	m	21
3	Toilet roll holder	No	14
4	Steel window size 1.00 x 0.60m high	No	4
5	Ditto, size 1.00 x 1.20m high	No	6
6	Steel burglar bars size 1.00 x 0.60m	No	4
7	Ditto, size 4.60 x 2.40m	No	1
8	Steel burglar bar size 6.40 x 2.40m	No	1
9	Ditto, size 7.00 x 2.60m	No	1
10	Ditto, size 11.00 x 2.80m	No	1
11	Steel gate size 0.90 x 2.10m	No	3
12	Ditto, size 1.80 x 2.10m	No	1
13	Roller shutter door size 1.70 x 2.60m	No	1
14	Ditto, size 5.00 x 3.00m	No	1
15	Shopfront size 4.60 x 2.50m	No	1
16	Shopfront size 4.80 x 2.40m with double door	No	1
17	Shopfront size 13.40 x 2.60m, ditto	No	1

Carried to Collection

Bill No. 4
NEW PUBLIC AND TENANT TOILETS

R

1	Ceramic tiles to walls and prepare plaster behind to receive paint (elsewhere measured) including any necessary skimming	m2	39		
2	Ceramic tiles to floors and prepare to receive new tiles (elsewhere measured)	m2	30		
3	Stainless steel wash hand basin including tap and all pipework	No	1		
4	Ditto, but stainless steel sink	No	1		
5	Ditto, but wash hand basin	No	11		
6	Ditto, but WC suite	No	14		
7	Ditto, but urinal	No	3		
8	Ditto, but geyser	No	1		
9	Mirror size 400 x 400mm	No	4		
10	Remove all pipework in existing duct area			Item	
11	Mirror size 400 x 400mm	No	4		
	<u>Forming Openings Through The Following And Make Good</u>				
12	One brick wall plastered both sides size 1.00 x 3.50m	No	1		
	<u>CONCRETE, FORMWORK AND REINFORCEMENT</u>				
	<u>Budgetary Allowances</u>				
13	Provide the budgetary allowance of R 80 000.00 (eighty thousand rand) for closing up service duct floor opening to be adjusted as required			Item	
	Carried to Collection				R
	Bill No. 4				
	NEW PUBLIC AND TENANT TOILETS				

MASONRY

Note

Bricks to have a minimum compressive strength of 14MPa and are to be solid clay bricks, ie no openings.

Mortar for brickwork to be Class 1 (28 days strength and 14.5MPa minimum)

Brickwork In (Class 1) Cement Mortar In:

1	Half brick wall	m2	141
2	One brick wall	m2	160
3	Ditto, in openings	m2	8

Sundries

4	Cut tooth and bond new brickwork to existing	m2	10
5	75 x 110mm Prestressed fabricated lintol in lengths not exceeding 3,00m	m	18
6	80mm Brick mesh reinforcement in walls	m	562
7	155mm Ditto	m	703

WATERPROOFING

DAMPPROOFING OF FLOORS AND WALLS

One Layer Of 375 Micron "Gunplas Brikgrip DPC" Embossed Damp Proof Course

8	In walls	m2	22
---	----------	----	----

CARPENTRY AND JOINERY

DOORS

Carried to Collection

R

Bill No. 4
NEW PUBLIC AND TENANT TOILETS

Solid Flush Doors Faced Both Sides With Commercial Veneer With Two Hardwood Edges Hung To Timber Or Steel Frames

1	Door size 813 x 2032mm	No	9
2	Door size 1013 x 2032mm	No	2
3	Extra for forming 500 x 300mm opening for louvre unit (elsewhere measured)	No	11

CEILINGS, PARTITIONS AND ACCESS FLOORING

PARTITIONS, ETC

Toilet Cubicles As Supplied By Vitrex Vitraflex Classic Manufactured With Waterproof Laminated Construction With Outer Skins Of Vitreous Enamel Sheets Of Approved Colour Bonded To Wood Particleboard Complete Including Fixing Components And Standard Ironmongery Comprising Indicator Bolts, Coat Hooks With Door Stops, Toilet Roll Holders And Rubber Buffers All In Strict Accordance With The Manufacturer's Product Specifications And Instructions

4	Intermediate partition size 1800 x 1935mm	No	19
5	End partition size 1800 x 1935mm	No	3
6	End pilaster size 125 x 1935mm	No	17
7	Ditto, size 500 x 1935mm	No	1
8	Intermediate pilaster size 250 x 1935mm	No	19
9	Urinal partition size 500 x 900mm	No	5
10	Door size 750 x 1930mm including ironmongery as described above	No	28

Carried to Collection

Bill No. 4
NEW PUBLIC AND TENANT TOILETS

R

IRONMONGERY

1	Pull handle Dorma DPH301C	No	11
2	Cylinder deadlock as Dorma D037D-SS	No	11
3	65mm Europrofile five pin double cylinder as Dorma DDC206301 with key to differ	No	11
4	Door closer as Dorma TS73V PA DC PAB SL	No	11
5	Door stop as Dorma DDS-SS-017	No	11
6	Hat and coat hook with rubber buffet as Dorma DHC-SS-031B	No	28
7	Soap dispenser as Ticra PHTIC22	No	12
8	Lockable stainless steel toilet roll holder as TR5	No	30
9	Wall mounted waste bin as Ticra PHTIC09	No	10
10	Hand dryer as Ticra TICZA	No	10
11	Paraplegic flush valve back rail as Dorma DGR-151-SS	No	2
12	Paraplegic side grab back rail as Dorma DGR-152-SS	No	2
13	150 x 300mm Sign as Dorma DSS-130M	No	4
14	150 x 300mm Sign as Dorma Dorma DSS-131F	No	4
15	150 x 300mm Sign as Dorma DSS-131P	No	2

Carried to Collection

Bill No. 4
NEW PUBLIC AND TENANT TOILETS

R

1	150 x 300mm Push plate Dorma DPP-430-CR-SF	No	11
2	813 x 900 x 1.6mm Thick satin finished grade 18/8 stainless steel kick plate counter screwed around perimeter including forming opening size 500 x 300mm for louvre unit (elsewhere measured)	No	20
<u>METALWORK</u>			
<u>GALVANISED PRESSED STEEL DOOR FRAMES INCLUDING BUILDING INTO POSITION</u>			
<u>1.6mm Double Rebated Frame For Half Brick Wall With Three Butts Per Door Leaf</u>			
3	Frame for door size 813 x 2032mm	No	6
4	Frame for door size 1013 x 2032mm	No	2
<u>1.6mm Double Rebated Frame For One Brick Wall With Three Butts Per Door Leaf</u>			
5	Frame for door size 813 x 2032mm	No	3
<u>ALUMINIUM WINDOWS AND DOORS</u>			
<u>Natural Anodized Aluminium Windows And Doors Complete With Ironmongery, Glass, Etc And Fixing In Position</u>			
<u>NOTE</u>			
1. See attached drawings for general aluminium window and door specifications including glass and glazing.			
2. All items must come with protective tape and plastic to be removed only once surrounding trades are complete.			
3. All windows and doors to be sealed all round with silicone sealant.			
4. Window or door reference number is indicated in brackets at the end of each relevant description.			
5. See also attached ironmongery schedules for the relevant doors.			
6	Shop front size 6800 x 2095mm with double door (D06) with ironmongery	No	1
Carried to Collection			
Bill No. 4			
NEW PUBLIC AND TENANT TOILETS			

R

PLASTERING

SCREEDS

Cement Screeds On Concrete

1	30mm Thick on floors	m2	5
2	30mm Thick on floors in patches	m2	32

INTERNAL PLASTER

Cement Plaster On:

3	Walls including flush columns and beams	m2	456
4	Ditto, in patches	m2	23
5	Narrow widths	m2	15

PLUMBING ABOVE GROUND

SANITARY PLUMBING

UPVC Pipes And Fittings

6	40mm pipes	m	10
7	50mm Pipes	m	52
8	110mm Pipes	m	95
9	40mm Pipes chased into walls including making good to plaster	m	8
10	50mm Ditto	m	65
11	40mm Pipes chased into concrete surface beds including making good to concrete, etc	m	4

Carried to Collection

Bill No. 4
NEW PUBLIC AND TENANT TOILETS

R

1	50mm Ditto	m	8
	<u>Extra For:</u>		
2	50mm Straight reducer	No	4
3	110mm Ditto	No	3
4	110mm Pan connector	No	25
5	110mm Bent pan connector	No	5
6	40mm Bend	No	4
7	50mm Bend	No	55
8	110mm Bend	No	8
9	40mm Inspection eye bend	No	3
10	50mm Ditto	No	19
11	110mm Ditto	No	8
12	40mm Junction	No	2
13	50mm Ditto	No	19
14	110mm Ditto	No	17
15	40mm Inspection eye junction	No	4
16	50mm Ditto	No	6

Carried to Collection

Bill No. 4
NEW PUBLIC AND TENANT TOILETS

R

1	110mm Ditto	No	5	
2	50mm Inspection eye reducing junction	No	2	
3	110mm Ditto	No	6	
	<u>Sundries</u>			
4	50mm UPVC vent valve	No	4	
5	110mm Ditto	No	4	
6	32 x 40mm Chromium plated bottle trap as Cobra 350 including joint to pipe and outlet of fitting	No	10	
7	40 x 40mm Ditto, as Cobra 360	No	10	
	<u>SANITARY FITTINGS</u>			
8	Wash hand basin as Duravit code 8448Z0, waste as Cobra 303-32, plug and chain, etc complete with brackets, etc and fixing to wall	No	2	
9	Purpose made vanity base size 1300 x 450 x 1200mm high complete with plaster and painted brick support walls, silstone vanity and backsplash and stainless steel drainage box gutter to underside (Taps and bottle trap elsewhere measured - see Architects drawing No 3108/B_403)	No	4	
10	Ditto, size 1930 x 450 x 1200mm high	No	4	
11	WC suite comprising wall hung pan as Duravit code DUR-25350900002, white toilet seat and cover as Duravit Alpin code 0067310000", concealed cistern as Valsir Tropea S Fixsystem VLS-VS0858102VU with flush actuator as VLS-VS0870235, forming recess in brick wall for cistern, etc complete all in strict accordance to the manufacturers instructions	No	30	
	Carried to Collection			R
	Bill No. 4			
	NEW PUBLIC AND TENANT TOILETS			

1	Wall hung urinal as Duravit code DUR-0829300000 complete with waste union, brackets, chromium plated sparge pipes, etc	No	8	
	<u>Sundries</u>			
2	15mm Chromium plated angle regulating valve with 350mm flexi tube as Cobra 832-10 including joints to pipes	No	39	
3	15mm Chromium plated urinal flush valve as Schell code SCH-024770699	No	8	
4	15mm Chromium plated self closing wall mounted bib tap as Schell SCH-021360699 with spare parts for extension for wall mounted tap as SCH-616620699 including joint to pipe	No	22	
	<u>TESTING</u>			
5	Allow for testing all sanitary plumbing, sanitary fittings and taps to the satisfaction of the architect and the Municipal Authorities, replace any defective work free of charge and leave perfect			Item
	<u>GLAZING</u>			
	<u>MIRRORS</u>			
6	6mm Float glass silvered back mirror size 450 x 900mm with polished edged, four times holed for and screwed to plugs in wall with chromium plated dome headed screws and cork washers at back	No	2	
7	Ditto, size 1300 x 900mm high	No	4	
8	Ditto, size 1900 x 900mm high	No	4	
	<u>PAINTING</u>			
	Carried to Collection			
	Bill No. 4			
	NEW PUBLIC AND TENANT TOILETS			

R

Note:

All plaster work to have a moisture content of between 0% and 12% prior to any paint applications. Any additional costs where the moisture content exceeds this will not be entertained.

PAINTING, ETC TO NEW WORK

ON PLASTER, ETC

Prepare Surface And Apply One Coat Primer And Two Coats Plascon Wall n All Paint On:

1	Internal plastered walls	m2	66
---	--------------------------	----	----

ON METAL

Prepare Surface And Apply one Coat Bituminous Paint On:

2	Backs of door linings before setting up in position	m2	16
---	---	----	----

Prepare Surface And Apply One Coat Primer And Two Coats Plascon Velvagio Paint On:

3	Galvanised door frames	m2	16
---	------------------------	----	----

PAINTING, ETC TO EXISTING WORK

ON PLASTER, ETC

Remove All Flaking Paint, Sand Down, Prepare Surface And Apply One Coat Primer And Two Coats Wall n All Paint On:

4	Internal plastered walls	m2	65
---	--------------------------	----	----

Carried to Collection

Bill No. 4
NEW PUBLIC AND TENANT TOILETS

R

Bill No. 4

NEW PUBLIC AND TENANT TOILETS

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

37

38

39

40

41

42

43

44

45

46

47

48

49

50

Carried to Summary

R

Bill No. 4

NEW PUBLIC AND TENANT TOILETS

Item No		Quantity	Rate	Amount
	<u>BILL NO. 5</u>			
	<u>REPLACEMENT OF FIRE DOORS AND ROLLER SHUTTER DOORS</u>			
	<u>ALL TRADES</u>			
	<u>Note:</u>			
	For Preambles see "Model Preambles for Trades" as published by the Association of South African Quantity Surveyors (2008 Edition).			
	<u>DEMOLITIONS</u>			
	<u>Break Up/Down, Take Out, Cut In Where Necessary And Remove From Site And Make Good Where Required</u>			
1	Steel door and steel frame size 0.90 x 2.10m	No	10	
2	Ditto, size 1.70 x 2.10m	No	2	
3	Steel roller shutter door size 5.00 x 2.60m	No	1	
4	Ditto, size 5.00 x 3.00m	No	2	
	<u>METALWORK</u>			
	<u>GALVANISED FIRE DOORS AND FRAMES</u>			
5	Class B two hour fire door size 813 x 2032mm including steel double rebated frame to suit 270mm hollow wall including all ironmongery, fixing in position in existing opening and making good to all opening finishes (see Architects drawing No 3108_D03)	No	10	
6	Ditto, size 1613 x 2032mm (see Architects drawing No 3108_D02)	No	2	
	Carried to Collection			R
	Bill No. 5 REPLACEMENT OF FIRE DOORS AND ROLLER SHUT			

ROLLER SHUTTER DOORS

1	Serranda Series 1500/8 or other approved galvanised powder coated (charcoal colour) steel electric operated slatted roller shutter door size 5.00 x 2.60m complete with internal and external locking points including building into position	No	1
2	Ditto, size 5.00 x 3.00m	No	2

PAINTING

PAINTING, ETC TO NEW WORK

ON METAL

Prepare Surface And Apply one Coat Bituminous Paint On:

3	Backs of door linings before setting up in position	m2	27
---	---	----	----

Prepare Surface And Apply One Coat Primer And Two Coats Plascon Velvaglo Paint On:

4	Galvanised doors	m2	48
5	Galvanised door frames	m2	27

Carried to Collection

Bill No. 5
REPLACEMENT OF FIRE DOORS AND ROLLER SHUT

R

Bill No. 5

REPLACEMENT OF FIRE DOORS AND ROLLER SHUTTER DOORS

COLLECTION

Total Brought Forward from Page No.

Page
No

52

53

Amount

Carried to Summary

Bill No. 5

REPLACEMENT OF FIRE DOORS AND ROLLER SHUT

R

Item No		Quantity	Rate	Amount
	<u>BILL NO. 6</u>			
	<u>PLUMBING AND DRAINAGE IN GROUND</u>			
	<u>Note</u>			
	For Preambles see "Model Preambles for Trades" as published by the Association of South African Quantity Surveyors (2008 Edition).			
	<u>STORMWATER DRAINAGE</u>			
	<u>UPVC Pipes Class 34 Including Laying On And Including Average 150mm Layer Of Sand Including Excavations In Earth, Risk Of Collapse, Keeping Excavations Free From Water, Working Space, Filling In And Ramming With Imported G7 Filling To 95%, Carting Away Surplus Soil, Etc</u>			
1	160mm Pipe laid in and including trenches not exceeding 1,00m deep	m	20	
2	Ditto, exceeding 1,00m and not exceeding 2,00m deep	m	20	
	<u>Reinforced Concrete Pipes (Class 75D) Including Short Lengths, Cutting And Jointing With Spigot And Socket Rubber Ring Joints Including Laying On And Including Average 150mm Layer Of Sand Including Excavations In Earth, Risk Of Collapse, Keeping Excavations Free From Water, Working Space, Filling In And Ramming With Imported G7 Filling To 95%, Carting Away Surplus Soil, Etc</u>			
3	375mm Pipe laid in and including trenches not exceeding 1,00m deep	m	21	
4	Ditto, exceeding 1.00 and not exceeding 2,00m deep	m	289	
5	Ditto, exceeding 2.00 and not exceeding 3,00m deep	m	43	
	Carried to Collection			R
	Bill No. 6			
	PLUMBING AND DRAINAGE IN GROUND			

Sundries

1	Hack up existing tarmac for an average width of 1.10m wide for new drains (elsewhere measured) and later relay tarmac and make good	m	155
2	Take up and set aside existing brick pavers for an average width of 1.10m wide for new drains (elsewhere measured) and later relay existing pavers and make good	m	60
3	Stormwater manhole size 1160 x 1160 x not exceeding 1000 mm deep internally complete including type 2A heavy duty cast iron manhole cover and frame (see Engineers drawing No DT-012)	No	1
4	Ditto, exceeding 1000mm and not exceeding 2000mm deep	No	13
5	Ditto, exceeding 2000mm and not exceeding 3000mm deep	No	4
6	Stormwater kerb inlet manhole size 1160 x 1160 x exceeding 1000 and not exceeding 2000 mm deep internally complete including precast manhole cover and galvanised steel frame (see Engineers drawing No DT-012)	No	1

SOIL AND WASTE WATER DRAINAGE

UPVC Pipes Class 34 Including Laying On And Including Average 150mm Layer Of Sand Including Excavations In Earth, Risk Of Collapse, Keeping Excavations Free From Water, Working Space, Filling In And Ramming With Imported G7 Filling To 95%, Carting Away Surplus Soil, Etc

7	110mm Pipe laid in and including trenches not exceeding 1,00m deep	m	71
8	160mm Ditto	m	38

Carried to Collection

Bill No. 6
PLUMBING AND DRAINAGE IN GROUND

R

1	110mm Pipe laid in and including trenches exceeding 1.00 and not exceeding 2,00m deep	m	47
2	160mm Ditto	m	290
3	160mm Pipe laid in and including trenches exceeding 2.00 and not exceeding 3,00m deep	m	62
<u>Extra For:</u>			
4	160mm Straight reducer	No	2
5	110mm Bend	No	64
6	160mm Bend	No	3
7	110mm Inspection eye bend	No	2
8	160mm Ditto	No	1
9	110mm Junction	No	1
10	160mm Ditto	No	1
11	110mm Inspection eye junction	No	19
12	160mm Ditto	No	4
13	110mm Inspection eye reducing junction	No	2
14	160mm Ditto	No	23

Carried to Collection

Bill No. 6
PLUMBING AND DRAINAGE IN GROUND

R

Sundries

1	Hack up existing tarmac for an average width of 0.90m wide for new drains (elsewhere measured) and later relay tarmac and make good	m	301
2	Hack up existing 150mm thick concrete surface bed for an average width of 0.90m wide for new drains (elsewhere measured) and later relay concrete and make good	m	15
3	Take up and set aside existing brick pavers for an average width of 0.90m wide for new drains (elsewhere measured) and later relay existing pavers and make good	m	63
4	Cut into existing manhole and connect up new 160mm PVC pipe (elsewhere measured) including altering benching, channelling, etc and making good	No	1
5	Cement Concrete 15MPa in encasing 110mm pipe to a minimum thickness of 100mm all round including any necessary formwork, etc	m	12
6	Ditto, to 160mm pipe	m	7
7	Ditto, to 110mm bend	No	19
8	UPVC gulley trap complete with UPVC removable grating including encasing all round with cement concrete 15MPa and with standard precast concrete surround fitted on top including excavation, risk of collapse, fill in and ram, formwork, etc	No	16
9	110mm Diameter UPVC ABC rodding eye cover and frame including joint to UPVC pipe and encasing in 500 x 500 x 250mm thick concrete	No	3
10	160mm Ditto	No	1

Carried to Collection

R

Bill No. 6
PLUMBING AND DRAINAGE IN GROUND

1	Stainless steel grease trap as type GTS7L/s including fixing to floor and connecting to pipework (elsewhere measured)	No	4
2	Inspection chamber size 900 x 900 x not exceeding 1000 mm deep internally complete including 600 x 900mm medium duty cast iron manhole cover and frame (see Engineers drawing No DT-021)	No	1
3	Ditto, exceeding 1000mm and not exceeding 2000mm deep	No	1
4	Inspection chamber size 1000mm diameter x not exceeding 1000 mm deep internally complete including type 4 heavy duty cast iron manhole cover and frame (see Engineers drawing No DT-021)	No	2
5	Ditto, exceeding 1000mm and not exceeding 2000mm deep	No	9
6	Ditto, exceeding 2000mm and not exceeding 3000mm deep	No	2
7	Extra over excavations for drain trenches, etc in earth for excavation in soft rock	m3	180
8	Ditto, in hard rock	m3	90

Note:

In remeasuring the cubic quantity of extra for excavations in soft, hard rock, etc for drain trenches, etc the following basis shall apply:

Drain Trenches, Water Supply, Etc - Trenches not exceeding 1,00m deep shall be taken 0,60m wider than the internal diameter of the pipe. This width shall be increased by 100mm for each successive depth of 1,00m to a maximum of 1,00m wider than the internal diameter of the pipe.

Carried to Collection

R

Bill No. 6
PLUMBING AND DRAINAGE IN GROUND

Inspection Chambers, Etc - Inspection chambers, etc shall be taken to the full extent in width and depth and no more.

WATER SUPPLY

UPVC Pipes And Fittings (Class 9) Including Laying On And Including Average 150mm Layer Of Sand Including Excavations In Earth, Risk Of Collapse, Keeping Excavations Free From Water, Working Space, Filling In And Ramming With Imported G7 Filling To 95%, Carting Away Surplus Soil, Etc

1	32mm Pipes laid in and including trenches not exceeding 1.00m deep	m	40
2	75mm Ditto	m	174
3	160mm Ditto	m	112
<u>Extra For Cast Iron Fittings:</u>			
4	32mm Straight reducer	No	4
5	75mm Ditto	No	2
6	160mm Ditto	No	2
7	32mm Bend	No	10
8	75mm Bend	No	5
9	160mm Bend	No	2
10	32mm Tee	No	6
11	75mm Tee	No	3
12	160mm Tee	No	2

Carried to Collection

Bill No. 6
PLUMBING AND DRAINAGE IN GROUND

R

1	32mm Reducing tee	No	1	
2	75mm Ditto	No	10	
3	160mm Reducing tee	No	2	
	<u>Sundries</u>			
4	Cement concrete (15MPa) in thrust blocks at bends, tees, etc including necessary excavation, formwork, etc	m3	5	
5	Hack up existing tarmac for an average width of 0.90m wide for new drains (elsewhere measured) and later relay tarmac and make good	m	245	
6	Take up and set aside existing brick pavers for an average width of 0.90m wide for new drains (elsewhere measured) and later relay existing pavers and make good	m	65	
7	75mm RSV socketted gate valve including joints to pipes	No	1	
8	160mm Ditto	No	1	
9	160mm Approved water meter including joints to pipes	No	1	
10	Valve chamber size 1000 x 1000 x not exceeding 1000 mm deep internally complete including 600 x 600mm medium duty cast iron manhole cover and frame (see Engineers drawing No DT-032)	No	2	
11	Precast concrete water meter box complete (see Engineers drawing No DT-032)	No	1	
	Carried to Collection			R
	Bill No. 6 PLUMBING AND DRAINAGE IN GROUND			

SITE CLEARANCE, ETC

1 Digging up and removing from site all rubbish, debris, vegetable matter, shrubs, small trees, etc and clearing site

m2

700

BUDGETARY ALLOWANCES

2 Provide the budgetary allowance of R 50 000.00 (fifty thousand rand) for any removal of existing pipes, manholes, etc in ground to be adjusted as required

Item

50,000.00

TESTING

3 Allow for testing all stormwater drainage, soil and waste water drainage, water supply in ground to the satisfaction of the architect and the Municipal Authorities, replace any defective work free of charge and leave perfect

Item

CONNECTION FEES

4 Provide the sum of R 45 000.00 (forty five thousand rand) for Municipal water connection fee to be adjusted as required

Item

45,000.00

5 Allow for profit and attendance

Item

Carried to Collection

R

Bill No. 6
PLUMBING AND DRAINAGE IN GROUND

Bill No. 6

PLUMBING AND DRAINAGE IN GROUND

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

55

56

57

58

59

60

61

62

Carried to Summary

R

Bill No. 6

PLUMBING AND DRAINAGE IN GROUND

Item No	BILL NO. 7	Quantity	Rate	Amount
	<u>PROVISIONAL SUMS</u>			
	The tenderer's attention is drawn to the fact that all Provisional Sums stated are nett and do not include builder's discount.			
	<u>Lift Installation</u>			
1	Provide the sum of R 800 000.00 (eight hundred thousand rand) for lift installation supplied and fixed complete	Item		800,000.00
2	Allow for profit	Item		
3	Allow for attendance	Item		
	<u>Sequencing of Tenants</u>			
4	Provide the sum of R 1 000 000.00 (one million rand) for sequencing of tenants supplied and fixed complete	Item		1,000,000.00
5	Allow for profit	Item		
6	Allow for attendance	Item		
	<u>Decanting of Tenants</u>			
7	Provide the sum of R 1 500 000.00 (one million five hundred thousand rand) for decanting of tenants supplied and fixed complete	Item		1,500,000.00
8	Allow for profit	Item		
9	Allow for attendance	Item		
	Carried to Collection		R	
	Bill No. 7 PROVISIONAL SUMS			

Repairs to Glazing to Shopfronts

1 Provide the sum of R 500 000.00 (five hundred thousand rand) for repairs to glazing of to shopfronts supplied and fixed complete

Item 500,000.00

2 Allow for profit

Item

3 Allow for attendance

Item

Service Duct Louvred Panels

4 Provide the sum of R 15 000.00 (fifteen thousand rand) for service duct louvred panels supplied and fixed complete

Item 15,000.00

5 Allow for profit

Item

6 Allow for attendance

Item

Training of Students

7 Provide the sum of R 504 000.00 (five hundred and four thousand rand) for the training of three students at R 7000.00 (seven thousand rand) per month per student for the duration of the contract

Item 504,000.00

8 Allow for profit

Item

9 Allow for attendance

Item

Community Liason Officer (CLO)

10 Provide the sum of R 144 000-00 (one hundred and forty four thousand rand) for the employment of a Community Liason Officer (CLO) at R 6 000.00 (six thousand rand) per month for the duration of the project

Item 144,000.00

11 Allow for profit

Item

Carried to Collection

R

Bill No. 7
PROVISIONAL SUMS

1 Allow for attendance

Project Steering Committee Members

2 Provide the sum of R 38 400.00 (thirty eight thousand four hundred rand) for the establishment and payment of four project steering committee members with an allowance of R 400.00 (four hundred rand) per member per month (one sitting per month)

3 Allow for profit

4 Allow for attendance

Item

Item

38,400.00

Item

Item

Carried to Collection

Bill No. 7
PROVISIONAL SUMS

R

Bill No. 7

PROVISIONAL SUMS

COLLECTION

Total Brought Forward from Page No.

Page
No

64

65

66

Amount

Carried to Summary

R

Bill No. 7
PROVISIONAL SUMS

Item No	Quantity	Rate	Amount
<u>BILL NO. 8</u>			
<u>EMPLOYMENT OF SMME SUB-CONTRACTORS</u>			
The following monetary provisions are for works to be carried out by SMME Sub-contractors.			

<u>Replacement Of Hawker Stalls And Surrounding Paving</u>			
1			
1			
	Item		3,400,000.00
2			
	Item		
3			
	Item		
<u>Wall And Floor Tiling To New Ablutions</u>			
4			
4			
	Item		600,000.00
5			
	Item		
6			
	Item		
<u>Replacement Of Windows</u>			
7			
7			
	Item		460,000.00
8			
	Item		
9			
	Item		
Carried to Collection			
Bill No. 8 EMPLOYMENT OF SMME SUB-CONTRACTORS			R

Painting

1 Provide the sum of R 450 000.00 (four hundred and fifty thousand rand) for painting

Item

450,000.00

2 Allow for profit

Item

3 Allow for attendance

Item

Carried to Collection

R

Bill No. 8
EMPLOYMENT OF SMME SUB-CONTRACTORS

Bill No. 8

EMPLOYMENT OF SMME SUB-CONTRACTORS

COLLECTION

Total Brought Forward from Page No.

Page
No

68

69

Amount

Carried to Summary

R

Bill No. 8

EMPLOYMENT OF SMME SUB-CONTRACTORS

Item No		Quantity	Rate	Amount
	<u>BILL NO. 9</u>			
	<u>SPECIALIST WORKS</u>			
	<u>Note</u>			
	The following specialist works will be domestic contractors to the main contractor. The total amount for each contract is to be carried forward from each of the separate Bills of Quantities and inserted in the relevant items below. Amounts are to exclude Value Added Tax.			
	<u>Internal Domestic Water Reticulation</u>			
1	Internal domestic water reticulation carried forward from separate document Part B1			
		Item		
2	Allow for profit			
		Item		
3	Allow for attendance			
		Item		
	<u>Builders Work In Connection With Internal Domestic Water Reticulation</u>			
4	Cut hole through existing half brick wall for pipe not exceeding 100mm diameter and make good to finishes	No	15	
5	Ditto, through existing one brick wall	No	15	
6	Ditto, through existing 270mm face brick wall	No	25	
7	Core through existing 250mm thick concrete slab for pipe not exceeding 100mm diameter and make good to finishes	No	8	
	<u>Early Warning Fire Detection</u>			
8	Early Warning fire detection carried forward from separate document Part B2			
		Item		
	Carried to Collection			
	Bill No. 9			
	SPECIALIST WORKS			
			R	

1	Allow for profit		Item	
2	Allow for attendance		Item	
<u>Builders Work In Connection With Early Warning Fire Detection</u>				
3	Cut hole through existing one brick wall for pipe exceeding 100 and not exceeding 200mm diameter and make good	No	20	
<u>Fire Protection Installation</u>				
4	Fire protection installation carried forward from separate document Part B3		Item	
5	Allow for profit		Item	
6	Allow for attendance		Item	
<u>Ventilation And Smoke Ventilation</u>				
7	Ventilation and smoke ventilation carried forward from separate document Part B4		Item	
8	Allow for profit		Item	
9	Allow for attendance		Item	
<u>Builders Work In Connection With Ventilation And Smoke Ventilation</u>				
<u>Form Opening Through Existing One Brick Wall Including 22mm Shutterboard Or Pine Lining Around Perimeter And Make Good To Finishes</u>				
10	Opening size 250 x 250mm	No	8	
11	Opening size 300 x 300mm	No	1	
Carried to Collection				
Bill No. 9 SPECIALIST WORKS				R

1	Opening size 400 x 300mm	No	4	
2	Opening size 500 x 300mm	No	16	
3	Opening size 250mm diameter	No	1	
4	Opening size 300mm diameter	No	20	
5	Opening size 350mm diameter	No	3	
<u>Form Opening Through Existing 270mm Face Brick Wall Including 22mm Shutterboard Or Pine Lining Around Perimeter And Make Good To Finishes</u>				
6	Opening size 250 x 250mm	No	8	
7	Opening size 300 x 300mm	No	3	
8	Opening size 400 x 300mm	No	8	
9	Opening size 500 x 300mm	No	20	
10	Opening size 250mm diameter	No	1	
11	Opening size 300mm diameter	No	32	
12	Opening size 350mm diameter	No	3	
<u>Core Through Existing 250mm Thick Concrete Slab For Opening And Make Good To Finishes</u>				
13	Opening size 250mm diameter	No	10	
<u>Electrical Installation</u>				
14	Electrical installation carried forward from separate document Part C			Item
Carried to Collection				R
Bill No. 9 SPECIALIST WORKS				

1	Allow for profit		Item
2	Allow for attendance		Item
<u>Builders Work In Connection With Electrical Installation</u>			
<u>Kabelflex Sleeve Pipes And Fittings Including Laying On And Including Average 150mm Layer Of Sand Including Excavations In Earth, Risk Of Collapse, Keeping Excavations Free From Water, Working Space, Filling In And Ramming With Imported G7 Filling To 95%, Carting Away Surplus Soil, Etc</u>			
3	110mm Pipe laid in and including trenches not exceeding 1,00m deep	m	90
4	Extra for 110mm slow bend	No	4
5	Skull and crossbones warning tape placed over sleeve pipes	m	90
6	Manhole size 600 x 600 x not exceeding 1000mm deep internally complete formed of 150mm thick concrete bottom, one brick wall plastered on inside face, smooth finished concrete surround, 450 x 450mm medium duty manhole cover and frame including excavations, cart off excess material, etc	No	3
7	Extra over excavations for sleeve pipe trenches, etc in earth for excavation in soft rock	m3	10
8	Ditto, in hard rock	m3	5

Note:

In remeasuring the cubic quantity of extra for excavations in soft, hard rock, etc for drain trenches, etc the following basis shall apply:

Carried to Collection

Bill No. 9
SPECIALIST WORKS

R

Sleeve pipe trenches - Trenches not exceeding 1,00m deep shall be taken 0,60m wider than the internal diameter of the pipe. This width shall be increased by 100mm for each successive depth of 1,00m to a maximum of 1,00m wider than the internal diameter of the pipe.

Manholes - Manholes shall be taken to the full extent in width and depth and no more.

1	Make good to plaster to walls where chase for 20mm conduit has been carried out	m	3,300
2	Ditto, but where chase for 100 x 50mm wall box has been carried out	No	780

Carried to Collection

Bill No. 9
SPECIALIST WORKS

R

Bill No. 9

SPECIALIST WORKS

COLLECTION

Total Brought Forward from Page No.

Page
No

71

72

73

74

75

Amount

Carried to Summary

R

Bill No. 9
SPECIALIST WORKS

Item No	Quantity	Rate	Amount
<u>BILL NO. 10</u>			
<u>OCCUPATIONAL HEALTH AND SAFETY</u>			
<u>TRADE PREAMBLES</u>			
<u>Trade Preambles</u>			
<u>For Trade Preambles refer to 'Model Preambles for Trades' (2008 edition) for the full descriptions of material to be used and work to be done in this Bill</u>			
<u>SUPPLEMENTARY PREAMBLES</u>			
<u>Supplementary Preambles</u>			
<u>Where items in this Bill are identical to those in the previous Bills, the descriptions have been shortened, and the full descriptions in the Trades concerned are to be referred to for the full meaning and intent each item</u>			
<u>Prior to pricing the Principal Contractor must familiarize him/herself with the Occupational Health and Safety Act No. 85 Of 1993, Construction Regulations 2014, any other relevant Regulations and Standards as well as project specific Health & Safety specifications</u>			
<u>The quantities contained herein serve as a guideline only to determine if the contractor has sufficiently priced for the Health and Safety obligations and demands of the Occupational Health and Safety Act No. 85 Of 1993, Construction Regulations 2014, other relevant Regulations and Standards as well as project specific Health & Safety specifications. Where quantities are missing the contractor is to insert his own quantities based on his individual requirements to comply with the Health and Safety obligations and demands of the Occupational Health and Safety Act No. 85 Of 1993, Construction Regulations 2014, other relevant Regulations and Standards as well as project specific Health & Safety specifications</u>			
Carried to Collection			
Bill No. 10 OCCUPATIONAL HEALTH AND SAFETY			
		R	

All Costs to comply with the obligations and demands of the Occupational Health and Safety Act No. 85 Of 1993, Construction Regulations 2014, and any other other relevant Regulations and Standards as well as project specific Health & Safety Specifications not listed or mentioned below must be priced in Preliminaries Section of the Bills of Quantities, no additional claims in respect of compliance with the above mentioned will be considered

OCCUPATIONAL HEALTH AND SAFETY

General

1	Provision of documents for inclusion within the Permit application for submission to the Department of Labour		Item	
2	Allow for the necessary Workman's Compensation Fund or FEM contributions for the duration of the project with and including renewals		Item	
3	Allow for the preparation and approval of project specific H&S Plan & File (CR 7(1)(a))		Item	
4	Allow for the implementation and maintenance of project specific H&S Plan & File (CR 7)	Mnths		24.00
5	Allow for the appointment of a Full-Time Competent Construction Health & Safety Officer/CHSO registered with SACPCMP to assist in the control of all health and safety related aspects on site as per [CR 8(5)]	Mnths		24.00
6	Allow for the appointment of two Full-Time Competent Health & Safety Representatives to assist in the control of all health and safety related aspects on site per active section of the sequenced work	Mnths		24.00
7	Provide for appointment of responsible and competent person/s to manage and supervise the works and administer and enforce health and safety on site as per (CR 8(1),(2),&(7))	Mnths		24.00

Carried to Collection

R

Bill No. 10
OCCUPATIONAL HEALTH AND SAFETY

1	Allow for provision of telecommunication facilities for the appointed Construction Health & Safety Officer	Mnths	24.00	
2	Allow for provision of Basic Emergency Preparedness and Response equipment & at least Level 2 First Aider/s	Mnths	24.00	
	<u>Provide, supply and maintenance for each worker the following SANS approved personal protective equipment & clothing as per site specific risk assessments:(Including but not limited to the following)</u>			
3	Hard Hats (High Density polyethylene, & 6-point lining) (Contractor is to insert the quantity based on the Contractors own requirements)	No		
4	Working at heights safety helmet (High Density polyethylene, & 6-point lining with chin strap) (Contractor is to insert the quantity based on the Contractors own requirements)	No		
5	Overall/work suits (100% cotton) (Contractor is to insert the quantity based on the Contractors own requirements)	No		
6	Safety shoes/boots (Steel-Toe) (Contractor is to insert the quantity based on the Contractors own requirements)	No		
7	Water boots (Steel-Toe) (Contractor is to insert the quantity based on the Contractors own requirements)	No		
8	Breathalyzer (Contractor is to insert the quantity based on the Contractors own requirements)	No		
9	Safety gloves (Contractor is to insert the quantity based on the Contractors own requirements)	No		
10	Ear Plugs/Muffs (Contractor is to insert the quantity based on the Contractors own requirements)	No		
	Carried to Collection			R
	Bill No. 10 OCCUPATIONAL HEALTH AND SAFETY			

1	Dusk Mask (at least FF2 type) (Contractor is to insert the quantity based on the Contractors own requirements)	No		
2	Respiratory protective equipment (Contractor is to insert the quantity based on the Contractors own requirements)	No		
3	Safety goggles/Eye protective equipment (Contractor is to insert the quantity based on the Contractors own requirements)	No		
4	Air horn for emergency evacuation	No	1.00	
5	OHS Act 85 of 1993 chart, Construction Regulation 2014, EEA 55 of 1998, BCEA 75 of 1997, LRA 66 of 1955	No	2.00	
6	Personal fall arrest and rescue equipment with and including lifelines and associated equipment (Contractor is to insert the quantity based on the Contractors own requirements)	No		
7	High visibility reflective vests and/or bibs (Contractor is to insert the quantity based on the Contractors own requirements)	No		
8	Temporary handrails, toe boards and roofing to walkways, special reference to disabled patrons provision to be made (Contractor is to insert the quantity based on the Contractors own requirements)	m		
9	SANS approved safety netting (orange colour with minimum of 1.2metres high) (Contractor is to insert the quantity based on the Contractors own requirements)	m		
10	SANS approved debris netting (orange colour to cover the scaffolding to prevent falling objects) (Contractor is to insert the quantity based on the Contractors own requirements)	m		
Carried to Collection				
Bill No. 10 OCCUPATIONAL HEALTH AND SAFETY				R

1	SANS approved hoarding for site barricading (minimum of 1.8 metres in height) (Contractor is to insert the quantity based on the Contractors own requirements)	m		
2	Temporary handrails and hoarding for openings and entrances (Contractor is to insert the quantity based on the Contractors own requirements)	m		
3	Allow for normal Pre, annually and post employment medical examinations (All employees) (Contractor is to insert the quantity based on the Contractors own requirements)	No		
4	Allow for Pre, annually and post employment medical examinations for working on heights (All employees) (Contractor is to insert the quantity based on the Contractors own requirements)	No		
5	Allow for Pre, annually and post employment medical examinations for plant/operators (All employees) (Contractor is to insert the quantity based on the Contractors own requirements)	No		
6	Provision for the supply and maintenance of road traffic signs in terms of the South African Road Traffic Signs Manual complete (delivery by trucks and moving plant safety signs with speed limits) (Contractor is to insert the quantity based on the Contractors own requirements)	No		
7	Mobile toilets and waste removal (Contractor is to insert the quantity based on the Contractors own requirements)		Item	
8	Specialised scaffolding, designed, erected and signed off by a competent person (Registered Professional Engineer)		Item	
9	Lifting equipment (scissor lift/crane) this will include testing of lifting tackle and lifting machines as per requirements stated in the Driven Machinery Regulation, Inspection of Lifting Tackle and Machinery (Contractor is to insert the quantity based on the Contractors own requirements)		Item	
Carried to Collection				
Bill No. 10 OCCUPATIONAL HEALTH AND SAFETY				R

1	First Aid Box (Contractor is to insert the quantity based on the Contractors own requirements)		Item	
2	Fire Extinguisher Equipment (Contractor is to insert the quantity based on the Contractors own requirements)		Item	
3	1500mm surveyor poles for barricading net (Contractor is to insert the quantity based on the Contractors own requirements)		Item	
4	Drip trays (Contractor is to insert the quantity based on the Contractors own requirements)		Item	
5	Waste bins (Contractor is to insert the quantity based on the Contractors own requirements)		Item	
6	Construction signage, including the signage for the Construction Work Permit (i.e. warning signs, advisory signs, temporary notice board and information board) (Contractor is to insert the quantity based on the Contractors own requirements)		Item	
7	Documentation for demolition work and demolition supervision (Contractor is to insert the quantity based on the Contractors own requirements)		Item	
8	Exposure to Biological Substances (Hepatitis B injections) (Contractor is to insert the quantity based on the Contractors own requirements)		Item	
9	Provision for drinkable water (Contractor is to insert the quantity based on the Contractors own requirements)		Item	
	<u>HEALTH AND SAFETY EDUCATION</u>			
	<u>Health and safety education</u>			
10	Allow for HIV/AIDS awareness and implementation programmes, including STI and TB	Mnths	24.00	
	Carried to Collection			R
	Bill No. 10			
	OCCUPATIONAL HEALTH AND SAFETY			

1	Allow for compulsory health and safety awareness programme (e.g inductions, toolbox talks, safety promotions, H&S related training)	Mnths	24.00	
2	Allow for SAQA registered training (working at heights)		Item	Not Priced
<u>ENVIRONMENTAL</u>				
<u>Environmental</u>				
3	Provide for adequate handling and storage of materials so as to minimize contamination of ground, air or water (This includes containers and material yards)		Item	
4	Provide for the adequate and safe collection and disposal of waste material from site by an approved method (This includes debris, skips, hazardous chemical skips and rubbish bins)		Item	
5	Provide for facilities and eating area for workers		Item	
6	Provide for rehabilitation on completion of site and temporary access routes not covered by construction or landscaping specifications		Item	
7	Provide for rubble shoots for the removal of rubble from the roof (including debris skips)		Item	
8	Asbestos Contractor (Level 3) for removal of asbestos and relevant material (costing to include identification, removal and safe storage and removal of debris from site)		Item	
9	Provide for adequate dust control measure (specialist equipment to reduce dust and isolation of dust areas)		Item	
10	Provide for adequate noise control measure (isolation of noise areas)		Item	
11	Provide for stockpiling of topsoil for re-use		Item	
Carried to Collection				
Bill No. 10				
OCCUPATIONAL HEALTH AND SAFETY				
				R

COMPULSORY BREAKDOWN FOR THE
ADJUSTMENT OF OHS

Compulsory breakdown for the adjustment of OHS and
Covid 19 requirements

Value related (R _____)

Fixed related (R _____)

Time related (R _____)

Carried to Collection

Bill No. 10
OCCUPATIONAL HEALTH AND SAFETY

R

Bill No. 10

OCCUPATIONAL HEALTH AND SAFETY

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

77

78

79

80

81

82

83

84

Carried to Summary

R

Bill No. 10

OCCUPATIONAL HEALTH AND SAFETY

C2.3 – Mechanical Installation

(See Attached)



**ECDC PROPERTIES:
REPAIRS AND REFURBISHMENTS OF
MDANTSANE MALL**

**PART B1-1: DOMESTIC WATER & HEATING
EQUIPMENT INSTALLATION**

Consisting of:

- Section 1: Scope of Works**
- Section 2: Specifications**
- Section 3: Bills of Quantities**
- Section 4: Materials & Equipment Offered**
- Section 5: Drawings**

DOCUMENTS COMPILED BY:

RNA Consulting Engineers
11 Bonza Bay Road, Beacon Bay
East London, 5201

Contact Person: Mr T Warne
Tel: (043) 742 0041
Fax: (043) 742 3883

PART B1-1 : SCOPE OF WORKS - DOMESTIC WATER INSTALLATION

1. GENERAL

- 1.1 The Standard for Uniformity in Construction Procurement published in terms of the Construction Industry Development Board (CIDB) Act, 2000 (Act No. 38 of 2000), the Standardized Construction Procurement Documents for Engineering and Construction Works as issued by the CIDB and any other relevant documentation pertaining thereto must be studied and all principles in this regard must be applied to all procurement documentation, practices and procedures.

2. THE CONTRACT

2.1 DOMESTIC WATER RECTICUALTION INSTALLATION

The main contract is for the refurbishment of the Mdantsane Highway Mall in Mdantsane, East London, Eastern Cape. The mall shall remain in operation whilst construction takes place. The project will therefore have to be sequenced & sectional completion will take place.

As per main contract, the Work Sequence shall be:

Section No.1 - North/South Wing (First Floor): Practical Completion – 6 (six) calendar months from possession of site (excluding annual builders' holiday)

Section No.2 - East/West Wing (First Floor): Practical Completion – 12 (twelve) calendar months from possession of site (excluding annual builders' holiday)

Section No.3 - North/South Wing (Ground Floor): Practical Completion – 18 (eighteen) calendar months from possession of site (excluding annual builders' holiday)

Section No.4 - East/West Wing (Ground Floor):
Practical Completion – 24 (twenty-four) calendar months from possession of site (excluding annual builders' holiday)

Section No.5 - Balance of Works (Demolition of hawker stalls/provision of new and replacement of underground services):

Practical Completion – 24 (twenty-four) calendar months from possession of site (excluding annual builders' holiday)

The work to be carried out and commissioned by a PIRB / IOPSA approved plumber:

- a. Installation of new domestic water reticulation, as per SANS 10252,
- b. Testing and Commissioning, as per SANS 10252,
- c. Manuals, Drawings, OEM Literature,

2.2 Existing

All installations new. Building Existing.

2.3 Order of The Works

As per the building contractors' program of works.

PART B1-2: DOMESTIC WATER TECHNICAL SPECIFICATION

1.0 GENERAL REQUIREMENTS

1.1 Project Specification

1.1.1 This specification applies to, and is to be read in conjunction with the drawings for the cold-water reticulation to the building. Furthermore, this specification covers only the piping within the buildings. The requirements pertaining to the sections of piping from the ring mains to the buildings are covered by the civil engineer's specifications. Similarly, all tap fittings, shower fittings shall be to the architect's specification as detailed elsewhere.

1.1.2 In so far as the conditions contained herein are at variance with anything contained in the drawings, clarification shall be sought from the Engineer though generally the contract shall be interpreted in terms of the information contained on the drawings.

1.2 Occupational Health and Safety Act

1.2.1 All equipment supplied and installed under the contract shall meet the requirements of the Occupational Health and Safety Act (Act No 85 of 1994, (as amended) and all other relevant statutory requirements and the Contractor shall comply with the requirements laid down by the Inspector of Machinery under this Act.

1.3 Notices

1.3.1 The Contractor shall supply and install all notices and warning signs that are required in terms of the Occupational Health and Safety Act, by local by-laws or regulations and by these documents.

This includes notices prohibiting entry to un-authorized persons, etc.

1.4 Drawings

1.4.1 The drawings issued with this specification do not purport to show the exact position, size or details of construction of equipment.

1.4.2 Tenderers must satisfy themselves that the equipment offered by them can be accommodated in the available space and positioned in such a way that access for maintenance, repairs or removal is not obstructed.

1.4.3 Drawings showing any alternative suggestions differing from the Engineer's design must be submitted with tenders.

1.4.5 Approval by the Engineer of drawings submitted by the Contractor shall not relieve him of his liability to carry out the work in accordance with the requirements of the contract documents.

1.4.6 Project Drawings

The following drawings form part of this specification and must be read in conjunction with it:

- 2214-M-T-101 DW RevA

1.5 Quality of Materials

1.5.1 Only materials of high quality shall be used throughout and shall be subject to the approval of the Engineer.

1.5.2 All materials, where applicable, shall conform in respect of quality, manufacture, tests and performance, with the requirements of the SABS / SANS standards, or, where no such standards exist, they shall conform to the appropriate current specification of the British Standards Institution. Materials manufactured in South Africa shall be used wherever possible.

1.5.3 Imported materials shall comply with the requirements of the relevant SABS / SANS or BS Specifications.

1.5.4 All materials shall be suitable for the site conditions. These conditions shall include weather conditions as well as prevailing conditions during installation and subsequent use.

1.5.5 Should the materials or components not be suitable for use under temporary site conditions the Contractor shall provide at his own cost, suitable protection until these unfavorable site conditions cease to exist.

1.6 Tests and Inspections - Pressure Testing and Quality Control

The Contractor shall, at no extra cost to the contract, provide all the necessary equipment and facilities to conduct all tests as directed by the Engineer and or Supply Authorities.

1.7 **Builder's Work**

1.7.1 The Structural Engineer's approval, in writing, must be obtained before any holes or chases are cut in any structural component i.e. brickwork, concrete, steel or timber.

1.7.2 The Contractor shall be responsible for cutting chases and holes in walls and slabs to accommodate his services which must be coordinated in liaison with the Main Contractor who will be responsible for making good.

1.8 **Protection of Equipment**

It shall be the responsibility of the Contractor to protect all reticulation work and fittings that have been tested and accepted by the Engineer in writing during the currency of the contract.

2.0 **SUMMARY OF SCOPE OF WORK**

This specification is for the supply, delivery, installation, testing and commissioning of fully functional internal water reticulation as well as any ancillary equipment as described below:

2.1 Cold-water reticulation systems,

- All piping, fittings, piping supports, valves, etc.
- Maintenance and operating manuals, parts lists, manufacturer's data sheets, as built pipe diagrams showing valve locations, maintenance schedules and list of recommended spares for all equipment.
- Pressure testing of all piping to a pressure of 600kPa, allowable operating pressure as specified by the manufacturer, operational testing and commissioning of the installation and training of staff in the use, care and maintenance of the equipment. All pressure testing must be witnessed and signed off by engineer.
- All test certificates, electrical compliance certificates and local authority approvals.
- All other items and requirements, whether specifically mentioned or not, for complete, functional and safe heat pump water heating systems complying with all the relevant codes and specifications.
- All safety notices, safety plan and safety equipment.

3.0 **PIPING SPECIFICATIONS**

3.1 **Copper Piping**

Copper piping for domestic water services shall in all cases comply with the requirements of SABS 460 Class 2 and 3. For applications below ground class 3 shall be used, wrapped with Denso tape or similar.

Piping above ground shall be of class 2 and be jointed with capillary soldered fittings. Provision must however be made for union couplings in strategic places.

Pipes shall be firmly and neatly chased in or fixed to walls, as directed by the Principal Agent. Holder bats, saddles or brackets shall be of copper, bronze or brass. Holder bats, clips, etc shall be fixed to timber roof trusses or walls with brass screws. Piping chased into walls shall be wrapped with two layers of brown paper (Kraft) and covered with 3:1 cement mortar mix. Note that wrapping piping with old cement bags is **not** acceptable.

3.2 **Capillary Soldered Jointing of Copper Piping**

3.2.1 Unless otherwise specified, all copper pipes shall be jointed with approved capillary solder type fittings, each joint being formed by cutting the pipe-ends square with a pipe cutter. If the tube end to be soldered is dirty due to cement, bitumen or tape-gum, it shall be mechanically cleaned with steel wool or abrasive paper prior to soldering.

3.2.2 The area to be soldered should then be thinly coated with a self-cleaning into the fitting apply a flame using a LPG Gas blow lamp, (or an electric resistance machine) 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. Test again with the solder. If the solder melts freely, hold the solder at about 45o to the mouth of the fitting, allowing it to melt and with steady pressure the solder will be drawn into the joint. **DO NOT** overheat the assembly and never hold the solder in the flame. Allow only the heat of the assembly to melt the solder.

3.2.3 Unless otherwise specified use only 2- or 3-mm solid core wire solder, type 97/3 (97% tin and 3% copper.) A careful check should be made to ensure that a ring of solder is visible around the mouth of the fitting.

- 3.2.4 Solders containing lead are not acceptable and not allowed.
- 3.2.5 No resin core or acid core solders are acceptable.
- 3.2.6 Fittings and pipes must be wiped clean with a damp cloth after jointing. Joints that have been fluxed should be soldered within one hour.
- 3.2.7 Copper pipes specified to be jointed with compression fittings shall be jointed with approved brass metal fittings with coupling nuts and rotary sleeve pieces.
- 3.2.8 All necessary couplings, connectors, elbows, tees and other fittings as may be required, shall be provided.
- 3.2.9 Copper pipes to be specified to be jointed with flared type fittings, shall be jointed with approved brass metal fittings with coupling nuts and cone.
- 3.2.9 N.B. Capillary, compression and flared type fittings used in jointing copper pipes must be of such a bore as will correctly fit the pipes, to ensure satisfactory jointing.
- 3.2.10 Compression ring or flared cone fittings shall always be used when making mechanical connections - see Clause 2.7 and Appendix A.
- 3.2.11 Note that compression type fittings may **NOT** be used with Class 0 copper piping.

3.3 **Brazing of Copper Piping**

- 3.3.1 If piping is to be brazed self fluxing copper/phosphorous with 2% minimum silver similar to Silbralloy shall be used.

3.4 **Labour Bends**

All labour bends shall be made with an approved bending machine in conjunction with a bending spring to give a uniform and even radius without ripple. Such bends shall be substantially undistorted.

3.5 **Services Chased in to Walls**

- 3.5.1 Water pipes buried in walls and floors shall be wrapped in two layers of stiff brown paper before being built in to aid thermal expansion of the pipes. It is **not** acceptable to use old cement bags for this purpose.

All copper water pipes chased into walls or cast into concrete slabs or columns shall be jointed using **capillary fittings only**.

3.6 **Connections to Wash Hand Basins, Baths, Sinks, etc**

Connection to all fittings (viz. taps, cisterns, machines, etc.) shall be mechanically made and not brazed or hard soldered. In this respect take note of clause 2.2.11 - it will be required that a suitable section of class 1 copper piping be joined to class 0 piping (where this has been used for the reticulation) and that the requisite compression fittings then be fixed to the class 1 copper piping. Jointing compounds (Teflon Pipe Sealer by Loctite or other approved and/or P.T.F.E. tape) shall be lead free and sparingly used.

Small diameter connections off the ring mains may be made using approved saddle connectors in conjunction with "Ball Valves" in accordance with the manufacturer's recommendations.

3.7 **De-Zincification**

All brass fittings and valves shall be certified by the manufacturers to be free from de-zincification and will be subjected to check tests as set out in Appendix A.

3.8 **Pipe Supports and Support Spacing**

All pipe work both vertical and horizontal shall be supported along its length with brackets capable of carrying the combined mass of the pipe and water and shall be spaced at the following maximum centres:

Diameter of	15 - 22	28 - 35	42 - 54	76 -108	Pipe (mm)
c/c Brackets/ hangers/					

holderbats (mm) 1200 2000 2500 3000

Unistrut: Type P1000 - 3300 (hot dip galvanised)
Brackets: P1108 - P1126 (see standard drawing)

All copper pipes shall be electrically insulated from holder batts, etc with P.V.C. tape wound around the piping.

Other support systems shall be subject to approval by the Engineer or his duly appointed representative.

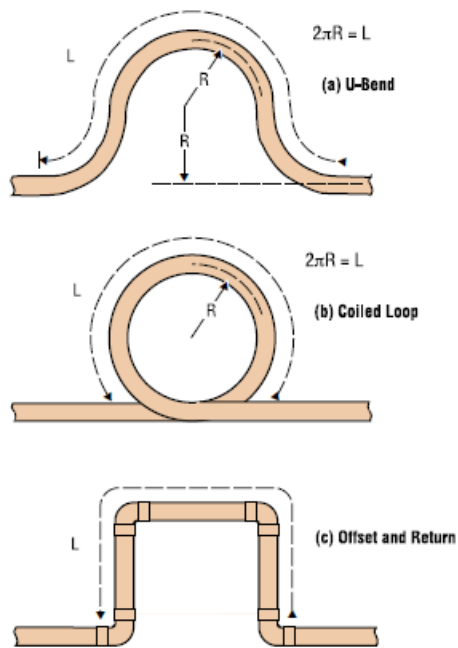
3.9 **Pipe Gradients**

Water pipes shall be laid to a minimum gradient of 1 in 200 with auto air release valves positioned at the highest points and vented to the outside.

3.10 **Allowance for Expansion of Piping**

All straight long runs in copper tubing shall be interrupted every 15 m with an offset or an expansion loop.

Expansion loops shall be provided as per standard practice for copper piping. The loop dimensions shall be as a minimum as follows:



Expected expansion in mm		LOOP LENGTH L AND RADIUS R FOR DIFFERENT PIPE ϕ		
		15mm ϕ	22mm ϕ	25mm ϕ
12	L	1250	1500	1700
	R	200	230	280
25	L	1700	2000	2400
	R	270	320	380
38	L	2200	2500	3000
	R	350	400	500

3.10 Pipe Gradients

Hot water pipes shall be laid to a minimum gradient of 1 in 200 with auto air release valves positioned at the highest points and vented to the outside.

4.0 VALVES AND FITTINGS

4.1 Isolating Valves

All toilets, kitchen areas etc. shall have a main isolating valve surface mounted inside those areas to aid maintenance.

Isolating valves are not allowed in the roof areas except for connections to geysers as shown on the drawings

Isolating valves on the cold water line shall be of the stop cock pattern up to 42 mm diameter and of sluice or gate valve pattern above 42 mm dia.

Where the static pressure is below 200 kPa all isolating valves on the cold water system shall be of the sluice or gate valve pattern.

"Stop-cocks" or "Ball-valves" shall precede all individual fittings i.e. toilet cisterns, hot water geysers, washing machines etc. All "Ball-valves" shall have hard chrome plated balls seated on Teflon seats.

4.2 Non-Return Valves

All non-return valves shall be of the lift type pattern.

4.3 **Automatic Air Release Valves**

Automatic air release valves shall be installed at all high points in the reticulation system where air locks can occur or as detailed by the Engineer.

Air release valves shall be preceded by an isolating valve and vented to the outside.

5.0 **HYDRAULIC TESTING OF WATER PIPES**

All water piping shall be hydraulically tested to a pressure equal to 3 times the working pressure but not less than 1000 kPa held for 60 minutes or as long as it takes to inspect every joint in the section being tested, whichever is the greater. The test shall take place in the presence of the Engineer or his duly appointed representative with the results being recorded for inclusion in the practical completion documentation and certification.

Under no conditions shall "leak cure chemicals" be introduced into the reticulation system.

All leaks shall be made good, so that the quality of the original components is not altered and so that the repairs are to the satisfaction of the Engineer or his duly appointed representative.

The Contractor shall provide all the necessary equipment required to carry out the tests on the pipes. Piping shall be tested in sections as the work progresses and before being covered in trenches or wall or floor chases. The completed pipe line shall also be pressure tested just prior to practical completion of the installation.

Failure to comply with the above will result in the contractor being required to expose the piping in question **at his own expense** in order for the pressure tests to be carried out.

6.0 **PAINTING**

All exposed and visible reticulation lines shall be painted by the Contractor. All piping shall be colour coded in accordance with the requirements of the SABS colour code. Identification of the contents of a pipe line shall be by means of painting a colour code on the pipes as required by the SABS colour code and these bands shall be painted on by the Contractor.

The colour coding shall consist of a primary colour only or of primary and secondary colour and shall generally consist of 300mm long primary colour bands painted around the pipe. Where applicable a central 100mm secondary colour band shall be added. Where short lengths of pipes run through occupied areas and in plant rooms the primary colour shall be applied to their entire length.

Where only bands can be applied they shall be at intervals of not more than 6m apart and adjacent to each side of a bend, valve, etc.

Where pipe runs are hidden, i.e. within ducts, false ceilings, etc colour coding bands shall be provided opposite each access panel or similar.

Arrows indicating the direction of flow of the contents of the pipe shall be applied as per colour coding bands.

7.0 **LABELLING OF VALVES, ETC.**

All main stop valves, control valves, etc. shall be labelled by means of rustless metal tags indicating their purpose and the section they isolate, if isolating valves. The tags shall be securely fixed to the valves, and shall be clearly legible.

Letters on labels shall be punched. No painted labels or plastic embossed labels will be accepted.

Alternatively 12 mm wide stainless steel tape embossed labels may be used fixed with copper wire to the relevant valves.

8.0 **WARRANTY**

The contractor is to guarantee all the systems and workmanship for a period of twelve (12) months against any defects (latent or obvious), non-conformance and/or failure from date of first delivery. The glycol expansion tanks, indirect solar geysers, solar panels and brackets shall carry a guarantee of 5 years. Documentation to support

such a guarantee on the equipment shall be provided for safe keeping by DRPW. Any defects and/or failure that may occur or become evident during the guarantee period shall be rectified within twenty four (24) hours after being notified of the occurrence of the defect. In the event that such failure and/or defect constitute a threat to the health and safety of the user and/or occupants, the contractor shall take immediate steps to rectify the fault. Any faulty item that becomes evident during the guarantee period shall be replaced with new and not repaired. The contractor shall also submit to the Department of Public Works AND school management a full report describing the nature of failure, cause of failure and possible methods to prevent future failure.

In the event that the contractor does not attend to such defects after being notified, the Department of Public Works and/or user reserve the right to effect the rectification of the defect and recover the costs thus incurred from the contractor.

9.0 **MAINTENANCE**

Immediately after each interim or final practical completion inspection all defects noted shall be rectified. Latent defects appearing within three (3) months or as specified, shall be rectified by the Contractor at no charge to the client.

PART B1-3 : BILLS OF QUANTITIES - DOMESTIC WATER INSTALLATION

**RNA CONSULTING ENGINEERS
MDANTSANE MALL
DOMESTIC WATER INSTALLATION
PROVISIONAL BILL OF QUANTITIES**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<u>BILL NO. 1 : PRELIMINARY AND GENERAL</u>					
1.1	Compliance with General Conditions of Contract : Insurances, Sureties, etc as outlined in the Principal Contractor's Preliminaries.				
	Fixed	No.	1		
	Value Related	No.	1		
	Time Related	No.	1		
1,2	Establish on Site and provision of buildings and storage facilities including de-establishment of site, cleaning and tidying up after completion of contract				
	Fixed	No.	1		
	Value Related	No.	1		
	Time Related	No.	1		
1,3	Tools and equipment, Communication, transport.				
	Fixed	No.	1		
	Value Related	No.	1		
	Time Related	No.	1		
1.4	Contract Management, Company overheads and supervision of the Works including attendance of site meetings (2 per month)				
	-				
	Fixed	No.	1		
	Value Related	No.	1		
	Time Related	No.	1		
1,5	Provision of all drawings and manuals as specified including As-Installed drawings	No.	1		
1,6	Liaison with Local Supply Authority, compliance with OSH Act, Local By-laws and any other statutory regulations	No.	1		
1,7	Any additional item not specifically mentioned or included in the Bills of Quantities which the Tenderer may wish to detail. (Specify)	No.	1		
Total Carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
2,0	<u>BILL NO. 2 : COLD WATER RETICULATION PIPING</u>				
	<u>Copper Piping</u>				
	Copper piping above ground to SANS 460 class 2 installed in accordance with the specification, drawings and manufacturer's recommendations. Pipe hanger & support bracket spacing to be as per the table on the drawings. Piping - chased into brickwork must be wrapped in two layers of kraft paper as specified.				
2,1	76 mm dia	m	0		
2,2	54 mm dia	m	0		
2,3	42 mm dia	m	20		
2,4	35 mm dia	m	90		
2,5	28 mm dia	m	22		
2,6	22 mm dia	m	54		
2,7	15 mm dia	m	310		
	<u>Bends</u>				
	Capillary soldered bends: (Maksal or equal and approved)				
2,8	76 mm dia	No.	0		
2,9	54 mm dia	No.	0		
2,10	42 mm dia	No.	10		
2,11	35 mm dia	No.	50		
2,12	28 mm dia	No.	20		
2,13	22 mm dia	No.	20		
2,14	15 mm dia	No.	186		
	<u>Tees</u>				
	Capillary soldered tees: (Maksal or equal and approved)				
2,15	76 mm dia	No.	0		
2,16	54 mm dia	No.	0		
2,17	42 mm dia	No.	2		
2,18	35 mm dia	No.	8		
2,19	28 mm dia	No.	8		
2,20	22 mm dia	No.	62		
2,21	15 mm dia	No.	20		
	<u>Isolating valves</u>				
	Ball valves, full bore with lever, hard chrome plated balls and teflon seats				
2,22	54 mm dia	No.	0		
2,23	42 mm dia	No.	2		
2,24	35 mm dia	No.	10		
2,25	28 mm dia	No.	2		
2,26	22 mm dia	No.	2		
2,27	15 mm dia	No.	62		
Total Carried forward to Next Page					

Total Carried forward From Previous Page				
<u>Pipe hangers and brackets</u>				
2,28	76 mm dia	No.	0	
2,29	54 mm dia	No.	0	
2,30	42 mm dia	No.	8	
2,31	35 mm dia	No.	36	
2,32	28 mm dia	No.	8,8	
2,33	22 mm dia	No.	21,6	
2,34	15 mm dia	No.	124	
<u>Non Return Valves</u>				
2,35	42 mm dia	No.	1	
2,36	22 mm dia	No.	0	
<u>Vacuum Breakers</u>				
2,37	35 mm dia	No.	8	
2,38	28 mm dia	No.	2	
2,39	22 mm dia	No.	2	
<u>Insulation</u>				
All exposed hot water piping to be insulated with R value or not less than 1 m ² .KW				
2,40	76 mm dia	m	0	
2,41	54 mm dia	m	0	
2,42	42 mm dia	m	0	
2,43	35 mm dia	m	0	
2,44	28 mm dia	m	0	
2,45	22 mm dia	m	0	
2,46	15 mm dia	m	0	
<u>Reducers</u>				
2,47	42 to 35 mm dia	No.	4	
2,48	35 to 28 mm dia	No.	8	
2,49	28 to 22 mm dia	No.	8	
2,50	22 to 15 mm dia	No.	62	
<u>Braided Flexible Hoses</u>				
2,51	15 mm	m	62	
<u>Sundry Items</u>				
2,52	Solder, flux, consumables required to complete the installation	Lot	2	
2,53	Connection to sanitary ware fittings	No.	62	
2,54	Flushing & cleaning pipework system	m	496	
2,55	Pressure testing of parts of the installation	No.	8	
2,56	Pressure testing complete installation	No.	4	
Total Carried forward to Next Page				

Total Carried forward From Previous Page				
2,57	Painting of piping	m	496	
2,58	Labelling of valves & piping	No.	99	
	<u>Manhole</u>			
2,60	Supply, install, test and commission domestic water manhole 400 x 400 mm with hinged cover.	No.	1	
2,61	Supply, install, test and commission domestic water manhole 1000 x 1000 mm with hinged cover.	No.	1	
	<u>Connection to Civil Mains</u>			
2,62	Trenching and laying of pipe from installation to civil main, incl backfilling.	m	20	
2,63	Connection of domestic water main to civil main	No.	2	
Total Carried forward to Summary Page				

PRICE SUMMARY

BILL NO.	DESCRIPTION	AMOUNT
1	BILL NO. 1 : PRELIMINARY AND GENERAL	
2	BILL NO. 2 : COLD WATER RETICULATION PIPING	
TOTAL CARRIED TO FORM OF TENDER (EX VAT)		

PART B1-4: SCHEDULE OF MATERIALS OFFERED

DOMESTIC WATER EQUIPMENT INSTALLATION

SCHEDULE OF MATERIALS OFFERED

The Tenderer must complete the following schedules and submit them with the priced Bill of Quantities.

The schedules will be scrutinised by the Engineer and should any material offered not comply with the requirements contained in the specification, the Contractor will be required to supply material in accordance with the contract at no additional cost.

NB : **Only one manufacturer's name to be inserted for each item.**

Item	Material	Make or trade name	Country of Origin
1.	Copper Piping		
2.	Isolating Valves		
3.	Strainers		
4.	Non-Return Valves		
5.	Safety Valves		
6.	Vacuum Breakers		
7.	Balancing Valves		
8.	Pressure Reducing Valves		
9.	Hangars		
10.			
11.			
12.			
13.			
14.			
15.			

NOTE : Tenderers are to note that under no circumstances may materials be installed other than offered in the above materials schedule, which has been approved and accepted by the Contractor.

Should the successful tenderer wish to supply materials other than those originally offered, prior written approval must be obtained from the Contractor before any orders are placed.



**ECDC PROPERTIES:
REPAIRS AND REFURBISHMENTS OF
MDANTSANE MALL**

**PART B2-1: EARLY WARNING FIRE DETECTION
EQUIPMENT INSTALLATION**

Consisting of:

- Section 1: Scope of Works**
- Section 2: Standard Specifications**
- Section 3: Detailed Specifications**
- Section 4: Bills of Quantities**
- Section 5: Materials & Equipment Offered**
- Section 6: Drawings**

DOCUMENTS COMPILED BY:

RNA Consulting Engineers
11 Bonza Bay Road, Beacon Bay
East London, 5201

Contact Person: Mr T Warne
Tel: (043) 742 0041
Fax: (043) 742 3883

PART B2-1: EARLY WARNING FIRE DETECTION - 1 SCOPE OF WORKS

EARLY WARNING SMOKE DETECTION & SUPPRESSION EQUIPMENT INSTALLATIONS

1. GENERAL

- 1.1 The Standard for Uniformity in Construction Procurement published in terms of the Construction Industry Development Board (CIDB) Act, 2000 (Act No. 38 of 2000), the Standardized Construction Procurement Documents for Engineering and Construction Works as issued by the CIDB and any other relevant documentation pertaining thereto must be studied and all principles in this regard must be applied to all procurement documentation, practices and procedures.

2. THE CONTRACT

2.1 EARLY WARNING SMOKE DETECTION & SUPPRESSION INSTALLATIONS

The main contract is for the refurbishment of the Mdantsane Highway Mall in Mdantsane, East London, Eastern Cape. The mall shall remain in operation whilst construction takes place. The project will therefore have to be sequenced & sectional completion will take place.
As per main contract, the Work Sequence shall be:

Section No.1 - North/South Wing (First Floor): Practical Completion – 6 (six) calendar months from possession of site (excluding annual builders' holiday)

Section No.2 - East/West Wing (First Floor): Practical Completion – 12 (twelve) calendar months from possession of site (excluding annual builders' holiday)

Section No.3 - North/South Wing (Ground Floor): Practical Completion – 18 (eighteen) calendar months from possession of site (excluding annual builders' holiday)

Section No.4 - East/West Wing (Ground Floor):
Practical Completion – 24 (twenty-four) calendar months from possession of site (excluding annual builders' holiday)

Section No.5 - Balance of Works (Demolition of hawker stalls/provision of new and replacement of underground services):

Practical Completion – 24 (twenty-four) calendar months from possession of site (excluding annual builders' holiday)

The work to be carried out and commissioned by a SAQCC Fire approved installer:

- a. Installation of new early warning fire detection equipment, as per SANS 10400 Section T; SANS 10139,
- b. Testing and Commissioning, as per SANS 10400 Section T; SANS 10139,
- c. Specialist building PA evacuation system,
- d. Manuals, Drawings, OEM Literature,

2.2 Existing

All installations new. Building Existing.

2.3 Order of The Works

As per the building contractors' program of works.

PART B2-2: EARLY WARNING FIRE DETECTION - STANDARD SPECIFICATION

AUTOMATIC FIRE DETECTION INSTALLATIONS

1.0 INTRODUCTION AND GENERAL

The system shall offer the best possible compromise between the initial expenditure and the long term interest and redemption charges and running / operating costs.

All workmanship and materials used in the execution of the works shall conform with modern practice and the entire installation shall comply fully with all relevant requirements of governmental and the Local Authority whose jurisdiction embraces the location of the site.

2.0 REFERENCES

The work shall be carried out strictly in accordance with:

- a. The Machinery and Occupational Safety Act of 1984.
- b. All relevant Regulations and Bylaws of the Municipal Council and Fire Department concerned.
- c. The National Fire Protection Association (NFPA) No 12.
- d. SANS 0139-1981 -Code of Practice for The Prevention, Automatic Detection and Extinguishing of Fire in Buildings.
- e. BS 5839 and European Standard EN 54, Parts' 2 and 4.

Where no Building, Municipal, Health or Fire Department Act, Regulation, Bylaw or other requirement exist, nor any SANS standard or detailed requirement by the Engineers then the Contractor's terms of reference shall always be the current editions of NFPA handbook.

3.0 INSTALLATION GENERAL PRACTICES

- a. All electrical equipment shall comply with the relevant SANS or BSS where applicable, and to SANS 10142, Code of Practice for the Wiring of Premises.
- b. Material shall be subject to the approval of the Engineer, to whom samples shall be submitted upon request.
- c. Cable sizes for each circuit shall be selected to ensure that the current carrying capacity will be adequate and that the voltage drop at the equipment served will comply with the Code of Practice for the Wiring of Premises.
- d. Wiring shall be carried out in PVC insulated cables enclosed in Class B conduit or approved trunking. Alternatively, M.I.M.S., fire resistant cable, or PVCSWAPVC cable may be used where convenient, and where permitted under the section Wiring between Detection Zones hereunder.
- e. All cables, cable trays, conduits (other than those encased in concrete or chased into walls), and cable trays shall run parallel with, or at right angles to the structure or walls. Their routes shall be co-ordinated with piping and duct systems. They may run on the surface of walls and ceilings in all plantrooms, in ceiling voids and in underfloor voids where permitted by the clause Wiring between Detection Zones. Elsewhere they shall be concealed in an approved manner.
- f. No cable or electrical shall be routed within 75 mm of a hot water pipe.

4.0 WIRING BETWEEN DETECTION ZONES

The control wires or power cables between the control panel, the battery pack, a detection zone or where the wiring of a detector circuit passes through any other detector zone, shall be one of the following:-

- a. Mineral insulated metal sheathed cable which shall complying with all SANS and BS EN codes. The Contractor may be required to demonstrate to the Engineer that he is proficient in making off these types of cables.
- b. PVC insulated annealed copper wire complying with SANS 150, housed within conduits which are buried into cement or brickwork. Surface conduits between zones will not be permitted.
- c. Fire resistant cables in compliance with SANS 150 and SANS Method 494 Resistance of cables to Fire Propagation.
- d. PVCSWAPVC cables and terminations complying with SANS 150.
- e. Aluminium cables will not be permitted.

5.0 CABLES AND WIRING

5.1 MIMS Cables

- a. MIMS cables shall be mineral insulated copper sheathed and copper core cables equal to pyrotenax of not less than 600 volt grade. Aluminium cables will not be permitted.
- b. Minimum sizes for MIMS cables shall be 1,5 mm² for power and 1,00 mm² for control wiring.
- c. Tails shall be sleeved with silicone rubber insulation in appropriate colour.
- d. All cable fixings shall tie by means of factory manufactured brass or copper saddles or clips, secured by brass or cadmium plated screws.
- e. Clips or saddles shall be provided within 150 mm of fittings, accessories or bends, and not more than 600 mm apart elsewhere. No more than 4 cables shall be secured by a single saddle.
- f. A straight length of cable shall be left adjacent to termination glands to enable the glands to be readily withdrawn. The cables shall be made-off with approved standard pot-type seals and accessories as applicable.
- g. The minimum bending radius of cables shall be 6 times the cable diameter.
- h. Where a number of cables run parallel they shall be dressed into a neat symmetrical arrangement without sagging or distortion. Care shall be taken to avoid flattening or indentation of cable sheaths.
- i. Where cables come into contact with dissimilar metals, which may give rise to corrosion, the Contractor shall adequately separate the surfaces with PVC tape or by other approved means.
- j. Where cables pass through holes in metal-work, the holes shall be neatly bushed to prevent damage to the sheath.
- k. Cables shall not be buried directly in plaster, concrete or similar materials.
- l. Where installation in these materials is necessary, the cables shall be enclosed in a suitable duct, pipe or conduit, which is provided with bushed ends to prevent damage to the cable sheath.
- m. Cables shall be mechanically protected where they rise from floors in exposed positions and where they may be exposed to accidental damage.

5.2 PVC Insulated Wire

- a. PVC insulated copper wire conductors shall be of South African origin, manufactured to comply with SANS 150.
- b. Where PVC insulated wires are used, the installation shall comprise PVC insulated copper conductors drawn into duct or conduit. Where such wires are drawn into conduits it shall be carried out in accordance with standard electrical practice, and shall be subject to the approval of the Engineer.
- c. No joints in the PVC wires between terminal points will be permitted under any circumstances.

5.3 Fire Resistant Cables

- a. The fire resistant cable shall be constructed of silicon rubber insulated copper conductors housed in a protective PVC sheath bonded to coated aluminium foil. This shall be as per PH120 Fire Resistant Cable or similar approved.
- b. These cables shall be installed in the manner prescribed for MIMS cables, with attention being paid to any special requirements regarding terminations, radius of bends, etc., as prescribed by the manufacture.
- c. No joints in this cable will be permitted.

5.4 Armoured Cables

- a. PVCSWAPVC cables and cable terminations shall comply with SANS 150 and shall be of 660 volt grade.
- b. These armoured cables where permitted, may:
 - Lay flat on cable trays, fixed with approved ties.
 - Where the cable tray is vertical, the armoured cables are to be held in position by approved straps.
 - Fixing with wire is not permitted.
 - Be fixed to the masonry with saddles.
 - Be fixed to unistrut with the approved fixing saddles.
- c. Where the cable is in a ventilation air path (other than the underfloor void of a computer room) the outer PVC sheath is to be removed after fixing if so demanded by the local authorities.
- d. No joints in PVC cables will be permitted under any circumstances.
- e. The PVC cable glands shall consist of the brass cone type with waterproof seal, equal to "DESCO", and shall be suitable for PVCSWAPVC general purpose 660 volt grade cable.

6.0 CONDUITS

- a. Conduit shall be heavy gauge welded screwed steel conduit to SANS 162 and powder coated yellow.
- b. Conduit shall be clean, true and free from internal obstructions.
- c. Burrs shall be removed with taper reamer. All free ends shall be fitted with approved bushes.
- d. No conduit shall be less than 25 mm nominal diameter.
- e. No surface conduits, PVC conduit or box trunking will be permitted between two separate detection zones or between detection and non-detection zone. They can however be used within a single detection or gas protected zone to interconnect the detectors and other equipment housed within that zone.
- f. The entire conduit system shall be watertight, electrically and mechanically continuous.
- g. During installation, the ends of conduit shall be temporarily plugged to prevent the ingress of dirt and moisture.
- h. Conduits shall be securely saddled along the length of the run and saddles shall be provided within 500 mm of all fittings or terminations.
- i. Sets and bends shall be made cold with approved bending machines in such a manner that there is no damage to or distortion of the conduit. In locations where it is not practicable to use sets for changes in direction, such changes shall be made by the use of approved screwed fittings.
- j. All sets and bends shall be such that they permit cables to be drawn easily into the conduits after installation.
- k. All junction boxes provided to facilitate the drawing-in of cables shall be located in positions which will be readily accessible in the completed project.
- l. Inspection fittings shall not be used as "Loop-in" points.
- m. The whole conduit installation shall be a "Loop-in" installation.
- n. Conduits shall be installed in such a manner that they are free from mechanical stress.
- o. No threads shall be visible after erection, other than at running joints.
- p. Running threads shall be thoroughly painted.
- q. Final connections to plant (other than in cases where the items can be mounted directly to termination boxes) shall be run to a junction box adjacent to the item of equipment.
- r. Flexible conduit connections are to be installed between the round terminal box adjacent to a ceiling void detector and its ceiling mounted remote indication lamp. The flexible conduit plus the PVC wires contained therein shall be left sufficiently long to allow for the indication of the lamp in the centre of a ceiling tile (which may not fall directly beneath the terminal box). There shall be no stress imposed on the flexible conduit.
- s. Before the drawing in of any conductors the conduit installation shall be complete with lock-nuts, bushes and all other accessories in accordance with standard electrical practice. Conduits shall be cleaned out and swabbed dry internally.

7.0 CABLE TRAYS

- a. Cable trays shall be of Pyrotenax, unistrut or other approved manufacture.
- b. The size and gauge of all trays shall be chosen to suit each particular application. They shall be adequately stiffened and braced both transversely and longitudinally, ensuring a true finished run.
- c. All screws, washers, nuts, etc. used in the installation of the trays shall be cadmium plated.
- d. All trays, fittings, brackets, etc. shall be galvanised or electro-tinned and where exposed shall be painted after erection in accordance with the details as specified herein.
- e. All trays shall be supported by brackets at intervals sufficiently small to produce a robust installation and to ensure that there is no perceptible deflection of the finished tray and its associated supports.
- f. All bends, tee-offs, changes in section and changes in direction shall be made with factory finished fittings.
- g. All joints shall be made with approved jointing plates. Lapped joints will not be permitted.

8.0 TRUNKING

- a. Trunking shall be manufactured from galvanised sheet metal of a thickness not less than 1 mm for runs, and 1,6 mm for bends, off-sets, reducing pieces, etc.
- b. Trunking shall comply with BS 4678.
- c. Covers shall be of the same material as the trunking and shall not exceed 1,2m in length.
- d. All screws, nuts, washers, etc. shall be cadmium plated.
- e. The trunking and covers shall be braced as necessary to ensure rigidity, and the open side of the trunking shall be provided with right angled returns to receive the covers.
- f. The covers shall be securely fixed to the trunking by means of approved clips or fasteners.
- g. The trunking shall be supported to brackets at intervals sufficiently small to produce a robust rigid installation and to ensure that there is no perceptible deflection of the trunking between supports.
- h. All bends, tee-offs, changes in section and changes in direction shall be made in factory-manufactured fittings.
- i. All joints shall be butt joints, made with internal fishplates.

- j. Lapped joints will not be permitted.
- k. Screws shall be cut off flush with the top of the nuts after erection, and shall be filed smooth and painted.
- l. The trunking is to be cut square where cutting is necessary for jointing etc. Cut edges shall be smoothed off with a file.
- m. Plastic trunking may be permitted at the Engineers discretion and subject to his approval of the specific material offered.

9.0 CONTROL PANELS

9.1 General

- a. The control panel shall be wired in the factory and not on site. The only connections to be made in the panel on site shall be the interconnection with the field wiring.
- b. All outgoing circuits shall terminate on numbered terminals with approved lugs where the numbers correspond to those reflected on the as-built drawings.
- c. Wires within the cubicle shall bear an identification number at both ends. Numbering shall be by approved wiring ferrules securely attached so that they will not slip off when the wire is removed from its terminal.
- d. The numbering shall correspond to the drawings. Handwritten numbers or adhesive tape bearing numbers will not be acceptable.
- e. When a device is removed from the loop, it must be reflected on the panel as a faulty device and it must be clear once the device has been re-installed.

10.0 ZONE PANEL

10.1 General

- a. Allow to supply and install a zone layout with a building plan and line unit numbers located adjacent each fire control panel.

11.0 NETWORKING

11.1 General

- a. The networking capabilities of the system shall be such that all control panels may be connected via optical medium. The system shall ensure rugged and reliable "peer to peer" operation. It shall be possible to remove and add to the network to allow for easy expansion of the system.
- b. The network shall use an industry standard protocol such as ARCNET or ETHERNET to ensure that no data is corrupted.
- c. The network is to feature:
 - Inter-panel Input/Output programming.
 - Remote uploading/downloading of system configurations to individual panels.
 - Remote maintenance.
 - RS232 nodes for connection to graphics packages, building management systems and modems.
 - Global repeater panel.
 - LCD repeaters.

12.0 LINE ISOLATORS

Loop isolators are to be connected in to the loop circuit and monitor for short circuit. In the event of a short circuit occurring the loop isolators on each side of the short circuit are to disconnect and isolate that portion of the loop from the system, enabling the remainder of the system to function normally.

A light emitting diode (LED) must illuminate when a loop/line isolator is in an open condition.

PART B2-3: EARLY WARNING FIRE DETECTION - DETAILED SPECIFICATION

AUTOMATIC FIRE DETECTION INSTALLATIONS

1.0 INTRODUCTION & GENERAL

This Detail Specification complements & qualifies the foregoing standard specifications of material & workmanship. The Standard Specification should be regarded as a basis and guideline, with this Detailed Specification taking preference where any ambiguity is concerned.

In the event of any further technical ambiguity between sections of this enquiry, then the sections will be considered in the following order of priority:

- a) Schedule of quantities
- b) Project specification
- c) Drawings (loose and bound-in)
- d) Standard specification

2.0 SITE CONDITIONS

Location: Mdantsane, East London, Eastern Cape

3.0 SCOPE OF WORK

The standard specification shall apply unless otherwise indicated in this section.

The drawings issued herewith and listed in the relevant section are to be read in conjunction with the specification and all items mentioned, together with all ancillary equipment necessary for the correct installation, operation and full compliance with the Standards and codes must be provided, notwithstanding the fact that they may not have been included in detail in these documents.

The bidder shall, at the time of bidding, draw the Engineer's attention to any omissions or discrepancy between the specification and the drawings and request from him clarification of details or responsibilities.

If a limited allowance or special conditions are made for the Bid Sum for the supply or erection of any item of the installation, the limit or special conditions shall be defined at the time of bidding.

It is the sole responsibility of the bidder to ensure that all quotations obtained from manufactures and suppliers are complete in their entirety and must include all equipment and accessories necessary for compliance with current practice and the efficient and proper functioning of the installation.

If any such items of equipment, brackets and accessories, etc., have been omitted from a supplier's quotation, or incidental work is necessary, the bidder must include for all such items and work in the bid.

The whole installation shall be in accordance with the latest edition of the Occupational Health and Safety Act: No. 85 of 1993. All regulations framed therein, shall be carried out to the satisfaction of the Engineer.

All equipment offered by the bidder shall be to the approval of the duly appointed Engineer, prior to installation. This Standard Specification and the Detailed Specification with drawings shall be carefully adhered to by the bidder. Equipment installed without the approval of the Engineer will have to be removed at the Contractor's expense and be replaced with officially approved listed items.

The successful bidder will be required to prove to the Engineer that he has qualified personnel on his staff establishment as well as recognised test equipment for the successful completion of a safe working installation.

The contractor shall employ only skilled artisans and technicians approved by the Engineer who are competent in this type of work. The work shall be carried out in accordance with the standards laid down by the Engineer.

The contracting firm shall be recognised contractor specialising in this field and approved by the Engineer.

The work performed shall comprise the supply, delivery, off-loading, interim storage, installation, testing, commissioning and leaving in good working order of the complete fire detection and evacuation system installation inclusive of all guarantees as specified herein and the supply of 'AS IS' installation record drawings, Maintenance and Operating Manuals for:

- Supply and installation of a Category L2 automatic fire detection and alarm evacuation system equipment.

- Supply and installation of PVC conduit and galvanised steel trunking.
- Interlock and interphase of early warning fire detection system with forced ventilation contactors,
- Interlock and interphase of early warning fire detection system with Natural / Smoke ventilation controller,
- Specialist building PA evacuation system,
- The liaison with:
 - Building/Principal Contractor, and their Domestic Sub-contractors,
 - Electrical Sub-contractor,
 - Air Conditioning Sub-contractor,
- Testing and commissioning (SAQCC Commissioner) of all equipment in the fire protected areas with and in conjunction with the Air Conditioning Sub-contractor.

This Sub Contract also includes all electrical works for the installation but excludes the power supply to the Main Panel which will be provided by others.

Notwithstanding any omission in this specification the installations shall be complete in all respects. This condition shall be recognised in the preparation of all working drawings submitted for approval. Further, despite any approval of working drawings given by and on behalf of the Main Contractor the responsibility for correct functioning of the plant during tests, inspection and the maintenance period shall rest entirely with the successful bidder. The installation shall be strictly in accordance with the approved drawings or such further drawings, modifications, or instructions as may be given by the Engineer concerned, or that are found to be necessary, and such modifications or instructions shall be deemed to be within the specification for the purpose of the bid, and shall not vitiate the contract.

Payment for such modifications will only be made on certification by the Engineer to the effect that such modifications have involved additional expense to the Sub-Contractor.

The following sections of Work are excluded:

- Builder's work e.g. cut-outs in walls to Tenderer's specifications, including chasing and making good of walls.
- The cutting of holes in suspended ceilings and ceiling tiles for the fixing of detector heads, sirens and other fire devices.
- Tiling, painting or decorating after installation
- Provision of suitable 220 V / 1 phase power supply for Control Panel.

3.0 SITE CONDITIONS

The site shall be serviced as far as electricity services are concerned, although Tenderers must make provision for an alternative electricity supply during installation.

The equipment specified herein shall be designed to operate at the environmental parameters as follows:

Location: Mdantsane, East London, Eastern Cape

4.0 PROGRAMME

The Sub Contractor shall complete the installation within the time stipulated. The Sub Contractor will be required to report to the Principal Contractor, generally on a weekly basis (or more often if required by the Principal Contractor), progress of work and any difficulties arising, to enable the Principal Contractor to update the programme.

The sequence in which the work is to be carried out shall be decided upon in consultation with the Principal Contractor. The Sub Contractor shall thereafter submit an adequately detailed Sub Contractor's installation programme for approval within two (2) weeks of the Sub Contract being awarded unless otherwise indicated herein after.

This programme must be periodically updated as the work progresses and as may be necessary to meet changing site conditions and alterations to the overall installation programme.

Programmes shall take the form of bar charts, network diagrams and schedules as may be required by the Main Contractor or as applicable, and shall reflect quantities of work as required for supervision purposes and measurements.

As a minimum the programme shall reflect:

- sequence and timing of installation activities.

- sequence and latest event times of major equipment ordering, manufacture and delivery dates.
- sequence and dates for the submission of drawings and samples for approval.
- sequence and dates for factory and site inspections and tests.
- target and achieved work quantities on a weekly, fortnightly and monthly basis.

In preference all work is to be undertaken by staff in the full time employ of the bidder.

All work which is to be undertaken by "Domestic Sub Contractors" of the Sub Contractor will be clearly identified in the bid submission and the Sub Contractors to be used subject to prior approval of the Client and/or Engineer and/or Principal Contractor; failure to comply with this requirement may result in the "Domestic Sub Contractors" being removed from site.

All costs in replacing the undesirable "Domestic Sub Contractor" or any delays incurred as a consequence of this will be entirely for the Sub Contractor's account.

5.0 PROJECT TECHNICAL SPECIFICATION

The bidder shall allow for programming the work in such a manner as to not disrupt the Main Contractor's programme. Sequence of work to suit the Sub Contractor's requirements will not be guaranteed nor accepted.

Claims from Sub Contractors arising out of broken work sequences or agreed programmes changed due to contingent requirements, will not be considered unless full motivations for the extra costs are submitted; the motivation for extra costs must justify costs in terms of the accepted programme and any unforeseen and justifiable additional staffing levels required to meet targets revised with insufficient notice. Reallocation of staff and/or acceleration of work will not be reason enough to claim for extra costs unless the Sub Contractor can prove that he has indeed had to pay for staff's idle time which was not or could not be envisaged at the time of bidding and/or drawing up the installation programme and sequence. When claiming for extra cost all out of town cost will be disallowed as it is assumed that the Sub Contractor has fully staffed premises in the vicinity of the site.

The Subcontractor must also assume that work may be required to continue uninterrupted outside of normal working hours and/or for an extended and/or unbroken period of time.

5.1 Automatic Fire Detection System

The building is to be constructed, the system will have a new analogue addressable fire detection system with corresponding line devices as specified in the bill of quantities and drawings provided.

All fire signals received by a sensor are to be confirmed by a sensor in a zone or any break glass unit; all confirmed signals will be automatically relayed to the Main Fire Alarm Panel unit. If not cancelled (reset) within a specified time (less than four minutes) all signals which are not confirmed will be automatically relayed via the GSM unit to the pre-programmed contact numbers and/or Fire Brigade. The person attending to the alarm can call for more time by pressing the "More Time" push button in which instance the clock will be reset to zero and a new cycle (programmable between 0 and 999 seconds) will be initiate. During such cycle the attendant must be capable of investigating the source of the alarm and cancel it (by pushing the reset button) at any panel in the event of a false alarm or confirm it (by pushing the accept button) at any panel or by breaking the glass of any break glass unit.

It must be noted that operation of the "More Time" push button shall be overridden by the triggering of a second sensor/device in the same zone or via a break glass unit.

The fire detection and alarm evacuation installation shall operate as follows:

In the event of a confirmed fire condition the fire alarm system is to automatically:

- Sound the evacuation sounders located in the building (a pulsing tone)
- Isolate the power supplies to fresh air fans, extraction fans, kitchen canopy systems fans in the specific zones and activate the appurtenant fire dampers

These functions will be grouped differently depending on what zone the signal originates from. The device address and location, as defined on the drawings, shall be indicated on the L.C.D. display of the fire control panel.

Information relating to the alarm (or fault condition) shall pass to the C.P.U. and in turn be displayed on the display terminal.

The generation of a fire alarm shall immediately initiate the following, within the affected fire zone only.

- In public, areas where sounders have been located at ceiling level, these shall operate in the affected zone only. However, facility shall be incorporated at the Main Fire control Panel to manually override the immediate activation of such devices if so required, and then to manually activate such sounders by zone. (a pulsing tone)
- All interface signals to other services within the affected zone, shall be initiated.
- Isolate the power supplies to ventilation fans in the specific zones and activate the appurtenant fire dampers
- Failure of a single fire control panel shall not affect the proper functioning of other fire control panels within the network, and the devices and equipment linked to them.
- The panel shall also incorporate a "Commission" key switch and a "Day/Night" key switch.

6.0 EQUIPMENT SPECIFICATIONS

6.1 General

The following description details the design parameters for the operation, control, dimensions, finishes, etc. for the Fire Detection unit installation. These parameters are the minimum requirements, and the sub-contractor may offer equipment that exceeds these specifications. All relevant technical information to be submitted with tender.

6.2 Optical Smoke Detectors and Bases

The location of optical smoke detectors are indicated on the drawing provided with this document and the Tenderer shall supply and install units that shall meet or better the following specifications:

- a. The detectors shall operate on a 24 V d.c. power supply, and be suitable for connection in the circuit to the control panel using two wire system.
- b. The detector base section shall be suitable for easy removal and replacement of the detectors, and shall allow for the interchanging of the different types of detectors without any modifications being necessary.
- c. The base to be employed shall depend on the special mounting conditions required, and shall be suitable for one or more of the following:
 - surface / wall mounting
 - mounting in damp / plant rooms
 - suspended mounting
 - underside of ceiling
 - explosion proof mounting, with intrinsic safety
- d. A visual alarm detection indication lamp shall be incorporated on each detector which shall illuminate or flash on the detector activated. If not visible over 360° the detector shall be orientated so that the indication light faces towards the entrance to the room, or to where it can easily be visible on entry to the space in an emergency.
- e. Unit is to feature:
 - Measure of smoke density from 0.5 to 10 particle range.
 - Active output proportional to the amount of smoke present in the chamber.
 - Output value of the sensor to provide data regarding contamination levels in sensor and electronic circuit.
 - Comply with Standard EN54 Part 7.

6.3 Manual Call Points Units

Breakglass / Manual call point units are to be provided for each zone as indicated on the drawings. These are to be suitable for manual initiation of an alarm for their respective zones.

The Tenderer shall provide and install equipment that meet or better the following specifications:

Each of the different types of mechanical / electrical breakglass units shall be:

- have a well illustrated front
- where specifically called for, a stainless steel or anodised aluminium lift flap, suitably illustrated on its face shall be provided to cover the unit to offer additional protection against accidental breakage.

The types of acceptable mechanical call point units are:

- a. Press-to-Activate

The electrical circuit will be activated on the button (housed behind the breakglass front) being pressed. This unit should generally be employed in preference to the break-to-activate type.

The unit shall be fire engine red with the front of the unit clearly displaying the words "FIRE / BRAND"

Recessed / chased-in round dia. 63 galvanised boxes shall be provided and installed by the electrical sub-contractor for mounting of the breakglass units, unless measured elsewhere.

6.4 Ceiling Mounted Sirens and Bases

The Tenderer shall provide and install sirens and bases that are under ceiling mounted as indicated on the drawing provided with this document. The units shall meet or better the following specification:

- a. Operate on 24 V d.c.
- b. Feature a shallow base as they are under ceiling mounted.
- c. Be fire engine red in colour.
- d. Be a compact high volume warning sounder and emit a sound level greater than 85 Db at 3 m.

Round dia. 63 galvanised boxes shall be provided and installed by the electrical sub-contractor, for the sirens unless measured elsewhere.

6.5 Line Devices

All line devices shall comply with the standard specification. The type and location of line devices are shown on the drawings.

Line Relays:

The Sub Contractor will provide the line relay and connect to a 24V contactor coil. The contactor and wiring to its contacts to be carried out under this contract but as part of the Air Conditioning installation.

Interface Units:

The interface units used shall be with Normally Open contacts either of the 'fire' or 'non-fire' types; an end of line resistors shall be provided with each interface unit.

The Sub Contractor will be expected to provide the interface units and connect to voltage free contacts which are to be monitored as follows:

- Contact open Normal
- Contact closed Alarm
- Wiring open Fault
- Wiring shorted Fault

6.6 Flashing Strobe / Beacon

Flashing Strobes / Beacons must use high efficiency LED's as their light source. In areas with high back ground noise, visual indicators accompany sounders to ensure that the alarm is recognised. Depending on the colour and flash rate, beacons can provide additional information about the nature of the alarm.

Features:

- IP Rating: IP65 (Standard)
- Operating Temp: -20°C to +70°C
- Construction: UV Stabilised Polycarbonate Weight: 0.14kg

Units are to be programmed to operate in the zone were a line device has activated only.

6.7 Sounder Drivers

A dual monitored line output unit (Sounder drivers) shall monitor and switch two separate 24V dc lines to sounder devices. The Sub Contractor shall provide all necessary components and interface units for the proper operation of the sounder devices by the sounder drivers.

The Sounders shall operate independently in zones or generally all together.

7.0 OPERATING AND MAINTENANCE INSTRUCTIONS

Three sets of instruction manuals shall be provided. Each manual shall comprise of the following sections, bound in a vinyl plastic covered folder with the name of the project typewritten on a card inserted into a clear plastic covered cardholder on the front cover and spine and shall be handed to the Main Contractor on completion of the installation:

- Table of Contents
- Functional Description of Plant (as installed)
- Operation of Plant (as installed – step by step instructions).
- Performance Testing Procedures including Test Report
- Maintenance Instructions (in schedule form setting out each item of plant, the description and frequency of maintenance operations required). Instructions on testing fire detection system must also be provided.
- Spare Parts (list of spare parts that shall be required, with detailed description of each part, make, model or part number and supplier's name and address).
- Descriptive Literature (for all items of plant and equipment).
- Record Drawings (of plant as installed to include plant layout drawings showing component location, control and wiring diagrams and schematic piping diagrams).

8.0 GUARANTEE

The entire fire detection and alarm evacuation system installation shall be fully guaranteed for 12 (twelve) calendar months from date of acceptance by the Engineer. During the guarantee period, the sub-contractor shall be responsible for the making good of any defects reported by the Tenant. The guarantee shall be ceded to the Superintendent following acceptance of the installation.

9.0 MAINTENANCE

The fire detection sub-contractor shall be responsible for the maintenance of the entire plant during the guarantee period, as specified in this document. Record of all services are to be kept and copies signed by the Superintendent.

The maintenance of the plant shall be undertaken by the Maintenance Staff after expiry of the guarantee period(s).

A hand-over to the Maintenance Staff representative is to be carried out on the plant 4 weeks before expiry of the guarantee period(s).

10.0 CERTIFICATION ON COMPLETION OF GUARANTEE & MAINTENANCE PERIOD

In the month prior to the expiry of the guarantee and first twelve months maintenance period the Engineer shall inspect and, if necessary, retest the installation so as to be able to provide the Tenant with a certificate, within fourteen days of the guarantee expiry date, to confirm that the guarantee has been honoured and that the installation has been properly serviced at required regular intervals by the fire detection sub-contractor.

11.0 SAMPLES & ALTERNATIVES

Samples will be requested where and when required.

The tender prices shall be based on the equipment as specified and not on any alternatives. Should the tenderer wish to submit prices for alternatives, he shall do so separately, in a letter or similar correspondence, attached to the tender. The use of any alternative equipment, if any, will be evaluated and decided on after tender award, when the costs, etc. will be negotiated with the successful tenderer

The Engineer reserves the right to call for prices on alternative equipment subsequent to tender submission.

12.0 SCHEDULES OF INFORMATION

The schedules of information contained in this document consists of 2 sections:

- Information supplied by the Engineer (schedules of drawings, cables, distribution boards, etc. as applicable).
- Information to be supplied by the sub-contractor at tender stage (tender form, information on the makes, types and ratings of equipment and materials offered, schedules of prices and rates for variations, schedules of quantities, etc. as applicable).

Tenderers must complete, at the time of tendering, the "Schedule of Material Offered", and provide sufficient technical details to enable the equipment concerned to be identified without ambiguity.

It is not sufficient for a Tenderer to state "as specified" in the schedules.

Failure to complete these schedules (if applicable) may render a tender invalid.

13.0 DRAWINGS

13.1 General

Generally, the term "detail" shall mean that the drawing is exact in all aspects to what shall be provided. Where the term "illustration" is used, however, it shall be construed that the drawing is to be regarded as a proposal or guideline as to what is to be provided, manufactured or supplied.

13.2 Tender Drawings

Refer to the proposed Fire Detection and Alarm Evacuation Installation as provided with this document.

13.3 Construction / Workshop Drawings

The successful tenderer shall submit construction drawings (or detailed catalogues) of the manufactured equipment, such as mounting details, etc., for consideration by the Engineer prior to manufacture/supply thereof.

The Engineer's approval of construction or workmanship drawings does not relieve the sub-contractor of his responsibility with regards to any of the deviations from the requirements of this contract unless the Engineer has been clearly informed, in writing, of such deviations at the time of submission and the Engineer subsequently gives written approval for the specific deviation. Similarly, the Engineer's approval shall not relieve the sub-contractor of responsibility for errors or omissions in the construction / workmanship drawings.

13.4 Record Drawings

The sub-contractor must prepare record drawings of the completed installation as constructed, indicating cable runs, equipment mounting details, circuiting & distribution board details, sleeve pipe positions, etc.

The contract shall not be deemed as complete until these drawings have been submitted.

13.5 Fire Detection System

The following drawings are required:

- Layout drawings
- Schematic circuit drawings
- Internal circuit drawings of all panels, etc.
- Wiring drawings showing wire colour codes and numbers as well as all connections onto terminal strips (markers to be approved by the Engineer).

The following documents are required:

- Full description of the system.
- Operating instructions.
- Installation instructions.
- Commissioning instructions.
- Maintenance instructions, maintenance schedule and trouble shooting guide.
- Programme printout

14.0 **SUPERVISION, WORKMANSHIP AND DELAYS**

The work shall at all times, for the entire duration of the contract, be executed under the supervision of a skilled and competent representative of the sub-contractor, who must be able and authorised to receive and execute instructions on behalf of the sub-contractor. This person must be a registered and accredited person, as described by the OHS Act. It must be noted that the staff complement of the sub-contractor shall remain similar throughout the duration of the contract, for all sections of the Works.

In the event that inferior materials or bad workmanship, on the part of the sub-contractor, leads to remedial work requiring redesign by the Engineer, the cost of this work, including related professional fees, shall be borne by the sub-contractor.

Similarly, should delays in the contract be caused by poor performance on the part of the sub-contractor causing the engineer to spend extra-ordinary time on the project, the extra costs incurred shall be borne by the sub-contractor.

These costs will be based on the SAACE hourly rate and will be deducted from claims due to from claims which will become due to the sub-contractor.

15.0 **COMPLIANCE WITH REGULATIONS, STANDARDS AND CODES**

The sub-contractor shall arrange for all inspections and testing of the installation as required. All notices, fees, including inspection and re-inspection, are the responsibility of the sub-contractor and all the relevant costs shall be borne by him.

The workmanship throughout the Works will be to the satisfaction of the Employer. Any materials or workmanship considered as faulty or incorrectly or inadequately erected or repaired, will be substituted, altered or rectified to the satisfaction of the Employer, without additional cost to the Employer.

The Works will be executed in strict accordance with the following:

- All relevant by-laws and regulations of local authorities.
- All relevant SANS, BS and other international standards.
- The Occupational Health and Safety Act of 1993.

16.0 COMMISSIONING AND TESTING

16.1 Commissioning

A documented method shall be followed whereby the sub-contractor shall ensure that his installation is correctly constructed in accordance with the manufacturers' specifications, consultant's specification, consultant's design and all Codes of Practice and International Design Codes.

The commissioning procedure must allow for signing off of the major items of equipment by a qualified person in terms of the codes. These signed off documents will form part of the record drawings.

16.2 Performance Tests

The sub-contractor shall be responsible for the physical testing, in the manufacturing works, or on site, of the items of plant or systems as required by the Engineer. These tests shall be performed by the sub-contractor or supplier of the equipment, and where called for, the Engineer shall witness such tests. The Engineer may also only witness a representative sample of the equipment tests. In any event, the sub-contractor will supply documentary proof of full performance tests of all relevant equipment.

16.3 Acceptance Tests

Acceptance tests will be performed on site of the working system or sub system, to show that the Works, as installed, is functioning according to the specifications and design. The onus for the correct functioning of the systems is still on the sub-contractor irrespective of whether the Engineer has witnessed the acceptance tests or not.

Prior to the system being taken into use, a certificate of compliance must be provided. The works shall not be deemed complete without this certificate.

16.4 Fire Detection and Alarm Evacuation System Testing Equipment

Testing equipment required for the successful commissioning of the Works described herein is to be made available by the sub-contractor.

All arrangements for this equipment or instructing of testing specialists to undertake this work and all associated costs, including professional fees shall be deducted from money due to the sub-contractor.

17.0 BUILDER'S WORK

The onus is on the sub-contractor to point out and check the requirements for and positioning and correctness of all builder's work for his services.

18.0 MAKING GOOD

With exception of making good to the cut-outs and drilled holes for piping, the sub-contractor will carry out, in all instances any work to be made good such as damage to, or disturbance of the building installations caused by himself or his employees during the execution of the contract at his own cost.

19.0 SITE MEETINGS

The sub-contractor's representative shall be expected to attend an official site meeting at the onset of the project including scheduled technical and site meetings during the contract period. For meetings termed as "technical and site", a site representative is required and must be competent and able to interpret and receive and act on instructions on behalf of the sub-contractor.

The tenderer shall price all relevant P & G costs, overheads, travelling, etc. for these meetings.

PART B2-4: EARLY WARNING FIRE DETECTION – BILLS OF QUANTITIES

RNA CONSULTING ENGINEERS

MDANTSANE MALL

FIRE DETECTION AND ALARM EVACUATION INSTALLATION

PROVISIONAL BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>BILL NO. 1 : PRELIMINARY AND GENERAL</u>				
1,1	Compliance with General Conditions of Contract : Insurances, Sureties, etc as outlined in the Principal Contractor's Preliminaries.				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1,2	Establish on Site and provision of buildings and storage facilities including de-establishment of site, cleaning and tidying up after completion of contract.				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1,3	Tools and equipment, Communication, transport.				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1,4	Contract Management, Company overheads and supervision of the Works including attendance of site meetings (2 per month).				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1,5	Provision of all drawings and manuals as specified including As-Installed drawings.	Item	1		
1,6	Liaison with Local Supply Authority, compliance with OSH Act, Local By-laws and any other statutory regulations .	Item	1		
1,7	Provision of Training of Client's representative (s) at "practical completion" and at "end of defects liability period".	Item	1		
Total Carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>BILL NO.2 : FIRE DETECTION EQUIPMENT PHASE 1</u>				
2,1	ADDRESSABLE FIRE CONTROL PANEL Supply, Install, test, commission and provide 12 month guarantee for Fire Control and Alarm Panel c/w loop card, 12Vdc 12AH battery back-up , and charger. 6 Loop Panel 1 Loop Panel	no. no.	1 1		
2,2	ADDRESSABLE OPTICAL SMOKE DETECTORS Supply, Install, test, commission and provide 12 month guarantee for Optical Smoke Detectors c/w bases.	no.	239		
2,3	ADDRESSABLE REMOTE LIGHT EMITTING DIODE (LED) Supply, Install, test, commission and provide 12 month guarantee for Remote Light Emitting Diode (LED) to suit detection device detailed c/w bases.	no.	19		
2,4	ADDRESSABLE HEAT DETECTORS Supply, Install, test, commission and provide 12 month guarantee for Heat Detectors c/w bases.	no.	13		
2,5	ADDRESSABLE MUTI SENSOR DETECTORS Supply, Install, test, commission and provide 12 month guarantee for Optical Smoke Detectors c/w bases.	no.	43		
2,6	Open Area Smoke Imaging Detection Emitter Supply, Install, test, commission and provide 12 month guarantee for open-area smoke imaging detection emitter, std power, battery version	no.	0		
2,7	Step Down transformer Supply, Install, test, commission and provide 12 month guarantee for boxed power supply unit, 100 -220 Vdc.	no.	85		
2,8	ADDRESSABLE MANUAL CALL POINTS Supply, Install, test, commission and provide 12 month guarantee for Breakglass Units - Type 1 c/w bases.	no.	8		
Subtotal Carried forward to Next Page					

Subtotal Brought forward from Previous Page				
2,9	ADDRESSABLE SIREN WITH BUILT-IN FLASHING STROBE WARNING LIGHT Supply, Install, test, commission and provide 12 month guarantee for Siren with build-in Smoke Detectors c/w bases.	no.	25	
2,10	ADDRESSABLE FLASHING STROBE WARNING LIGHT Supply, Install, test, commission and provide 12 month guarantee for flashing strobe with range of 30 to 130 flashes per minute, 3Hz or less, c/w bases and labelling	no.	107	
2,11	ADDRESSABLE 96t dB SIREN Supply, Install, test, commission and provide 12 month guarantee c/w bases.	no.	0	
2,12	DOOR SWITCHES Supply, Install, test, commission and provide 12 month guarantee for Read Switches linked to Main Fire Control Panel and/or Repeater Fire Control Panel.	Sets	8	
2,13	BATTERIES Supply, install, test, commission and provide a 12 month guarantee for 12 Vdc 7.5AH battery to operate panel for 3 hours.	no.	4	
2,14	Intelligent Mains Interphase Relay for Switching Input / Output Unit Supply, install, test, commission and provide a 12 month guarantee for intelligent mains switching input / output unit. Providing single line tolerant circuit with minimum one normally open contacts, connected to single pair of cables.	no.	85	
2,15	Intelligent Input / Output Unit Supply, install, test, commission and provide a 12 month guarantee for intelligent input / output unit. Pair of normally open contacts connected with single pair of cables, c/w a st of changeover relay output contacts.	no.	85	
2,16	NETWORK CARD Supply, install, test, commission and provide a 12 month guarantee for two (2x) Westermo Converters ODW732 Single Mode, Fibre to 485, for connection of fire detection system to IDZ control room	no.	1	
Subtotal Carried forward to Next Page				

Subtotal Brought forward from Previous Page			
2,17	REMOTE DISPLAY UNIT Supply, install, test, commission and provide a 12 month guarantee for remote display unit	no.	2
2,18	FIRE PROOF CABLE Supply, install, test, commission and provide a 12 month guarantee for fire proof cable with a fire rating of 30 minutes or higher, all as specified.	m	3170
2,19	INTER-LOCKING SYSTEM Supply, install, test, commission and provide a 12 month guarantee for inter-locking of fire detection system with Ventilation Systems.	no.	85
2,20	A3 FRAMED FIRE ZONE PANEL Supply and install an A3 frame fire zone panel indicating all zones on that floor with devices numbering. Zones to be in different colour for easy readability. All frames to be installed next to the panels (Main / Repeater panels and etc.).	no.	4
2,21	SPRAGUE CONDUIT Supply, Install, test, commission and provide 12 month guarantee for Sprague Conduit c/w bases, couplings (include all mounting brackets & boxes etc all as specified).	m	720
	PVC CONDUIT Supply, Install, test, commission and provide 12 month guarantee for PVC conduit chased into brickwork, cast into concrete or fixed onto trusses including cutting, bending, steel saddles, bushes, etc.		
2,22	25mm diameter conduit	m	3170
2,23	32mm diameter conduit	m	300
	PVC CONDUIT ROUND BOXES		
2,24	Supply, Install, test, commission and provide 12 month guarantee for round box for 25mm conduit, back or side entry for 1, 2, 3 or 4-way chased into brickwork, cast into concrete or fixed onto trusses including couplings bushes, cover plates and fixing materials.	no.	719
2,25	Supply, Install, test, commission and provide 12 month guarantee for 75 x 75 x 50 box (for manual call points) for 25mm conduit, chased into brickwork or cast into concrete.	no.	8
Subtotal Carried forward to Next Page			

Subtotal Brought forward from Previous Page				
2,26	WIRING CHANNEL (P2000) Supply, Install, test, commission and provide 12 month guarantee for P2000 wiring channel, galvanised channel with cover including suspension hangers, end caps and etc	m	360	
2,27	PROGRAMING All fire detection protocols, sequencing etc. & interphase / interlock with natural / smoke ventilation controller.	no.	1	
2,28	TESTING Testing of entire system to ensure all systems integrate, to ensure 100% operational status	no.	1	
2,29	RS485 Supply, Install, test, commission and provide 12 month for RS485 cable, in sleeve provided by others.	m	200	
2,30	<u>Electrical</u> Connect equipment to isolator or connect cable to isolator, provided.	no.	2	
2,31	<u>12 Month Service Plan</u> Supply 12-month service plan, consisting of 3 quarterly minor services, and 1 final major service at 12 months from Practical Completion	No	1	
2,32	<u>Training</u> Training of staff on operation of units; location of equipment and basic day to day maintenance.	No	1	
Subtotal Carried forward to Next Page				

FINAL SUMMARY PAGE

Item No.	Description	Total Amount
1	TOTAL BILL NO 1: PRELIMINARY & GENERAL	
2	BILL NO. 2 : FIRE DETECTION EQUIPMENT PHASE 1	
3	PC SUM FOR PA EVACUATION SYSTEM	R 250 000,00
Total carried to Form of Offer and Acceptance (Ex VAT)		

PART B2-5: EARLY WARNING FIRE DETECTION - SCHEDULE OF MATERIALS OFFERED

AUTOMATIC FIRE DETECTION INSTALLATIONS

The Tenderer must complete the following schedules and submit them with the priced Bill of Quantities. The schedules will be scrutinised by the Engineer and should any material offered not comply with the requirements contained in the specification, the Contractor will be required to supply material in accordance with the contract at no additional cost.

NB : **Only one manufacturer's name to be inserted for each item.**

Item	Material	Make or trade name	Country of Origin
1.	ADDRESSABLE FIRE CONTROL PANEL		
2.	ADDRESSABLE OPTICAL SMOKE DETECTORS		
3.	ADDRESSABLE REMOTE LIGHT EMITTING DIODE (LED)		
4.	ADDRESSABLE OPTICAL HEAT DETECTORS		
5.	ADDRESSABLE MANUAL CALL POINTS		
6.	WEATHER PROOF ADDRESSABLE MANUAL CALL POINTS		
7.	ADDRESSABLE SIREN		
8.	ADDRESSABLE FLASHING STROBE WARNING LIGHT		
9.	FIRE RESISTANT CABLE		
10.	ITERPHASE / RELAY UNITS		
11.			
12.			
13.			

NOTE : Tenderers are to note that under no circumstances may materials be installed other than offered in the above materials schedule, which has been approved and accepted by the Contractor. Should the successful tenderer wish to supply materials other than those originally offered, prior written approval must be obtained from the Contractor before any orders are placed.



**ECDC PROPERTIES:
REPAIRS AND REFURBISHMENTS OF
MDANTSANE MALL**

**PART B3-1: FIRE PROTECTION EQUIPMENT
INSTALLATION**

Consisting of:

- Section 1: Scope of Works**
- Section 2: Standard Specifications**
- Section 3: Detailed Specifications**
- Section 4: Bills of Quantities**
- Section 5: Materials & Equipment Offered**
- Section 6: Drawings**

DOCUMENTS COMPILED BY:

RNA Consulting Engineers
11 Bonza Bay Road, Beacon Bay
East London, 5201

Contact Person: Mr T Warne
Tel: (043) 742 0041
Fax: (043) 742 3883

PART B3-1: FIRE PROTECTION EQUIPMENT - 1 SCOPE OF WORKS

FIRE PROTECTION EQUIPMENT INSTALLATIONS

1. GENERAL

- 1.1 The Standard for Uniformity in Construction Procurement published in terms of the Construction Industry Development Board (CIDB) Act, 2000 (Act No. 38 of 2000), the Standardized Construction Procurement Documents for Engineering and Construction Works as issued by the CIDB and any other relevant documentation pertaining thereto must be studied and all principles in this regard must be applied to all procurement documentation, practices and procedures.

2. THE CONTRACT

2.1 FIRE PROTECTION EQUIPMENT INSTALLATIONS

The main contract is for the refurbishment of the Mdantsane Highway Mall in Mdantsane, East London, Eastern Cape. The mall shall remain in operation whilst construction takes place. The project will therefore have to be sequenced & sectional completion will take place. As per main contract, the Work Sequence shall be:

Section No.1 - North/South Wing (First Floor): Practical Completion – 6 (six) calendar months from possession of site (excluding annual builders' holiday)

Section No.2 - East/West Wing (First Floor): Practical Completion – 12 (twelve) calendar months from possession of site (excluding annual builders' holiday)

Section No.3 - North/South Wing (Ground Floor): Practical Completion – 18 (eighteen) calendar months from possession of site (excluding annual builders' holiday)

Section No.4 - East/West Wing (Ground Floor):
Practical Completion – 24 (twenty-four) calendar months from possession of site (excluding annual builders' holiday)

Section No.5 - Balance of Works (Demolition of hawker stalls/provision of new and replacement of underground services):

Practical Completion – 24 (twenty-four) calendar months from possession of site (excluding annual builders' holiday)

The work to be carried out and commissioned by a SAQCC Fire approved installer:

- a. Installation of new hose reel, hydrant and extinguisher equipment, as per SANS 10400 Section T & SANS 10252,
- b. Installation of new galvanised steel water reticulation,
- c. Installation of new twin booster fire brigade connections,
- d. Connection of internal reticulation to external civil bulk main supply,
- e. Testing and Commissioning, as per SANS 10400 Section T and SANS 10139,
- f. Manuals, Drawings, OEM Literature,

2.2 Existing

All installations new. Building Existing.

2.3 Order of The Works

As per the building contractors' program of works.

PART B3-2: FIRE PROTECTION STANDARD SPECIFICATION

1.0 GENERAL

- 1.1 This standard specification applies to, and is to be read in conjunction with the particular technical specifications.
- 1.2 In so far as the conditions contained herein are at variance with anything contained in the particular specification, the contract shall be interpreted in terms of the particular specification for each particular service.
- 1.3 Equipment, materials and operational methods, shall comply with the relevant South African Bureau of Standards Specification or the British Standard Specification, wherever such specification exists, whether prescribed or not. Preference will be given to the latest issue of the SANS specification where both such specifications exist, unless otherwise prescribed in this or the particular specification.

2.0 OCCUPATIONAL HEALTH AND SAFETY ACT

- 2.1 All equipment supplied and installed under the contract shall meet the requirements of the Occupational Health and Safety Act (Act No 85 of 1994, (as amended) and all other relevant statutory requirements and the Contractor shall comply with the requirements laid down by the Inspector of Machinery under this Act.

3.0 DRAWINGS

- 3.1 The drawings issued with this specification do not purport to show the exact position, size or details of construction of equipment.
- 3.2 Tenderers must satisfy themselves that the equipment offered by them can be accommodated in the available space and positioned in such a way that access for maintenance, repairs or removal is not obstructed.
- 3.3 Drawings showing any alternative suggestions differing from the Engineer's design must be submitted with tenders.
- 3.4 Within four weeks of signing of the contract (or date of order) the successful tenderer shall submit to the Engineer or his duly appointed representative the following working drawings:
 - 3.4.1 Plant room lay-out showing total operating mass of equipment and the positions and sizes of the water and drain connections required.
 - 3.4.2 Construction details of all items manufactured by the air conditioning and/or ventilation Contractor, such as air plenums, duct work, bases etc.
 - 3.4.3 Dimensions and positions of all holes through walls, slabs, etc., and any amendments to the sizes or positions of return grilles, louvred openings, etc., indicated on the Engineer's drawings.
- 3.5 Approval by the Engineer of drawings submitted by the Contractor shall not relieve him of his liability to carry out the work in accordance with the requirements of the contract documents.
- 3.6 Positions and sizes of return air grilles, louvred openings, openings through reinforced concrete beams and slabs, etc., as indicated on the drawings shall be adhered to as far as possible. Amendments will only be considered if absolutely unavoidable.

4.0 MANUFACTURER'S RATINGS

- 4.1 All equipment such as fans, compressors, cooling towers, pumps, etc., shall be operated well within the manufacturer's ratings. Equipment offered for use beyond these limits will not be considered.
- 4.2 Tenderers must submit manufacturer's ratings of all equipment offered. Ratings shall be given in the SI system.

5.0 POWER, WATER AND DRAIN CONNECTIONS

- 5.1 Power, water and drain points in the plant rooms will be provided to a point by others.
- 5.2 All plumbing between equipment and water and drain points shall form part of the contract.

6.0 NOTICES

- 6.1 The Contractor shall supply and install all notices and warning signs that are required in terms of the Occupational Health and Safety Act, by local by-laws or regulations and by these documents. This includes notices prohibiting

entry to un-authorized persons, etc.

6.2 A log-book and log-book stand must be provided for each plant room. This must take the form of an A5 size hard cover note book fixed by a light chain through the top left-hand corner to a writing surface.

7.0 WELDING

7.1 Welding shall be carried out in accordance with the current edition of SANS 044 Parts 1 to VII where applicable.

7.2 All welded fillet or butt joints shall be free from porosity, cavities and entrapped slag. Joints shall be ground smooth if required for aesthetic reasons only. If strength is required, they shall not be ground.

7.3 The joints in the weld run, where welding has been recommenced, shall be as smooth as possible and shall show no pronounced hump or crater in the weld surface.

7.4 The profile of the weld shall be uniform, of approximately equal leg length and free from overlap at the toe of the weld. Unless otherwise specified the surface shall be either flat or slightly convex in the case of fillet welds and with a reinforcement of not more than 3 mm in the case of butt welds.

7.5 The weld face shall be uniform in appearance throughout its length.

7.6 Filler metal electrodes shall be of an approved type for the material being used and shall be kept in a dry condition. All electrodes shall conform to SANS 455.

7.7 Only welders in possession of a valid approved competence certificate shall be employed.

7.8 When pipes are welded, tenderers must allow for pipe joints (where chosen by the Engineer's Representative) to be X-ray tested by the SANS or other approved body for sound welding at the Contractor's expense or for joints to be cut for examination purposes. After the removal of these joints, the piping must be made good by the Contractor. Should any of the welds prove unsatisfactory, the Contractor may be called upon, at his own expense, to have all welds examined by X-ray. The X-ray examination shall be carried out by the South African Bureau of Standards or other approved body.

7.9 All welds must show proper fusion.

8.0 GALVANISING

8.1 All hot dip galvanizing shall be carried out in accordance with SANS 934 and SANS 763 where applicable.

8.2 Mild steel plate and sections shall be of good commercial quality, or higher grades, best suited for galvanizing. The materials shall be free from slag or coarse laminations, fine fissures and rolled-in impurities.

8.3 Castings shall be sound, dense and clean, and free from distortion, porosity, carbon and slag enclosures, blow-holes, and other injurious conditions.

8.4 Welding flux shall be chipped away and all welds wire brushed before galvanizing.

8.5 The surfaces to be galvanised shall be free from paint, oil, grease, and similar impurities.

8.6 All exposed surfaces including welds shall be thoroughly sand blasted prior to galvanizing.

8.7 The Engineer shall have the right to inspect all steel components before galvanizing, and shall have the right to reject or ask for remedial treatment of any material which is considered to be unsuitable. This applies particularly to welds.

8.8 The galvanised coating shall be smooth, adherent, continuous and free from black spots or flux stains.

8.9 Globular extra-heavy deposits of zinc which interfere with the intended use of the material will not be acceptable. Excessively protuberant lumps and nodules shall be removed by hot wiping or by the skilful application of mechanical means, however, there shall remain a sufficient minimum thickness of unbroken zinc coating. Flaws on small parts and working surfaces shall be repaired only by stripping and re-dipping. The zinc bath shall contain not less than 98.5% pure zinc.

8.10 The deposits expected from galvanised coatings shall be as follows: -

MATERIAL THICKNESS	COATING GRAMS PER m ²	APPROXIMATE THICKNESS
Bolts and Nuts	275 - 300	0,033 - 0,036 mm
1,25 mm to 2 mm	400	0,056 mm
2 mm to 5 mm	535	0,07 mm
5 mm and over	760	0,108 mm

9.0 COUPLINGS

Couplings shall be aligned by means of a clock gauge and the results entered in the commissioning data included in the Operating and Maintenance manuals.

10.0 BEARINGS

10.1 ANTI-FRICTION

10.1.1 Anti-friction bearings shall include all bearings which provide rolling contact between one or more sets of hardened steel balls or rollers and the hardened steel rings or raceways.

10.1.2 Anti-friction bearings shall be of approved manufacture.

10.1.3 To facilitate maintenance, spares inter-changeability and standardisation, anti-friction bearings of standard design and manufacture shall be employed. All anti-friction bearings shall be provided with greasing facilities in accordance with the manufacturer's requirements.

10.2 BUSHED BEARINGS

10.2.1 Only where specifically stated and in cases of low velocities and light loads in moisture free conditions will bushed bearings be accepted. All bushed bearings shall be made of an approved bearing metal composition which has good anti-friction qualities and is capable of withstanding severe usage.

10.2.2 All bushed bearings shall be provided with lubrication facilities to ensure adequate lubrication and shall be properly grooved to distribute the lubricant uniformly over the bearing surfaces. Grooves shall not be cut into the journal, but always into the surrounding bush. The edges of all chambers and grooves shall be rounded to avoid sharp corners and to facilitate the introduction of the oil or grease between the journal and the bearing metal.

10.3 SELF-LUBRICATING OR OIL-LESS BEARINGS

10.3.1 Self-lubricating or oil-less bearings shall only be used on application of light loads and low velocities in moisture free and low humidity and conditions and where access to bearings is difficult and likely to be neglected during servicing.

10.3.2 The type of bearing metal composition used shall have friction and wear resistant properties akin to those of grease lubricated bushed bearings.

11.0 GENERAL MACHINERY PROTECTION

11.1 COUPLING AND SHAFT GUARDS

11.1.1 All high-speed couplings, projecting shaft ends and every dangerous moving part of machinery within normal reach of a person shall be protected by a guard manufactured from not less than 1,5 mm mild steel plate.

11.1.2 The guards shall be neatly formed and securely fixed in position.

11.2 BELT GUARDS

11.2.1 All belt or rope drives shall be adequately protected by a belt guard.

11.2.2 The guard shall be manufactured from 25 mm wire mesh or open type expanded metal, securely braced and stiffened with light rolled steel sections and bolted in position. They shall be in accordance with the Occupational Health and Safety Act of 1994 (as amended).

11.3 CHAIN DRIVES

11.3.1 All chain drives shall be fitted with sheet chain cases and lubrication facilities to the chain manufacturer's recommendations. All joints shall be dust tight and arranged for convenient installation and dismantling.

11.3.2 Each chain case shall be fitted with a hinged inspection door, drain hole and plug.

12.0 QUALITY OF MATERIALS

12.1 Only materials of high quality shall be used throughout and shall be subject to the approval of the Engineer.

12.2 All materials, where applicable, shall conform in respect of quality, manufacture, tests and performance, with the requirements of the SANS standards, or, where no such standards exist, they shall conform with the appropriate current specification of the British Standards Institution. Materials manufactured in South Africa shall be used wherever possible.

12.3 Imported materials shall comply with the requirements of the relevant SANS or BS Specifications, although these materials need not necessarily bear the SABS mark.

12.4 All materials shall be suitable for the site conditions. These conditions shall include weather conditions as well as prevailing conditions during installation and subsequent use.

12.5 Should the materials or components not be suitable for use under temporary site conditions the Contractor shall provide at his own cost, suitable protection until these unfavorable site conditions cease to exist.

13.0 MAINTENANCE INSTRUCTIONS

13.1 As requested in the particular specification the Contractor shall provide operating and maintenance manuals/instructions at the time of hand-over of the installation.

13.2 The manuals shall include the following:

13.2.1 Maintenance instructions for all components of the plant which shall include maintenance items required over and above those included in the maintenance schedules attached to this specification, troubleshooting guide, part numbers of all replacement items, capacity curves of pumps, fans and compressors, belt sizes, types and lengths, serial numbers of all principal pieces of equipment, etc.

13.2.2 The names, addresses and telephone numbers of manufacturers or their agents.

13.2.3 Receiver test certificates.

13.2.4 A complete set of the "as built" drawings reduced in size to fit the manuals.

13.3 The operating and maintenance instructions specified above shall be obtained from the equipment manufacturer and where no such manuals exist, they shall be compiled by the Contractor to the best of his ability.

13.4 The contract shall be considered incomplete until all tests have been conducted to the satisfaction of the Engineer and all drawings and manuals have been handed over.

14.0 MAINTENANCE, SERVICING AND GUARANTEE

14.1 MAINTENANCE AND SERVICING

14.1.1 The Contractor shall be responsible for all maintenance and servicing of the installation during the 12-month guarantee period in accordance with the service schedules attached to this specification. Such additional items as required by the manufacturer of the equipment shall be included. (See also clause 13.2)

Four (4) services are required during this period on dates to be agreed at the first delivery inspection. The final service shall be carried out approximately 14 days before final delivery and expiry of the guarantee.

The contractor shall complete the service schedules and submit copies thereof together with his invoice for the servicing to the engineer after each service.

14.1.2 During the 12-month guarantee period the Contractor shall make good any defects due to inferior materials and workmanship and maintain all plant and equipment in perfect operating condition.

- 14.1.3 The Contractor shall maintain the plant log book on site in which he shall record, sign and date all work carried out at each inspection as well as log all temperature and pressure readings.
- 14.1.4 The Contractor shall allow for all expendable materials necessary for servicing such as lubricating oils, grease, refrigerant, cleaning materials etc.
- 14.2 GUARANTEE PERIOD
- 14.2.1 The CONTRACTOR shall unconditionally guarantee all new plant and equipment (machinery) for a minimum period of twelve (12) months from the date of hand over to the Engineer.
- If the CONTRACTOR or his supplier has a standard guarantee which exceeds the minimum warranty called for, the remaining portion of such extended warranty must be ceded to the client.
- 14.2.2 The guarantee shall cover the performance of the WORKS and any defects due to inferior materials and/or workmanship, fair wear and tear excepted, and the CONTRACTOR shall repair any such defects without delay.
- This guarantee shall include malfunction, and water, refrigerant gas, oil, or air leaks, and all adjustments.
- 14.2.3 Should the performance of any part of the complete WORKS become unsatisfactory so as to become detrimental to its functional use, the CONTRACTOR shall replace any such part or the complete WORKS with equipment as prescribed by the Engineer.
- 14.2.4 If any such defects are not remedied without delay, the Engineer reserves the right to have such defect repaired at the risk and cost of the CONTRACTOR by another CONTRACTOR whom the Engineer deems to be proficient in the WORK. this to be without prejudice to any rights the Engineer has against the installation CONTRACTOR. The Engineer will give written notice to the installation CONTRACTOR of such instances where he appoints another CONTRACTOR to remedy defects in the WORKS.
- 14.3 PREVENTIVE MAINTENANCE SERVICES.
- Preventive maintenance servicing of plant and equipment shall be carried out in accordance with the maintenance schedules and programs to be supplied by the Engineer. Copies must be made as required of these schedules.
- 15.0 ELECTRICAL EQUIPMENT AND INSTALLATION
- 15.1 Unless otherwise stated in the particular specification tenderers must allow in their price for the complete electrical installation and wiring.
- 15.2 All electrical equipment and wiring shall be in accordance with the current issue of the Standard Wiring Regulations (SANS1 0142) (as amended).
- 15.3 Three phase power will be provided by others in the plant room.
- 15.4 Ammeters and pilot lights shall be provided for electric heaters.
- 14.5 All motors over 5 kW shall be provided with an approved electronic type motor protection unit.
- 15.6 In conventional field assembled plants lighting shall be provided for filter, coil and fan chambers, etc and shall comprise of bulk-head fittings permanently fixed to the walls or ceiling and earthed directly to the main earthing bar of the switchboard by means of a 4 mm² bare copper earth continuity conductor, in addition to being earthed by means of the continuity of the conduit as specified.
- 15.7 A single phase power point will be provided in the plant room by others for this lighting.
- 16.0 AUTOMATIC CONTROL SYSTEMS
- 16.1 Unless otherwise specified either electric or electronic controls may be offered. All control devices shall perform the functions indicated and operate in the required sequence.
- 16.2 The performance of controllers shall be stable under all conditions and shall be such that an aperiodic recovery of the controlled variable is obtained following a disturbance. Means of adjusting the control loop stability, such as adjustable proportional bands, adjustable reset rates etc., shall be provided on controllers when applicable.
17. DRIVES
- 17.1 Compressors and pumps shall be direct coupled to their driving motors.

- 17.2 The drives between centrifugal fans and motors shall be by means of grooved pulleys and V-belts.
- 17.3 V-belt drives shall be designed in accordance with CKS 332. Motors shall be mounted on slide rails for adequate belt tensioning and replacement.
- 17.4 All drives shall be protected by stout 25 mm wire mesh guards and shall be in accordance with the Occupational Health and Safety Act of 1994 (as amended).
- 18.0 EQUIPMENT BASES
- 18.1 Bases for centrifugal fans, compressors, air cooled condensers, air compressors, pumps and motors etc., shall consist of reinforced concrete cast into sheet metal formers at least 150 mm deep.
- 18.2 Bases shall be reinforced with at least 13 mm reinforcing bars located at 150 mm centers each way.
- 18.3 The mass ratio between bases and equipment shall be at least 1:1 for fans and 1,5:1 for pumps.
- 18.4 Concrete bases for the pumps shall be large enough to support pipes and fittings between the pumps and flexible connections.
- 18.5 Bases generally shall be large enough to accommodate the motors and driven equipment. Equipment shall be bolted onto the concrete inertia base.
- 18.6 Spring isolators shall be installed between concrete inertia bases and floor plinths and between the cooling towers or evaporative condensers and floor plinths.
- 18.7 Structural steel bases shall be provided for the cooling towers and evaporative condensers if their framework does not permit point support.
- 18.8 Either free standing stable spring or caged spring with snubber may be used. Spring isolators shall be installed with leveling bolts and shall incorporate 6 mm thick ribbed neoprene acoustical pads bonded to the base.
- 18.9 Spring diameters shall be large enough to prevent excessive rocking of equipment during start-up and normal operation.
- 18.10 Isolators shall be chosen to give a static deflection corresponding to a ratio of 3:1 of the lowest disturbing frequency to the natural frequency of the mounting.
- 18.11 Bases and spring isolators shall be arranged to give a clearance of approximately 25 mm between the underside of the bases and floor plinths.
- 18.12 Floor plinths of sufficient height shall be installed under all equipment by the air conditioning contractor. The plinths shall be large enough to accommodate the concrete inertia bases and spring isolators. Floor plinths shall also be provided under items of equipment which do not require concrete inertia bases such as cooling towers, air plenums, etc. The plinths under the air plenum shall be at least 100 mm higher than the finished floor level in the plant room.
- 19.0 RUNNING OF PIPES
- 19.1 Pipes and ducts shall be installed in accordance with the drawings issued with the supplementary specification.
- 19.2 The drawings are schematic and do not purport to show the exact positions of pipes nor the details of construction and installation. All final dimensions must be checked on site before the fabrication of piping sections.
- 19.3 Pipe sleeves with at least 6 mm clearance filled with a resilient material shall be provided where refrigerant tubing or water piping passes through walls or slabs.
- 19.4 Where beams, stanchions or other obstructions interfere with the straight running of pipes or ducts, suitable offsets shall be provided or changes in the section of the duct made, without altering the cross-sectional area.
- 19.5 Tenderers should make themselves conversant with complete drawings of the building in order to determine the number of such offsets or changes in section and the positions in which they will be required. Due allowance for these shall be made in the tendered price.
- 19.6 A complete set of drawings of the building may be inspected at the office of the Architect.

20.0 PAINTING

- 20.1 All exposed galvanised sheet metal work in plant rooms, air conditioned and ventilated spaces, basements, corridors etc., shall be painted.
- 20.2 Ducts shall be identified by coloured symbols as specified in clause 6 of SANS 0173-1980.
- 20.3 The temporary white rust preventative compound on new galvanised sheet metal shall be removed by means of washing, brushing and if necessary, abrasion with a special solvent or compound used for this purpose. The surface shall be well rinsed and dried. It shall then be painted with one coat of zinc dust/zinc oxide paint to SANS 910 or one coat of calcium plumbate primer to SANS 912 followed by one under coat to SANS 681 type II and one coat high gloss enamel paint to SANS 630, Grade I, as top coat, the colour of which will be determined by the Engineer.
- 20.4 The entire air-conditioning unit casing, including galvanised iron eliminators, sumps, drip pans, fans etc., shall be painted internally with two coats of epoxy-tar paint to SANS 801, type II. The white rust preventative compound on galvanised iron shall be removed as specified above before the paint is applied. Angle iron framework shall be similarly painted with epoxy paint before side covers are fitted.
- 20.5 Ferrous cooling tower and evaporative condenser casings, including galvanised iron eliminators sumps and fans and internal areas of connecting ductwork shall be internally painted as specified above. Externally the casings shall be painted as specified in clause 48.3. Factory painted equipment will also be acceptable.
- 20.6 Exposed hot water piping with canvas covered insulation shall be painted two coats of bitumen aluminium paint to SANS 802.
- 20.7 Exposed uninsulated galvanised piping shall be thoroughly degreased. In case a detergent is used, the surfaces shall be well rinsed and dried. It shall then be painted with one coat of zinc dust/zinc oxide paint to SANS 910, or one coat of calcium plumbate primer to SANS 912, followed by either one undercoat to SANS 681, type II, and one coat high gloss enamel paint to SANS 630, Grade I, as topcoat or two coats of PVA to SANS 634, Grade I.
- 20.8 Uninsulated black piping, flat-iron, angle-iron and rods for supports, brackets, duct stiffeners, etc., shall be painted on all sides with a zinc chromate primer to SANS 679, Type I followed by two coats of enamel paint to SANS 630, Grade I.
- 20.9 Where specified in the supplementary specification aluminium shall be painted with a wash primer to SANS 723, followed by a zinc chromate primer to SANS 679, Type I, and two coats of enamel paint to SANS 630, Grade I.
- 20.10 Motors, compressors, pumps etc., shall be painted light grey. Belt guards shall be painted bright red.
- 20.11 Before any painting is applied the steel surfaces shall be prepared according to SANS 064, (Code for preparation of steel surfaces for painting.)
- 20.12 Where specified in the particular specification steel surfaces shall be cleaned and then treated by the hot phosphate process to a minimum weight of 1,6 gr/m² coating followed by two coats of baking enamel to SANS 783, Type I.

21.0 GENERAL REQUIREMENTS FOR FIRE INSTALLATIONS

All fire pipe installations shall adhere to the technical and particular specifications of the Employer, and shall include the following general requirements:

- 21.1 Piping shall conform to the requirements of SANS.
- 21.2 Pipes shall be cut accurately to measurements established on site and installed without springing or forcing and properly clear of windows, doors and other openings. All piping shall be reamed after cutting and shall be clean, straight and free of defects.
- 21.3 Drawings are generally diagrammatic and indicative of work to be installed. Routing and arrangement of piping shall be as indicated, subject to site conditions and the appropriate requirements of SANS rules.
- Clashes with other trades shall be avoided and fittings, valves, drain points, etc shall be located so as to ease access, maintenance and operation of the system. Note that required offsets, fittings, valves, drains, etc are not necessarily indicated.
- 21.4 Pipe runs shall be straight and direct as possible, in general forming right angles with or parallel to walls or other piping, and neatly spaced. Piping shall be installed so that there is sufficient clearance between finished coverings of piping, fittings and adjoining work.

Sleeves shall be provided where piping passes through partitions, beams, slabs, etc.

- 21.5 Valved and capped drain points shall be provided at all low points in the piping network.
- Unions or flanged connections shall be provided to aid dismantling of the piping should it be required.
- 21.6 No cold springing shall be allowed. Pipe sections shall be fabricated/cut to length accurately in order to avoid cold springing.
- 21.7 Where necessary, adequate temporary supports shall be installed during erection so as not to overstress piping or equipment to which piping is connected.
- 21.8 All supports shall conform to the requirements of SANS, and no perforated straps or strip steel shall be used.
- 21.9 Piping which is subject to vertical movements shall be provided with springs or other suitable supports.
- 21.10 Hangers shall be installed in such a manner that they cannot be disengaged by any pipe or support steel movement.
- 21.11 No pipe shall be suspended from another pipe except if specifically called for on the drawings or in the particular specification (Part 3).
- 21.12 The Contractor shall be responsible for selecting the sizes and types of pipe hangers, supports and support devices not shown on the drawings, but which are necessary for the completion of the installation. Support spacing shall be as specified in paragraph 23.0 The Contractor shall supply details of all calculations to the Engineer for scrutiny together with two marked up prints showing the location and types of all supports/pipe hangers to be installed prior to ordering and commencing installation.
- 21.13 During construction all pipe ends shall be kept plugged to prevent any ingress of dirt, rubble etc.

22.0 PIPING

- 22.1 Steel piping shall be solid drawn, heavy grade steam quality piping conforming to ASTM/A106 Schedule 40 or to B.S. 1387/1967 (heavy quality) or SANS 62/1971. In all instances the latest editions and amendments to these specifications shall apply.

In plant rooms piping may be welded, prefabricated off-site to aid in installation and connection to pumps, storage tanks, etc. Welding shall be carried out as specified in paragraph 7.0 of this specification.

Generally, pipe sections shall be screwed together using malleable iron threaded fittings, class 150 and 300 in accordance with ASME B 16.3. Only eccentric fittings shall be used at changes in pipe size. No bushing shall be used in lieu of reducing fittings. Screwed joints shall be screwed up tightly using an approved jointing compound such as PTFE tape. Hemp joints will not be accepted.

Pipes joined with grooved fittings (e.g., Klambon or Victaulic) shall be joined by a listed combination of fittings, gaskets, and grooves. Grooves cut or rolled on pipe shall be dimensionally compatible with the fittings and pressure at which the system is to operate.

Where flanges are used, they shall be in accordance with ASME B16.5. Steel slip-on boss flanges for welding shall have a nominal pressure at least 10% in excess of the maximum fluid pressure. Where equipment is supplied complete with flanges not in accordance with the above specification, a matching weld-on flange is to be used for connecting up such equipment. Bolts in flanges are to be high tensile steel and of the correct length such that no more than 1,5 clear threads protrude beyond the nuts after tightening to the correct torque. In flanged joints new gaskets shall be used for every assembly operation unless such an assembly is intended solely for initial fitting. Gasket material shall be fibre composition or similar material suitable for the system operating pressure and temperature.

- 22.2 Underground piping shall be class 16 HDPE piping and weld-on flanges in accordance with SANS 0533-2

Pipes shall be laid on a 100 mm sand-bedding cradle and covered with 300 mm sand before backfilling. The total cover over the piping shall be a minimum of 900mm generally and 1100mm under roadways. All backfilling shall be to the Engineers approval.

Where required thrust blocks shall be cast between the pipe and the undisturbed trench material. At thrust blocks the pipe bend shall be wrapped with a "Densopol 80 HT Tape" (or equal and approved) so that no concrete comes into direct contact with the HDPE piping.

All underground piping shall be pressure tested prior to it being covered.

23.0 PIPE SUPPORTS AND HANGERS

All necessary pipe hangers, brackets, supports, stanchions and anchors shall be designed, supplied and installed by the Contractor, in accordance with SANS.

23.1 Maximum pipe support spacing shall be as follows:

Pipe Diameter	Max support Spacing
20 mm	3 m
25 mm	3.6 m
32 mm	3.6 m
40 mm	4.5 m
50 mm	4.5 m
65 mm	4.5 m
80 mm	4.5 m
100 mm	4.5 m
150 mm	6 m
200 mm	6 m

The contractor will be required to ensure that the hangers/supports selected are conservatively rated for the carrying capacity required. (Refer to paragraph 21.12).

23.2 There shall be at least one pipe support for each mechanical pipe joint .

23.4 Components of any pipe support shall be securely attached to each other by means of bolts or threaded rod with nuts and washers.

23.5 All components of all pipe supports shall be galvanized.

24 VALVES AND FITTINGS

All valves, check valves, shut-off valves, etc. shall be of a pressure class greater than or equal to pressure class of the piping.

All valves controlling water supplies for fire systems or portions thereof, should be accessible to authorized persons during emergencies. Permanent ladders, chain-operated hand wheels, or other acceptable means should be provided where necessary.

Outside control valves shall be located within a fenced enclosure under the control of the owner, sealed in the open position, and inspected weekly as part of an approved maintenance and safety procedure.

24.1 Valves greater than 50mm diameter shall be of the butterfly type with resilient rubber seats. 100 mm and 150 mm diameter valves shall be equipped with gear operated closing mechanism. Valves shall conform to BS 5155 and shall be KERR fig. no 104A or similar or equal and approved.

24.2 Valves up to and including 50mm diameter shall be of the screwed and socketed type with bronze body and gated with non- rising spindle.

24.3 Valves shall be labelled as follows:

- (a) Main stop valves, control valves, etc shall be labeled by means of rust-free metal tags indicating their purpose and the section they isolate, if isolating valves.
- (b) The tags shall be securely fixed to the valve and shall be clearly legible.
- (c) All letters on labels shall be engraved or punched. No painted or plastic embossed labels will be accepted.

24.4 Strainers shall be of the Y-type with cast iron body, stainless steel or bronze strainer element and shall be equipped with flanged ends. The hole sizes of the strainer element shall be maximum 1 mm Ø and be removable without dismantling of pipe-work. Strainers shall be suitable for a temperature of up to 90°C at a 1 600 kPa pressure rating and installed with the element facing downwards or a maximum of 45° sideways.

24.4 Non-return valves shall be of the spring-loaded wafer dual flap plate type fitted between two flanges. They shall be equipped with a cast iron body, aluminium bronze plates, stainless steel springs and neoprene seals on the plates. The valves shall be suitable for working pressures of up to 1 600 kPa.

25 PUMPS

- 26.1 Pump sets shall conform and be installed as detailed in SANS and these specifications. The number and type of pump sets will be detailed in the Particular Specification (Part 3) and will comprise some or all of the following
- (a) Electrical driven jockey pump set
 - (b) Electrical driven main sprinkler/fire pump and drive.
 - (c) Diesel driven main sprinkler/fire pump and drive.
 - (d) Sprinkler/fire pump starting arrangement.
 - (e) Electric and Engine drive controllers and ancillary equipment.
 - (f) Water flow test devices.
 - (g) Fuel storage and piping

The pump sets shall be, installed, tested, commissioned and certified in accordance with SANS and the Local Authority's requirements.

- 26.2 Prior to ordering and installation, the Contractor shall provide a full set of plans and detailed data describing the following for scrutiny and/or approval by the Engineer and Local Authority:
- (a) Pumps
 - (b) Pump drivers
 - (c) Drive controllers
 - (d) Power supply
 - (e) Starting arrangements
 - (f) Piping and fittings
 - (g) Suction and discharge connections
 - (h) Water supply and/or storage conditions

Each pump unit shall be provided with certified test curves from the manufacturer showing brake horsepower, flow and head capacities. The Contractor shall provide this information to the Engineer and Local Authorities for approval.

- 26.3 The Contractor shall perform and certify a full field acceptance test on the completed installation in accordance with SANS. This test shall be witnessed by the Engineer and Local Authority.

- 26.4 The following information shall be embossed on a plate fixed to each pump:

- (i) flow capacity (l/sec);
- (ii) pump head (metres water gauge);
- (iii) impeller size;
- (iv) pump speed
- (v) required motor power;
- (vi) make of pump;
- (vii) model;
- (viii) date of purchase.

- 26.5 Pumps shall be of the centrifugal end-suction type listed for fire protection service. It shall be possible to remove the impellers without removing the pump from its mountings.

Pumps shall comply with the following requirements:

- (a) Impellers shall be double entry radial types of bronze or cast iron.
- (b) Casings shall be of cast iron with renewable casing wear rings. The casing wear rings shall be made of cast chrome steel.
- (c) Shaft seals shall be of the mechanical type.
- (d) Bearings shall be grease lubricated anti friction types.
- (e) Pump shafts shall be of stainless steel.
- (f) An auto priming system shall be provided.
- (g) Pump cooling devices shall be provided to prevent over heating of pumps when operating at closed head.

- 26.6 Characteristic curves showing capacity, head, efficiency NPSH, power required and operating range shall be submitted to the Engineer at tender stage. Prior to installation, a complete set of test certificates shall be submitted for approval to the Engineer and Local Authority indicating all performance characteristics of the pump to be installed.

- 26.7 A pressure gauge must be provided downstream of the pump outlet backpressure valve and on the pump suction side.

- 26.8 An approved flow test device and pipe connection shall be provided in the delivery line downstream of the non-return valve, in order to carry out a running flow/pressure test on the pump at approximately full load when the test valve is fully open. The test pipe shall be piped back to the water tank.
- 26.9 Pumps shall be mounted on mild steel bases, adequately corrosion protected by hot dip galvanizing after manufacture. Pump bases shall be filled in with concrete and properly secured to the floor.
- 27.0 DRIVE MOTORS
- 27.1 Electric drive motors shall be drip proof conforming to BS 2613 and BS 170. Windings shall at least be according IP55 of IEC 144. High temperature permanent sealed bearings shall be used. Motor speeds shall preferably be limited to 1450 rpm but shall not exceed 2950 rpm.
- 27.2 Diesel engines shall be naturally aspirated air cooled types capable of being started without the use of wicks, cartridges, heater plugs or ether, at an engine room temperature of 4°C. They must be capable of accepting full load within 15 seconds from receipt of the signal to start.
- 27.3 Engines shall be capable of operating continuously at full load at the site conditions for a period of 8 hours. The Contractor supplying the pumping set shall supply to the Engineer and Local Authority a statement giving the 8-hour power rating of the engine at speeds of 1000 rpm, 1400 rpm, 1800 rpm, 2 200 rpm, 2600 rpm and the maximum speed. Any of the speeds quoted which are in excess of the maximum speed rating of the engine may be omitted and the maximum speed and corresponding rating shall be given.
- 27.4 Speed and Number of Strokes
- The engine must be of the solid injection, compression ignition type, with a running speed for reciprocating engines up to 750 kW not exceeding 1500 rpm. Generally, engines of the four stroke, industrial type, designed for stationary operation are preferred. Two-stroke engines of the pump assisted uniflow scavenged type will be considered if their specific fuel consumption (kg fuel used per kW hour) is equivalent to or better than that of the equivalent four stroke engine.
- 27.5 Fuel Classification
- The engine shall be rated for diesel fuel as normally available in South Africa and in compliance with SABS 342 - 1969 or B.S.2869 -1970, Class A1 , (as amended) for diesel fuel with a minimum octane rating of 40 and nett calorific value of 10000 kcal/kg (39600 kJ/kg).
- 27.6 Rating of Plant
- The rating of the engine shall take cognisance of the site conditions, site altitude and include all auxiliary equipment such as radiator and fan, oil pump, water pump, air filter, governor, battery charger (generator) etc. The output stated shall only be the nett available, after the above have been allowed for.
- The engine output must be de-rated in accordance with BS 5514 for the site conditions stated in the particular specification.
- 27.7 Overload Facility
- The engine shall be capable of delivering 10% overload for one (1) hour in any 12-hour period of continuous running.
- 27.8 Engine Appearance
- The engine shall be of neat appearance and all water, lubricating and diesel oil lines, filters and stop cocks shall be of top quality and completely leak free.
- 27.9 Service Connections
- All service connections to the engine shall be flexible to prevent vibration being transmitted between plant and building, and to prevent damage to these lines and connections.
- 27.10 Supporting Framework
- The engine and pump shall be mounted on one common steel supporting frame manufactured of channel iron or other equivalent steel work to provide a rigid and solid foundation. The main frame shall be of the "skid" base type. If no "skid" base is provided, suitable for free standing,

holding down bolts and vibration eliminators to the generator set manufacturer's specification must be provided. This subframe shall be supported from a main frame by anti-vibration mountings. Duplex anti-vibration mounts shall be used.

The inner frame and its supports shall be of sufficient height above floor level to permit installation of a drip tray and for draining of engine oil.

The drip tray must be sloped and made of mild steel. It must be fixed in the frame beneath the engine and alternator and a drain pipe fitted with a plug must be extended from the lowest point of the drip tray to beyond the frame in an easily accessible position.

27.11 Heat Protection

All engine piping, whether flexible or rigid, shall either be of the heat resistant type or adequately protected against damage by radiant heat. This also applies to any wiring attached to the engine.

27.12 Crankcase Vent Pipe

The crankcase vent pipe shall be taken to the drip tray to collect oil condensate.

27.13 Bearings

Engine bearings for the crankshaft and connecting rods, big and small ends shall be of the bush type, split sleeve type, or roller type. The bearing types and metals shall be suitable for operating in the worst site conditions.

27.14 Lubrication

The lubrication shall be by means of a force-fed pressure system supplying circulating oil to all bearings, gear trains and important moving parts. A gear driven oil pump shall be incorporated with an oil cooler if necessary. The oil cooler shall have a thermostatically controlled oil bypass valve to control the oil inlet temperature by proportionate bypassing. 250 hour running time, full flow oil filters with automatic bypass and replaceable elements shall be fitted.

An isolating valve shall be fitted in the oil line from the make up tank to the sump in order to facilitate sump draining without the loss of new oil from the make up tank.

27.15 Cooling

27.15.1 General

Cooling of engines may be either by air or by water.

27.15.2 Water Cooling

Where radiators are used, they shall be of the heavy-duty industrial air blast type, pressurised and sized for continuous full load operation.

The fan shall be designed and run in a direction such that cool air is drawn across the generator, engine and radiator in that order.

Removable ducting shall be provided between the radiator and the louvre in the wall opening.

Fans must be liberally sized to enable engines to operate well within their maximum temperature limits (but without running too cool) at the ambient site conditions stated in the particular specification or at a plant room temperature of 40 deg C whichever is the higher.

In water cooled engines water circulation shall be pump driven by means of an integral engine mounted centrifugal pump.

If under exceptional circumstances cooling towers are required these will be specified separately in the particular specification. It will be required that they be of stainless steel or fibre glass and that particular attention be paid to plant room ventilation under these circumstances.

27.15.3 Air Cooling

In air cooled engines air ducts shall be provided to positively exhaust hot air and to prevent re-circulation. Integral engine mounted fans are required to ensure air flow across the various components in the order listed above.

Discharge ducting must be taken straight up through the roof of the plant room and must be made with strategically placed flanged joints, etc to enable it to be easily removed for servicing and maintenance purposes (if required), and/or to permit removal of the set without having to remove the ducting. Quick action type lock nuts or screws to enable quick and easy dismantling of ductwork are required. Self tapping screws are unacceptable.

The ducting must be fixed to the roof structure, must be flashed to render the exit point waterproof and must be fitted with an expanded metal bird screen at the discharge end(s).

The ducting must be made in such a way that expansion and contraction of the ducting will be taken up by sliding joints or similar.

The discharge end of the ducting must be fitted with a cover to prevent the ingress of rain water at times when the set is not running. Over and above, a drain point for accumulated moisture must be provided at the lowest point of the ducting. This drain must be piped to just outside the plant room door. Drainage of moisture from the ducting must be such as to prevent the diesel engine from getting wet.

Ducting must be made of 16-gauge galvanised iron suitably cross braced to prevent drumming.

27.16 Speed Control

The engine shall be provided with a suitable governor to control the engine speed to within 10% of its rated speed under any condition of load up to the full load rating. The governor shall be field adjustable.

27.17 Air System

The air system shall consist of two items, viz. the incoming combustion air and the exhaust gas.

27.17.1 Combustion Air

Combustion air filtration shall be by means of dry type, cartridge, high efficiency air filters fitted and sized for 500-hour operation and supplied complete with a service indicator. Oil bath air filters may be fitted and used in existing plant only. Air filters must be of Donaldson manufacture or similar, equal and approved.

27.17.2 Exhaust Gas

Exhaust gas shall be piped, the piping being fitted with expansion joints, silencer and discharged to atmosphere.

The expansion joints shall be of the stainless steel, concertina type, flexible, flanged and bolted to the exhaust manifold or turbo-charger outlet as applicable. Stainless steel bolts and nuts of the appropriate size must be used. Care must be exercised that exhaust pipe and silencer supports at the expansion joints are so positioned that no strain is placed on the manifold joint, turbo-charger, piping or silencer.

The silencer shall be of stainless steel, of the baffle or absorption type of a size and construction such that a sound level of 75 dB absolute is not exceeded within two meters of the exhaust. The exhaust pipe shall be of stainless steel, insulated and of sufficient size to ensure that the back pressure is acceptable within the limits of the engine manufacturer. The exhaust system shall be offset from the centre line of the plant to allow for hoists or cranes to remove the engine.

The piping shall have bends with a minimum radius of 2,5 times the pipe diameter, insulated with 25 mm thick insulating rope and cloth or similar suitable approved insulating material, and be wrapped and sealed in bright polished class 430 stainless steel sheeting.

Stainless steel nuts and bolts must be used in assembling the exhaust system. Flanged joints are required to aid dismantling.

Exhaust piping over 100mm diameter must have a minimum thickness of 1,6mm.

Once the exhaust is external to the building, no insulation is necessary. The entire system shall be supported with flexible hangers, brackets, clamps, etc.

27.18 Engine Fuelling

Engine fuelling shall be by means of an engine mounted pump with the governor-controlled fuel injection pump(s) and injectors all arranged for easy access and maintenance.

A fuel filter with replaceable elements shall be fitted between the lift pump and the injection pump, suitable for the full flow of fuel at full load. The filter must take out particles down to 5 microns in size, or less, and be of Donaldson or similar, equal and approved manufacture.

A primary, heavy-duty filter/water separator shall be fitted before the lift pump in the fuel line from the tank. This water separator shall be of Donaldson or similar, equal and approved manufacture, shall be suitable for 250-hour operation and be easily maintained.

Copper tubing shall be used from the sludge filter to the engine components, but steel tubing may be used on the overflow from the injectors to the fuel tank. Note that galvanised piping is not acceptable. All piping shall be neatly run and securely fixed with saddles and clamps taking cognisance of flexibility to prevent vibration damage as stated in Clause 27.9 .

27.19 Starter Motor

Starting of the plant shall be by means of an engine mounted, electric starter motor on sets up to 500 KVA. Above this size two motors will be required. The starter motor(s) shall be suitably sized to easily spin the plant under "cold start" Winter / Summer conditions without the use of special starting equipment.

Two interlocks shall be incorporated, one electrical and one mechanical, preventing the starter motor engaging unless the engine is at rest.

The starter motor(s) shall be 12- or 24-volts D.C. fitted with an approved device for positive engagement. The starter motor shall be controlled from the plant panel.

27.20 Jacket Water Heaters

Water cooled engines shall be fitted with immersion heaters of a minimum of 1,5 kW up to 5 kW capacity in order to ensure that the jacket water temperature is warm enough for the engine to start easily from cold and under severe cold conditions. Heaters must be so situated as to promote thermo-syphoning of the water with the piping connections installed in such a manner that the cooling system thermostat does not impede the free flow of this thermosyphoning water. The temperature shall be thermostatically controlled via a relay and the elements fed at 220 volts with M.C.B. protection at the panel.

27.21 Battery

The battery shall consist of a number of cells to form a 12- or 24-volt D.C. supply suitably sized to start the engine. These cells shall be of the lead acid type with flat terminals, rated at 1,5 volts/cell and mounted on a suitable frame with a timber base. The battery shall be as close as is practical to the starter motor, but separate from any vibrating parts of the set.

The battery discharge capacity with full cranking current for 60 seconds at a temperature of 5 deg C shall not fall below a cell voltage of 1,5 volts. This voltage is considered the minimum to satisfactorily operate the 12 or 24 V. D.C. control equipment on the control panel (i.e., after three starting attempts, each of 10 seconds, the panel control voltage shall not be below 20 volts D.C.)

The battery under normal conditions shall be continually trickle charged from the Control Panel charger (reference must be made to clause 28.9).

Under running conditions, the battery shall be charged from an engine driven brushless Alternator/Rectifier complete with auto rate control.

The battery cables must be run clear of all exhaust piping and other hot surfaces and must be fixed in position so as to ensure correct reconnection of the cables in the event of the battery being changed or removed. The cables must be liberally sized in order to minimize the voltage drop to the starter motor.

27.22 Protection Equipment on Engine

The protection of the set is covered under paragraph 28.0 but the following monitoring equipment is required as listed hereunder:

27.22.1 Alarm signal system in wall mounted or floor standing control board for indicating "shut down" of the following items:

- a) Fail to start / starter circuit lockout

- b) High water temperature (sensed on engine side of the thermostat) or high head temperature in the case of air-cooled engines
- c) Low oil pressure
- d) High oil temperature (if required)
- e) Low fuel pressure (if required)
- f) Engine over/under speed

27.22.2 Gauges in the wall mounted or floor standing control panel showing:

- a) Fuel oil pressure (if required)
- b) Lubricating oil pressure
- c) Lubricating oil temperature (if required)
- d) Jacket water temperature

27.22.3 All necessary sensors for alarm circuits.

27.22.4 All necessary fuel cut off solenoids

27.22.5 A manual shut off valve before the lift pump in the fuel line at the day tank.

27.23 Coupling

The engine/pump coupling shall be by means of a flange adaptor ring or bell housing incorporating a shock absorbing coupling. The flexible coupling shall be direct coupled to the engine and alternator with no gears so that the engine and alternator run at 1500 rpm or the regular engine speed compatible with 50Hz power generation.

27.24 Fuel Tanks and Pumps

27.24.1 Day Tank

A combined fuel storage and day service tank shall be supplied with each set. The tank shall be mounted on a self-supporting floor standing steel frame at a minimum height of 400 mm above floor level (to provide a gravity feed to the engine) or integral with the engine/pump support base. This service tank shall be mounted close to the plant, within the plant room, hold a minimum of 150 litres and a maximum of 200 litres. A full height transparent gauge tube shall be fitted to the service tank. The gauge tubing must be similar or equal to that supplied by Lister diesel engines. (Plastic tubing will not be permitted). If called for in the particular specification a dip stick may be supplied and fitted in lieu of the gauge glass.

The service tank shall be so designed and mounted such that water and sludge can collect at the lowest point and be easily drained off by means of a stop cock. The lower gauge tube connection must be fitted with a shut-off valve.

A manual ball type shut off valve between the service tank and the lift pump shall be incorporated in the steel or copper fuel feed pipeline.

27.24.2 Fuel Piping

In principle the fuel lines shall all be medium class steel to SABS 62 or BS 1387 (but not galvanised) with appropriate bends to provide an expansion facility. Copper shall only be used from the primary filter to the engine pumps.

A fusible link mounted directly above the set and connected to a dead weight operated fuel shut-off valve will be required in instances where the day tank is situated in a separate room to the generating set.

27.24.3 Fuel Pumps

One diesel fuel pump suitably sized, shall be fitted adjacent to the service tank.

It shall be a centrifugal pump complete with electric motor, starter, isolator and float switches. Level control and float switches for control of the pump(s) shall be mounted within the service tank.

Float switches shall be "REMEX" level controllers (or similar and equal and approved). Three float switches will be required, one to operate the pump (on/off), one for a low-level alarm and the other for an extra low level engine cut-out. A facility for running the pump manually is required.

It must be possible to mute all alarms but the indicator light(s) must remain on until the tank has been refilled at which time they should cancel automatically.

The float switches shall be of such a type that they can be tested manually without opening the tank. They must further be installed in such a manner that they do not foul each other.

28 CONTROL PANEL

28.1 General

The control system may consist of plug in, low voltage relays of the octal base type or solid-state PC control . The panel shall provide full protection for the diesel pump set.

28.2 Sheet Metal Work

The control panel and components shall be of approved design, manufacture and construction and shall be complete in all respects with all necessary equipment, bars, connections, wiring and accessories. The panel shall be robustly constructed, shall be in accordance with standard accepted practice, comply to the relevant S.A.B.S. Code of Practice and/or BSS 162/1961, and shall have an attractive appearance.

The panel shall be totally enclosed, dust and moisture proof as well as rodent and insect proof with full gland plates fitted at appropriate heights. The panel shall be floor standing and have a steel plinth. Doors shall be of folded and welded construction, with suitable bracing to eliminate buckling, and all doors and cover plates shall have rubber seals and grommets.

A construction of angle iron and loose sheets will not be acceptable, neither will pop-rivets or self tapping screws.

All steel work shall be thoroughly de-rusted. Millscale shall be removed by shot blast or other approved means and the steel work then degreased, followed by bonderising or similar phosphoric inhibitive treatment. A zinc chromate primer shall be applied, followed by two coats of best quality white enamel inside and three coats of enamel (Electric Orange) on the outside, sprayed and baked on. Bolt heads or thumb screws securing the panels shall be chromium plated. The latches securing the doors shall have positive locking devices and no spring-loaded ball latches or similar will be accepted.

28.3 Approvals

Before commencement of manufacture of the panel, full working drawings must be submitted for approval by the Engineer. When the panel is under construction, and again upon completion but prior to delivery to site, the manufacturer must notify the Engineer so that the panel can be inspected and approved.

28.4 Components

All components where possible shall bear the SABS mark or if not available the equivalent B.S. or DIN mark.

All components shall be entirely suitable for their application and the switchgear shall be suitable for the site and location. Space shall be provided for the incoming and outgoing cable circuits.

All cut edges and drilled holes of Bakelite or similar insulation board must be treated with electrical varnish. All equipment, levers, handles, keys, etc. required for operation of the panel must be included together with suitable clips or trays to store these when not in use.

28.5 Guarantee

The whole of the panel and components shall be guaranteed for a period of 12 months from the date of hand-over to the Owner

28.6 Equipment

The following equipment shall be included on the panel:

- (a) 1 meter (220 V AC) to indicate the total running hours the plant has been in operation.

- (b) 1 voltmeter (as per BS 89), approximately 125 mm scale to read 0 to 415 volts.
- (c) Control relays, start relays, three crank start relays, start failure relay, fuel supply relay (solenoid), continually rated alarm relay, oil pressure relay, oil temperature relay, overspeed relay, water overheat relay, jacket water heater relay, alarm relay, low fuel relay.
- (d) Illuminated resettable fault indicators, coupled to a common continuously rated hooter or low current electronic type yodel alarm for: low oil pressure, high oil temperature, high water temperature, engine overspeed, failure to start, pump overload, low fuel level, extra low fuel level engine trip
- (e) Auto/Test/Manual/ off selector key switch
- (f) Battery charger
- (g) MCB's for:- Battery Charger, Jacket water heater, fuel pump
- (h) Lamp and alarm test facility.

28.7 Sequence of Operation

The control panel shall be so designed to provide the following:

28.7.1 A water pressure sensing relay which in the event of a fall in pressure the timing sequence shall be :

28.7.1.1 An immediate command to the engine to start.

28.7.1.2 Once the command to start has been given, three start attempts shall be allowed each of 10 seconds with a 10 second delay between each attempt. In the event of failure to start within these 3 initial attempts, the starting system shall switch off and a L.V. alarm shall be initiated. Any further start attempts may only be carried out when the plant is in the "manual" position.

28.7.1.3 Fault reset after identification and rectification of same shall be by switching the selector to the "off" position and then back to the desired mode.

28.8 Protection of Plant

The panel shall automatically provide the following protection with the alarm circuiting and tripping devices operating off the 12- or 24-volt D.C. Battery as applicable.

	Hooter or Siren	Visual Light Indicator	Lock out	Fuel Solenoid off
Overspeed	X	X	X	X
Under speed or overload	X	X	X	X
High Temperature	X	X	X	X
Low Oil Pressure	X	X	X	X
3 Starts Failure	X	X	X	X
Low Fuel Alarm	X	X		
Battery Charger Failure	X	X		
Extra Low Fuel Cut-out	X	X	X	

All the above shall have the necessary re-set buttons.

28.9 Battery Charger

28.9.1 The charger module shall be a mains (220 V) operated unit to continuously trickle charge the engine starter battery.

It must be of the modulating type similar or equal to those supplied by Messrs Vaal, Romberg, Semi-Conductor Services, or P & S Power Products or be as further specified here.

28.9.2 A "loss of charge" alarm relay shall be provided to indicate failure of the charger. This should be a current monitor.

- 28.9.3 The output voltage (27,6 volts D.C. or 13,8 volts if applicable) shall be via full wave rectification and be kept within 1% of the float charge voltage.
- 28.9.4 The 220-volt input voltage may vary between 200/240 volts and the equipment, (transformer etc) must be capable of handling this discrepancy.
- 28.9.5 During the "cranking/start" period and during running of the diesel engine the battery charger shall be disconnected via a relay. Charging of the battery shall then be by means of an engine mounted alternator.
- 28.9.6 The charger shall be equipped with:
- (a) Overload protection on the 24 (12) volt side
 - (b) One 72 x 72 mm shielded type ammeter showing the charging rate
 - (c) One 72 x 72 mm shielded type voltmeter with a spring return, normally open, push-button switch for indicating battery voltage
 - (d) Relays for "failure alarms" and "running/start"
 - (e) Transformer and full wave solid state rectifier complete with capacitors where applicable.
 - (f) HRC fuses or fast acting MCB's on the secondary side
- 28.9.7 The battery charger shall be fully incorporated into the main control panel and be built to the same general specification (see paragraph 28.1) Relays shall preferably be of the "Octal" base type or equal and approved.
- 28.9.8 Ventilation.
- The position of the battery charger shall allow for good ventilation and not be below any of the other switch gear or relays.
- 28.10 Log Book
- A plastic covered log book shall be supplied for each plant room.
- 28.11 Emergency Lighting
- A 24 (12) Volt emergency light must be incorporated into the top section of the control panel in order to provide sufficient illumination for the safe operation and checking of the control panel. This light must switch on automatically in the event of a mains failure.
- 29.0 COMMISSIONING OF PLANT & EQUIPMENT
- 29.1 All instruments used shall be provided by the Contractor and shall be accurately calibrated and maintained in good working order.
- 29.2 Testing and balancing shall not begin until the system has been completed and is in full working order.
- 29.3 Tests shall be conducted by the Contractor in the presence of a Representative of the Engineer.
- 29.4 Two copies of the complete test reports shall be submitted to the Engineer prior to the first delivery of the project. Reports shall cover test and balance analysis for all air distribution and hydraulic systems. Sound tests for room type air conditioning equipment and all diffusers in occupied areas shall be included in the report. Reports shall be neatly typed.

PART B3-3 FIRE PROTECTION TECHNICAL SPECIFICATION

1.0 Introduction and General

This detail specification complements and qualifies the foregoing standard specifications of material & workmanship. The standard specification should be regarded as a basis and guideline, with this detailed specification taking preference where any ambiguity is concerned.

In the event of any further technical ambiguity between sections of this enquiry, then the sections will be considered in the following order of priority (unless stated elsewhere in Conditions of Contract).

- Schedule of quantities
- Detailed specification
- Drawings
- Standard specification

2.0 Scope of Work

This subcontract calls for the supply, installation, testing and commissioning of the specified Fire Protection Installation for the refurbishment of Site 03 Dimbaza Factories.

2.1 The following sections of work are included:

- a. Supply and Installation of complete:
- Fire protection installation, complete with all pipework, holderbats, isolating valves, hose reels, hydrants (were indicated) and the connection of the reticulation to the underground civil fire mains connection, either within a valve box or a saddle.
 - Twin booster fire brigade connections,
 - Handheld fire extinguishers.
 - Signage.
 - All installed by SAQCC approved installer.
- b. Testing and certification:
- Performing and submission of test records (as per SANS requirement) and certificates.
 - Issuing of SAQCC Fire Certificate of Compliance
 - Supply of Operators and Maintenance Manuals
 - Basic maintenance training for building maintenance staff
 - Provision of a twelve-month guarantee for the installation including a full service prior to expiry.
 - All other materials and labour necessary to complete the Works in full accordance with the specification and design contained or referred to in this document.

2.2 The following sections of work are excluded:

- Builder's work e.g., cut-outs in walls to Tenderer's specifications, including chasing and making good of walls.

3.0 Site Conditions

3.1 General

The equipment specified herein shall be designed to operate at the environmental parameters particular to Dimbaza, and surrounds.

4.0 Fire Mains Service Connection

4.1 New Fire mains bulk supply line to be installed by specialist SAQCC certified contractor.

5.0 Pipe Locations, Materials and Specifications

For steel piping of 75 mm diameter and larger (i.e. flanged) the hot dip galvanising to SANS 763, 1977 (when required) shall be after fabrication.

6.0 Pipe Jointing and Fittings

Mild Steel Piping and/or Galvanised:

- 6.1 Mild steel piping shall be joined by means of screwed sockets, navy unions or flanges. Red lead jointing or other approved jointing compounds may be used sparingly and exposed threads shall be painted with zinc chromate primer or equivalent paint to prevent rusting.
- 6.2 Where it is required to remove sections of pipe or where pipe joints will need to be tightened after installation and testing, unions or flanges must be provided to facilitate the work,
- 6.3 Welding construction is only permitted for pipes of 50 mm diameter or larger and then only when prefabricated and welded in the workshop of the installing engineers whose welding procedures, pre-approved by the Insurance Council of South Africa.

NO WELDING OR HEAT CUTTING IS PERMITTED ON ANY SITE OF ERECTION

The edges of pipe to be welded shall be machine bevelled wherever possible. Gas cuts shall be true and free of all burned material. Before welding the surfaces shall be thoroughly cleaned and degreased. Piping shall be carefully aligned. No metal shall project within the pipe. Mitred joints will not be allowed.

Only welded fittings prefabricated by recognised manufacturers will be permitted. No other prefabricated welding fittings will be permitted without the express approval of the Engineer.

For branch piping sixty five millimetres (65 minimum) in size or larger, use welding tees, with flanged outlet. For piping 200 mm and larger use shaped spigots and welding neck flanges. Cracks, pinholes, excessive undercutting etc. shall be removed and the joints rewelded. Welders and welding processes shall meet the requirements of the SANS Code for welders.

- 6.4 Jointing of mild steel and galvanised piping using grooved pipe fittings and couplings may be used provided they have been approved by SANS. Proper gaskets, designed for the applications shall always be used. Approval by the consulting Engineers must in all cases be obtained prior to the utilisation of such fittings.

7.0 INSTALLATION OF PIPING

All piping shall be installed in an approved manner to meet structural and architectural requirements, to avoid interference with the work of other trades and be finished in a neat and workmanlike manner with true alignments and grades. Piping shall be run to ensure sufficient access for inspection, testing, servicing, etc.

7.1 Storage

Deliver and store to Suppliers recommendations with plugged ends. Clean pipes thoroughly. In addition it is required that pipes are stored off the ground and under cover.

Keep the ends closed during erection with temporary caps. Before any pipe is installed it shall be upended and pounded to remove any foreign matters present.

7.2 Installation

Slope of Pipes

In order to prevent air being lodged, the pipe lines shall have a proper inclination throughout the work.

Also the sloping shall be such that the system can be thoroughly drained.

7.3 Underground Piping

- a) Unless otherwise specified, the Contractor shall not be responsible for the digging and backfilling of pipe trenches for underground piping in his contract. He is however to ensure that the excavations and laying of piping is in accordance with SANS 1 200 06, LD and LD, and that this specification is adhered to so that his installation can be correctly installed.
- b) The trenches shall be of such depth that when properly laid at least 750 mm of soil shall cover the top of the pipe.
- c) The pipes shall be laid on a clean, soft soil bed not less than 750 mm deep. When backfilling the trench, it shall firstly be filled to approximately 150 mm above the pipe again with clean soft soil and then

compacted after which the final filling is to be made and again compacted (care shall be taken to ensure that no large stones or debris occur in the filling material).

- d) In the case of cement and uPVC piping the Contractor must ensure that the trenches are recessed where couplings or fittings are positioned such that the pipe lies flat on the bed. This is to prevent the fittings supporting the length of pipe. The Contractor is also to allow for any pipe movements, such as thrust at bends etc. Concrete blocks in accordance with manufacturer's specifications shall be provided at these points. Where asbestos cement piping cross roads etc., the pipe shall be protected by casting into concrete not less than 100 mm over the top of the pipe.
- e) Where steel or uPVC pipes are to cross roadways, under connecting corridors, etc., the Contractor shall provide PVC sleeves through which the pipes will pass. It shall be at a depth of not less than 750 mm below the surface and shall be encased in concrete not less than 150 mm all round. These sleeves are to be two pipe sizes above the size of the water pipe to permit the removal and the replacement of the pipe should the need arise.

7.4 Internal Pipe Runs

All piping shall be installed parallel to, or at right angles with building walls and partitions.

In general, all pipes shall be supported from the building structure in a neat and workmanlike manner, and whenever possible, parallel runs of piping shall be grouped together.

- a) Where pipes pass through walls, floors, ceilings, etc., they shall be sleeved. The sleeves shall be of PVC material and allow for pipe thermal reactions.
- c) Where pipe sizes are reduced, proper reducing fittings shall be used. On no account will bushes be accepted.
- d) Horizontal take-offs from vertical pipes shall be long enough before the next fixing to take up any movements or shall have an expansion loop to provide this facility.
- e) Every tube section shall be installed to have the possibility of expansion and contraction without restriction. It shall be anticipated that no deflection acts on very short tube section. Expansion loops or expansion joints and anchors shall be fitted in order to reduce the displacement of individual line elements and to deflect them to the points where they can act without damage.

7.5 Concealment of Pipework

Pipework must not be embedded in the concrete floors of a building, nor should it be concealed in any other situation where difficulty or undue expense would be involved in making alterations or additions which may subsequently be necessary. Concealment of pipework is particularly to be deprecated in the case of buildings in multiple tenure where erection of partitions to suit tenants may impair the effective distribution of water from the sprinklers and necessitate alterations in the positioning of sprinklers.

7.6 Pipe Hangers and Supports

- a) All pipes shall be supported from the building structure in a neat and workmanlike manner and, wherever possible, parallel runs of horizontal piping shall be grouped together on trapeze hangars.
- b) Vertical risers shall be supported at each floor line with pipe clamps. The use of wire, perforated metal straps, nails and so forth, to support pipes will not be permitted. Hanging of pipes from other pipes will also not be permitted.
- c) Vertical runs shall be secured by means of rustless holderbats or other clamps. Duckfoot supports shall be provided at the bottom of a vertical section of large piping (100 mm and above) to support the weight of the pipe and the water.

Under no circumstances shall a vertical pipe be supported from its highest point. Should any fittings be installed in the vertical sections, care shall be taken to ensure that these fittings are not in a state of tension through the combined weight of the pipe and the water.

- d) Horizontal pipes shall be supported by means of galvanised hangers at close enough centres to prevent sagging. The minimum recommended spacings for supports and hanger rod size shall be set out below:
- e) The hangers shall be protected against rust and adjustable in height. They shall be manufactured from rods of the diameter as specified above, one end threaded and bolted to an angle iron cleat or Unistrut

section suitably secured to the structure. The other end shall be formed into an eye and bolted to the pipe clamp.

7.7 Changes in Material

Where piping material changes occur (i.e. copper to steel etc.) dielectric unions must be furnished and installed.

7.8 Threaded Pipe

The pipe connection shall be cut square and full threaded with clean cut tapering threads and shall be reamed after threading. All threaded connections shall be made with approved thread compound applied to male threads only, and shall be so made up that not more than two (2) threads will be exposed.

7.9 Testing of Water Piping

All piping installed on the project shall be hydraulically tested as specified herein. The Contractor shall provide all equipment required to make these tests.

Piping may be tested a section at a time in order to facilitate the construction programme.

The Contractor shall fill the section of the pipe to be tested with water and bring the section up to test pressure with a positive displacement type test pump. The tests shall be conducted by the Contractor in the presence of the Engineer or his representative. Gauges used in the tests shall have been recently calibrated with a dead weight tester.

All tests shall have full test pressure applied to the piping for a minimum of twenty-four (24) hours

The test pressure at any section of the system shall not be less than one and a half times the system working pressure or 1 500 kPa (Maximum) unless otherwise stated under Part Four of the specification.

When the test pressure has fallen over 6 percent (%) during the twenty-four (24) hour test period, the point of leakage shall be found, repaired and the test repeated. This procedure shall be followed until the piping system has been proven absolutely tight.

The use of chemicals or so-called "stop-leak" compounds will not be permitted at any time.

When instruments or gauges are installed in the piping system, they shall be removed during the tests if subject to damage from shock or excessive pressure. This does not apply to control valves.

Leaks shall not be repaired by mastic or other temporary means. All leaks shall be repaired by removal of the section that is leaking and reinstalling new material with joints as specified herein before.

7.10 Flushing of System Pipework

There must be a 50 mm diam. flushing connection fitted on the incoming main below each installation control valve. These flushing points must be plugged to prevent misuse.

7.11 Terminal Drain Valve

25 mm drain valves must be fitted at the extremity of the distribution pipe at each level of protection. This is to indicate that there is water at this point and that no blank flanges are left in the installation. The valve should be positioned at hand level and must be normally strapped closed.

8.0 **Fittings**

8.1 All fittings, including safety devices are to be placed and sized.

9.0 **Safety Devices**

9.1 Where applicable.

10.0 **Handling And Storage Of Materials, Fittings And Components**

10.1 Pipes, fittings and components shall be handled carefully to obviate damage

10.2 Manufactures' advice shall be followed as to how their products should be loaded, transported, unloaded and sorted

11.0 **Identification**

11.1 Colour Coding

11.1.1 General

All equipment shall be colour-coded in accordance with standards recognised, and where possible to comply with relevant SANS colour codes unless specified otherwise.

11.1.2 Colour Coding of Pipes

Identification of the contents of pipes shall either be by painting a 100 mm wide primary colour band or by using self-adhesive PVC coloured tape. The colour of the paint or tape shall comply with SANS 0140 Identification Colour Marking, Part III, Contents of Pipelines, as detailed below.

The colour names referred to in the table s are specified in SANS 1091.

TABLE OF COLOUR CODING FOR PIPELINES AS PER SANS 0140 PART III - 1978

CONTENTS OF PIPE PRIMARY COLOUR BANDS

FIRE FIGHTING

- All Pipes Signal Red

12.0 **Sterilization**

12.1 N/A

13.0 **Builders Work**

13.1 The Engineer will prepare details showing where all sleeves are to be positioned before any structural concrete is cast.

13.2 The Engineer's approval, in writing, must be obtained before any holes or chases are cut in any structural component i.e. brickwork, concrete, steel or timber.

13.3 The Contractor shall be responsible for cutting chases and holes in walls and slabs to accommodate his services which must be coordinated in liaison with the Main Contractor who will be responsible for making good.

14.0 **Excavation**

14.1 General:

Tenderers are to note that excavation shall be carried out by the main contractor.

15.0 **Operating And Maintenance Details**

15.1 Two complete sets of operating manuals complete with spares schedules, as-fitted layout drawings, schematic diagrams and operating and general maintenance information, bound in hardcover ring binders shall be prepared by the Contractor and delivered to the Engineer 14 days prior to practical completion for approval, at or before final handover.

15.2 A full "RECORD" set of drawings shall also be submitted to the engineer for record purposes.

16.0 **Schedules Of Information**

16.1 The schedules of information contained in this document consists of 2 sections :

- a. Information supplied by the Engineer (schedules of drawings, sleeves etc. as applicable.)

b. Information to be supplied by the Contractor at tender stage

(tender form, information on the makes, types and ratings of equipment and materials offered, schedules of prices and rates for variations, schedules of quantities, etc. as applicable.)

16.2 Tenderers are required to enter, at the time of tendering, in the "Schedule of Equipment and Material Offered", sufficient details to enable the equipment concerned to be identified without ambiguity.

16.3 It is not sufficient for a tender to state "as specified" in the schedules.

16.4 Failure to complete these schedules (if applicable) may render a tender invalid.

17.0 **Samples And Alternatives**

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

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

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

18.0 **Certification On Completion Of Guarantee And Maintenance Period**

19.1 In the month prior to the expiry of the guarantee and first twelve months maintenance period the Engineer shall inspect and, if necessary, retest the installation so as to be able to provide the Tenant with a certificate, within fourteen days of the guarantee expiry date, to confirm that the guarantee has been honoured and that the installation has been properly serviced at required regular intervals by the subcontractor.

18.2 The cylinders shall be guaranteed from date of take over for a period of three years on the tank, insulation and outer casing and for one year on the electrical components

19.0 **Supervision Of Workmanship And Details**

19.1 The work shall at all times, for the entire duration of the contract, be executed under the supervision of a skilled and competent representative of the subcontractor, who must be able and authorized to receive and execute instructions on behalf of the Mechanical Subcontractor.

19.2 In the event that inferior materials or bad workmanship, on the part of the subcontractor, leads to remedial work requiring redesign by the Engineer, the cost of this work, including related professional fees, shall be borne by the Subcontractor.

19.3 Similarly, should delays in the contract be caused by poor performance on the part of the Contractor causing the Engineer to spend extraordinary time on the project, the extra costs incurred shall be borne by the Contractor.

These costs will be based on the SAACE hourly rates and will be deducted from claims due or claims which will become due to the Contractor.

20.0 **Making Good**

20.1 The subcontractor will carry out in all instances any work to be made good such as damage to, or disturbances of the building installations caused by himself or his employees during the execution of the contract, at his own cost.

21.0 **Test And Inspections - Pressure Testing And Quality Control**

21.1 The Contractor shall, at no extra cost to the contract, provide all the necessary equipment and facilities to conduct all tests as directed by the Engineer and or Supply Authorities.

22.0 **Commissioning And Testing**

22.1 Commissioning:

A documented method shall be followed whereby the mechanical subcontractor shall ensure that his installation is correctly constructed in accordance with the manufacturers' specifications, consultant's specification, consultant's design and all codes of practice and international design codes.

The commissioning procedure must allow for signing off of the major items of equipment by a qualified person in terms of the codes. These signed off documents will form part of the record drawings.

22.2 Performance Tests:

The mechanical subcontractor shall be responsible for the physical testing, in the manufacturing works, or on site, of the items of plant or systems as required by the Engineer. These tests shall be performed by the mechanical subcontractor or supplier of the equipment, and where called for, the Engineer shall witness such tests. The Engineer may also only witness a representative sample of the equipment tests. In any event, the mechanical subcontractor will supply documentary proof of full performance tests of all relevant equipment.

22.3 Acceptance Tests:

All brass fittings and valves shall be certified by the manufacturers to be free

From de-zincification and will be subjected to check tests as set out in the Detailed Specification

Acceptance tests will be performed on site of the working system or sub system, to show that the works, as installed, is functioning according to the specifications and design. The onus for the correct functioning of the systems is still on the mechanical subcontractor irrespective of whether the Engineer has witnessed the acceptance tests or not. Prior to the system being connected, a test certificate must be issued by / given to the local electricity supply authorities.

23.0 **Compliance With Regulations, Standards And Codes**

23.1 The subcontractor will arrange for all inspections and testing of the installation after completion, including the issuing of the Certificate of Compliance. All notices, fees, including inspection and re-inspection are the responsibility of the subcontractor and all the relevant costs shall be borne by him.

23.2 The workmanship throughout the Works will be to the satisfaction of the Employer. Any materials or workmanship considered as faulty or incorrectly or inadequately erected or repaired, will be substituted, altered or rectified to the satisfaction of the Employer, without additional cost to the Employer.

23.3 The Works will be executed in strict accordance with the following:-

- a. All relevant by-laws and regulations of local authorities.
- b. All relevant SANS, BS and other international standards of the latest revision, where applicable.

c. The Occupational Health and Safety Act of 1993 as amended.

24.0 **Monthly Certificates**

24.1 Pro forma claim forms are available from the Engineer. These are available in a blank copied format or as a computer file in Excel. This is the preferred method of submitting payment claims. Should the subcontractor have developed his own method of claiming, this may be submitted to the Engineer for consideration.

25.0 **Programme**

25.1 The subcontractor must conform to the programme as submitted by the principal Contractor. The estimated period for completion, as tendered, is as per the builders programme. The cost of overtime, additional labour and plant for the completion of the works, in accordance with the programme, must be included in the Tenderer's price for the project. The cost of any work outside the requirements of the programme or necessary under exceptional circumstances will be for the Employers' account only if covered under a variation order.

25.0 **Drawings**

25.1 Tender Drawings

All drawings, those supplied loose, as well as those bound in, form part of this enquiry and are listed below:

- 2214-M-T-101 FP RevA Fire Protection Equipment
- 2214-M-T-102 FP RevA Fire Protection Equipment

It is the Tenderer's responsibility to inform the Engineer as to the absence of any of these drawings.

26.0 **Sufficiency Of Tender**

26.1 The Tenderer's offer shall be for the supply, delivery, installation and commissioning of the complete installation as detailed, described or implied in this document and on the accompanying drawings.

26.2 The Tenderer's offer shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the Works and that the rates and prices he has entered in the schedules shall cover all his obligations under the contract for the proper completion of the Works.

27.0 **Measurement**

27.1 The Tenderer shall not make any assumption regarding the installation. If there is any doubt or ambiguity, the Engineer must be consulted. The Tenderer shall take cognisance of the fact that the schedule of quantities is re-measurable and the quantities may be adjusted at the end of the contract.

27.2 All measurements are nett, unless otherwise stated, and Tenderers must allow in the rate for wastage.

PART B3-4: FIRE PROTECTION EQUIPMENT – BILLS OF QUANTITIES

RNA CONSULTING ENGINEERS

MDANTSANE MALL

FIRE SUPPRESSION EQUIPMENT

PROVISIONAL BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>BILL NO. 1 : PRELIMINARY AND GENERAL</u>				
1,1	Compliance with General Conditions of Contract : Insurances, Sureties, etc as outlined in the Principal Contractor's Preliminaries.				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1,2	Establish on Site and provision of buildings and storage facilities including de-establishment of site, cleaning and tidying up after completion of contract.				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1,3	Tools and equipment, Communication, transport.				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1.4	Contract Management, Company overheads and supervision of the Works including attendance of site meetings (2 per month).				
	-				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1,5	Provision of all drawings and manuals as specified including As-Installed drawings.	Item	1		
1,6	Liaison with Local Supply Authority, compliance with OSH Act, Local By-laws and any other statutory regulations .	Item	1		
1,7	Provision of Training of Client's representative (s) at "practical completion" and at "end of defects liability period".	Item	1		
Total Carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
2,0	BILL NO 2: FIRE FIGHTING EQUIPMENT				
	<u>Steel Piping</u>				
	Supply and install steel piping to ASTM A106 #40 or SANS 62 as specified (heavy quality)				
2,1	150 mm	m	0		
2,2	125 mm	m	292		
2,3	100 mm	m	134		
2,4	80 mm	m	60		
2,5	65mm	m	20		
2,6	50mm	m	15		
2,7	40mm	m	10		
2,8	32mm	m	10		
2,9	25mm	m	44		
2,10	Thrust Block 2,4 Ton/m ²	m ²	2		
	<u>Pipe Hangers & Brackets(steel piping)</u>				
	Supply and install as specified				
2,11	150 mm	no	0		
2,12	125 mm	no	97		
2,13	100 mm	no	45		
2,14	80 mm	no	20		
2,15	65mm	no	7		
2,16	50mm	no	8		
2,17	40mm	no	5		
2,18	32mm	no	5		
2,19	25mm	no	22		
	<u>Pipe Fittings</u>				
	<u>Bends</u>				
	Supply and install as specified				
2,20	150 mm	no	0		
2,21	125 mm	no	28		
2,22	100 mm	no	20		
2,23	80 mm	no	40		
2,24	65mm	no	20		
2,25	50mm	no	15		
2,26	40mm	no	10		
2,27	32mm	no	10		
2,28	25mm	no	32		
	<u>Tees Equal</u>				
	Supply and install as specified				
2,29	150 mm	no	0		
2,30	125 mm	no	18		
2,31	100 mm	no	16		
2,32	80 mm	no	16		
2,33	65mm	no	20		
2,34	50mm	no	15		
2,35	40mm	no	10		
2,36	32mm	no	10		
2,37	25mm	no	16		
Subtotal Carried forward to Next Page					

Subtotal Brought forward from Previous Page				
	<u>Reducers</u>			
	Supply and install as specified			
2,38	150 - 125 mm	no	0	
2,39	125 - 100 mm	no	14	
2,40	100 - 80 mm	no	8	
2,41	125 - 65 mm	no	20	
2,42	125 - 32 mm	no	15	
2,43	125 - 25 mm	no	10	
2,44	100 - 32 mm	no	10	
2,45	100 - 25 mm	no	16	
	<u>Clamp On</u>			
	Supply and install as specified			
2,46	150 mm	no	0	
2,47	125 mm	no	166	
2,48	100 mm	no	87	
2,49	80 mm	no	50	
2,50	65mm	no	30	
2,51	50mm	no	28	
2,52	40mm	no	25	
2,53	32mm	no	25	
2,54	25mm	no	42	
	<u>Isolating Valves</u>			
	Supply and install as specified			
2,55	150 mm	no	0	
2,56	125 mm	no	4	
2,57	100 mm	no	2	
2,58	80 mm	no	2	
2,59	65mm	no	2	
2,60	50mm	no	2	
2,61	40mm	no	2	
2,62	32mm	no	2	
2,63	25mm	no	16	
	<u>Non-Return Valves</u>			
	Supply and install as specified			
2,64	125 mm non return valve	no	4	
	<u>Painting and Finishing</u>			
	Allow for painting sprinkler and fire hose reel piping as follows			
2,65	Etching primer coat	sum	2	
2,66	Undercoat (different colour to primer)	sum	2	
2,67	Final coat - colour as specified by architect	sum	2	
	<u>Testing and Commissioning</u>			
2,68	Allow for testing and commissioning of the systems	sum	1	
Subtotal Carried forward to Next Page				

Subtotal Brought forward from Previous Page

2,69	<p>Valve Chamber Supply and install as specified</p> <p>Bulk Valve Chamber - Cover Dimension 400 x 324 mm; Frame Dimension 533 x 458 x 152 mm, clear opening 380 x 305 mm</p>	no	0		
	<p>Fire Hose Reels Supply and install as specified Fire hose reels to comply with requirements contained in SANS 543 and maintained in accordance with the requirements as given in SANS 1475-2. Supply, install, test and commission: 30 m length of fibre braid reinforced neoprene hose of 20 mm internal diameter, c/w pressure gauge</p>				
2,70		no	16		
2,71	Tamper seals	no	16		
	<p>Fire Extinguishers Supply and install as specified Hand held fire extinguishers shall comply with the requirements contained in SANS 1910 or SANS 1151, and shall be installed, maintained and serviced in accordance with SANS 10105-1 and SANS 1475-1.</p>				
2,72	5 kg CO2 hand held fire extinguisher.	no	30		
2,73	4,5 kg DCP hand held fire extinguisher.	no	30		
	<p>Waterproof Tape Supply and install as specified</p>				
2,74	Self adhesive waterproof tape 2,5 mm	m	40		
	<p>Hydrant Supply and install as specified</p>				
2,75	80 x 65mm "Woodlands Type" or equally approved brass right-angle hydrant valve with cap and chain	no	12		
Subtotal Carried forward to Next Page					

Subtotal Brought forward from Previous Page					
	<p><u>Hydrant Pedestal</u> Supply and install as specified</p> <p>Unreinforced concrete hydrant pedestal 1.1m high overall cast around vertical pipe with bottom 600mm below ground, 340 x 340mm square at base and tapering to 210 x 210mm overall octagonal shaped top, finished in all exposed faces in 1:3 cement plaster with all angles rounded including formwork and setting 600mm deep in ground, excavation in all material, backfilling, carting away surplus material, risk of collapse, dewatering, backfilling, compaction, and two coats of approved golden yellow paint to exposed surfaces, as per Engineer's drawing.</p>				
2,76		no	1		
	<p><u>Twin Booster Fire Brigade Connection</u> Supply and install as specified</p> <p>Twin Booster Fire Brigade Connection</p>				
2,77		no	2		
Total Carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
3,0	<p>BILL NO 3: FIRE SIGNAGE EQUIPMENT</p> <p><u>Fire Signage</u></p> <p>Aluminium Framed Wall Mounted Brackets ABS PVC 150 mm Signs</p> <p>ALL "E" TYPE SIGNS IS WHITE FIGURES AND BORDER ON GREEN BACKGROUND</p> <p>ALL "F" TYPE SIGNS ARE RED REVERSE ENGRAVED ON ON WHITE BACKGROUND WITH 4mm RED BORDER LINE</p> <p>All internal signage to be SANS 1186/5</p> <p>Supply and install the following:</p>				
3,1	2 compartment Type F1 (Arrow & Extinguisher)	No	27		
3,2	3 compartment Type F4 (Arrow; Extinguisher & Hose Reel)	No	7		
3,3	4 compartment Type F7 (Arrow; Extinguisher; Hose Reel 7 Hydrant)	No	17		
3,4	1 Compartment Type E1 (EXIT sign)	No	13		
3,5	2 compartment Type E1 (Arrow & Running Man)	No	13		
Total Carried forward to Summary Page					

SUMMARY

Item No.	Description	Amount
1	BILL NO. 1 : PRELIMINARY AND GENERAL	
2	BILL NO 2: FIRE FIGHTING EQUIPMENT	
3	BILL NO 3: FIRE SIGNAGE EQUIPMENT	
Carried to Main Contractors Final Summary (Ex VAT)		

PART B3- 5 SCHEDULE OF MATERIALS OFFERED

The Tenderer must complete the following schedules and submit them with the priced Bill of Quantities.

The schedules will be scrutinised by the Engineer and should any material offered not comply with the requirements contained in the specification, the Contractor will be required to supply material in accordance with the contract at no additional cost.

NB : **Only one manufacturer's name to be inserted for each item.**

Item	Material	Make or trade name	Country of Origin
1.	Gavanised steel pipe		
2.	Non-Return Valves		
3.	Isolating valves		
4.	Strainers		
5.	Angle valves		
6.	Manholes		
7.	30m Hose Reels		
8.	Hand Held Fire Extinguishers		
9.	Pressure Gauges		
10.	Hydrant Connections		

NOTE : Tenderers are to note that under no circumstances may materials be installed other than offered in the above materials schedule, which has been approved and accepted by the Contractor.

Should the successful tenderer wish to supply materials other than those originally offered, prior written approval must be obtained from the Contractor before any orders are placed.



**ECDC PROPERTIES:
REPAIRS AND REFURBISHMENTS OF
MDANTSANE MALL**

**PART B2-1: HEATING VENTILATION AND AIR
CONDITIONING EQUIPMENT
INSTALLATION**

Consisting of:

- Section 1: Scope of Works**
- Section 2: Standard Specifications**
- Section 3: Detailed Specifications**
- Section 4: Bills of Quantities**
- Section 5: Materials & Equipment Offered**
- Section 6: Drawings**

DOCUMENTS COMPILED BY:

RNA Consulting Engineers
11 Bonza Bay Road, Beacon Bay
East London, 5201

Contact Person: Mr T Warne
Tel: (043) 742 0041
Fax: (043) 742 3883

PART B4-1: VENTILATION - SCOPE OF WORKS

HEATING VENTILATION AND AIR CONDITIONING EQUIPMENT

1. GENERAL

- 1.1 The Standard for Uniformity in Construction Procurement published in terms of the Construction Industry Development Board (CIDB) Act, 2000 (Act No. 38 of 2000), the Standardized Construction Procurement Documents for Engineering and Construction Works as issued by the CIDB and any other relevant documentation pertaining thereto must be studied and all principles in this regard must be applied to all procurement documentation, practices and procedures.

2. THE CONTRACT

2.1 HEATING VENTILATION AND AIR CONDITIONING EQUIPMENT

The main contract is for the refurbishment of the Mdantsane Highway Mall in Mdantsane, East London, Eastern Cape. The mall shall remain in operation whilst construction takes place. The project will therefore have to be sequenced & sectional completion will take place. As per main contract, the Work Sequence shall be:

Section No.1 - North/South Wing (First Floor): Practical Completion – 6 (six) calendar months from possession of site (excluding annual builders' holiday)

Section No.2 - East/West Wing (First Floor): Practical Completion – 12 (twelve) calendar months from possession of site (excluding annual builders' holiday)

Section No.3 - North/South Wing (Ground Floor): Practical Completion – 18 (eighteen) calendar months from possession of site (excluding annual builders' holiday)

Section No.4 - East/West Wing (Ground Floor):
Practical Completion – 24 (twenty-four) calendar months from possession of site (excluding annual builders' holiday)

Section No.5 - Balance of Works (Demolition of hawker stalls/provision of new and replacement of underground services):

Practical Completion – 24 (twenty-four) calendar months from possession of site (excluding annual builders' holiday)

The work to be carried out and commissioned by a SAQCC gas approved installer:

- a. Fresh air and extraction ventilation systems,
- b. Dual purpose Smoke & Natural Ventilation Slope Ventilators, Electrically Actuated & Interlocked to Early Warning Fire Detection System,
- c. Transfer Grills,
- d. Testing and Commissioning, as per SANS 10400 Part O & T,
- e. Manuals, Drawings, OEM Literature,

2.2 Existing

All installations new. Building is Existing.

2.3 Order of The Works

As per the building contractors' program of works.

PART B4-2: VENTILATION - STANDARD SPECIFICATION

1.0 GENERAL

The scope of Work is as stated in 1.0

The system shall offer the best possible compromise between the initial expenditure and the long term interest and redemption charges and running/operating costs.

The design and installation shall comply with the codes of practice and standards promulgated by recognized authorities in the fields of air-conditioning, refrigeration, ventilation, piping, electrical technology and all other branches of engineering science applicable, such as the S.A.N.S., B.S.S., A.S.H.R.A.E., SMACNA and A.S.M.E.

All workmanship and materials used in the execution of the works shall conform to modern practice and the entire installation shall comply fully with all relevant requirements of governmental and the Local Authority whose jurisdiction embraces the location of the site.

2.0 BIDS

2.1 Conditions of bid

The attention of bidders is drawn to the conditions of bid as indicated on the official bid form.

2.2 Modifications

Bidders are at liberty to submit modifications based on their standard practice and such modifications, with reasons therefore, shall be clearly stated in the bid. The price for this shall not be included in the net bid price but shall be stated separately as an extra or an omission.

2.3 Checking of bid documents

On receipt of the bid documents, the bidder must, prior to submitting his bid, check all the bid documents and should any difference or discrepancy between or in the Drawings and Specification be detected by the bidder, he shall seek in writing a decision also in writing of the Representative/Agent on the true intent and meaning of the bid documents as the East London Industrial Development Zone cannot be held liable for the additional cost of extra work that may be caused as a result thereof.

2.4 Scope of bid price

The bid price and all prices and/or rates which are inserted into the price schedules in the Specification and transferred to the bid form, must be for the execution and completion of the Works in accordance with the Drawings, Specifications and Conditions of Contract, as well as for the provision of all labour, materials, workmanship, machinery, plant and everything that is or may become necessary.

If there are or may be any exemptions from levies, customs duties, tax, etc applicable on materials, good or work, the bidder must make his own arrangements therefore, as the bid price shall be regarded as comprehensive.

2.5 Value Added Tax

The bid price shall include Value Added Tax payable in terms of the Value Added Tax act, 1991 (Act 89 of 1991).

2.6 Information required with bids

Bidders shall supply with their bids a full specification where necessary, including dimensioned drawings or sketches of the plant, and a complete wiring diagram of any automatic controls.

Particulars shall be given as set out in the schedule concerned which shall be filled in by the bidder. Failure to comply with these requirements may render the bid liable to disqualification.

2.7 Proof that materials are available

A bidder may be required, before acceptance of his bid, to furnish proof to the satisfaction of the Representative/Agent that he is in a position to secure all the materials required to complete the Contract within the contract period stated in the contract documents.

2.8 Bid documents and ownership thereof

The bid documents consisting of the official bid form, the specifications and the drawings (if any) scheduled in the Specification, and which have been made available to bidders, are the property of the East London Industrial Development Zone and shall be returned to the East London Industrial Development Zone, whether or not a bid is submitted.

3.0 **THE SITE**

3.1 Definition of Site

Location: Mdantsane, East London, Eastern Cape

External: Summer Max. Average : 26°C
Winter Min. Average : 6°C

3.2 Inspection of Site

Bidders shall visit the Site before bidding and satisfy themselves as to the local conditions, the accessibility of the Site, the full extent and nature of the work to be done and the conditions affecting the execution of the Contract generally. Claims on the grounds of lack of knowledge in such respects or otherwise will not be entertained.

3.3 The Site

The Site to be occupied by the Contractor will be clearly defined on the site plan, or will be pointed out to him by the Representative/Agent. The Contractor will on no account be allowed to extend his operations beyond the boundaries of the Site.

3.4 Procedure of work (Site in occupation)

If the site will be in occupation during the course of the Contract, the Works shall be carried out at such times and in such manner as will cause the least inconvenience to the occupants, and still allow the work to be proceeded with expeditiously. The instruction of the Representative/Agent shall be complied with in regard to the carrying out of any portion of the works which in his opinion requires to be expedited and priority shall be given to such work as and when directed.

(Site not in occupation)

If the Site will not be in occupation during the course of the Contract, the Works shall be proceeded with expeditiously. Priority shall be given to any portion of the Works as indicated in the Specification.

3.5 Existing services

If the Contractor encounters any existing services such as cables, pipes or sewers during the execution of the works, he must immediately notify the Representative/Agent, halting all work in the vicinity thereof, until instructions to proceed have been given by the Representative/Agent. Electric wires, telephone wires, pipes, etc., shall not be interfered with during the course of the Contract, but should it be necessary to disconnect or cut any such wires or pipes the Representative/Agent shall be advised thereof and his instructions awaited.

3.6 Protection of trees, shrubs and plants

The Contractor will be held responsible for any damage to trees, shrubs and plants on the Site and shall make good such damage at his own expense.

Trees, shrubs and plants may only be removed as indicated on the Drawings. The remaining trees, shrubs and plants may not be removed, cut back or disturbed in any way without the written consent of the Representative/Agent.

3.7 Water for the Works

The contractor shall provide all water he may require for the execution of the Works at his own expense.

3.8 Electricity for the Works

The Contractor shall provide all electricity for the execution of the Works at his own expense.

3.9 Recoverable materials property of Contractor

Items specified to be removed, taken out, demolished or dismantled and which are not specified for re-use, or for handing over to the Representative/Agent or others, become the property of the Contractor and must be removed from the Site immediately.

4.0 **ADMISSION TO SITE**

4.1 Permission for admission to and establishment on Site

Before the Site is visited by bidders or before the successful bidder (Contractor) establishes himself on the Site, the Representative/Agent's prior approval must be obtained. The Representative/Agent will, in the case of a Site located in defence or other security areas, make arrangements with the unit commander, or in the case of other Government sites, with the officer-in-charge, for permits for inspection of the Site for bidding purposes.

5.0 **PAINTING**

Painting shall only be necessary to those items which would normally be visible or visible when serviced, all mild steel or other components which would otherwise suffer corrosion if unpainted, however, shall be painted with two coats of rust-proof paint whether such components are normally visible or not.

Items which are factory-painted need not be repainted other than any making good which may be necessary. All plants requiring painting shall be correctly prepared and painted. No untreated metal surfaces shall be permitted on the project.

Items which are not galvanized or similarly protected against rust and corrosion shall be painted, as later detailed herein. No equipment, hanger brackets, etc., shall be permitted to be delivered on site in unprotected form; they shall be factory-coated with an approved zinc-rich prime coat before dispatch from their place of manufacture.

Painting shall comprise the following consecutive processes. First thoroughly clean, descale and degrease all surfaces, in accordance with acknowledged good practice, follow with a good coating of approved zinc-rich primer and finish with two coats of quality high-gloss enamel of an acceptable make. Final finish shall be to the full approval of the Engineer.

With the exception of ducting and piping, items with a galvanized finish, such as cable trays, need not be painted but shall be properly cleaned with a suitable proprietary galvanized iron cleaning fluid.

Particular care shall be taken that appropriate primers be used as a basis for painting and that paint be of high quality manufacture, all to provide a completely satisfactory finish to the approval of the Engineer. It shall be noted that galvanized surfaces are to be treated to ensure proper bonding of paint.

Whereas it would not be necessary to paint any ductwork conduits or pipe work installed in roof voids, shafts masonry ducts, etc., or where not normally visible, it is a requirement that such equipment be properly cleaned, treated with two coats of rust proofing paint if not galvanized or not metal subject otherwise to rust.

All equipment on the project shall be colour-coded in accordance with standards recognized in the Republic of South Africa and, where possible, to comply with relevant South African National Standard Colour Codes. (SANS. 01091-1975).

6.0 **PIPEWORK**

Refrigeration pipe work shall be carried out in seamless refrigeration quality copper tubing, suitable provision being made that the piping is not subjected to any stresses by vibration from the compressors.

7.0 **EQUIPMENT SUPPORTS**

Where equipment supports, stands, platforms and suspension brackets are indicated, specified or necessary for ductwork, pipe work, etc., the Sub-contractor shall provide supporting structures capable of carrying the load without distortion, affixed to the building structure in such a manner as not to subject it to undue stress.

Supporting of any rotating equipment shall incorporate vibration mountings of the type and selection specified in the applicable clauses referring to equipment bases herein.

All methods of suspension or supports shall be submitted to the Engineer for approval and for reference to the Structural Engineer where necessary prior to manufacture or installation.

Generally, supports shall preferably be proprietary products such as Unistrut or failing this, shall be of mild steel sections, purpose fabricated for their application. Under no circumstances whatever will sheet metal straps or plastic tie-wraps be accepted as a supporting method.

All supports shall cradle the item to be supported; shall not be riveted or welded to the equipment to be carried except in exceptional circumstances approved by the Engineer. Rod hangers shall not exceed one meter in length and be of minimum diameter 12 mm. For longer suspensions use mild steel angles. Angel iron supports shall be of 25 mm x 3 mm minimum. All supporting structures for equipment shall be dip galvanized.

Fastening methods shall employ REDHEAD or RAMSET anchor bolts or their equivalent for fixing supports to the building structure, it not being permissible to utilize gunpowder shot-driven bolts for this purpose unless prior approval be obtained.

Pipe work supporting holder bats shall be the product of a recognized manufacturer of such equipment, shop-fabricated saddles or similar devices being unacceptable unless limited space available necessitates their use. On insulated pipe work, hardwood inserts consisting of two-round machine cut pieces of timber shall be clamped around the pipe, insulation being cut away at such points, to allow proper support fitting. Wooden inserts shall be of the same thickness as adjoining insulation and 50 mm longer than the width of the holder bat support, to permit correct finishing of the insulation of vapour sealing to them.

Cable and flexible pipes shall be supported on Unistrut or equivalent perforated galvanized cable trays, manufactured by specialists, shop-fabricated trays or racks not being acceptable. The cable tray shall be suspended or bracketed using suitable mild steel angles.

8.0 DRAINS

The sub-contractor to provide all necessary drain piping laid to suitable falls from every item requiring such drainage. Such drains shall be run to the adjacent relevant drain points shown on the Drawings.

Drainage pipe work shall be adequately sized and carried out generally in medium grade galvanized piping and secured to wall (where applicable), all connections to equipment being effected with conical faced unions or flanged.

Drainage pipe work of longer than 4,5m run shall be provided with cleaning eyes on all bends to facilitate maintenance.

All condensate drainage is to terminate to the nearest drain.

9.0 ASSEMBLY OF COMPONENTS

9.1 It is essential that all mating components such as couplings, taper lock bushes, machined faces, etc., be thoroughly cleaned with a suitable solvent before assembly. All surfaces must be free from burrs or irregularities, which may prevent the correct mating of the surfaces.

9.2 A molybdenum-disulphide lubricant similar or equivalent to Mobil-grease Super shall be used on the threads of all bolts and between the mating surfaces of all parts closely fitted together, such as shafts and couplings, keys and base plates. PTFE tape shall be used in all screwed pipe connections.

10.0 WELDING

10.1 Welding shall be carried out in accordance with the current edition of SANS 044 Parts I to VII where applicable.

10.2 All welded filler or butt joints shall be free from porosity, cavities and entrapped slag. Joints shall be ground smooth, if required for aesthetic reasons only, without effecting weld strength.

10.3 The joints in the weld run, where welding has been recommended, shall be as smooth as possible and shall show no pronounced hump or crater in the weld surface.

10.4 The profile of the weld shall be uniform, of approximately equal leg length and free from overlap at the toe of the weld. Unless otherwise specified the surface shall be either flat or slightly convex in the case of fillet welds and with reinforcement of not more than 3mm in the case of butt welds. The weld face shall be uniform in appearance throughout its length.

10.5 Filler metal electrodes shall be of an approved type for the material being used and shall be kept in a dry condition. All electrodes shall conform to SANS 0455.

- 10.6 Only welders in possession of a valid approved competence certificate shall be employed.
- 10.7 All welds must show proper fusion.
- 10.8 Where welding is contemplated in pipe work systems, Tenderers shall allow for the removal and testing by an approved body of 5% of the welded joints in the system. These will be removed at random as indicated by the Engineer and tested. Should faulty welding be discovered, all other joints shall be X-ray tested by the SANS or an approved body, all at the expense of the Contractor.

11.0 GALVANISING

- 11.1 Unless otherwise specified in the Detailed Specification the following items shall always be galvanised:
- a) Fabricated mild steel sections exposed to the weather.
 - b) Steel grilles and louvers exposed to the weather.
- 11.2 Where hot dip galvanising is called for, items to be galvanised shall be entirely pre-fabricated and then dismantled in sections for galvanising. No cutting of threads or welding will be accepted after galvanising.
- 11.3 All hot dip galvanising shall be carried out in accordance with SANS 0934 and SANS 0763 where applicable, including preparation for galvanising.
- 11.4 Mild steel plate and sections shall be of good commercial quality, or higher grades, best suited for galvanising. The materials shall be free from slag or coarse laminations, fine fissures and rolled-in impurities.
- 11.5 Castings shall be sound, dense and clean, and free from distortion, porosity, carbon and slag enclosures, blowholes, and other injurious conditions.
- 11.6 Welding flux shall be chipped away and all welds wire brushed before galvanising.
- 11.7 The surface to be galvanised shall be free from paint, oil, grease and similar impurities.
- 11.8 All exposed surfaces including welds shall be thoroughly sand blasted prior to galvanising.
- 11.9 The Engineer reserves the right to inspect all steel components before galvanising, and shall have the right to reject or ask for remedial treatment of any material which is considered to be unsuitable. This applies particularly to welds.
- 11.10 The galvanising coating shall be smooth, adherent, continuous and free from black spots or flux stains.
- 11.11 Globular extra-heavy deposits of zinc, which interfere with the intended use of the material, will not be acceptable. Excessively protuberant lumps and nodules shall be removed by hot wiping or by the skilful application of mechanical means, however there shall remain a sufficient minimum thickness of unbroken zinc coating. Flaws on small parts and working surfaces shall be repaired only by stripping and re-dipping.
- 11.12 Repairs to galvanised coatings will not be accepted. Items damaged will need to be re-galvanised.
- 11.13 Coating thickness shall be as per table 1 of SANS 0763 unless otherwise specified in the Detailed Specification.
- 11.14 The SANS requirement for uniformity shall apply.
- 11.15 Galvanised surfaces specified with paint finishing shall not be passivated.

12.0 BEARINGS

12.1 Anti-friction

Anti-friction bearings shall include all bearings, which provide rolling contact between one or more sets of hardened steel balls or rollers and hardened steel rings or raceways.

Anti-friction bearings shall be of approved manufacture and available throughout South Africa.

To facilitate maintenance, spares interchangeability and standardisation, anti-friction bearings of standard design and manufacture shall be employed. All anti-friction bearings shall be provided with greasing facilities in accordance with manufacturer's requirements.

12.2 Bushed Bearings

Only where specifically stated in the Detailed Specification and in the case of low velocities and light loads in moisture free conditions will bushed bearings be accepted. All bushed bearings shall be made of an approved bearing metal composition, which has good anti-friction qualities and is capable of withstanding severe usage in the specific application.

All bushed bearings shall be provided with lubrication facilities to ensure adequate lubrication and shall be properly grooved to distribute the lubricant uniformly over the bearing surfaces. Grooves shall not be cut into the journal, but always into the surrounding bush. The edges of all chambers and grooves shall be rounded to avoid sharp corners and to facilitate the introduction of the oil or grease between the journal and the bearing metal.

12.3 Self-lubricating or oil less bearings

Self-lubricating or oil less bearings shall only be used on application of light and low velocities in moisture free and low humidity conditions and where access to bearings is difficult and likely to be neglected during servicing.

The type of bearing metal composition used shall have frictional and wear resistant properties akin to those of grease lubricated bushed bearings.

13.0 **NOISE AND VIBRATION CONTROL**

13.1 General

Unless otherwise specified in the Detailed Specification the design, Manufacture and installation of all the mechanical and electrical equipment shall be such as to ensure compliance with the relevant sections of SANS 0103 of 1983 "The Measurement and Rating of Environmental Noise with Respect to Annoyance and Speech Communications", as amended.

Any installation where the measured residual sound level exceeds the maximum desired residual sound level as per SANS 0103 shall be rectified to comply with SANS 0103 at the Contractor's own expense.

In all plant room applications where airborne noise cannot be limited or comply with the set standards, provision shall be made for acoustical treatment of the equipment involved or, alternatively, total enclosure thereof with acoustical panelling to comply with requirements laid down in this specification.

Such provisions shall be included in the tender price and no claims for payment to comply with this requirement will be entertained.

13.2 Vibration Isolation

Proper provisions shall be made in the foundations and mountings of all equipment capable of transmitting vibration forces to its environment, whether local or remote, (As is the case with pipes) for vibration isolation.

14.0 **DAMPING**

14.1 Where static deflections in excess of 8mm are indicated, steel springs shall be employed incorporating acoustic sound pads in series with the spring.

The horizontal stiffness of the springs shall not exceed that in the vertical, in particular for systems mounted at vertical frequencies below 5Hz.

Low frequency mounts shall incorporate rubber snubbers to accommodate extreme horizontal or vertical motions such as can occur near resonance during start up.

The snubbers shall however not be relied upon to provide the necessary horizontal stability of the machine in normal operational conditions.

Spring layouts and inertia blocks shall be employed to avoid this situation.

For static deflections below 8mm, rubber in sheer mounts may be used provided the frequency is above 6Hz.

For small static deflections less than 4mm and particularly for high-speed machines and general acoustic isolation, ribbed rubber neoprene composite pads may be employed subject to the specified requirements.

No equipment shall be installed in critical areas without correct and approved vibration isolation. Sufficient stability and damping shall be incorporated in the mountings to minimise the movement of the machine during start up or

changes in the operating conditions.

The selection of mounts shall take proper cognisance of unequal distribution of the mounting weight of equipment and rotational and/or pressure forces acting thereon.

15 PUMPS

Where condensate pumps are required, the pumps shall be totally enclosed in the corner of the surface mounted trunking, and shall be specified to pump the maximum condensate generated by the unit.

16.0 FANS

16.1 Centrifugal Fans

No centrifugal fan shall be selected in a class range other than Class 1 or 2 and the rotating speed of the fan at duty point shall not exceed 1 440 r/min.

Centrifugal fans in critical areas and fans above 7,5kW shall in all cases be mounted together with the drive motor on anti-vibration mountings together with the correct inertia mass.

16.2 Propeller Fans

Propeller fans shall comply with the criteria already laid down and shall be carefully selected for the highest possible efficiency with due regard for the noise criteria.

Propeller fans in excess of 0,5kW and of rotational speed higher than 800 r/min shall, in addition to the requirements already laid down, be mounted on correctly selected and installed anti-vibration mountings to reduce possible vibration transmission to surrounding structures.

16.3 Axial Flow Fans

Axial flow fans shall be selected for the highest possible efficiency and comply with the noise criteria specified. In critical areas no fan shall be installed without attenuators on inlet and outlet sides.

In addition it will be required that the fan as a whole be mounted on anti-vibration mountings and where specified in the Detailed specification, it may be required for the fan to be enclosed in acoustic panelling.

No axial flow fan may be installed without anti-vibration mountings to match the fan characteristics and in critical areas it may be required for the axial fan to be provided with inertia mass to match.

Fan rotational speeds specified in the Detailed Specification shall not be exceeded.

17.0 PIPING

17.1 General

Under no circumstances may any piping be directly connected to noise generating equipment such as pumps, chillers, cooling towers etc.

Connections to such equipment shall be made with correctly selected flexible rubber type connectors of the spherical type.

In critical areas double spherical rubber type isolators immediately adjacent to the noise generating machine will be required.

17.2 Pipe Penetrations Through Walls

Under no circumstances will pipe penetrations through walls be permitted where the pipe comes in direct contact with the surrounding wall or structure.

At such penetrations it is required that a sleeve of 25mm thick soft neoprene, or other approved material, be provided around the piping at the penetration and, where plastering is applied, plastering shall be cut back to the outer edge of this sleeve.

Rubber links similar to the LINK-SEAL bolted type are preferred.

17.3 Pipe Supports

In all critical applications and within the first ten meters of all equipment, it is required that pipe supports shall be of the flexible type, correctly selected for the application and with the correct static deflection.

Any other areas and applications at risk of noise or vibration transmission to the surrounding structure similarly require pipe mountings isolated from the structure.

Pipe supports fixed to sensitive building elements will not be permitted.

17.4 Refrigerant Piping

Refrigerant piping in critical applications shall similarly be supported on anti-vibration mountings and in addition, delivery and suction piping at compressors and air handling units shall be provided with at least two braided flexible connections installed at 90° to each other and in close proximity of each other.

18.0 **SOUND ATTENUATORS**

18.1 Where required, in order to comply with the noise and vibration criteria already laid down, or where specified in the Detailed specification, sound attenuators shall be provided for ventilation, air conditioning and all other plant (Duct mounted and/or as applicable).

Primary sound attenuators shall be installed near or in the plant room.

The attenuators selected shall match the specific fan or plant characteristics to ensure the correct insertion loss to meet the sound criteria laid down.

Unless otherwise specified, sound attenuators shall be installed with flexible connections at the inlet and outlet connections.

The sound attenuators shall in addition be selected to produce the minimum pressure loss across the attenuator coupled to the least re-generated noise level produced by the flow through the attenuator.

18.2 Unless otherwise specified, air path sound attenuators shall be manufactured from galvanised sheet steel with the sound absorption material moisture repellent and erosion resistant up to 20 m/s air speed, and preferably flange connected.

Wherever possible attenuators shall be proprietary type supplied by the same manufacturer as the plant manufacturer to ensure complete compatibility.

Where not clearly indicated on the drawings, attenuators shall in all cases be provided at points where supply and return air ducting leaves the plant room and shall be installed to prevent noise breakout from the plant room via the ductwork.

Where specified in the Detailed Specification and indicated on the drawings, additional cross talk attenuators shall be installed in the air conditioning or ventilation ductwork.

The internal free area of sound absorbers shall be not less than the cross sectional area of the connecting duct as indicated on the drawings.

18.3 Field fabricated type sound absorbers shall be made as follows:-

All sides of rectangular ducting shall be double walled with the inner walls perforated with 10mm holes at 25mm centres. The space between the two sidewalls shall be divided into 3 unequal sections by means of 25mm thick cement fibre panel strips and filled with glass wool. The lining thickness shall be at least 80mm. Circular ducts shall be lined as specified above except that the lining thickness shall not be less than 100mm.

19.0 **AIR FILTERS**

19.1 General

Filters of the type, size and quantity as specified in the Detailed Specification shall be provided.

Filter efficiency and arrestance shall be in accordance with ASHRAE Test Standard 52-76.

Filters and filter holding frames shall be of approved manufacture with standardised dimensions to enable replacement with equivalent filters of all recognised manufacturers.

Construction and manufacture of all components shall be such that under no circumstances any unfiltered air can by-pass filters or filter banks.

Sufficient space shall be allowed in front or behind filters, as applicable, to enable inspection and servicing.

Proper access doors shall be fitted to filter service areas.
Filters installed close to exposed air inlets shall be weather protected with weather louvers and a wire mesh screen.

Tubes for the measuring of the pressure drop across each filter bank shall be fitted as standard to enable connecting a manometer or other instrument as specified.

All filters and filter banks, including two-stage high efficiency and final filters shall be fitted with inclined pressure differential manometer gauges, clearly marked with filters clean (green) and filters dirty (red) indicators of a permanent type.

A separate manometer shall be fitted for each filter stage.

Fan and system selection shall allow for expected final filter resistance to ensure a supply air quantity in excess of 90% of design air quantity immediately prior to filter replacement.

Unless otherwise specified in the Detailed Specification only dry media filters are required. Where specified, pressure monitoring across a filter bank or banks shall be fitted for alarm purposes using differential pressure switches to activate the warning alarm or indicator required.

Where air filters of the washable type are specified in the Detailed Specification a suitable filter wash tank and stand complete with a drying rack shall be provided in each plant room.

The wash tank and stand shall be manufactured from galvanised steel and epoxy powder coated. The wash tank shall be connected to mains water and a suitable overflow and drain piped to the building drain fitted. The drying rack shall hold at least 20 filters. Where washable filters are specified one complete set of spare filters shall be provided.

19.2 Panel Filters

Panel filters shall be of the pleated type and not less than 50mm thick.
The filter shall be washable or disposable as specified.

Synthetic media shall be used bounded together with galvanised wire for reinforcing and bonded in the frame ensuring no air bypass.

The frame shall be galvanised steel or a distortion and corrosion free moulding.
Initial synthetic dust arrestance shall be not less than 70% with dust holding capacity needed in excess of 300g per square meter nominal face area.
Initial dust spot efficiency shall be not less than 20%.

Nominal filter face velocity shall not exceed 1,5m/s with initial clean filter resistance 60Pa or less and recommended resistance at specified arrestance not more than 250Pa.

19.3 Pad Type Panel Filters

Pad type panel filters shall make use of disposable replacement media of thickness as specified, but generally not less than 25mm thick.

Disposable media supplied and the filter in general shall comply with 24.1 above, unless otherwise specified.
The media shall be held in galvanised steel frames with galvanised steel screen supports on both sides. The downstream screen shall be fixed in the frame with the upstream screen removable.

19.4 Extended Surface Intermediate Efficiency Filters

Filter media shall be self-supporting, leak-free and stable under all airflow conditions.
Front frames shall be of aluminium, galvanised steel or reinforced high-density hard polyurethane foam with a continuous foam rubber gasket.
"Slide-in" type of arrangements will not be accepted for filters in this class.
Filter depths less than 150mm will not be accepted.

Galvanised protection screens shall be fitted to match the airflow arrangement.
Initial synthetic dust arrestance shall be not less than 85% with dust holding capacity not less than 1500g per square meter nominal face area.

Nominal filter face velocity shall not exceed 2,5m/s with initial clean filter resistance 60Pa or less and recommended resistance at specified arrestance not more than 250Pa.

19.5 High Efficiency Particulate Air Filters (HEPA)

Filter media shall be self-supporting leak-free and stable under all airflow conditions.

The media shall be bonded in to a pressed and sealed particle board housing.
Unless otherwise specified in the Detailed Specification filters shall be provided with silicone filled channel seals.

"Slide-in" type of arrangements will not be accepted for filters in this class.

Filters shall be arranged in two or three stage configuration with the primary filters complying with clauses above as specified in the Detailed Specification.

Filter depths less than 300mm will not be accepted and effective filter media surface area shall exceed 50m per square meter nominal face area.

Each filter shall be individually tested in the factory for leakage with a DOP aerosol and supplied to site in completely sealed protection containers.

Corrugated media separators shall be of aluminium or Kraft paper.

Filter efficiency shall be not less than 99,9% when tested with 0,3 micrometer Dioctylphthalate smoke.

Dust holding capacity shall not be less than 2 000g per square meter nominal face area.

Nominal filter face velocity shall not exceed 1,5m/s with initial clean filter resistance to be 250Pa or less and final resistance not to exceed 500Pa.

Pressure monitoring across the HEPA filters is required with warning light and/or alarm as specified.

19.6 Filter Holding Frames

Filter holding frames shall be the manufacturer's standard product installed and used in accordance with his recommendations.

Holding frames shall be manufactured from at least 16 gauge galvanised or epoxy powder coated steel. Holding frames may be bolted or riveted together and shall be suitably reinforced in larger arrangements to withstand all possible operating conditions.

Fasteners shall be positive sealing type and a minimum of four fasteners per filter is required. Fasteners shall match the particular filter, filter arrangement and frame.

20.0 **MEASUREMENT OF COMPLETED WORK**

The attached Bills of Quantities is provisional, which means that the Bill does not represent the exact scope of work to be performed and completed and that every piece of completed work will be measured and agreed with the Contractor before payment is processed.

21.0 **UNAUTHORISED EXPENDITURE**

Although the Engineer has conducted the audit of the buildings installations other items may have degraded in the intervening period up to site handover. It is therefore very imperative for the Contractor to bring to the Engineer's attention as soon as he / she realises that the work measured in the Bill of Quantities may be appreciably exceeded. Failure to observe this procedure where the Contractor proceeds with excessive additional work without authorisation will be tantamount to unauthorised expenditure which may lead to non-payment for unauthorised work.

22.0 **SPECIFICATIONS & STANDARDS**

The works carried out under this Contract shall be governed by the:

- (i) The latest issue of SANS 10142: "Code of Practice for the Wiring of Premises"
- (ii) The Occupational Health and Safety Act, 1993 (Act 85 of 1993) as amended

23.0 **SCHEDULE OF MATERIALS**

In all instances where schedule of materials are attached or included on the drawings, these schedules are to be regarded as forming part of the specification.

24.0 **QUALITY OF MATERIALS**

Materials are to comply with the relevant South African National Standards (SANS), or to IEC specifications, where no SANS specifications exist. All materials used shall bear the SANS mark of approval as applicable.

25.0 PROGRAMME AND PLANNING

The sequence, in which the work must be carried out, must be established in consultation with the Main Contractors construction programme, Sub-contractors and their respective Domestic contractors. The Engineer must be kept informed on the progress all the time.

26.0 SUPERVISION

The work shall, at all times be carried out under the supervision of a skilled and competent representative of the Contractor, who will be able and be authorised to receive and carry out instructions on behalf of the Contractor.

27.0 WORKMANSHIP

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

28.0 SUPPLY OF MATERIAL

The Employer reserves the right to supply any items of material or equipment to the Contractor for installation. The Contractor must arrange for taking delivery of and providing safe storage for these materials and he will be held responsible for all damages to or loss of such materials while they are in his custody.

29.0 COMPLETION

Completion shall take place only after the whole installation has been accepted by the Engineer and

- (a) All damage that may have been done by the Contractor in the process of the installation has been repaired and made good
- (b) All tests of the Mechanical installation has been done and tests results have been submitted to the Engineer,
- (c) The completed Certificate of Compliance as specified has been submitted to the Engineer,
- (d) All equipment guarantees, if any have been submitted to the Engineer,
- (e) The work site has been cleared of all debris and waste materials and left in a neat and tidy condition.

PART B4-3: VENTILATION - DETAILED SPECIFICATIONS

1.0 INTRODUCTION & GENERAL

This Detail Specification complements & qualifies the foregoing standard specifications of material & workmanship. The Standard Specification should be regarded as a basis and guideline, with this Detailed Specification taking preference where any ambiguity is concerned.

In the event of any further technical ambiguity between sections of this enquiry, then the sections will be considered in the following order of priority:

- a) Schedule of quantities
- b) Project specification
- c) Drawings (loose and bound-in)
- d) Standard specification

2.0 SITE CONDITIONS

Location: Mdantsane, East London, Eastern Cape

3.0 SCOPE OF WORK

General

The standard specification shall apply unless otherwise indicated in this section.

The drawings issued herewith and listed in the relevant section are to be read in conjunction with the specification and all items mentioned, together with all ancillary equipment necessary for the correct installation, operation and full compliance with the Standards and codes must be provided, notwithstanding the fact that they may not have been included in detail in these documents.

The bidder shall, at the time of bidding, draw the Engineer's attention to any omissions or discrepancy between the specification and the drawings and request from him clarification of details or responsibilities.

If a limited allowance or special conditions are made for the Bid Sum for the supply or erection of any item of the installation, the limit or special conditions shall be defined at the time of bidding.

It is the sole responsibility of the bidder to ensure that all quotations obtained from manufactures and suppliers are complete in their entirety and must include all equipment and accessories necessary for compliance with current practice and the efficient and proper functioning of the installation.

If any such items of equipment, brackets and accessories, etc., have been omitted from a supplier's quotation, or incidental work is necessary, the bidder must include for all such items and work in the bid.

The whole installation shall be in accordance with the latest edition of the Occupational Health and Safety Act: No. 85 of 1993. All regulations framed therein, shall be carried out to the satisfaction of the Engineer.

All equipment offered by the bidder shall be to the approval of the duly appointed Engineer, prior to installation. This standard specification and the supplementary specification with drawings shall be carefully adhered to by the bidder. Equipment installed without the approval of the Engineer will have to be removed at the Contractor's expense and be replaced with officially approved listed items.

The successful bidder will be required to prove to the Engineer that he has qualified personnel on his staff establishment as well as recognised test equipment for the successful completion of a safe working installation.

The contractor shall employ only skilled artisans and technicians approved by the Engineer who are competent in this type of work. The work shall be carried out in accordance with the standards laid down by the Engineer. The contracting firm shall be recognised contractor specialising in this field and approved by the Engineer. The work performed shall comprise the supply, delivery, off-loading, interim storage, installation, testing, commissioning and leaving in good working order of the complete electric access goods only lift installation inclusive of all guarantees as specified herein and the supply of 'AS IS' installation record drawings, Maintenance and Operating Manuals for:

Heating Ventilation and Air Conditioning Systems Overview:

- Fresh air and extraction ventilation systems,
- Dual purpose Smoke & Natural Ventilation Slope Ventilators, Electrically Actuated & Interlocked to Early Warning Fire Detection System,
- Transfer grills,
- Testing and Commissioning, as per SANS 10400 Part O & T,

The liaison with a Building/Principal Contractor, Electrical Subcontractor, and their Domestic Subcontractors if and when required

Testing and commissioning of all air-conditioning and ventilation system equipment in conjunction with the Fire Detection and Alarm Evacuation Systems Sub-contractor.

This Sub Contract also includes all electrical work for the installations but excludes the power supply to the isolator provided by others.

Notwithstanding any omission in this specification the installations shall be complete in all respects. This condition shall be recognised in the preparation of all working drawings submitted for approval. Further, despite any approval of working drawings given by and on behalf of the Main Contractor the responsibility for correct functioning of the plant during tests, inspection and the maintenance period shall rest entirely with the successful bidder.

The installation shall be strictly in accordance with the approved drawings or such further drawings, modifications, or instructions as may be given by the Engineer concerned, or that are found to be necessary, and such modifications or instructions shall be deemed to be within the specification for the purpose of the bid, and shall not vitiate the contract.

Payment for such modifications will only be made on certification by the Engineer to the effect that such modifications have involved additional expense to the Sub-Contractor.

4.0 PROGRAM

The Sub Contractor shall complete the installation within the time stipulated. The Sub Contractor will be required to report to the Principal Contractor, generally on a weekly basis (or more often if required by the Principal Contractor), progress of work and any difficulties arising, to enable the Principal Contractor to update the programme or forward plan any changes.

The sequence in which the work is to be carried out shall be decided upon in consultation with the Principal Contractor. The Sub Contractor shall thereafter submit an adequately detailed Sub Contractor's installation programme for approval within two (2) weeks of the Sub Contract being awarded unless otherwise indicated herein after.

This programme must be periodically updated as the work progresses and as may be necessary to meet changing site conditions and alterations to the overall installation programme.

Programmes shall take the form of bar charts, network diagrams and schedules as may be required by the Main Contractor or as applicable, and shall reflect quantities of work as required for supervision purposes and measurements.

As a minimum the programme shall reflect:

- sequence and timing of installation activities.
- sequence and latest event times of major equipment ordering, manufacture and delivery dates.
- sequence and dates for the submission of drawings and samples for approval.
- sequence and dates for factory and site inspections and tests.
- target and achieved work quantities on a weekly, fortnightly and monthly basis.

In preference all work is to be undertaken by staff in the full time employ of the bidder.

All work which is to be undertaken by "Domestic Sub Contractors" of the Sub Contractor will be clearly identified in the bid submission and the Sub Contractors to be used subject to prior approval of the Client and/or Engineer and/or Principal Contractor; failure to comply with this requirement may result in the "Domestic Sub Contractors" being removed from site.

All costs in replacing the undesirable "Domestic Sub Contractor" or any delays incurred as a consequence of this will be entirely for the Sub Contractor's account.

5.0 DESIGN CONDITIONS

Indoor: 24°C 50% RH

Outdoor: 31°C DB; 22.8 °C DB

6.0 VENTILATION SYSTEM DESCRIPTION

6.1 General

The bidder shall allow for programming the work in such a manner as to not disrupt the Main Contractor's programme. Sequence of work to suit the Sub Contractor's requirements will not be guaranteed nor accepted.

Claims from Sub Contractors arising out of broken work sequences or agreed programmes changed due to contingent requirements, will not be considered unless full motivations for the extra costs are submitted; the motivation for extra costs must justify costs in terms of the accepted programme and any unforeseen and justifiable additional staffing levels required to meet targets revised with insufficient notice. Reallocation of staff and/or acceleration of work will not be reason enough to claim for extra costs unless the Sub Contractor can prove that he has indeed had to pay for staff's idle time which was not or could not be envisaged at the time of bidding and/or drawing up the installation programme and sequence. When claiming for extra cost all out of town cost will be disallowed as it is assumed that the Sub Contractor has fully staffed premises in the vicinity of the site.

The Subcontractor must also assume that work may be required to continue uninterrupted outside of normal working hours and/or for an extended and/or unbroken period of time.

6.2 EQUIPMENT SPECIFICATION

6.2.1 All standard off the shelf ventilation equipment will be natural anodised aluminium unless otherwise specified.

6.2.2 DESIGN CONSTRAINTS

Refer to the drawings provided with this specification for:

Heating, Air Conditioning & Ventilation:

- 2214-M-T-101 VENT Rev00
- 2214-M-T-102 VENT Rev00
- 2214-M-T-101 SV Rev00
- 2214-M-T-102 SV Rev00

7.0 ELECTRICAL

Overloads shall be adjustable to approximately 25% higher than the relevant motor overload current.

Wiring in panels shall be neatly run in vertical or horizontal lines and each terminal shall be numbered to accord with the relevant wiring and control diagram. Circuit breakers, timers, relays, etc. shall be labelled in accordance with the wiring diagram and the item of plant served.

8.0 OPERATING AND MAINTENANCE MANUALS

8.1 Operating Manuals

Three complete sets of operating manuals shall be supplied by the Contractor, two sets to the Engineer for onward forwarding to the Employer and one for the User Department's use.

Manuals must be compiled in layman's language.

At least one month before commissioning, one draft copy shall be submitted to the Department/Engineer for comments and approval.

Operating manuals shall give a clear description of and the purpose of the installation.

- (a) Paper copies of all approved drawings and diagrams.

- (b) Detailed description of the different components used in the installation.
- (c) On- and off switching procedures.
- (d) Guidelines for routine-test to be carried out by the User Department inclusive of the periods during which tests are to be undertaken.
- (e) Detailed instructions for procedures to be followed during a fault

The following drawings are required:

- Layout drawings
- Wiring drawings showing wire colour codes and numbers as well as all connections onto terminal strips (markers to be approved by the Engineer) of all plant new and existing.

The following documents are required:

- Full description of the system.
- Operating instructions.
- Installation instructions.
- Commissioning instructions.
- Maintenance instructions, maintenance schedule and trouble shooting guide.

8.2 Maintenance Manuals

Two complete sets of maintenance manuals (Technical) prepared in English, shall be supplied by the Contractor.

At least one month before commissioning a draft copy shall be submitted to the Department/Engineer for comments and approval.

Maintenance manuals shall consist of the following:

- (a) A general description of the system.
- (b) A general description of the controls.
- (c) Schedule of equipment, model numbers, optional extras, modifications, electrical power requirements, etc.
- (d) Detailed monthly, quarterly, semi annually and annual preventative maintenance procedures.
- (e) Manufacturer's catalogues clearly indicating type, size and model of equipment supplied.
- (f) Tabulated commissioning data of all equipment and the system, indicating- as measured and according to specification - requirements.
- (g) List of suppliers, addresses and telephone numbers.
- (h) List of spare parts for all equipment.
- (i) Fault tracing/finding procedures.

The following drawings are required:

- Layout drawings
- Wiring drawings showing wire colour codes and numbers as well as all connections onto terminal strips (markers to be approved by the Engineer) of all plant new and existing.

The following documents are required:

- Full description of the system.

- Operating instructions.
- Installation instructions.
- Commissioning instructions.
- Maintenance instructions, maintenance schedule and trouble shooting guide.

Manuals shall be bound in a firm hard cover.

The information shall be clear and readable and supplied with an index.

The above-mentioned manuals shall be available at first delivery. Delivery of the installation will not be accepted without the manuals.

9.0 TRAINING OF STAFF

The bidder shall allow for sufficient time for instructing the User's appointed responsible persons in the correct operation of all plant and equipment, procedures to be followed in the event of faults etc.

Two sets of instruction manuals shall be provided. Each manual shall comprise of the following sections, bound in a vinyl plastic covered folder with the name of the project typewritten on a card inserted into a clear plastic covered cardholder on the front cover and spine and shall be handed to the Main Contractor on completion of the installation:

- Table of Contents
- Functional Description of Plant (as installed)
- Operation of Plant (as installed – step by step instructions for setting temperatures, etc.)
- Plant and Equipment (a scheduled list of all major plant to include description, make, model number and supplier's name and address).
- Performance Testing Procedures including Test Report
- Maintenance Instructions (in schedule form setting out each item of plant, the description and frequency of maintenance operations required).
- Spare Parts (list of spare parts that shall be required, with detailed description of each part, make, model or part number and supplier's name and address).
- Descriptive Literature (for all items of plant and equipment).
- Record Drawings (of plant as installed to include plant layout drawings showing component location, control and wiring diagrams and schematic piping diagrams).

10.0 GUARANTEE

The entire air-conditioning and ventilation / extraction installation shall be fully guaranteed for twelve calendar months from date of acceptance by the Engineer and contract practical completion date.

During the guarantee period, the Tenderer shall be responsible for the making good of any defects reported by the Tenant. The guarantee shall be ceded to the Superintendent following acceptance of the installation.

11.0 MAINTENANCE

The air-conditioning Tenderer shall be responsible for the maintenance of the entire plant during the guarantee period, as specified in this document. During this period the plant shall be serviced quarterly including filter cleaning and the Superintendent undertakes to provide access to the plant at suitable times during trading hours. Record of all services shall be kept and copies signed by the Superintendent.

12.0 CERTIFICATION ON COMPLETION OF GUARANTEE & MAINTENANCE PERIOD

Included in the pricing for the installation of the package plant is a 12 month quarterly service plan.

In the month prior to the expiry of the guarantee / first twelve months maintenance period, the Engineer shall inspect and, if necessary, retest the installation so as to be able to provide the Superintendent with a certificate, within fourteen days of the guarantee expiry date. This is to confirm that the guarantee has been honoured and that the installation has been properly serviced at required regular intervals by the air-conditioning Tenderer.

13.0 SAMPLES & ALTERNATIVES

Samples (within reason) will be requested by the Engineer and are to be made available on-site for inspection / approval.

The tender prices shall be based on the equipment as specified and not on any alternatives. Should the Tenderer wish to submit prices for alternatives, he shall do so separately, in a letter or similar correspondence, attached to the tender. The use of any alternative equipment, if any, will be evaluated and decided on after tender award, when the costs, etc. will be negotiated with the successful Tenderer.

The Engineer reserves the right to call for prices on alternative equipment subsequent to tender submission.

14.0 SCHEDULES OF INFORMATION

The schedules of information contained in this document consists of 2 sections:

Information supplied by the Engineer (schedules of drawings, etc. as applicable).

Information to be supplied by the Tenderer at tender stage (tender form, information on the makes, types and ratings of equipment and materials offered, schedules of prices and rates for variations, schedules of quantities, etc. as applicable).

Tenderers must provide, at the time of tendering, in the "Schedule of Material Offered", sufficient details to enable the equipment concerned to be identified without ambiguity.

It is not sufficient for a Tenderer to state "as specified" in the schedules.

Failure to complete these schedules may render a tender invalid.

15.0 DRAWINGS

15.1 General

Generally, the term "detail" shall mean that the drawing is exact in all aspects to what shall be provided. Where the term "illustration" is used, however, it shall be construed that the drawing is to be regarded as a proposal or guideline as to what is to be provided, manufactured or supplied.

15.2 Tender Drawings

Refer to the tender drawing as provided with this document.

15.3 Construction / Workshop Drawings

The successful Tenderer shall submit construction drawings (or detailed catalogues) of the manufactured equipment, such as mounting details, etc., for consideration by the Engineer prior to manufacture/supply thereof.

The Engineer's approval of construction or workmanship drawings does not relieve the Tenderer of his responsibility with regards to any of the deviations from the requirements of this contract unless the Engineer has been clearly informed, in writing, of such deviations at the time of submission and the Engineer subsequently gives written approval for the specific deviation. Similarly, the Engineer's approval shall not relieve the Tenderer of responsibility for errors or omissions in the construction / workmanship drawings.

15.4 Record Drawings

The Tenderer must prepare record drawings of the completed installation as constructed, indicating cable runs, equipment mounting details, circuiting & distribution board details, sleeve pipe positions, etc.

The contract shall not be deemed as complete until these drawings have been submitted.

16.0 SUPERVISION, WORKMANSHIP AND DELAYS

The work shall at all times, for the entire duration of the contract, be executed under the supervision of a skilled and competent representative of the Tenderer, who must be able and authorized to receive and execute instructions on behalf of the Tenderer. This person must be a registered and accredited person, as described by the OHS Act. It must be noted that the staff complement of the Tenderer shall remain similar throughout the duration of the contract, for all sections of the Works.

In the event that inferior materials or bad workmanship, on the part of the Tenderer, leads to remedial work requiring redesign by the Engineer, the cost of this work, including related professional fees, shall be borne by the Tenderer.

Similarly, should delays in the contract be caused by poor performance on the part of the Tenderer causing the engineer to spend extraordinary time on the project, the extra costs incurred shall be borne by the Tenderer.

These costs will be based on the CESA hourly rate and will be deducted from claims due to from claims which will become due to the Tenderer.

17.0 COMPLIANCE WITH REGULATIONS, STANDARDS AND CODES

The Tenderer shall arrange for all inspections and testing of the installation as required. All notices, fees, including inspection and re-inspection, are the responsibility of the Tenderer and all the relevant costs shall be borne by him.

The workmanship throughout the Works will be to the satisfaction of the Employer. Any materials or workmanship considered as faulty or incorrectly or inadequately erected or repaired, will be substituted, altered or rectified to the satisfaction of the Employer, without additional cost to the Employer.

The Works will be executed in strict accordance with the following:

- All relevant by-laws and regulations of local authorities.
- All relevant SANS, BS and other international standards.
- The Occupational Health and Safety Act of 1993.

18.0 COMMISSIONING AND TESTING

18.1 General

Upon practical completion of this Sub Contract the Sub Contractor shall allow for providing the Engineer with a complete commissioning schedule indicating the actual test results and measurement of all the design or specified data/variables.

Tests to demonstrate the capacity specified and general operating characteristics of all plant shall be made under the direction of the Engineer at any time before the practical completion inspection under conditions imposed by him.

The Sub Contractor shall be responsible for supplying test equipment which is to the Engineer's satisfaction; any costs incurred by the Sub Contractor in supplying adequate instrumentation will be entirely for his account. Test instruments shall be tested for accuracy by an approved laboratory or by the manufacturer and certificates showing the degree of accuracy shall be furnished to the Engineer if required.

On satisfactory completion of all tests and after the completed installation has been inspected and passed as satisfactory by the Engineer, the installation will be accepted as being practically complete and be handed over to the Employer.

The Sub-Contractor shall be responsible for supplying an itemised set of test results for the Engineer's approval; the Engineer may at his discretion request the Sub-Contractor to re run at the Sub Contractor's expense any test which he has not witnessed or with which he feels not satisfied.

The following shall be recorded/measured for each separate installation as specified and installed under this contract:

Description of installation tested;

Date and time of test;

Ambient temperature conditions (measured in the shade):

- (a) Dry bulb temperature
- (b) Wet bulb temperature
- (c) % RH

19.0 BUILDER'S WORK

The onus is on the Tenderer to point out and check the requirements for and positioning and correctness of all builder's work for his services.

20.0 MAKING GOOD

The builder is to be made aware of all works, timeously, relating to the impact of this installation(s). The Tenderer will carry out, in all instances any work to be made good such as damage to, or disturbance of the building installations caused by himself or his employees during the execution of the contract at his own cost.

21.0 SITE MEETINGS

The Tenderer's representative shall be expected to attend an official site meeting at the onset of the project including scheduled technical and site meetings during the contract period. For meetings termed as "technical or site", a site representative for the nominated Tenderer is required to attend and this person must be competent and able to interpret and receive and act on instructions on behalf of the Tenderer.

The Tenderer shall price all relevant P & G costs, overheads, travelling, etc. for these meetings.

PART B4-4: VENTILATION – BILLS OF QUANTITIES

RNA CONSULTING ENGINEERS

MDANTSANE MALL

FRESH AIR; EXTRACTION & SMOKE VENTILATION

INSTALLATION

PROVISIONAL BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Bill No. 1 : Preliminary and General</u>				
1.1	Compliance with General Conditions of Contract : Insurances, Sureties, etc as outlined in the Principal Contractor's Preliminaries.				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1,2	Establish on Site and provision of buildings and storage facilities including de-establishment of site, cleaning and tidying up after completion of contract				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1,3	Tools and equipment, Communication, transport.				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1.4	Contract Management, Company overheads and supervision of the Works including attendance of site meetings (2 per month)				
	-				
	Fixed	Item	1		
	Value Related	Item	1		
	Time Related	Item	1		
1,5	Provision of all drawings and manuals as specified including As-Installed drawings	Item	1		
1,6	Liaison with Local Supply Authority, compliance with OSH Act, Local By-laws and any other statutory regulations	Item	1		
1,7	Any additional item not specifically mentioned or included in the Bills of Quantities which the Tenderer may wish to detail. (Specify)	Item	1		
Total Carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
2,0	Bill No. 2 : Fresh Air Ventilation Equipment Installation				
	- Weather Louvers Supply and Install				
2,1	500 x 300 mm external weather louvre, natural aluminium, with concealed fixing, all as specified.	No..	11		
2,2	400 x 300 mm external weather louvre, natural aluminium, with concealed fixing, all as specified.	No..	5		
2,3	300 x 300 mm external weather louvre, natural aluminium, with concealed fixing, all as specified.	No..	12		
2,4	250 x 250 mm external weather louvre, natural aluminium, with concealed fixing, all as specified.	No..	59		
	Sleeve Supply and Install				
2,5	500 x 300 mm x 400 mm length galvanised sleeve, all as specified.	No..	11		
2,6	400 x 300 mm x 400 mm length galvanised sleeve, all as specified.	No..	5		
2,7	300 x 300 mm x 400 mm length galvanised sleeve, all as specified.	No..	12		
2,8	250 x 250 mm x 400 mm length galvanised sleeve, all as specified.	No..	59		
	Galvanised Sheet Metal Transfer Supply and Install				
2,9	- 500 x 300 mm rectangular to 315 mm diam round fan transfer.	No..	11		
2,10	400 x 300 mm rectangular to 250 mm diam round fan transfer.	No..	5		
2,11	300 x 300 mm rectangular to 200 mm diam round fan transfer.	No..	12		
2,12	250 x 250 mm rectangular to 150 mm diam round fan transfer.	No..	59		
Carried forward to Next Page					

Carried forward from Previous Page				
2,13	200 mm diam rectangular to 250 mm diam round fan transfer.	No..	12	
2,14	150 mm diam rectangular to 250 mm diam round fan transfer.	No..	59	
<u>In Line Axial Fans</u>				
Supply and Install				
2,15	FAF 1 Axial in line fan, 315 Diam; Q = 300 l/s @ 200 Pa.	No..	11	
2,16	FAF 2 Axial in line fan, 250 Diam; Q = 250 l/s @ 180 Pa.	No..	5	
2,17	FAF 3 Axial in line fan, 200 Diam; Q = 200 l/s @ 170 Pa.	No..	12	
2,18	FAF 4 Axial in line fan, 150 Diam; Q = 150 l/s @ 170 Pa.	No..	59	
<u>Silencer</u>				
Supply and Install				
2,19	315 diam silencer 600 mm length	No..	22	
2,20	250 diam silencer 600 mm length	No..	8	
2,21	200 diam silencer 600 mm length	No..	24	
2,22	150 diam silencer 600 mm length	No..	118	
-				
<u>Galvanised Sheet Metal Ducting</u>				
Supply and Install				
2,23	315 mm diam round sheet metal ducting.	m	165	
2,24	250 mm diam round sheet metal ducting.	m	1314	
2,25	200 mm diam round sheet metal ducting.	m	445	
-				
Carried forward to Next Page				

Carried forward from Previous Page				
	<u>Fire Damper</u> Supply and Install			
2,26	315 mm diam Fire Damper, fusible link @ 74 deg C, externally resettable	No..	2	
2,27	250 mm diam Fire Damper, fusible link @ 74 deg C, externally resettable	No..	52	
2,28	200 mm diam Fire Damper, fusible link @ 74 deg C, externally resettable	No..	6	
	<u>Flexible Ducting</u> Supply and Install			
2,29	250 mm diameter Insulated Flexible Ducting	m	84	
2,30	200 mm diameter Insulated Flexible Ducting	m	89	
	<u>Galvanised Sheet Metal Spigot</u> Supply and Install			
2,31	250 mm diam 45 deg shoe spigot	No.	84	
2,32	200 mm diam 45 deg shoe spigot	No.	89	
	<u>Galvanised Sheet Metal End Cap</u> Supply and Install			
2,33	315 mm galvanised steel end cap.	No.	11	
2,34	250 mm galvanised steel end cap.	No.	78	
	<u>Diffusers</u> Supply and Install			
2,35	250 mm diam supply air grill, natural aluminium, c/w balancing damper	No.	84	
2,36	200 mm diam supply air grill, natural aluminium, c/w balancing damper	No.	89	
	<u>Fan Controller</u>			
2,37	2 pole fan controller, on / off wired remotely and installed in conduit and round box provided by others.	No.	87	
Carried forward to Next Page				

Carried forward from Previous Page				
	<u>Electrical</u>			
2,25	Connect plug fan to isolator or connect cable to isolator, provided.	No..	87	
	<u>Transport to Site</u>			
2,26	Transport all equipment to site.	Sum	1	
	<u>Training</u>			
2,27	Transport all equipment to site.	Sum	1	
	-			
	-			
	-			
Total Carried forward to Summary Page				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
3,0	Bill No. 3 : Extract Air Ventilation Equipment Installation				
	- Weather Louvers Supply and Install				
3,1	500 x 300 mm external weather louvre, natural aluminium, with concealed fixing, all as specified.	No..	5		
3,2	250 x 250 mm external weather louvre, natural aluminium, with concealed fixing, all as specified.	No..	7		
	Sleeve Supply and Install				
3,3	500 x 300 mm x 400 mm length galvanised sleeve, all as specified.	No..	5		
3,4	250 x 250 mm x 400 mm length galvanised sleeve, all as specified.	No..	7		
	Galvanised Sheet Metal Transfer Supply and Install				
3,5	- 500 x 300 mm rectangular to 315 mm diam round fan transfer.	No..	4		
3,6	250 x 250 mm rectangular to 250 mm diam round fan transfer.	No..	10		
	In Line Axial Fans Supply and Install				
3,7	FAF 1 Axial in line fan, 315 Diam; Q = 300 l/s @ 200 Pa.	No..	5		
3,8	FAF 2 Axial in line fan, 250 Diam; Q = 250 l/s @ 180 Pa.	No..	7		
	Silencer Supply and Install				
3,9	315 diam silencer 600 mm length	No..	10		
3,10	250 diam silencer 600 mm length	No..	14		
	-				
Carried forward to Next Page					

Carried forward from Previous Page				
	<u>Galvanised Sheet Metal Ducting</u> Supply and Install			
3,11	315 mm diam round sheet metal ducting.	m	75	
3,12	250 mm diam round sheet metal ducting.	m	105	
3,13	200 mm diam round sheet metal ducting.	m	298	
	<u>Elbow Galvanised Sheet Metal</u> Supply and Install			
3,14	90 deg medium radius 250 mm diam round sheet metal ducting.	No..	4	
	<u>Flexible Ducting</u> Supply and Install			
3,15	200 mm diameter Insulated Flexible Ducting	m	66	
	<u>Galvanised Sheet Metal Spigot</u> Supply and Install			
3,16	200 mm diam 45 deg shoe spigot	No.	66	
	<u>Galvanised Sheet Metal End Cap</u> Supply and Install			
3,17	315 mm galvanised steel end cap.	No.	5	
3,18	250 mm galvanised steel end cap.	No.	7	
	<u>Diffusers</u> Supply and Install			
3,19	200 mm diam supply air grill, natural aluminium, c/w balancing damper	No.	66	
	<u>Fan Controller</u>			
3,20	2 pole fan controller, on / off wired remotely and installed in conduit and round box provided by others.	No.	12	
	<u>Door Grill</u>			
3,21	450 x 450 mm aluminium door grill, doubled sided	No.	7	
3,22	300 x 300 mm aluminium door grill, doubled sided	No.	19	
Carried forward to Next Page				

Carried forward from Previous Page				
	<u>Electrical</u>			
3,23	Connect plug fan to isolator or connect cable to isolator, provided.	No..	12	
	<u>Transport to Site</u>			
3,24	Transport all equipment to site.	Sum	1	
	<u>Training</u>			
3,25	Transport all equipment to site.	Sum	1	
	-			
Total Carried forward to Summary Page				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
4,0	<u>Bill No. 4 : Smoke Ventilation Equipment Installation</u>				
	- <u>Dual Purpose Smoke And Natural Ventilator</u>				
4,1	Supply and install Sloped Fire Ventilation Louver, 2400 W x 2370 L mm x 432 H mm, aerodynamic Free Area of 2,48 m ² , electrically actuated, louvered slope mounted smoke ventilators aluminium material, including a fusible link to fail safe open at 74°C, as a secondary activating mechanism.	No	19		
4,2	Structural steel H frames for mounting ventilators between steel trusses, distance between trusses: 3518 mm (face to face)	No	19		
	<u>Controller</u>				
4,3	Four Zone Master Control Panel, installed. Including provision for rain sensors.	No	6		
	<u>Cable</u>				
4,4	PH120 fire rated reticulation between control panel and each smoke ventilator. Including Galvanized Conduit to roof eve.	m	360		
	<u>Burglar Bars</u>				
4,5	Bugler Bars	No	19		
	<u>Bird Guards</u>				
4,6	Bird Guards	No	19		
	<u>Dust Seals</u>				
4,7	Dust Seals	No	19		
	<u>Louvers</u>				
4,8	Supply and install vertical aluminium louver 1800 x 1800 mm	No	17		
4,9	Supply and install ceiling aluminium louver 1600 x 1000 mm	No	6		
4,10	Structural steel H frames for mounting louvers between steel trusses, distance between trusses: 3518 mm (face to face)	No	17		
	<u>UPS</u>				
4,11	UPS unit to operate controller for 3 hour	No	1		
	<u>Electrical</u>				
4,14	Connect equipment to isolator or connect cable to isolator, provided.	No	1		
	<u>Training</u>				
4,13	Training of staff on operation of units; location of equipment and basic day to day maintenance.	No	3		
Total Carried forward to Nest Page					

Total Carried forward From Previous Page				
	<u>MISC</u>			
4,14	Delivery of Ventilators.	No.	1	
4,15	Site Visits, Handover & Commissioning.	No	1	
4,16	12 Month System Inspection & Guarantee	No	1	
4,17	O&M Manuals, including Laminated Block Diagrams.	No	3	
4,18	Health & Safety File.	No	1	
4,19	Scaffolding for Reticulation Installation.	No	1	
4,20	Interface with Fire Detection System & Programming	No	1	
Total Carried forward to Summary Page				

PRICE SUMMARY

ITEM	DESCRIPTION	AMOUNT
1	Bill No. 1 : Preliminary and General	
2	Bill No. 2 : Fresh Air Ventilation Equipment Installation	
3	Bill No. 3 : Extract Air Ventilation Equipment Installation	
4	Bill No. 4 : Smoke Ventilation Equipment Installation	
Total carried to Form of Offer and Acceptance (Ex VAT)		

PART B4-5: VENTILATION - SCHEDULE OF MATERIALS OFFERED

The Tenderer must complete the following schedules and submit them with the priced Bill of Quantities.

The schedules will be scrutinised by the Engineer and should any material offered not comply with the requirements contained in the specification, the Contractor will be required to supply material in accordance with the contract at no additional cost.

NB : **Only one manufacturer's name to be inserted for each item.**

Item	Material	Make or trade name	Country of Origin
1.	Weather louvers		
2.	Axial silent fans		
3.	Silencers		
4.	Sheet metal ducting		
5.	Flexible ducting		
6.	Fire dampers		
7.	Diffusers		
8.	Fan controllers		
9.	Door grills		
10.	Slope Dual Purpose Natural and Smoke Ventilators		
11.	PH120 cable		
12.	Controller		
13.	Transfer grills		
14.			
15.			
16.			
17.			

NOTE : Tenderers are to note that under no circumstances may materials be installed other than offered in the above materials schedule, which has been approved and accepted by the Contractor.

Should the successful tenderer wish to supply materials other than those originally offered, prior written approval must be obtained from the Contractor before any orders are placed.

C2.4 – Electrical Installation

(See Attached)



**ECDC PROPERTIES:
REPAIRS AND REFURBISHMENTS OF
MDANTSANE MALL**

PART C - ELECTRICAL INSTALLATION

Consisting of:

- Section 1: Technical Specification & Tender Drawings**
- Section 2: Returnable Schedules**
- Section 3: Pricing Instructions & Bills of Quantities**
- Section 4: Pictures**

DOCUMENTS COMPILED BY:

RNA Consulting Engineers
11 Bonza Bay Road, Beacon Bay
East London, 5201

Contact Person: Mr N. Nzuza
Tel: (043) 742 0041
Fax: (043) 742 3883

Section 1 – Technical Specification & Tender Drawings

TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

CLAUSE	DESCRIPTION	PAGE
1	TENDER PROCEDURE	1
2	SCOPE OF WORK	2
3	SPECIFICATIONS & STANDARDS	3
4	SYSTEM LOW VOLTAGE	3
5	SCHEDULE OF MATERIALS	3
6	CONTRACT DRAWINGS	4
7	POWER CABLE SLEEVES	4
8	NOTICES AND FEES	4
9	EXISTING SERVICES	4
10	QUALITY OF MATERIALS	5
11	BALANCING OF LOAD	5
12	SUPERVISION	5
13	WORKMANSHIP	5
14	SUPPLY OF MATERIAL	5
15	SAMPLES AND DRAWINGS	6
16	SWITCHES AND SOCKET OUTLETS	6
17	LUMINAIRES AND LAMPS	7
18	SCHEDULE OF LIGHT FITTINGS	10
19	EARTHING AND BONDING	15
20	LIGHTNING PROTECTION SYSTEM	15
21	MOUNTING HEIGHTS	16
22	WIRING	17
23	WIREWAYS	17
24	MEASUREMENT OF QUANTITIES	18
25	LV DISTRIBUTION BOARDS	18
26	INSTALLATION GUARANTEE	20
27	PARTIAL COMPLETION	20
28	FINAL COMPLETION	21
29	CABLE TRENCHES	21
30	TENDER DRAWINGS	21

ELECTRICAL INSTALLATION DETAILS

1. TENDER PROCEDURE

- The electrical installation to be carried out by a **Domestic Subcontractor** (“hereinafter referred to as **Electrical Subcontractor**”) to the Principal Contract, in terms of the Principal Contractor’s general condition of contract. All conditions, in terms of the Principal Contract are relevant and binding to this subcontract. It is the responsibility of the Subcontractor to obtain all the relevant conditions of the contract from the Principal Contractor prior to submitting their tender. All payments for the electrical work will be paid through the Principal Contractor.
- This tender must be completed in full including the electrical Bills of Quantities and is to be returned with the Principal Contractor’s returnable schedules and tender.
- All Subcontractor’s must be registered as the Electrical Contractors with the Department of Labour and work must be carried out by “**A REGISTERED ELECTRICIAN**”
- All Subcontractors must be registered with the CIDB and must have the correct grading (**6EB or Higher**) for the value of electrical work.
- All materials must be of South African manufacture and must bear the SABS approval mark and to conform to the specifications contained herein. The Electrical Subcontractor must submit proof of unavailability of material where this requirement cannot be fulfilled.
- Only local produced or locally manufactured electrical cables products, ~~photo-voltaic system~~ and raw material or input will be considered.
- **100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"**
- All quantities in the Bills of Quantities are provisional quantities.

The Electrical Subcontractor shall comply with all the requirement of mandatory subcontracting to an SMME where feasible of up to **30%** of their contract value (Including VAT) as stipulated under the SMME subcontracting requirements. The Electrical Subcontractor shall on a fulltime basis closely mentor, manage and supervise the SMME and shall manage, guide, and assist the SMME in all aspects of management, execution and completion of his/her subcontract. This shall typically include the on-site productivity planning and management of materials, cost management, contract management, Health and Safety management, quality management, communication management and close-out documentation.

The SMME employed & operating under the appointed Electrical Subcontractor, must be registered as an electrical contractor with the Department of Labour and works to be carried out by registered Electricians; registered with Construction Industry Development Board (CIDB) with the correct grading of **4EB or higher**; Electrical Contractors Association of South Africa (ECASA); registered with Compensation for Occupational Injuries and Diseases Act, No 130 of 1993 (COIDA); registered with the Unemployment Insurance Fund (UIF); etc.

As agreed together with the awarded Electrical Subcontractor, the Engineer & client, the envisioned SMME package may consist, but not limited to, of the following items listed in the BoQ:

- Bill No.3: Item 3.3 LV Trenching, Item 3.4 LV Cable Sleeves & Bends, Item 3.5 Pull Tape;
- Bill No.4: Item 4.1 Conduit, Item 4.2 Conduit Boxes, Item 4.5 Conductors, Item 4.8 Wiring Channel (if required);
- Bill No.5: Item 5.3 Conduit, Item 5.4 Conduit Boxes, Item 5.5 Conductors;
- Bill No.6: Item 6.1 Manholes, Item 6.3 Cable Sleeves, Item 6.4 Conduit, Item 6.6 Pull Tape, Item 6.7 Cable Tray (if required); and
- Bill No.8: Item 8.2 Isolating, Disconnecting & Making Safe the existing electrical installation.

2. SCOPE OF WORK

The main contract is for the refurbishment of the Mdantsane Highway Mall in Mdantsane, East London, Eastern Cape. The mall shall remain in operation whilst construction takes place. The project will therefore have to be sequenced & sectional completion will take place.

As per main contract, the Work Sequence shall be:

- Section No.1 - North/South Wing (First Floor):
 - Practical Completion – 6 (six) calendar months from possession of site (excluding annual builders' holiday)
- Section No.2 - East/West Wing (First Floor):
 - Practical Completion – 12 (twelve) calendar months from possession of site (excluding annual builders' holiday)
- Section No.3 - North/South Wing (Ground Floor):
 - Practical Completion – 18 (eighteen) calendar months from possession of site (excluding annual builders' holiday)
- Section No.4 - East/West Wing (Ground Floor):
 - Practical Completion – 24 (twenty-four) calendar months from possession of site (excluding annual builders' holiday)
- Section No.5 - Balance of Works (Demolition of hawker stalls/provision of new and replacement of underground services):
 - Practical Completion – 24 (twenty-four) calendar months from possession of site (excluding annual builders' holiday)

The work to be carried out by the Electrical Subcontractor under this Contract comprises of, but not limited to, the supply and installation of the following, including commissioning:

- (i) Liaising with Buffalo City Metropolitan Municipality (BCMM) Electrical Department, East London Offices, for switching of power, as and when required.
- (ii) Isolating, disconnecting & removal of the existing electrical installation, where instructed.
- (iii) Trace ALL existing electrical cable routes, cable sizes, DBs fed from & supplying

- to and recreate As-Built/Installed drawings of the existing cable installation.
- (iv) Supply and installation of new Low Voltage (LV) Distribution Boards (DBs); including BCMM approved Prepaid Meters within the line shop DBs.
 - (v) Supply and installation of LV cabling to Sub-Main DBs on each floor; line shop DBs must utilise existing LV cabling.
 - (vi) Supply and installation of power and data cable sleeves; if requirement arises.
 - (vii) Supply and installation of wireways (cable ladders, wire mesh, power skirting, P2000 & P8000 trunking) under concrete soffit & at high levels for lighting, power and data cabling.
 - (viii) Supply and installation of luminaires, light switches, occupancy sensors, switched socket outlets and other small power systems.
 - (ix) Submission of samples of all luminaires and other materials for vetting and approval as to the Engineer, Client, Principal Agent or any other member of the professional team.
 - (x) Supply and installation of Earthing and Bonding of all building installations.
 - (xi) Attendance to any specialist installers, such as LPS (Lightning Protection System), mechanical (fire detection, smoke ventilation, etc.) intruder alarm and data cabling and other related services; if and when required.
 - (xii) Performing and submission of test records and certificates.
 - (xiii) Balancing of loading and circuits at Final Works completion.
 - (xiv) Test completed installations and issue of Certificates of Compliance for all Electrical System Installation (including LPS, Earth Mat installations, etc.).
 - (xv) Produce marked As-Built drawings for all Electrical (including DB Schematic Diagrams, LPS installations, etc.) to be submitted to the Engineer.

The description of the Works listed above, is not necessarily complete and shall not limit the work to be carried out by the Electrical Subcontractor under this Contract.

3. **SPECIFICATIONS & STANDARDS**

The works carried out under this Contract shall be governed, but not limited to:

- (i) SANS 10142-1: Wiring Code and/or as amended,
- (ii) SANS 10114-1: Interior Lighting Part 1: Artificial Lighting of Interiors;
- (iii) SANS 10114-2: Part 2: Emergency Lighting;
- (iv) Protection against Lightning – Physical Damage to Structures and Life Hazard: SANS 10313: 2008 and in conjunction with the SANS 62305 series
- (v) The Occupational Health and Safety Act, 1993 (Act 85 of 1993)

4. **SYSTEM LOW VOLTAGE**

The supply to the Electrical installation shall be 400/230 Volts, 3 phase, 4 wire, 50 Hertz, Earthed Neutral or as directed by the relevant Supply Authority.

5. **SCHEDULE OF MATERIALS**

In all instances where schedule of materials are attached or included on the drawings, these schedules are to be regarded as forming part of the specification.

All materials and equipment procured by the Electrical Subcontractor must be made in South Africa. Where this is not possible, the Electrical Subcontractor must provide to the Engineer or Engineer's Representative validating evidence that such material and/or equipment is not available South Africa.

6. **CONTRACT DRAWINGS**

Drawings must be read in conjunction with this Specification and the Bills of Quantities. Any errors, discrepancies or contradictions found between the Drawings, the Specifications and the Bills of Quantities must be brought to the attention of the Engineer or Engineer's Representative **immediately** as they become evident.

The drawings generally show the scope and extent of the proposed work and shall not be construed as showing every minute detail of the work to be executed.

The position of power points, switches and light points that may be influenced by built-in furniture and equipment must be established on site prior to these items being built in.

Drawings will be issued to site accompanied by drawing issue slips. The drawing issue register reflecting the summary of all previously issued drawings with dates and drawing revisions will be issued at site meetings once a month.

7. **POWER CABLE SLEEVES**

Where cables cross paved, concrete or tarred surfaces and roadways where cables enter buildings, cables shall be run in flexible (corrugated) PVC sleeves. **Any other cable sleeves will not be acceptable.**

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 and provided with pulling tape/rope for pulling in future cables. The pulling tape/rope shall be manufactured from unstarched polyester & coated with silicone, have a thickness of 1.0mm (± 0.2 mm) x width 16mm (± 1.0 mm) and have a breaking strain of 800kg, similar or equivalent to Optex Pull Tape.

All sleeves shall be laid in at a minimum depth of 600mm below final levels. Slow bends approved by the Engineer shall be used where sleeves enter buildings.

8. **NOTICES AND FEES**

The Electrical Subcontractor shall liaise, issue all notices and make the necessary arrangements with the Supply Authority for power connection.

The Electrical Subcontractor shall give all notices required and pay all necessary fees which may be due to the relevant authorities.

9. **EXISTING SERVICES**

The Electrical Subcontractor shall be held responsible for damage to any existing services

shown on the drawings and/or brought to his attention by the relevant authorities, Engineer, Client, Principal Agent or any other member of the professional team. The repairs to such the damaged services will be to the Electrical Subcontractor's account.

To avoid damaging existing services and existing services that cannot be identified and indicated to Electrical Subcontractor, the Electrical Subcontractor shall supply and use detection equipment for the location of existing services.

10. **QUALITY OF MATERIALS**

Materials are to comply with the relevant South African National Standards (SANS), or to IEC specifications, where no SANS specifications exist. All materials used shall bear the SABS mark of approval as applicable.

All materials must be of South African manufacture unless this is not possible.

11. **BALANCING OF LOAD**

The Electrical Subcontractor is required to balance the load as **equally** as possible over the multiphase supply during the construction period of the Contract.

The Electrical Subcontractor is, then, to return to site at Final Completion to take current readings from all the distribution boards and balance the loads where necessary. This is to be done with the Engineer or the Engineer's Representative in attendance.

12. **SUPERVISION**

The work shall, at all times for the duration of the Contract, be carried out under the supervision of a skilled and competent representative of the Electrical Subcontractor, who will be able and be authorised to receive and carry out instructions on behalf of the Electrical Subcontractor. A sufficient number of workmen shall be employed at all times to ensure satisfactory progress of the work.

13. **WORKMANSHIP**

All inferior work shall, on indication by the Engineer, Client, Principal Agent or any other member of the professional team, be **immediately** removed and rectified by and at the expense of Electrical Subcontractor.

14. **SUPPLY OF MATERIAL**

The Client reserves the right to supply material, tools or equipment to the Electrical Subcontractor for installation. The Electrical Subcontractor must arrange for taking delivery of and providing safe storage for such materials, tools or equipment and he/she will be held responsible for any and all damages to or loss of such materials, tools or equipment while they are in custody of the Electrical Subcontractor. The Electrical Subcontractor will submit the installation rate of such materials, tools or equipment to the Engineer or Engineer's Representative if not included in the priced Bills of Quantities.

15. **SAMPLES AND DRAWINGS**

- 15.1 The Electrical Subcontractor is required to submit for vetting, approval, comment or records, samples of materials upon which the Electrical Subcontractor's offer is based prior to installation. Any approvals given or comments made shall be on the generality of the scheme and shall not relieve the Electrical Subcontractor of his responsibility to ensure full compliance with all performance, regulatory criteria and latent defects experienced.
- 15.2 Samples forwarded shall remain in the site stores until completion of the Works. The samples will be the last items to be embodied within the installation.
- 15.3 All expenses in connection with the supply and return of the samples shall be borne by the Electrical Subcontractor.

16. **SWITCHES AND SOCKET OUTLETS (SSO)**

16.1 **General**

Covers shall be of at least 1mm thickness and to be manufactured in accordance with, but not limited SANS 1084 and SANS 164 – 1, 2 & 3 and any other gazetted legislation. The Electrical Subcontractor may submit equivalent alternatives to the Engineer for approval.

Light switches and switched socket outlets plates must be provided with earth studs and all light switch boxes shall be connected to the earth conductor.

For uniformity only one make must be installed.

16.2 **Light Switches and Occupancy Sensors**

Light switches shall be of 250 Volts grade and comply with, but not limited to SANS 1085 as amended and bear SABS mark. Light switches shall be rated at 16 Amperes.

Switches which shall be of the single pole, rocker operated type, flush mounted in 100mm x 50mm x 50mm galvanised boxes.

Light switches exposed to the weather must be of an approved watertight type.

Multi-gang switches are to be used where more than one light switch is indicated on the drawing.

Occupancy Sensors Features:

- Self-adjusting ultrasonic [US] and passive,
- Infrared [PIR] sensitivity,
- Self-adjusting timer,
- Automatic false-on/false-off corrections,
- Natural light override range: 100 – 5000 LUX,
- Casing must be rugged, high impact, injection-moulded,
- Plastic KJAB ABS Cicolac (UL-954VA) flame class,
- Rating UV inhibitors, impact resistant lens and

- 152.4mm long colour-coded leads

16.3 Socket Outlets

Switched socket outlets shall comply with SANS 1085 as amended and be rated at 16 Amperes, 250 Volts unless otherwise specified.

Flush mounted standard switched socket outlets shall be of the 16Amp 3-pin shuttered base type, with SANS 164-2 (ZA/Euro plug) 16Amp 3-pin + earth module and bear SABS mark.

Socket outlets indicated on walls shall be existing flush mounted 100mm x 100mm x 50mm galvanised boxes.

All surfaces mounted switched socket outlets to be in 100 x 100 x 50 extension outlet boxes mounted on the wall surfaces; colours of outlet boxes and cover plates to match.

The powerskirting mounted standard switched shall be of the 16Amp 3-pin shuttered base type, with SANS 164-2 IEC 16Amp 3-pin + earth, ~~including the 3Amp USB module~~. All switched socket outlets mounted in powerskirting to have matching cover plates.

Further details of these outlets are listed in the Switch, SSO and Isolator Schedule.

The Electrical Subcontractor will be responsible for the installation of power points to feed equipment such as water heaters, air-conditioners, fans, security equipment, etc. This equipment, if supplied and installed by others, will be connected by the Electrical Subcontractor.

The cover plates to all outlets shall be fixed **AFTER** the final coat of paint has been applied. The Electrical Subcontractor shall allow for this in his programme and pricing of the Works.

15.4 Labelling

All light switches and switched socket outlets shall be permanently labelled with a circuit number e.g.:

- Dn/m
- Pn/m
- Ln/m

Where D = Dedicated Power circuit
P = Power circuit
L = Light circuit
n = circuit number (1, 2, 3, etc.)
m = component number in the circuit

17. LUMINAIRES AND LAMPS

All luminaires to be supplied by the Electrical Subcontractor shall have the approval of the Engineer or Engineer's Representative.

Luminaires must be of the type specified in the Schedule of Light Fittings.

17.1 Luminaires

All internal and external luminaires shall have LED modules and drivers. All LED luminaire drivers shall conform to SANS/IEC/EN standards.

If a specified luminaire is not available in LED option, then all fluorescent and CFL luminaires shall have class A2 electronic ballasts. The Electrical Subcontractor shall supply luminaires complete with lamps in separate boxes.

17.2 Installation

The installation and mounting of luminaires must conform to the manufacture's specification that must be obtained by the Electrical Subcontractor.

The Electrical Subcontractor is to note that in the case of board and acoustic tile ceilings i.e., as opposed to concrete slabs, close co-operation with the Principal Contractor is necessary to ensure that as far as possible luminaires are symmetrically positioned with regard to the ceiling pattern. The lay-out of the luminaires as indicated on the drawings must be adhered to as far as possible, and where this is not possible due to partitioning, etc., the Engineer's, Client's, Principal Agent's or any other member of the professional's decision must be sought.

Fluorescent and/or channel type luminaires installed against concrete ceilings shall be screwed to the outlet boxes and in addition 2 x 6mm expansion or other approved type fixing bolts are to be provided. The bolts are to be 3/4 of the length of the luminaires apart.

Fluorescent and/or channel type luminaires to be mounted on board ceilings shall be fixed onto wooden brandering and where necessary, additional brandering must be provided for this purpose. The fixing screws are to be placed 3/4 of the length of the fitting apart. Earth conductors must be drawn in with the circuit wiring and connected to the earthing terminal of all fluorescent luminaires as well as other luminaires exposed to the weather.

Bulkhead luminaires are to be screwed directly to the concrete and brick work with approved expansion type of fixing plugs and round head screws. Against board ceilings luminaires shall be secured to the brandering or joists by means of two 40mm x No. 8 round head screws.

17.3 Lamps

Lamps to be supplied with luminaires must be from manufacturers listed below. Any other similar lamps may be submitted for approval:

- Wotan, Osram, Phillips, GEC and GE

17.4 Electronic Ballasts and L.E.D Drivers

Class A2 electronic ballasts and L.E.D drivers to be supplied with luminaires must be from manufacturers listed below. Any other similar lamps may be submitted for approval:

- Tridonic

- Vossloh Schwabe
- Osram
- Phillips
- Mean Well

NOTE: No-name brands and brands of dubious quality and origin are not acceptable.





18. SCHEDULE OF LIGHT FITTINGS

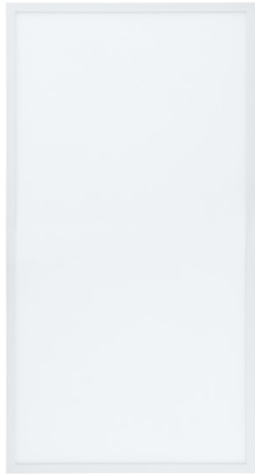

Luminaires and accessories are to be according to this Specification and shall be approved by the Engineer. As a minimum requirement, all luminaires to be installed in this contract shall bear the bear a SABS or IEC mark of quality approval including their components




All luminaires to





- Have LED modules and driver from reputable manufacturers with 3m cable with 6A plug and 5-year warranty
- LED luminaires to be 4000K (Neutral White) with Ra of not less than 80
- Life cycle: 60000 hours lifetime @ Tq 25°C minimum and L70 derating, 80 or more colour rendering index (CRI > 80).
- Surge protection device: 5kV/5kA (this will depend on the location, for indoor it is usually between 5kV/5kA and 10kV/10KA and for outdoor is 20kV/20kA)
- Insulation classification: Class 1
- Driver shall comply with IEC 61347-1 & IEC 61347-2-B as applicable and shall be suitable for operation on 230V +/- 10% 50Hz single phase system and it must be insured that harmonics filter is provided as per SANS 61000-3-2. The driver and LED circuitry shall be protected against lightning and power surges. The suitable surge arrestor with 10kA rating shall be provided for indoor installations and 20kA for outdoor installations.
- The driver should be 198 – 277V tolerance.
- Driver – Built-in driver must have 5-year warranty.
- Luminaires shall be suitable for operation with Mid Power LED's. Note: NO LED TUBES to be used.
- Power factor capacitors shall be shall be supplied to correct the power factor to at least 0.95 or higher.
- THERMAL: the luminaire must be able to withstand an ambient temperature of 35°C Storage temperature of the luminaire should be able to handle -40°C <T<60°C. To this end internal electrical and mechanical components shall not be allowed to exceed their maximum temperature ratings of 75°C. Test report from an independent authorized testing facility proving this requirement shall be made available to the client on request.

Noise: Due to the sensitive environment in which the luminaire is used, the noise level emitted from the luminaire shall be kept as low as possible. Drivers/electronic components shall, therefore, comply fully with the requirements of the latest edition of SANS 55015.

Type	Description	Picture of Luminaire
B	35W LED linear channel type luminaire, 1150mm in length, manufactured in black polymethyl methacrylate (PMMA) body, housing CRI:80 4000 Kelvin low voltage LED Zhaga Boards (5019lm luminous flux), IP44 rated, surface mounted, including mounting clips, onto ceiling and/or onto P2000 trunking, with opal diffuser & integrated driver.	
BE	Same as above, but with 1-hour <u>lithium</u> battery back-up.	
B	19W LED linear channel type luminaire, 580mm in length, manufactured in black polymethyl methacrylate (PMMA) body, housing CRI:80 4000 Kelvin low voltage LED Zhaga Boards (2508lm luminous flux), IP44 rated, surface mounted, including mounting clips, onto ceiling and/or onto P2000 trunking, with opal diffuser & integrated driver.	
BE	Same as above, but with 1-hour <u>lithium</u> battery back-up.	
EX	15W LED Surface mounted or ceiling suspended single-sided maintained emergency exit sign with an EXIT decal. With one hour maintained emergency lighting.	
G	35W LED channel type luminaire, 1150mm in length, manufactured in black polymethyl methacrylate (PMMA) body, housing CRI:80 4000 Kelvin high voltage LED Samsung Zhaga Boards (5019lm nominal flux), <u>IP65 rated</u> , surface mounted, including mounting clip, onto ceiling, with opal diffuser & integrated driver.	
GE	Same as above, but with 1-hour <u>lithium</u> battery back-up.	

J	50W LED <u>recessed</u> mounted (including surface mount frame) 1200mm x 600mm backlit luminaire (4656lm nominal flux), with 1.5kV surge protected driver, body made from matt white epoxy powder coated finish, seamless aluminium extruded frame. High colour rendering index CRI>80, UGR: <22; <19(4Hx8H,8Hx4H), colour temperature 4000k, ambient temperature -20°C - +30°C, opal diffuser & 5Amp plug top.	
JE	Same as above, but with 3-hour <u>lithium</u> battery back-up.	
JS	50W LED <u>surface</u> mounted 600mm x 600mm backlit luminaire (4656lm nominal flux), with 1.5kV surge protected driver, body made from matt white epoxy powder coated finish, seamless aluminium extruded frame. High colour rendering index CRI>80, UGR: <22; <19(4Hx8H,8Hx4H), colour temperature 4000k, ambient temperature -20°C - +30°C, opal diffuser & 5Amp plug top.	
JSE	Same as above, but with 3-hour <u>lithium</u> battery back-up.	
K	1 x 10W decorative indicator surface mounted, above the strong room, luminaire with 230V flasher and red diffuser (lens).	
L	18W LED outdoor decorative wall mounted bulkhead (2456lm nominal flux), LM6 die cast aluminium base, opal UV stabilised non-discolouring high impact acrylic injection moulded diffuser, captive washers, stainless steel Allen key screws, the diffuser must be permanently sealed to the aluminium base and must be supplied with a 600mm cable supply lead, mains connections must be by means of a suitable screw terminal block with a wire clamping contact, the trim ring casting is manufactured from high-pressure die-cast aluminium and is finished in a special multi-stage epoxy powder surface coating IP65 rating	

LE	Same as above, but with 1-hour <u>lithium</u> battery back-up.	
P	<p>124W LED 48 LEDs wall mounted (including wall mounting bracket) luminaire, with 3 compartment design; 1-Optical compartment with LED engine, 2-Gear compartment & 3-A spigot compartment. Both optical & gear compartments are to be rated IP67. Housing to be of marine grade aluminium with high impact glass or polycarbonate. LED engine to consist of the LED light source & the power supply which can be easily replaced or upgraded (Futureproof). The power supply is to automatically disengage when opening the luminaire. Luminaire is to be supplied with an electronic trip connector protector with surge protection 6kV & additional removable inline 10kV surge protection device, with stainless steel external screws.</p>	
P1	<p>48W LED 24LEDs wall mounted (including wall mounting bracket) luminaire, with both optical & gear compartments are to be rated IP67. Housing to be of marine grade aluminium with high impact glass or polycarbonate. LED engine to consist of the LED light source & the power supply which can be easily replaced or upgraded (Futureproof). The power supply is to automatically disengage when opening the luminaire. Luminaire is to be supplied with an electronic trip connector protector with surge protection 6kV & additional removable inline 10kV surge protection device, with stainless steel external screws. Electrical contractor to price in for constructing a small concrete plinth & stainless-steel cage to protect the floor mounted floodlight.</p>	

R1	15W LED Surface mounted or ceiling suspended one directional and one-sided emergency sign with a RUNNING MAN decal. With one hour <u>lithium</u> battery maintained emergency lighting.	
R2	Same as above, but ceiling suspended, double-sided emergency sign	
S	42W LED Post top mounted luminaire with UV stabilised non-discolouring high-impact acrylic or clear acrylic diffuser, with glare baffles, a mounting height of up to 6m. Luminaire to be IP65 rated and to have a 10kV/kA surge protection. Luminaire is to have 360-degree symmetrical angle light distribution.	
Z	18W 200-265V LED non-dimmable ceiling <u>recessed</u> mounted ultra-slim downlighter panel, with 110° beam, thermoplastic body in <u>white</u> and integrated 1kV surge protection.	
ZE	Same as above, but with 3-hour <u>lithium</u> battery back-up.	
ZS	6W 200-265V LED <u>IP65</u> non-dimmable ceiling <u>recessed</u> mounted ultra-slim downlighter panel, with 110° beam, thermoplastic body in <u>white</u> and integrated 1kV surge protection.	
ZSE	Same as above, but with 3-hour <u>lithium</u> battery back-up.	
Z1	18W 200-265V LED non-dimmable ceiling <u>surface</u> mounted ultra-slim downlighter panel, with 110° beam, thermoplastic body in <u>white</u> and integrated 1kV surge protection.	

19. EARTHING AND BONDING

20.1 General

Earthing shall generally be in accordance with, but not limited to:

- (i) SANS 10142-1: Wiring Code,
- (ii) SANS 10198: Part 3 - Earthing System; General Provision
- (iii) Part 12 - Installation of Earthing Systems
- (iv) SANS 1063: Earth Rods Couplers and Clamps
- (v) AMEU Code of Practice for the application of protective multiple earthing to low voltage distribution systems and
- (vi) The OHS Act 85 of 1993.

20.2 Trench Earthing

- (i) The trench earth shall be laid alongside and not above cables.
- (ii) All connections shall be by means of crimped lugs and bolted connections.

20.3 Earth Terminal

A readily accessible earthing terminal shall be provided, near the trap door in the ceiling, for the bonding of other services such as a telephone, an audio system, a video, and the like, to the building. Such an earthing terminal shall be bonded to the consumer's earth terminal in the main distribution board by a conductor of at least 6mm² copper or equivalent, and shall be identified by the earth symbol.

NOTE: Providers of services other than the electrical power services should not access the distribution board or other parts of the electrical installation.

21 LIGHTNING PROTECTION SYSTEM

The Electrical Subcontractor shall be responsible for the employment of an accredited specialist subcontractor to design, supply and install the lightning protection system (LPS). A provisional sum has been allowed for in the Bill of Quantities for the lightning protection system. The Electrical Subcontractor will be instructed to obtain quotations from specialist LPS sub-contractors who will submit their quotation accompanied by the full analysis and design of the LPS system as directed below.

NOTE: No quotes will be considered without this full analysis and design of the LPS system.

This specialist shall conduct a full survey of the buildings to be protected in order to evaluate the type of lightning protection system to be implemented. This survey must be conducted in accordance with the latest following SANS codes of practice:

- (vii) SANS 10313: Protection against lightning – Physical damage to structures & life hazard.
- (viii) SANS 62305-1: General Principals.
- (ix) SANS 62305-2: Risk management.

- (x) SANS 62305-3: Physical damage to structures & life hazard.
- (xi) SANS 62305-4: Electrical & electronic systems within structures.
- (xii) SANS 1063: Earth rods, couplers & connections.
- (xiii) SANS 10199: The design & installation of earth electrodes.

The LPS specialist shall provide a risk analysis spread sheet to conclude the buildings classification. The risk analysis shall take into account the following criteria.

20.1 Type of structure:

- (i) Construction of walls.
- (ii) Roof construction.
- (iii) Roof covering.
- (iv) Equipment on the roof.

20.2 Contents of the structure:

- (i) Risk of panic.
- (ii) Kind of contents.
- (iii) Value of contents.
- (iv) Measures for reduction of damage.

20.3 Consequential losses:

- (i) Danger to the environment.
- (ii) Loss of services to the public.
- (iii) Other consequential losses.

Based on the above results and in conjunction with location and accepted annual frequency of lightning flashes the required protection level must be established. The design methodology (Protective Angle, Grid or Rolling Sphere) used for the system must be stated and it must be shown with the use of drawings that the building / structure falls within the shielding offered by the LPS.

The LPS specialist shall also provide drawings to indicate the positions of the air termination system and down conductors. Where applicable the down conductors are to be installed in down pipes. Each down conductor should be bonded to the air termination system and be terminated to a 1 800mm copper earth spike in the ground.

The issue of a Certificate of Compliance for the Lightning Protection Systems is compulsory on completion of the installation.

21 MOUNTING HEIGHTS

Unless indicated differently on drawings all boxes must be mounted as follows:
(Measurements to be taken from the finished floor level to underside of a box).

Wall switches, general	: 1 000mm
Switched socket outlets	: 450mm
(") above worktop	: 300mm
Outside wall outlets for luminaires	: 2 200mm (Bulkheads) or 3800mm (Floodlights)

Stove isolators and pushbuttons : 1 200mm

On-tap hot water dispenser isolators : 2 000mm

22 WIRING

Lighting and Power wiring in conduit and channel wireways shall comprise 600/1000V single core PVC insulated copper wire sized in accordance with the distribution board schematics. Conductor outer sheaths shall be of the following colours:-

- Phase Conductors : red, white, blue
- Neutral : black
- Earth : green or yellow/green

Conductors shall not be drawn into conduit until the conduit installation has been completed and all conduit ends are provided with bushes, dried out and cleaned, etc.

The loop-in system shall be followed through out, and no joints of any description will be permitted. The earth wire must be continuous and can be common in the same conduit. If cut, the earth wire must be ferruled with a spigot type ferrule.

The following sizes of PVC insulated stranded copper conductors must be used:

- (i) Light fittings : 1,5 or 2,5mm²
- (ii) Socket outlets : 2,5mm²
- (iii) Mechanical equipment isolators : 4mm²
- (iv) Solar water heaters isolators : 4mm²

Bare copper earth continuity conductor must be drawn into wireways with the "live" conductors and connected to the earth pin of the socket outlet and earth terminal block at the respective Switch Board.

23 WIREWAYS

23.1 Wiring Channels

Wiring channels, wherever indicated on the drawings, shall be medium duty and shall be complete with corner pieces, end pieces, junction pieces, supply conduits and cover plates as specified and indicated on the drawings. **Note that Nylon or plastic nuts or fasteners will not be accepted.**

The channels shall be manufactured of rolled sheet steel and hot-dip galvanised to SANS 763.

Channels shall be cold galvanised at all joints, sections that have been cut and at places where the galvanising has been damaged.

23.2 Conduit and Conduit Accessories

Unless indicated differently on the drawings conduit and conduit accessories shall be PVC

to SANS 950.

Draw-boxes and bonding trays are to be provided in accordance with the 'Wiring Code' and wherever necessary to facilitate easy wiring. Draw boxes are not measured separately in the Bill of Quantities. The Electrical Subcontractor must therefore include the cost of draw boxes and bonding trays in the conduit rates.

23.2.1 Installation

A maximum of 2 plug circuits or 3 light circuits per 20mm diameter conduits will be permitted. Therefore, before conduit installation care must be taken to work out from the construction drawings the number of circuits required in any section.

24 MEASUREMENT OF QUANTITIES

For construction and installations, the Electrical Subcontractor shall take quantities from the latest available revised construction drawings and physically measure cable routes on site before ordering.

Quantities in the Bills of Quantities must not be used for ordering.

25 LV DISTRIBUTION BOARDS

Distribution boards must be manufactured and wired by a specialist distribution board manufacturer who is a member of the Electrical Contractor Association (ECA). Readymade boards purchased from hardware shops and wholesalers and wired by the contractor are not acceptable.

25.1 Distribution Boards Layout

- (i) The layout shall be such that three-phase and single-phase sections are mechanically and electrically separated.

Single phase sections of three phase boards shall be arranged in three horizontal parallel rows, directly above on another and in the phase sequence L1 - L2 - L3 from top to bottom.

- (ii) Lighting and power circuits shall be separated by a dummy space and along the horizontal rows. Extra space for future circuits shall be allowed for at the right-hand side of each lighting and power row, in the ratio of **one** spare space for each **four** lighting or power circuit installed (**30%**). A minimum of **one** space shall be allowed to each lighting and power row. Dummy covers are to be provided over spare spaces. Similar provision for future circuits shall be made on the bus-bars, neutral and earth bars.

- (iii) Any part of the distribution board metal work shall be electrically continuous and a suitable stud shall be provided for the earthing of the enclosure.

- (iv) An earth bar must be provided in the bottom of the distribution boards for the connection of earth conductors for other services.

25.2 Marking and Labelling

- (i) The distribution boards shall be fitted with identification labels engraved with the reference logos indicated on the wiring diagrams. The labels shall be affixed to the front of the panels or in a similar prominent position, by drive screws or other approved method.

DB's label shall indicate the following information:

- **DB name e.g., "SDB-G"**
- **Where it is fed from, the cable and Earthwire sizes e.g., "Fed from MDB-G with 35mm² 4-core SWA ECC cable"**

- (ii) Each individual item of equipment installed in the panels shall be identified by a label engraved with the corresponding diagram reference.

Note: Self-adhesive tape labels, such as Brother™ labelling machines will not be considered suitable for this purpose.

- (iii) Each wiring termination of contactors, timers, shunt trip coils, etc. shall be fitted with a concentric wire marker marked with unique numbers and indicated on the DB as-built schematic diagram. Clip-on and stick-on cable markers will not be considered suitable for this purpose.
- (iv) Where an outgoing terminal block is provided, each individual terminal shall be marked with unique numbers and indicated on the DB as-built schematic diagram.
- (v) Purpose made labels shall describe the various sections or functions of the panels, to facilitate the identification of the equipment and relate it to the diagrams.

25.3 Drawing Pocket

Each distribution board must be provided with **A4 size pockets**, fixed on the inside of the doors to store two A1 size drawings which will be folded into A4 size.

25.4 Equipment

Unless otherwise stated on the drawings, the following minimum specification shall be assumed for equipment to be installed in the panels: -

Moulded Case Breakers (MCB)	SABS Class 15 kA
Miniature Circuit Breaker (mccb)	SABS Class 6 kA

25.5 Shop Drawings

Prior to manufacture the Electrical Contractor will be required to submit to the Engineer for approval, factory shop drawings for each distribution board. **No request for relaxation of this requirement shall be entertained.** The drawings must, at least, indicate the following information:

- Outside distribution dimensions,
- Notes giving detailed description of components and equipment in each board,
- General arrangement of installed equipment,
- Schematic wiring diagrams with fault levels,
- List of equipment to be installed; details to include rating, make and type number,
- Distribution board labels,
- Circuit breaker and isolator label names, as per schematic diagram,
- Project name,
- Drawings number,
- Size of legend card slot.

26 INSTALLATION GUARANTEE

The whole installation shall be guaranteed for the period stated in Contractor Data from the date of Practical Completion.

27 PRATICAL COMPLETION

Practical completion shall take place **only** after the whole installation has been accepted by the Engineer and;

- (a) All damage that may have been done by the Electrical Contractor or any other parties in the process of the installation has been repaired and made good.
- (b) All tests of the general building's electrical installation have been done and tests results have been submitted to the Engineer or Engineer's Representative.
- (c) The completed Certificate of Compliance for Electrical installation have been submitted to the Engineer or Engineer's Representative.
- (d) The completed Certificate of Compliance for Lightning Protection System installation have been submitted to the Engineer or Engineer's Representative.
- (e) All equipment guarantees, if any, have been submitted to the Engineer or Engineer's Representative.
- (f) Correct As-Built drawings have been submitted and accepted by the Engineer or Engineer's Representative.
- (g) The building has been cleared of all debris and electrical waste materials and left in a neat and tidy condition.
- (h) All three phases have been balanced and witnessed by the Engineer or Engineer's Representative. This may require the Electrical Contractor to return to site when the building is occupied to take current measurements and rebalance phases.

28 FINAL COMPLETION

Final Completion shall be taken on expiration of the maintenance period which is stated in the Contract Data calculated from the date of taking the Practical Completion.

The final payment will not be approved without the submission of all the above information under heading 26 and accepted by the Engineer.

29 CABLE TRENCHES

Prior to payment of final retention monies, all cable trenches shall be checked for settling and repaired as necessary.

30 TENDER DRAWINGS

The following tender drawings are attached to this document

Drawing No.	Title	Size
1. 2214-T-E-101	Ground Floor – Lighting Layout	A3
2. 2214-T-E-102	Ground Floor – Power Layout	A3
3. 2214-T-E-103	First Floor – Lighting Layout	A3
4. 2214-T-E-104	First Floor – Power Layout	A3
5. 2214-T-E-301	SDB-1 DB Schematic Diagram	A3
6. 2214-T-E-302	SDB-A & SDB-Sxx SHOP DB Schematic Diagrams	A3
7. 2214-T-E-303	Ground Floor - SDB-Sxx SHOP & SDB-C1 DB Schematic Diagrams	A3
8. 2214-T-E-304	SDB-B & SDB-Sxx SHOP DB Schematic Diagrams	A3
9. 2214-T-E-305	SDB-C & SDB-Sxx SHOP DB Schematic Diagrams	A3
10. 2214-T-E-306	SDB-D & SDB-Sxx SHOP DB Schematic Diagrams	A3
11. 2214-T-E-400	Typical Electrical Details	A3

Section 2 – Returnable Schedules

RETURNABLE SCHEDULES

TABLE OF CONTENTS

ITEM No.	DESCRIPTION
2.1	FINANCIAL DETAILS
2.2	REGISTRATION AS AN ELECTRICAL CONTRACTOR
2.3	DETAILS OF INSTALLATION ELECTRICIAN
2.4	SCHEDULE OF MATERIAL & EQUIPMENT OFFERED
2.5	SCHEDULE OF ELECTRICAL SUBCONTRACTOR'S TESTING EQUIPMENT

2.1 **FINANCIAL DETAILS**

Name of Bank or Financial Institution where Account is kept:

.....

Branch Name

Bank Contact Person.....

Branch Code

Account number

Name under which account is operated:

NOTE;

Tenders cannot be adjudicated without the above information and failure on the part of tenderers to declare the information, thus causing delays to the adjudication to the, may result in their tender being disqualified.

.....

NAME OF ELECTRICAL SUBCONTRACTOR

.....

***ELECTRICAL SUBCONTRACTOR'S
SIGNATURE***

.....

DATE

2.2 REGISTRATION AS AN ELECTRICAL CONTRACTOR

The Tenderer must employ an Electrical Subcontractor registered with the Electrical Contracting Board of South Africa and must also be registered with the Workmen's Compensation Commissioner and the Unemployment Insurance Commissioner.

Tenderers must complete the following questionnaire and submit it with this tender.

- a) Has the Electrical Subcontractor been registered with the Electrical Contractors Association of South Africa (ECASA) YES/NO
Registration No:
Date of issue:
- b) Has the Electrical Subcontractor been registered with the Department of Manpower?
 - i) Registered for Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 (COIDA) YES/NO
Registration No:
Date of issue:
 - ii) The Unemployment Insurance Fund (UIF) YES/NO
Registration No :
Date of issue:

I/We certify that the above information is correct

Signature:

Name of Signatory:

Name of Firm Represented:

Address:

.....
.....

Date:

NOTE: IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT ELECTRICAL INSTALLATIONS REGULATIONS FAILURE TO COMPLY WITH THIS CLAUSE OF THE SPECIFICATION MAY RESULT IN DISQUALIFICATION AND REJECTION OF THE TENDER.

2.3 DETAILS OF INSTALLATION ELECTRICIAN

I/We certify that is a registered installation electrician in terms of the Occupational Health and Safety Act (Act 85 1994) and is permanently employed by my/our company trading as:

.....
.....

I/We further certify that the abovementioned person will be appointed as the responsible person in charge of the installation, which person shall personally supervise the whole of the electrical works as tendered for from inception to completion inclusive of signing all commencement/completion/ cost certificates necessary as part of the Works.

I/We further certify that I/We am/are fully aware of the provisions of the Occupational Health and Safety Act (Act 85 1994), and that my/our company is trading as a registered electrical contracting organisation.

SIGNATURE OF TENDERER	SIGNATURE OF INSTALLATION ELECTRICIAN
------------------------------	-------	--	-------

REGISTRATION NUMBER OF INSTALLATION ELECTRICIAN	DATE
--	-------	-------------	-------

COMPANY STAMP

ATTACH CERTIFIED COPY OF WIREMANS LICENSE

NOTE It is an offence to employ a registered single-phase installation electrician on a poly-phase installation and it may be necessary to submit a certified copy of the licence of the person to be employed on any poly-phase project.

2.4 SCHEDULE OF MATERIALS & EQUIPMENT OFFERED – Electrical Installation

The Electrical Subcontractor shall complete the following schedule of materials and equipment offered at tender stage and undertook that the actual materials and equipment installed shall be in accordance with this schedule. Unless the equivalent is no longer available, previously offered equipment shall be binding. Where previously offered equipment or where the equipment specification has changed, the Electrical Subcontractor may indicate an alternative offer that must conform to the specifications.

The Electrical Subcontractor is to take note that if the material offered is not to specification, this may not be accepted by the Engineer.

NB : Only one manufacturer's name to be inserted for each item.

Col.	1	2	3	4	5	6
Item No.	Item	Make or Trade Name	Model No. or I.D.	Material to Spec? (Give details if not)	SABS Mark Y/N	Country of Origin
1.0	Distribution Boards					
1.1	Switchgear utilised					
2.0	Make of Switches & Accessories					
2.1	Light switches					
2.2	Photocell					
2.3	Switch socket outlets					
2.4	Isolators					
2.5	MCB's					
2.6	Circuit breakers 1P, 2P, 3P					
2.7	On load isolators without trips					
2.8	Contactors 1P, 2P, 3P					
2.9	Earth leakage units					
2.10	Powerskirting					
2.11	Switched Socket Outlets					

Col.	1	2	3	4	5	6
Item No.	Item	Make or Trade Name	Model No. or I.D.	Material to Spec? (Give details if not)	SABS Mark Y/N	Country of Origin
4.0	Wiring Channel					
4.1	Manufacturer					
4.2	Model No.					
5.0	Luminaires					
5.1	Type A1					
5.2	Type A1E					
5.3	Type B					
5.4	Type BE					
5.5	Type CH					
5.6	Type EL					
5.7	Type EX					
5.8	Type G					
5.9	Type GE					
5.10	Type H					
5.11	Type HE					
5.12	Type J					
5.13	Type JE					
5.14	Type K					
5.15	Type L					
5.16	Type LE					
5.17	Type PS					
5.18	Type PU					
5.19	Type R1					
5.20	Type R2					

Col.	1	2	3	4	5	6
Item No.	Item	Make or Trade Name	Model No. or I.D.	Material to Spec? (Give details if not)	SABS Mark Y/N	Country of Origin
5.21	Type S					
5.22	Type Z					
5.23	Type Z1					
5.24	Type ZD					
5.25	Type ZS					
5.26	Continuous Linear					

NOTE: Tenderers are to note that under no circumstances may materials be installed other than offered in the above materials schedule, which has been approved and accepted by the Contractor.

Should the successful tenderer wish to supply materials other than those originally offered, prior written approval must be obtained from the Contractor before any orders are placed.

.....

NAME OF TENDERER

.....

TENDERER'S SIGNATURE

.....

DATE

2.5 SCHEDULE OF ELECTRICAL SUBCONTRACTOR'S TESTING EQUIPMENT

Item	Test	Equipment
1.	Insulation Resistance	
2.	Earth Continuity	
3.	Polarity	
4.	Earth Leakage Protection	
5.	Other: (Specify)...	

SIGNATURE:

DATE:

(of person authorised to sign on behalf of the Electrical Subcontractor)

Section 3 – Pricing Schedules & Bills of Quantities

PRICING SCHEDULES & BILLS OF QUANTITIES

TABLE OF CONTENTS

Clause	DESCRIPTION
3.1	Pricing Instructions
3.2	Bills of Quantities

3.1 PRICING INSTRUCTIONS

1 These Bills of Quantities contain pages numbered in the consecutive order. The Electrical Subcontractor is required to check the numbers of pages and should any page be found to be missing, or in duplicate, or if any reproduction is indistinct, or if any ambiguity arises as to the meaning of any item or description, or if these Bills of Quantities contain any obvious errors, then the Electrical Subcontractor must immediately inform the Electrical Engineer and have the same rectified or explained, as the case may be. No claim will afterwards be considered where the Electrical Subcontractor has failed to comply with these instructions.

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
km	=	kilometre
kW	=	kilowatt
mm	=	millimetre
m	=	metre
m ²	=	square metre
m ³	=	cubic metre
No.	=	number
Prov sum	=	Provisional sum
R/only	=	Rate only
Sum	=	lump sum
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 Reasonable compensation will be received where no pay item appears in respect of work

required in the Bills of Quantities in terms of the Contract and which is not covered in any other pay item.

- 10 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.
- 11 Those parts of the contract to be constructed using labour-intensive methods have been marked in the Bills of Quantities with the letters LI in a separate column filled in against every item so designated. The works, or parts of the works so designated are to be constructed using labour-intensive methods only. The use of plant to provide such works, other than plant specifically provided for in the scope of work, is a variation to the contract. The items marked with the letters LI are not necessarily an exhaustive list of all the activities which must be done by hand, and this clause does not over-ride any of the requirements in the generic labour-intensive specification in the Scope of Works.
- 12 Payment for items which are designated to be constructed labour-intensively (either in this schedule or in the Scope of Works) will not be made unless they are constructed using labour-intensive methods. Any unauthorised use of plant to carry out work which was to be done labour-intensively will not be condoned and any works so constructed will not be certified for payment.
- 13 The responsibility for the accuracy of the Bills of Quantities written into the Bills of quantities remains with the person who prepared the Bills of Quantities. The Electrical Subcontractor shall be relieved of responsibility of measuring quantities at the tender stage, and the Electrical Subcontractor's sum submitted shall be in respect of the quantities set out in the Bills of Quantities, although he will be required to make his assessment of items such as brackets, fixing, etc., from details stated in the Bills of Quantities and shall include in the item prices for such small installation materials as are required for the complete installation in accordance with the Specification.
- 14 The Bills of Quantities are not to be used for ordering purposes. Any orders placed by the Contractor on the basis of these Bills of Quantities shall be at his own risk.

The quantities given in the Bills of Quantities for cables, cable markers, earth wire laid with cable and excavations cannot be regarded as exact and are subject to measurement on site after completion of the service and adjustments will be made according to the unit rates given in the Bills of Quantities.

Notwithstanding the fact that the lengths of cables as given in the Bills of Quantities have been measured from scaled drawings, the contractor shall check such lengths on site before ordering the cable, as he will not be paid for excess cable after the completion of the service. Any allowance for off-cuts shall be made in the unit rates. The final measurements shall be based on the net route length of the cables concerned.

- 15 All items described as "Provisional" shall be measured as executed and paid for according to prices in the Bills of Quantities and any unexpended amounts shall be deducted from the amount of the contract sum. No work for which "Provisional" items are provided shall be commenced without written instructions from the Engineer.
- 16 Materials encountered in the excavations for cable trenches, lighting standard and bollard holes generally shall, unless special provision to the contrary is made hereinafter, be classified as follows:-
 - a) 'Hard rock' shall mean any excavation requiring the use of explosives.
 - b) 'Soft rock' shall mean any excavation which necessitates the use of pneumatic tools.

c) 'Ordinary material' shall mean all pickable material.

In the event of any dispute regarding the classification of material, the Engineer's decision in this connection shall be final.

Should the Contractor consider that any material encountered in the excavations is 'hard rock' or 'soft rock', he shall immediately notify the Electrical Engineer in writing. Failing such notification, the excavation shall be assumed to be in 'ordinary material' and shall be measured and valued accordingly. Wherever practicable all excavation in ground other than 'hard rock' and/or 'soft rock' shall be carried out first after which levels will be taken of the exposed 'hard rock' and/or 'soft rock' and agreed upon by the Electrical Engineer and the Electrical Subcontractor.

Where the Electrical Subcontractor encounters a combination of 'hard rock' and/or 'soft rock' simultaneously in a section of trench and employs explosives or pneumatic tools to remove all the various types of materials in that section of trench, the use of these methods of removal will in no way influence the Electrical Engineer's classification of the materials.

3.2 - Bills of Quantities

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

ITEM	DESCRIPTION	UNIT	RATE			AMOUNT
			Fixed	Value Related	Time Related	
1.0	<u>BILL NO. 1 : PRELIMINARY & GENERAL</u>					
1.1	Contract Works Insurances	Sum				
1.2	Supplementary Insurance	Sum				
1.3	Public Liability Insurance	Sum				
1.4	Construction Guarantee / Security	Sum				
1.5	Establish on Site and provision of buildings and materials storage facilities including de-establishment of site, cleaning and tidying up after completion of contract	Sum				
1.6	Contract Management and supervision of the Works including Contractor's Monthly Reports and attendance of site meetings (2 per month)	Sum				
1.7	Compliance with Construction Regulations and Health and Safety Act	Sum				
1.8	Compliance with EPWP Labour Intensive Specification	Sum				
1.9	Tools and Equipment	Sum				
1.10	Provision of shop drawings and manuals as specified	Sum				
1.11	The Electrical Subcontractor shall comply with all the requirement of mandatory subcontracting to an SMME where feasible of up to 30% of their contract value (Including VAT) as stipulated under the SMME subcontracting requirements. The Electrical Subcontractor shall, on a fulltime basis closely mentor, manage and supervise the SMME and shall manage, guide, and assist the SMME in all aspects of management, execution and completion of his/her subcontract. This shall typically include the on-site productivity planning and management of materials, cost management, contract management, Health and Safety management, quality management, communication management and close-out documentation. Provision for pricing of compliance with the aforementioned is made under this clause and it is explicitly pointed out that all requirements in respect of the aforementioned are deemed to be priced hereunder and no additional claims in this regard shall be entertained	Sum				
TOTAL BILL NO.1 TO PRICE SUMMARY						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
2.0	<u>BILL No. 2: DISTRIBUTION BOARDS</u>					
2.1	Indoor distribution boards <u>with cascaded protection</u> as specified and shown on the drawings. NOTE: All equipment to be SABS approved and bear the SABS performance mark					
2.1.1	SDB-S6 - S18 (Shop DBs Supplied by Main DB)	No.	18			
2.1.2	SDB-S11 & S17 (Shop DBs Supplied by Main DB)	No.	2			
2.1.3	SDB-S12 (Fast Food Shop DB Supplied by Main DB)	No.	1			
2.1.4	SDB-S13 (Pharmacy Shop DB Supplied by Main DB)	No.	1			
2.1.5	SDB-S16/16A (Wholesaler DB Supplied by Main DB)	No.	1			
2.1.6	SDB-S19 (Wholesaler DB Supplied by Main DB)	No.	1			
2.1.7	SDB-S19A (Fast Food Shop DB Supplied by Main DB)	No.	1			
2.1.8	SDB-S19C (Vacant Shop DB Supplied by Main DB)	No.	1			
2.1.9	SDB-S19D (Doctor's Rooms DB Supplied by Main DB)	No.	1			
2.1.10	SDB-S19E (Fast Food Shop DB Supplied by Main DB)	No.	1			
2.1.11	SDB-S19F (Furniture Shop DB Supplied by Main DB)	No.	1			
2.1.12	SDB-1 (Ground Floor In Main LV Room)	No.	1			
2.1.13	SDB-A (Ground Floor)	No.	1			
2.1.14	SDB-S1 - S24B (Shop DBs Supplied by SDB-A)	No.	16			
2.1.15	SDB-S24 - S25 (Shop DBs Supplied by SDB-A)	No.	3			
2.1.16	SDB-S5B (Shop DB Supplied by SDB-A)	No.	1			
2.1.17	SDB-B (First Floor)	No.	1			
2.1.18	SDB-S56 - SD5 (Shop DBs Supplied by SDB-B)	No.	23			
2.1.19	SDB-C (First Floor)	No.	1			
2.1.20	SDB-S26 - S55 (Shop DBs Supplied by SDB-C)	No.	16			
2.1.21	SDB-S36 & S43 (Shop DBs Supplied by SDB-C)	No.	2			
2.1.22	SDB-SDR2 - SDR4 (Doctors Rooms DBs Supplied by SDB-C)	No.	3			
2.1.23	SDB-S31 (Gym DB Supplied by SDB-C)	No.	1			
2.1.24	SDB-MAN (Manager Office DB Supplied by SDB-C)	No.	1			
2.1.25	SDB-D (First Floor)	No.	1			
2.1.26	SDB-S41 - S53 (Shop DBs Supplied by SDB-D)	No.	14			
2.1.27	SDB-S39 - S49 (Shop DBs Supplied by SDB-D)	No.	4			
2.1.28	SDB-S48 (ECDC Office DB Supplied by SDB-D)	No.	1			
2.1.29	SDB-HS1 - SDB-HS21 - Distribution Boards with BCMM Prepaid Meters; 2 x switched socket outlets (SANS 164-1 & 164-2) & 2 x 1-Lever 1-Way Light Switches	No.	21			
Carried Forward from Next Page						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
Brought Forward from Previous Page						
2.1.30	SDB-C1 (Ground Floor - Column SDB)	No.	2			
2.2	3CR12 outdoor distribution kiosk (EDK-S03) with 350Amp Triple Pole circuit breaker, 3-phase & neutral busbars, earth bar and plinth	No.	1			
2.3	<u>Distribution Board Equipment</u> The rates below will be used to add or omit relevant equipment into or out of distribution boards including wiring. All equipment to have a SABS stamp.					
2.3.1	10A - 20A 6kA SP circuit breaker (Curve-1)	No.	1			Rate Only
2.3.2	10A - 20A 6kA SP circuit breaker (Curve-2)	No.	1			Rate Only
2.3.3	25A - 32A 6kA SP circuit breaker (Curve-1)	No.	1			Rate Only
2.3.4	25A - 32A 6kA SP circuit breaker (Curve-2)	No.	1			Rate Only
2.3.5	10A - 20A 6kA SP circuit breaker (Curve-1)	No.	1			Rate Only
2.3.6	6A - 10A 6kA TP circuit breaker (Curve-2)	No.	1			Rate Only
2.3.7	20A - 32A 6kA DP circuit breaker (Curve-1)	No.	1			Rate Only
2.3.8	20A - 32A 6kA DP circuit breaker (Curve-2)	No.	1			Rate Only
2.3.9	32A - 63A 6kA DP circuit breaker (Curve-2)	No.	1			Rate Only
2.3.10	32A - 63A 6kA TP circuit breaker (Curve-1)	No.	1			Rate Only
2.3.11	32A - 63A 6kA TP circuit breaker (Curve-2)	No.	1			Rate Only
2.3.12	80A - 125A 6kA TP circuit breaker (Curve-1)	No.	1			Rate Only
2.3.13	150A - 225A 6kA TP circuit breaker (Curve-1)	No.	1			Rate Only
2.3.14	250A - 400A 6kA TP circuit breaker (Curve-1)	No.	1			Rate Only
2.3.15	63A 30mA Earth Leakage Unit with protective circuit breaker (single-phase)	No.	1			Rate Only
2.3.16	63A 30mA Earth Leakage Unit with protective circuit breaker (three-phase)	No.	1			Rate Only
2.3.17	63A - 80A 10kA TP circuit breaker (Curve-1)	No.	1			Rate Only
2.3.18	63A - 80A 10kA TP circuit breaker (Curve-2)	No.	1			Rate Only
2.3.19	Single Phase (max. 80Amp) directly connected Buffalo City Metropolitan Municipality approved Prepaid meter with Keypad & Card	No.	120			
2.3.20	Single Phase (max. 100Amp) directly connected Buffalo City Metropolitan Municipality approved Prepaid meter with Keypad & Card	No.	1			
2.3.21	3Phase 4Wire (max. 100Amp) directly connected Buffalo City Metropolitan Municipality approved Prepaid meter with Keypad & Card	No.	13			
2.3.22	3Phase 4Wire (max. 150Amp) directly connected Buffalo City Metropolitan Municipality approved Prepaid meter with Keypad & Card	No.	1			
TOTAL BILL No. 2 CARRIED TO PRICE SUMMARY PAGE						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
3.0	<u>BILL No. 3: CABLING AND CABLE SLEEVES</u>					
3.1	<u>LV Cabling</u>					
	Multicore ECC PVC SWAPVC cable with stranded copper conductors to SANS 1507-3 drawn into cable sleeves, installed on cable trays/ladders or laid in open trenches and ducts					
3.1.1	150mm ² x 4 core	m	1			Rate Only
3.1.1	120mm ² x 4 core	m	1			Rate Only
3.1.4	95mm ² x 4 core	m	580			
3.1.5	70mm ² x 4 core	m	200			
3.1.6	50mm ² x 4 core	m	100			
3.1.7	25mm ² x 4 core	m	50			
3.1.8	16mm ² x 4 core	m	150			
3.1.9	10mm ² x 4 core	m	1			Rate Only
3.1.10	25mm ² x 2 core	m	1			Rate Only
3.1.11	16mm ² x 2 core	m	1			Rate Only
3.1.12	10mm ² x 2 core	m	500			
3.1.13	6mm ² x 2 core	m	1			Rate Only
3.1.14	4mm ² x 2 core	m	1800			
3.1.15	2,5mm ² x 2 core	m	1			Rate Only
3.2	<u>LV Cable Terminations for</u>					
3.2.1	150mm ² x 4 core	No.	1			Rate Only
3.2.2	120mm ² x 4 core	No.	1			Rate Only
3.2.3	95mm ² x 4 core	No.	10			
3.2.4	70mm ² x 4 core	No.	4			
3.2.5	50mm ² x 4 core	No.	4			
3.2.6	25mm ² x 4 core	No.	4			
3.2.7	16mm ² x 4 core	No.	8			
3.2.8	10mm ² x 4 core	No.	1			Rate Only
3.2.9	25mm ² x 2 core	No.	1			Rate Only
3.2.10	16mm ² x 2 core	No.	1			Rate Only
Carried Forward from Next Page						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
Brought Forward from Previous Page						
3.2.12	10mm ² x 2 core	No.	220			
3.2.13	6mm ² x 2 core	No.	1			Rate Only
3.2.14	4mm ² x 2 core	No.	42			
3.2.15	2,5mm ² x 2 core	No.	1			Rate Only
3.3	Label of all cables on both ends with numbering beads or non-corroding straps to indicate their connection points [Refer to Technical Specification – Electrical Installation].	Sum	1			
3.4	<u>LV Cable Joint Kit for</u>					
3,4,1	95mm ² - 150mm ² cable jointing kit and accessories	No.	1			
3,4,2	70mm ² - 95mm ² cable jointing kit and accessories	No.	5			
3,4,3	50mm ² - 70mm ² cable jointing kit and accessories	No.	4			
3,4,4	35mm ² - 50mm ² cable jointing kit and accessories	No.	3			
3,4,5	16mm ² - 35mm ² cable jointing kit and accessories	No.	1			
3,4,6	10mm ² - 16mm ² cable jointing kit and accessories	No.	30			
3.5	<u>LV Trenching</u>					
	Excavation 600mm deep x 400mm wide including backfilling and compacting					
3.5.1	In earth	m	200			
3.5.2	Soft rock EXTRA OVER earth (Proof of amount required)	m ³	0.5			
3.5.3	Selected fines bedding 150mm under cable and 150mm on top of cable (when required by soil conditions & Proof of amount utilised require)	m ³	0.5			
3.5.4	Excavation concrete & asphalt road crossings 600mm deep x 650mm wide including backfilling and compaction and re-instating the road surface to the original specification. The project's Civil Engineer to certify the road crossing re-instatement.	m	200			
3.5.5	LV Cable marker tape laid in an open trench and 150mm above a cable 150mm wide 800 gauge cable marker tape.	m	250			
3.5.6	250mm High truncated pyramid cable route marker with stainless steel insert engraved with the cable details e.g. "Low Voltage 25mm² 4C CABLE from DB-A to DB-B/Load X" . installed to protrude 150mm above ground on soft soil and be flush with paved surfaces. At every cable start point and end point and every 30m along the length and at every cable route direction change.	No.	1			Rate Only
Carried Forward from Next Page						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
Brought Forward from Previous Page						
3.3.7	Double skin brick manhole, 900mm x 900mm x 600mm deep minimum inside dimensions with heavy duty cover made from polymer for Power Cabling	No.	1			Rate Only
3.3.8	Double skin brick manhole, 1200mm x 1200mm x 900mm deep minimum inside dimensions with heavy duty cover made from polymer for Power Cabling	No.	1			
3.4	LV Cable Sleeves & Bends Corrugated (Kabelflex) cable sleeve laid in open trench including cutting and joining NOTE: Spare sleeves for future use to be sealed at both ends					
3.4.1	110mm diameter	m	150			
3.4.2	50mm diameter	m	1			Rate Only
3.4.3	90 degrees slow bends for 110mm dia. sleeve	No.	4			
3.4.4	90 degrees slow bends for 50mm dia. Sleeve	No.	1			Rate Only
3.5	Optex Pull Tape, or equivalent, with thickness of 1.0mm (±0.2mm) x width 16mm (±1.0mm) and breaking strain of 800kg, draw tape into conduit or sleeve(s)	m	110			
3.6	Cable Ladder Medium duty hot dipped galvanised cable ladder including splices clamps, hold down saddles and suspension materials installed at high level. Ladder spanning to be at 1.6m intervals					
3.6.1	100mm wide	m	1			Rate Only
3.6.1.1	90 degrees Horizontal elbow	No.	1			Rate Only
3.6.1.2	Elbow (rise/dropper)	No.	1			Rate Only
3.6.1.3	4-Way Crossover	No.	1			Rate Only
3.6.1.4	Tee	No.	1			Rate Only
3.6.2	300mm wide	m	30			
3.6.2.1	90 degrees Horizontal elbow	No.	1			
3.6.2.2	Elbow (rise/dropper)	No.	3			
3.6.2.3	4-Way Crossover	No.	1			Rate Only
3.6.2.4	Tee	No.	1			Rate Only
3.6.3	500mm wide	m	1200			
3.6.3.1	90 degrees Horizontal elbow	No.	12			
3.6.3.2	Elbow (rise/dropper)	No.	10			
3.6.3.3	4-Way Crossover	No.	4			
3.6.3.4	Tee	No.	40			
3.6.4	1000mm wide (from MAIN LV Room)	m	20			
3.6.4.1	90 degrees Horizontal elbow	No.	1			
3.6.4.2	Elbow (rise/dropper)	No.	4			
3.6.4.3	4-Way Crossover	No.	1			Rate Only
3.6.4.4	Tee	No.	1			
TOTAL BILL No. 3 CARRIED TO PRICE SUMMARY PAGE						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
4.0	<u>BILL No. 4 : GENERAL LIGHTING</u>					
4.1	<u>Conduit</u>					
	Conduit chased into brickwork, cast in concrete, laid in trench or fixed on I-beams, trusses in ceiling void including cutting, bending, reaming, setting, joining, draw boxes and fixing material					
4.1.1	20mm - PVC	m	20600			
4.1.2	25mm - PVC	m	1			Rate Only
4.1.3	20mm - Galvanised/Bosal (ORANGE)	m	50			
4.1.4	25mm - Galvanised/Bosal (ORANGE)	m	1			Rate Only
4.2	<u>Conduit Boxes</u>					
4.2.1	PVC Round box for 20-25mm conduit, back or side entry for 1, 2, 3 or 4-way chased into brickwork, cast into concrete or fixed onto trusses including couplings bushes cover plates and fixing materials	No.	785			
4.2.2	Galvanised/Bosal Round box for 20-25mm conduit, back or side entry for 1, 2, 3 or 4-way chased into brickwork, cast into concrete or fixed onto trusses including couplings bushes cover plates and fixing materials (ORANGE)	No.	55			
4.2.3	Galvanised steel, 100 x 50 x 50mm box for 20-25mm conduit built into brickwork or cast in concrete. (cover plates measured elsewhere)	No.	265			
4.3	<u>Luminaires</u>					
	Luminaires must be delivered with lamps packed separately. For Types, see "Detailed Installation Specification".					
4.3.1	Type-B	No.	41			
4.3.2	Type-BE	No.	12			
4.3.3	Type-EX	No.	12			
4.3.4	Type-G	No.	1			Rate Only
4.3.5	Type-GE	No.	4			
4.3.6	Type-J	No.	435			
4.3.7	Type-JE	No.	127			
4.3.8	Type-JS	No.	111			
4.3.9	Type-JSE	No.	31			
4.3.10	Type-L	No.	45			
4.3.11	Type-LE	No.	5			
4.3.12	Type-K	No.	2			
Carried Forward from Next Page						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
Brought Forward from Previous Page						
4.3.13	Type-P	No.	21			
4.3.14	Type-P1	No.	5			
4.3.15	Type-R1	No.	1			Rate Only
4.3.16	Type-R2	No.	1			Rate Only
4.3.17	Type-S	No.	5			
4.3.18	Type-Z	No.	46			
4.3.19	Type-ZE	No.	22			
4.3.20	Type-ZS	No.	29			
4.3.21	Type-ZSE	No.	30			
4.3.22	Type-Z1	No.	1			Rate Only
4.4	<u>Equipment and Control Gear</u>					
	16 Amp rocker type light switch with cover plate installed into a flush box (box measured elsewhere)					
4.4.1	1-Lever, 1-Way	No.	197			
4.4.2	1-Lever, 2-Way	No.	28			
4.4.3	2-Lever, 1-Way	No.	2			
4.4.4	1-Lever, Intermediate	No.	2			
4.4.5	Rotary Switch Weatherproof	No.	1			
4.4.6	Photocell	No.	2			
4.4.7	230-250V _{AC} Ceiling mount occupancy sensors passive Infrared with IntelliDAPT self-adjusting technology, all digital passive infrared sensor, auto-on and manual-on operating modes, 360° coverage area, detection range of up to 6m & up to 15m , zero arc point switching and built-in photo-cell with supersaver mode.	No.	57			
4.5	<u>Conductors: 600/1000 grade PVC insulated single core copper conductors</u>					
4,5,1	2,5mm ² red/black	m	46700			
4,5,2	2,5mm ² red/black/Yellow-Green	m	23400			
4.6	Labelling of all Light switches with circuit numbers [Refer to Technical Specification – Electrical Installation].	Sum	1			
Carried Forward from Next Page						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
Brought Forward from Previous Page						
4.7	<u>Poles</u>					
4.7.1	5.7m long (5.0m mounting height) glass fibre reinforced polyester (GRP) pole with 50mm dia spigot, 6A SP circuit breaker and 6mm thick hot dip galvanised base plate	No.	5			
4.8	<u>Wiring Channel</u>					
	Hot dip galvanised channel with cover including propriety suspension hangers splices, end caps and joints; channel to be powder coated ORANGE & installed at high level (<i>for power and lighting conductors</i>).					
4.8.1	P2000 single channel including PVC cover, splices and hangers	m	1			Rate Only
4.8.1.1	P2000 90 bends	No.	1			Rate Only
4.8.1.2	P2000 T piece	No.	1			Rate Only
4.8.1.3	P2000 DB inlet	No.	1			Rate Only
4.8.1.4	P2000 End Caps	No.	1			Rate Only
4.8.1.5	P2000 Crossover Radiused	No.	1			Rate Only
4.8.2	P8000 single channel including PVC cover, splices and hangers	m	1			Rate Only
4.8.2.1	P8000 90 bends	No.	1			Rate Only
4.8.2.2	P8000 T piece	No.	1			Rate Only
4.8.2.3	P8000 DB inlet	No.	1			Rate Only
4.8.2.4	P8000 End Caps	No.	1			Rate Only
4.8.2.5	P8000 Crossover Radiused	No.	1			Rate Only
4.9.2	P9000 single channel including PVC cover, splices and hangers	m	1			Rate Only
4.9.2.1	P9000 90 bends	No.	1			Rate Only
4.9.2.2	P9000 T piece	No.	1			Rate Only
4.9.2.3	P9000 DB inlet	No.	1			Rate Only
4.9.2.4	P9000 End Caps	No.	1			Rate Only
4.9.2.5	P9000 Crossover Radiused	No.	1			Rate Only
TOTAL BILL No. 4 CARRIED TO PRICE SUMMARY PAGE						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
5.0	<u>BILL No. 5 : GENERAL SMALL POWER</u>					
5.1	<u>Powerskirting</u>					
	Two tier PVC power skirting complete with covers and cover strips. Colour to be selected by the Architect.	m	150			
5.1.1	End caps	No.	25			
5.1.2	Internal angles	No.	10			
5.1.3	External angles	No.	6			
5.1.4	Flat Tee	No.	2			
5.1.5	Power Skirting riser	No.	12			
5.2	<u>Wiring Channel</u>					
	Cabstruct powder coated orange 1-tier wiring channel with cover including propriety suspension hangers splices, end caps, joints & powder coated ORANGE					
5.2.1	P8200 channel with PVC covers	m	1			Rate Only
5.2.2	N8/1 channel with PVC covers	m	50			
5.2.3	Endcaps	No.	10			
5.2.4	Internal angles	No.	1			Rate Only
5.2.5	External angles	No.	1			Rate Only
5.2.6	Flat Elbow	No.	5			
5.3	<u>Conduit</u>					
	Conduit chased into brickwork, cast in concrete, laid in trench or fixed on I-beams, trusses in ceiling void including cutting, bending, reaming, setting, joining, draw boxes and fixing material					
5.3.1	20mm - PVC	m	13200			
5.3.2	25mm - PVC	m	1			Rate Only
5.3.3	20mm - Galvanised/Bosal (ORANGE)	m	100			
5.3.4	25mm - Galvanised/Bosal (ORANGE)	m	1			Rate Only
5.4	<u>Conduit Boxes</u>					
5.4.1	PVC round box for 20mm conduit, back or side entry for 1, 2, 3 or 4-way chased into brickwork, cast into concrete or fixed onto trusses including couplings bushes, cover plates and fixing materials	No.	570			
Carried Forward from Next Page						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
Brought Forward from Previous Page						
5.4.2	Galvanised/Bosal Round box for 20-25mm conduit, back or side entry for 1, 2, 3 or 4-way chased into brickwork, cast into concrete or fixed onto trusses including couplings bushes cover plates and fixing materials (ORANGE)	No.	30			
5.4.3	Galvanised steel, 100 x 100 x 50mm box for 20mm - 32mm conduit built into brickwork or cast in concrete. (cover plates measured elsewhere)	No.	556			
5.5	<u>Conductors</u> The supply and installation of PVC insulated stranded single core copper conductors drawn into conduits and ducting					
5.5.1	2.5mm ² PVC black and red	m	32300			
5.5.2	4mm ² PVC black and red	m	350			
5.5.3	2.5mm ² PVC insulated green/yellow earth wire	m	16400			
5.5.4	4mm ² Surfex Cable	m	1			Rate Only
5.6	<u>Equipment and Control Gear</u>					
5.6.1	Flush mounted 16 Amp 3 pin switched socket outlets with cover plates (Boxes measured elsewhere):					
5.6.1.1	Standard Single switched socket outlet with 3-Pin (SANS 164-1 & SANS 164-2)	No.	350			
5.6.2	Surface mounted 16 Amp 3 pin switched socket outlets with <u>including boxes & cover plates</u>					Rate Only
5.6.2.1	6Amp 3-pin unswitched socket outlet fitted in a round box for light fittings & extract fans at high levels	No.	765			
5.6.2.2	Standard Single switched socket outlet with 3-Pin in ceiling void or high levels (SANS 164-1 & SANS 164-2)	No.	1			Rate Only
5.6.2.3	Dedicated (Red) switched socket outlet with 3-Pin in ceiling void or high levels (SANS 164-1 & SANS 164-2)	No.	215			
5.6.2.4	Weatherproof Standard Single switched socket outlet with 3-Pin (SANS 164-1 & SANS 164-2)	No.	1			Rate Only
5.6.3	Power Skirting mounted 16 Amp 3-pin switched socket outlets with mounting cradle and cover plates:					
5.6.3.1	Standard single switched socket outlet (SANS 164-1)	No.	60			
5.6.3.2	Standard 3-Pin socket outlet (SANS 164-2) & Switch	No.	30			
5.6.3.3	Dedicated (red) switched socket outlet (SANS 164-1)	No.	1			Rate Only
5.6.4	N8/1 trunking mounted 16 Amp 3-pin switched socket outlets with mounting cradle and cover plates:					
5.6.4.1	Standard single switched socket outlet (SANS 164-1)	No.	1			Rate Only
5.6.4.2	Standard 3-Pin socket outlet (SANS 164-2) & Switch	No.	1			Rate Only
Carried Forward from Next Page						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
Brought Forward from Previous Page						
5.6,5	Indoor surface mounted 20A - 32A DP switched industrial (welding) socket outlets	No.	12			
5.6,6	Indoor surface mounted 20A - 32A DP isolator including box	No.	7			
5.6,7	Indoor surface mounted 20A - 32A TP isolator including box	No.	1			Rate Only
5.6,8	Indoor surface mounted 63A TP isolator including box	No.	1			Rate Only
5.6,9	Indoor surface mounted 80A TP isolator including box for Lift Installation	No.	1			
5.6,10	Indoor surface mounted 100A TP isolator including box	No.	1			Rate Only
5.6,11	Outdoor surface mounted 20A - 32A DP isolator including box	No.	1			Rate Only
5.6,12	Outdoor surface mounted 20A - 32A TP isolator including box	No.	1			Rate Only
5.7	Labelling of all Power points with circuit numbers [Refer to Technical Specification – Electrical Installation].	Sum	1			
TOTAL BILL No. 5 CARRIED TO PRICE SUMMARY PAGE						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
6.0	<u>BILL No. 6 : TELEPHONE AND DATA SYSTEM</u>					
6.1	Double skin brick 600mm deep manhole with heavy duty polymer cover with the following minimum inside dimensions:					
6.1.1	inside dimensions:900mm x 900mm	No.	1			Rate Only
6.1.1	inside dimensions: 600mm x 600mm	No.	1			
6.2	Surface mounted distribution board with architrave, 10mm thick soft wood back board (plywood or shutter board) and hinged door:					
6.2.1	450mm x 450mm	No.	10			
6.2.2	650mm x 650mm	No.	1			Rate Only
6.3	<u>Cable sleeves</u>					
	Heavy duty or flexible (Kabelflex) PVC cable sleeves laid in open trench including cutting, backfilling and compacting. NOTE: Spare sleeves for future use to be sealed at both ends					
6.3.1	110mm diameter	m	50			
6.3.2	50mm diameter	m	1			Rate Only
6.3.4	90 degrees slow bends for 110mm sleeve	No.	3			
6.3.5	90 degrees slow bends for 50mm sleeve	No.	1			Rate Only
6.4	<u>Conduit</u>					
	The supply and installation of conduit including cutting, bending, joints, settings, fittings, boxes, fixing materials					
6.4.1	25mm - PVC	m	150			
6.4.2	32mm - PVC	m	1			Rate Only
6.4.3	25mm - Galvanised/Bosal (ORANGE)	m	20			
6.4.4	32mm - Galvanised/Bosal (ORANGE)	m	1			Rate Only
6.5	200 x 200 x 100 PVC wall boxes for 25mm & 32mm conduits installed in ceiling void including cover plates	No.	1			Rate Only
6.6	Optex Pull Tape, or equivalent, with thickness of 1.0mm (±0.2mm) x width 16mm (±1.0mm) and breaking strain of 800kg, draw tape into conduit or sleeve(s)	m	20			
Carried Forward from Next Page						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
Brought Forward from Previous Page						
6.7	<u>Cable Tray</u>					
6.7.1	300mm wide medium duty hot dipped galvanised welded wire mesh cable tray including splices clamps, hold down saddles and suspension materials installed at high level (for ICT cabling).	m	1			Rate Only
6.7.1.1	90 degrees Horizontal elbow	No.	1			Rate Only
6.7.1.2	Tee piece	No.	1			Rate Only
6.7.1.3	Four way crossover	No.	1			Rate Only
6.7.1.4	Internal elbow (riser)	No.	1			Rate Only
6.7.1.5	External elbow (dropper)	No.	1			Rate Only
6.8	<u>Powerskirting Modules</u>					
6.8.1	Data RJ45 CAT6	No.	1			Rate Only
TOTAL BILL No. 6 CARRIED TO PRICE SUMMARY PAGE						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
7.0	<u>BILL No. 7 : SUNDRY ITEMS</u>					
7.1	Earthing and Bonding to each of the building installations	Sum	1	-----		
7.2	Test the completed electrical installations and issue Certificates of Compliance	Sum	1	-----		
7.3	Prepare and issue marked-up "As-Built" drawings for the full Electrical and Lightning Protection System installations including all Distribution Boards.	Sum	1	-----		
7.4	Electrical Contractor is to return to site at Final Completion to take current readings from all the distribution boards and balance the loads where necessary.	Sum	1	-----		
7.5	Attendance to any specialist contractors during the installation of their respective plant, if required.	Sum	1	-----		
7.6	Prepare and conduct detailed Training Programme, including training documentation, for Tenant, Clients Staff and Maintenance Personnel. This will be training of 4 groups, each of up to 4 personnel. Each group shall receive a minimum of two 1-hour training sessions.	Sum	1	-----		
TOTAL BILL No. 7 CARRIED TO PRICE SUMMARY PAGE						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

NB All materials must be of South African manufacture. The Electrical Subcontractor must submit proof of unavailability where this requirement cannot be fulfilled.

100% OF MATERIAL OR GOODS AND SERVICES MUST BE PROCURED WITHIN THE BOUNDARIES OF THE EASTERN CAPE AND MUST BE MARKED "ECP"

ITEM	DESCRIPTION	UNIT	QNTY	RATE		AMOUNT
				SUPPLY	INSTALL	
8.0	<u>BILL No. 8 : PROVISIONAL SUMS</u>					
8.1	Trace <u>ALL</u> existing electrical cable routes, cable sizes, DBs fed from & supplying to and recreate As-Built/Installed drawings of the existing cable installation.	Sum	1	-----	-----	R10 000.00
8.2	Allowance for the electrical subcontractor to; Isolate, disconnect & make safe the existing electrical installation. Safely remove existing redundant electrical equipment & wiring. Cable ladders, trunking & cables are to remove - these may be rerouted or relocated, as instructed. Proven costs will need to be produced & agreed before works commences & claimed against this item - Bill No.9 - Dayworks Rates to be completed for consideration.	Sum	1	-----	-----	R50 000.00
8.3	Conduct assessment, test, issue a report, with an itemised quotation, to repair & refurbish the existing Main LV Panel, within the main LV room. Also include, but not limited to; replacing missing panel cover plates, blanks, circuit breaker labelling, typed out laminated legend cards, neatening, resaddling of existing cables; cleaning of LV Room & cable trench; to bring panel up to SANS & OHS Act regulations.	Sum	1	-----	35 000.00	35 000.00
8.4	Lightning Protection System (LPS) including soil resistivity testing, testing and issuing of an SABS prescribed certificate for LPS, Maintenance Manuals, As-built drawings and profit. (Quotations to be provided from Specialists, as per Electrical Specification)	Sum	1	110 043.50	-----	110 043.50
8.4.1	Mark-up on item above	%		-----		
8.5	Liaise with the Supply Authority (Buffalo City Metropolitan Municipality - BCMM) for switching on and off of the power supply to the Mall as and when the electrical subcontractor requires to execute any electrical works.	Sum	1	-----		
TOTAL BILL No. 8 CARRIED TO PRICE SUMMARY PAGE						

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

ITEM	DESCRIPTION	UNIT	QNTY	RATE
9.0	<u>BILL No. 9 : ADJUSTMENTS TO N/S CONTRACT VALUE</u>			
9.1	An adjustment to the contract value resulting from a contract instruction for additional work not covered by the rates in the n/s priced document shall be determined in terms clause 32.0 of the JBCC Series 2000. NOTE: For the Public Sector Clause 3.2.2 is deleted			
9.2	Rates excluding mark-up for adjustment to the contract value under clause 32.2.3			
9.3	<u>Labour</u>			
9.3.1	Master Electrician			
(a)	Normal time	Hour	1	
(b)	Week overtime	Hour	1	
(c)	Sunday	Hour	1	
(d)	Public Holidays	Hour	1	
9.3.2	Licensed Electrician			
(a)	Normal time	Hour	1	
(b)	Week overtime	Hour	1	
(c)	Sunday	Hour	1	
(d)	Public Holidays	Hour	1	
9.3.3	Artisan			
(a)	Normal time	Hour	1	
(b)	Week overtime	Hour	1	
(c)	Sunday	Hour	1	
(d)	Public Holidays	Hour	1	
9.3.4	Apprentice stage 1			
(a)	Normal time	Hour	1	
(b)	Week overtime	Hour	1	
(c)	Sunday	Hour	1	
(d)	Public Holidays	Hour	1	
9.3.5	Apprentice stage 2			
(a)	Normal time	Hour	1	
(b)	Week overtime	Hour	1	
(c)	Sunday	Hour	1	
(d)	Public Holidays	Hour	1	
9.3.6	Apprentice stage 3			
(a)	Normal time	Hour	1	
(b)	Week overtime	Hour	1	
(c)	Sunday	Hour	1	
(d)	Public Holidays	Hour	1	

NOTE: ITEMS ENTERED ON THIS PAGE ARE NOT CARRIED FORWARD TO PRICE SUMMARY

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

ITEM	DESCRIPTION	UNIT	QNTY	RATE
9.3.7	Econop 1			
(a)	Normal time	Hour	1	
(b)	Week overtime	Hour	1	
(c)	Sunday	Hour	1	
(d)	Public Holidays	Hour	1	
9.3.8	Econop 2			
(a)	Normal time	Hour	1	
(b)	Week overtime	Hour	1	
(c)	Sunday	Hour	1	
(d)	Public Holidays	Hour	1	
9.3.9	Econop 3			
(a)	Normal time	Hour	1	
(b)	Week overtime	Hour	1	
(c)	Sunday	Hour	1	
(d)	Public Holidays	Hour	1	
9.3.10	Electrician Assistant			
(a)	Normal time	Hour	1	
(b)	Week overtime	Hour	1	
(c)	Sunday	Hour	1	
(d)	Public Holidays	Hour	1	
9.4	<u>Materials</u>			
9.4.1	At cost. Invoices to be submitted as proof			
9.5	<u>Transport</u>			
9.5.1	0,5 ton bakkie	km	1	
9.5.2	1 ton bakkie	km	1	
9.5.3	3 ton bakkie	km	1	
9.5.4	Crane truck	Hour	1	
9.5.5	Other (Specify)			
9.6	<u>Plant</u>			
9.6.1	100W - 500W Drilling machine	Hour	1	
9.6.2	Angle Grinder	Hour	1	
9.6.3	Cutting Disc	Hour	1	
9.6.4	Rock Breaker	Hour	1	
9.6.5	Chasing machine	Hour	1	
9.6.6	Generator	Hour	1	
9.6.7	Vacuum cleaner for dust extraction from grinder	Hour	1	
9.6.8	Other (Specify)	Hour	1	
NOTE: ITEMS ENTERED ON THIS PAGE ARE NOT CARRIED FORWARD TO PRICE SUMMARY				



RNA CONSULTING ENGINEERS (PTY) LTD
 Consulting Electrical & Mechanical Engineers
 2021/724549/07

POSTNET Suite # 136
 Private Bag X3
 Beacon Bay
 5241
 11 Bonza Bay Rd, Beacon Bay,
 East London, 5241
 Tel: (043) 742 0041
 Fax: (043) 742 3883
 Email: office@rnaconsulteng.co.za

2214 ECDC MDANSTANE MALL - ELECTRICAL INSTALLATION

PRICE SUMMARY PAGE

ITEM NO.	DESCRIPTION	AMOUNT
1	PRELIMINARY & GENERAL	
2	DISTRIBUTION BOARDS	
3	CABLING AND CABLE SLEEVES	
4	GENERAL LIGHTING	
5	GENERAL SMALL POWER	
6	TELEPHONE AND DATA SYSTEM	
7	SUNDRY ITEMS	
8	PROVISIONAL SUMS	
9	ADJUSTMENTS TO N/S CONTRACT VALUE	NO AMOUNT
SUBTOTAL		
ADD 15% VAT		
TOTAL incl. V.A.T.		

REMINDER NOTE

The **Total Price** including Main Contractor's Mark-up **which excludes VAT**, must be carried over to the final summary in **Part A** and all fixed amounts shown in the price schedule must be included therein. No adjustments will be made for any failure by Tenderers to include the fixed amounts in the **Total Price** for this particular installation.

SUB-CONTRACTOR'S NAME:

DATE:

SIGNATURE:

N.B. The above-named Sub-Contractor is to be employed on this contract. Substitute Sub-Contractors are not acceptable.

The price submitted include all Main Contractor's 'Profit and Mark up **BUT** Exclude the VAT when transferring price to Part A of the Final Summary Total of the Main Contractor's Document

Section 4 – Pictures

PICTURES



Change or Direction Cable Route Marker



Straight Run Cable Route Marker



Outdoor Cable Box



Cable Numbering



Distribution Board type



DB and Kiosk Labelling



Part C3: Scope of work
C3 - Scope of work

1 Background To

ECDC Vision

To be an innovative leader in promoting sustainable economic growth and development of the Eastern Cape.

Mission

To promote sustainable economic development in the Eastern Cape through focused:

- a) Provision of innovative development finance
- b) Leveraging of resources, strategic alliances, investment and partnerships.

Legislative Mandate

ECDC draws its mandate directly from the Eastern Cape Development Corporation Act (Act 2 of 1997) and is led by the economic development priorities of the provincial government, as detailed in the Provincial Growth and Development Plan (PGDP), Eastern Cape Provincial Industrial Development Strategy (PIDS), the policy statement and budget speech of the Member of the Executive Council (MEC) of Economic Development, Environment Affairs and Tourism (DEDEAT)

Section 3 of the ECDC Act states that the Corporation shall “plan, finance, co-ordinate, market, promote and implement development of the Province and its people in the field of industry, commerce, agriculture, transport and finance”.

2 Scope of Works

The Contractor shall:

- Subcontract a minimum of 5% of the total project value to targeted enterprises;
- Perform needs analysis on the targeted enterprise to identify developmental goals;
- Provide internal mentorship support to improve the targeted enterprise/s performance;
- Develop a project specific enterprise development plan to improve the targeted enterprise/s performance in the identified developmental areas to the CIDB Competence Standard for Contractors Gazette No. 41237, 10 November 2017
- Monitor and report the progress of the agreed development areas with the targeted enterprise/s
- Submit a project completion report to the Employer’s representative for each targeted enterprise.

The Contractor shall provide opportunities to learners requiring structured workplace learning using one or a combination of any of the Skills Methods as agreed: accommodate Part/Full Occupational qualification (Method 1), Trade qualifications learners (Method 2), train Work Integrated Learners – P1 and P2 Learners (Method 3) and/or Professional Candidates (Method 4) as indicated in the cidb Standard and as agreed to by the Employer on this project (Employer to stipulate)

The Contractor may only place 33% employees employed by him/her or that of his/her subcontractor contributing to the CSDG.

The Contractor shall achieve the measurable CSDG by providing opportunities to learners requiring structured workplace learning using one or a combination of any of the Skills Methods as agreed: accommodate Part/Full Occupational qualification (Method 1), Trade qualifications learners (Method 2), Work Integrated Learners (Method 3) and/or Candidates (Method 4) as per the cidb Standard in relation to work directly related to the Contract as indicated under clause 4.2 and 4.3 in the cidb Standard. (Employer to stipulate).

The Contractor shall ensure that all beneficiaries of the Standard are registered with CIDB Skills Development Agency (SDA).

The Contractor shall be responsible for developing subcontractors in accordance with the cidb Standard for Indirect Targeting for Enterprise Development.

2.1 General description of the works

The following works are to be carried out at the Mdantsane Mall (Erf 10436) in Makinana Street, Mdantsane, N.U.2:

The project consists of one (1) multi storey building that fills the extent of the erf. The building is a commercial enterprise and currently tenanted.

The description and scope of works, as described hereunder are a general guide only and may be subject to change. No liability or claim will be accepted should this information provided change or be regarded as misleading.

Sectional Completion and Operational Requirements:

The building will remain operational and open for trade during business hours for the duration of the construction period. As such Sectional Completion will be stipulated in the contract data with five (5) sections being anticipated – starting with the first storey, doing one wing at a time and then proceeding with work in the ground storey. To enable this, specialised scaffolding, hoarding and a very detailed Health and Safety plan will be required. The contractor will also be expected to assist with the decanting of the tenants during construction to enable work to take place in the various areas.

The scope of work will include partial renovation of the existing space:

- Demolition of existing hawker stalls and provision of new.
- Conversion of existing public ablutions into retail space on the first floor.
- Conversion of existing retail space into tenant ablutions on the first floor.
- Conversion of existing retail space into public ablutions on the first floor.
- Conversion of existing retail space into tenant ablutions on the ground floor.
- Conversion of existing retail space into public ablutions on the ground floor.
- Structural roof modification including new roof sheeting and side cladding.
- New windows
- New gutters and downpipes.
- New roller shutter doors at the three existing entrances.
- New ceilings

- Replacement of underground services – water, sewer, and stormwater.
- Replacement/reinstating tarmac/concrete after installation of new services
- Full replacement of M&E services:
 - Power and Lighting
 - Ventilation
 - Internal wet services, firefighting reticulation, and equipment
 - Internal domestic water reticulation to public and tenant toilets only
 - New early warning fire detection system
 - New lift in existing lift shaft

2.2 Variation in the Scope of Work

The Client retains the right to omit specific sections of the work prior to signing the contract and in the event that such omissions are incorporated in the contract it is hereby agreed that no claim for loss of profit will be entertained. In addition, tenderers are required to price all work in a “stand-alone fashion” so that profit/mark-up etc are such that omission of any of the tendered works will NOT render the remaining contract work viable.

2.3 Temporary works, etc.

Refer also to Clause 4.2: Enclosure of the Works in the Preliminaries Section of this document.

3. General

3.1 Damage to other services

The Contractor shall assume full responsibility in the event where he or any person in his service is directly or indirectly responsible for any damages caused to other services already installed (water, sewerage, storm water, roads, surveyors' pegs, etc.) Any such damage shall immediately be reported to the Principal Agent.

The Contractor shall be held fully responsible for the repair of such damage to the satisfaction of the Principal Agent.

The costs for the repair of such damage shall be borne by the Contractor. Claims by the Contractor in this connection will not be considered. Should any portion of the works in terms of this Contract, for which the Contractor is responsible, be damaged by other Contractors, the Contractor shall repair such damage at the tendered rate and shall submit full details of such damage to the Principal Agent so that he can recover such costs from the responsible party.

This repair work may only be done on the written instruction from the Principal Agent. The contractor shall make provision for a full scan of the area to determine the position of services in the area.

3.2 Local labour and local authorities

Local Labour:

It is intended that the project must make maximum possible use of local labour which is presently unemployed in the area of which the project is performed. All unskilled labour shall be from the Local Municipal Supply area.

Engagement of local labour shall be controlled in a formal manner through the client's labour liaison body. It is furthermore expected that the labour liaison body will assist in the monitoring of labour goals.

3.3 Liaison with Local Authorities

The contractor will have to liaise with local authorities regarding the following matters:

3.3.1 Locating of existing underground services.

3.3.2 Protection of existing services during construction.

It is the contractor's onus to immediately contact all these authorities and to accommodate their involvement in his programme of work.

The contractor should also warn the authorities at least 48 hours before the actual work commence.

Compensation for delays, losses or accidents will not be considered should the contractor at any time have failed to keep the local authorities informed.

The Principal Agent or employer must immediately be notified, should the contractor experience any problem regarding work, which involves a local authority.

3.4 Community Liaison and Community Relation

In all dealings with the community and workers employed from within the community, the Contractor shall take due cognisance of the character, culture and circumstances of the community involved and shall at all times use his best endeavours to avoid the development of disputes and to foster a spirit of co-operation and harmony towards the project.

The Contractor shall at all times, keep the Principal Agent fully informed on all matters affecting the contractor and the community, and shall attend all community meetings relating to the project as may be reasonably required by the Principal Agent.

All matters concerning the community shall be discussed and where possible, resolved at such meetings. Where any resolution of a community meeting shall be contrary to the terms and provisions of the Contract, the Contractor shall not give effect thereto without a prior written instruction from the Principal Agent.

Where the Contractor is of the opinion that any instruction of the Principal Agent issued in terms of this clause will result in the incurring of additional costs which were not provided for in his tendered rates and/or that a delay in the progress of the works will result, he shall be entitled to submit a claim in terms of the conditions of contract.

3.5 OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993)

Contractors shall meet the health and safety requirements as stipulated in health and safety plan, to be prepared by the Employer's Agent and issued to the contractor.

3.5.1 Safety Precautions

Notwithstanding the fact that the Contractor is solely responsible for the actions of his staff and any duly appointed sub-contractors, the Principal Agent reserves the right for himself, or his nominated representative, to inspect and monitor working methods and materials handling to ensure that safe working practices are being adhered to at all times.

3.5.2 Health and Safety Specifications

Please refer to Annexure A in Part C.4 for the Health and Safety Specification and Baseline Risk Assessment.

4.1 Responsibilities and duties

Notwithstanding the fact that a description of the services has been provided above, ECDC shall be entitled to request additional services related to deliverables required to ensure the successful completion of the services set out above on such further terms and conditions as may be agreed between the parties in writing.

The service provider shall at all times faithfully and timeously carry out and perform the Services and shall use its best endeavours to properly conduct, improve, extend and develop the business of ECDC in the provisioning of the services.

The Services Provider shall as part of his duties, attend such meetings as may be required by ECDC from time to time and submit weekly or monthly progress reports on the services as may be required and requested by ECDC.

4.2 Obligation to perform and sub-contracting

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

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

4.3 Performance guarantee

Within fourteen (14) days of receipt of the notification of contract award, the successful bidder shall furnish to ECDC the performance security of the amount specified above.

The proceeds of the performance security shall be payable to ECDC as compensation for any loss resulting from the bidder's failure to complete his obligations under the contract.

The performance security shall be denominated in the currency of the contract or in a freely convertible currency acceptable to ECDC and shall be in one of the following forms:

A bank guarantee or an irrevocable letter of credit issued by a reputable bank located in South Africa, acceptable to ECDC, in the form provided in the bid documents or another form acceptable to ECDC; or

A cashier's or certified cheque

The performance security will be discharged by ECDC and returned to the bidder not later than thirty (30) days following the date of completion of the bidder's performance obligations under the contract, including any warranty obligations, unless otherwise specified in SCC.

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

4.4 Anti-dumping and countervailing duties and rights

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

4.5 ECDC facilities

Unless otherwise agreed in writing by ECDC, the Service Provider will work from its own office and provide its own facilities, such as transport, telephone, cell phone, fax and computer facilities to perform the services.

The service provider may use certain facilities made available by ECDC to assist in performing the services, including but not limited to computer facilities, telephone and fax facilities and stationery. In this regard the service provider agrees to:

Abide by the health, safety and security measures as prescribed by ECDC from time to time;

To use such accommodation and facilities entirely at his own risk and ECDC shall not be liable for any loss or damage whatsoever and howsoever caused arising out of or in connection with the use of these items, other than loss or damage caused as a result of ECDC's own wilful misconduct.

4.6 Force majeure

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

4.7 Insurance

The contractor shall affect and maintain all required and/or necessary insurances in accordance with Clause 12 of the **JBCC Series 2000 Principal Building Agreement Edition 6.2 (For Organs of State) prepared by the Joint Building Contracts Committee, May 2018.**

4.8 Responsibility to perform

Delivery of the goods and performance of services shall be made by the bidder in accordance with the time schedule prescribed by ECDC in the contract.

If at any time during performance of the contract, the bidder or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services,

the bidder shall promptly notify ECDC in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the bidder's notice, ECDC shall evaluate the situation and may at his discretion extend the bidder's time for performance, with or without the imposition of penalties, in which case the extension shall be ratified by the parties by amendment of contract.

ECDC reserves the right to procure outside of the contract small quantities or to have minor essential services executed if an emergency arises, the bidder's point of supply is not situated at or near the place where the supplies are required, or the bidder's services are not readily available.

A delay by the bidder in the performance of its delivery obligations may render the bidder liable to the imposition of penalties, unless an extension of time is agreed upon without the application of penalties.

ECDC shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services using the current prime interest rate calculated for each day of the delay until actual delivery or performance.

Where necessary, ECDC may also consider termination of the contract in accordance to the requirements of the Construction Agreement conditions applicable for administration of this contract.

4.9 Duration of the contract

The construction project duration is **24 Months** from date of appointment. The successful Bidder shall be required to complete and submit the signed and duly completed **client recommended Construction Contract**.

Upon any delay beyond the delivery period in the case of a supplies contract, ECDC shall, without cancelling the contract, be entitled to purchase supplies of a similar quality and up to the same quantity in substitution of the goods not supplied in conformity with the contract and to return any goods delivered later at the bidder's expense and risk, or to cancel the contract and buy such goods as may be required to complete the contract and without prejudice to his other rights, be entitled to claim damages from the bidder. (N/A)

4.10 Payment and tax

Payments shall only be made in accordance with the fees as quoted in this documentation. Prices charged by the bidder for goods delivered and services performed under the contract shall not vary from the prices quoted by the bidder in this bid, except for any price adjustments authorized at ECDC's request for bid validity extension, as the case may be.

ECDC will reimburse the service provider for expenses and disbursements incurred subject to the submission of satisfactory proof that such expenses and disbursements have been incurred and subject to it being within the budget as indicated in this documentation.

The service provider shall from time to time during this contract duration furnish ECDC with a VAT compliant tax invoice accompanied by a copy of the delivery note and upon fulfilment of other obligations stipulated in the contract.

Each invoice must be accompanied by a detailed timesheet and expense claim forms substantiating the amount claimed.

Payments shall be made promptly by ECDC in Rand, but in no case later than thirty (30) days after submission of a VAT compliant tax invoice and supporting documentation by the service provider if the services have been properly executed as agreed.

The service provider shall retain all proof of expenditure and maintain such accounts and records as are reasonably necessary, claimed above, should ECDC require an audit to substantiate that expenditure and allow ECDC's own personnel or an independent auditor access to those records.

Should the above audit reveal that ECDC has been overcharged, the Service Provider will reimburse the ECDC the amount overcharged within 30 days inclusive of interest calculated at prime plus 2% per annum.

A foreign bidder shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the Republic of South Africa.

A local bidder shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted goods to ECDC.

C3.4 Health and Safety Specification

PROJECT SPECIFIC OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

FOR

GENERAL BUILDING MAINTENANCE

MANAGED ON BEHALF OF

EASTERN CAPE DEVELOPMENT CORPORATION
(THE "CLIENT")



PREPARED BY:

AFRICAN HELICAL PILE AND ANCHOR COMPANY CC

T/A SHEHAWK CONSULTANTS



PROJECT:

MDANTSANE MALL, NU2 (HI-WAY) - PROFESSIONAL SERVICE
PROVIDER FOR REPAIRS, REFURBISHMENT AND MAINTENANCE.

KEY ROLE PLAYERS

Client	EASTERN CAPE DEVELOPMENT CORPORATION
---------------	---

Principal Agent/ Architect	BNM Architects Project Managers
Contact	Mrs. Arinda Swart
Contact Number:	041 585 2125
Email address:	arindas@bnm.co.za

Structural and Civil Engineers	SMEC
Contact	Mr. Juan Kampman
Contact Number:	041 363 6777
Email address:	Leneal.Smith@smec.com

Electrical & Mechanical Engineer	RNA Consulting Engineers
Contact	Mr Travis Warne (Mechanical) / Mr Toby Nzunza (Electrical)
Contact Number:	043 742 0041
Email address:	travisw@rnaconsulteng.co.za toby@rnaconsulteng.co.za

Quantity Surveyor	Pulana Baxter & associates
Contact	Mr Inga Jakavula
Contact Number:	043 721 0984
Email address:	inga@pba.co.za

Health and Safety Agent	African Helical Pile and Anchor Company t/a SHEHawk Consultants
Contact	Barinda Gretton
Contact Number:	082 460 9891
Email Address:	barinda@shehawk.co.za

INDEX

	KEY ROLE PLAYERS
	LIST OF ABBREVIATIONS
	DEFINITIONS
	KEY REFERENCES
	SCOPE OF WORK
1.	PREAMBLE
1.1	Purpose of the Occupational Health & Safety Specification
1.2	Implementation of the Project Specific Occupational Health & Safety Specification
1.3	Requirements at Tender Stage
2	GENERAL REQUIREMENTS
2.1	Summary of Risks identified during Design
2.2	Specified hazardous Chemical Substances
3	OCCUPATIONAL HEALTH & SAFETY MANAGEMENT
3.1	Structure and Organization of H&S Responsibilities
3.1.1	Construction Work Permit Application
4.	HEALTH AND SAFETY PLAN FRAMEWORK
4.1	Appointment of Competent Site Personnel
4.1.1	Construction Supervision
4.1.2	Construction Health and Safety Officer
4.1.3	Traffic Safety
4.2	Health and Safety Representatives and H&S meetings
4.3	Appointment of Competent Contractors
5.	GENERAL RISK MANAGEMENT
5.1	Health Risks and Medical Surveillance
5.1.1	General Environmental Conditions
5.1.2	Noise Risks
5.2	Emergency Procedures
5.2.1	First Aiders and First Aid Equipment
5.2.2	Fires and Emergency Management
5.2.3	Incident Management and Compensation Claims
5.3	Personal Protective Equipment (PPE) and clothing
5.4	Occupational Health and Safety Signage
5.5	Induction of Employees and Visitors, General H&S Training
5.6	Management of Construction Vehicles, Mobile Plant and Equipment
5.7	Excavations
5.8	Working at Heights
5.9	Cranes and lifting equipment
5.10	Temporary works
5.11	Demolition
5.12	Mechanical installations
5.13	Safety and Switching procedures for electrical Installations
5.14	Auditing
5.15	Communication on Site
5.16	Care of Workers on Site (Welfare)
5.17	Discipline Alcohol and Substance Abuse
5.18	Electrical Equipment
5.19	Explosive Power Tools
5.20	Hazardous Chemical Substances
5.21	Pressure Equipment
5.22	Hot Work
5.23	Security / Access Control
5.24	Housekeeping
5.25	Barricading
5.26	Existing Services
5.27	Asbestos
5.28	Public Health and Safety
6.	HEALTH AND SAFETY FILE
7	NON-CONFORMANCES
7.1	Failure to Comply with Provisions
8.	MEASUREMENT AND PAYMENT

ANNEXURE A: CLOSE OUT REQUIREMENTS

ANNEXURE B: NON-CONFORMANCES

ANNEXURE C: CONTRACTORS MONTHLY HEALTH AND SAFETY REPORT

ANNEXURE D: SAFETY AND SWITCHING PROCEDURES FOR ELECTRICAL INSTALLATIONS

PROJECT SPECIFIC OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

LIST OF ABBREVIATIONS

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

DEFINITIONS

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

Client: Eastern Cape Development Corporation (ECDC)

Construction Health and Safety Agent:

A competent person appointed by the Client to carry out the duties of the Client in respect of Occupational Health and Safety on the Project in terms of Regulation 5 sub regs (5) and / or (6)

ECDC: Eastern Cape Development Corporation

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

Hazard: Source of exposure to danger

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

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

Health and Safety Agent:

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

Health and Safety Plan:

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

Induction Training:

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

Principal Agent:

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

Risk:

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

Regulation/s:

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

Site:

Means the area in the possession of the Principal Contractor for the construction of the works. Where there is no demarcated boundary it will include all adjacent areas, which are reasonably required for the activities for the Principal Contractor, and approved for such use by the Designer.

The Act:

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

KEY REFERENCES

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

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

Joint Building Conditions of Contract (JBCC)

South African Roads Traffic Safety Manual (SARTSM) Chapter 2, Volume 13 of 1999

Road Traffic Safety Act No. 93 of 1996 (as amended)

Construction Specifications & Standards 6.0 for Southern Africa. Hans Wegelin 6th Edition 2010

SANS Code 10400.

SCOPE OF WORK: MDANTSANE MALL, NU2 (HI-WAY) - PROFESSIONAL SERVICE PROVIDER FOR REPAIRS, REFURBISHMENT AND MAINTENANCE

These specifications are applicable to the specific scope of work pertaining to the above-mentioned project as detailed in the tender documents, this amongst all includes for example:

- New roof sheeting
- New side cladding detail
- New gutters and downpipes
- Structural repairs and repainting of existing structure (Including additional steelwork over the North-Eastern corner in order to change the fall of the roof (Above gym))
- Replacing steel windows.
- Replacing of roller shutter doors at the 3 x exiting entrances
- Replacing/reinstating tarmac/concrete after installation of new services (sewer/water/stormwater)
- Replacing/reinstating brick paving after installation of new services (sewer/water/stormwater)
- Refurbishment of existing public ablutions on the first floor
- New stormwater/sewer and water supply in ground.
- New public ablutions on the ground floor
- Builders work in connection with electrical, mechanical work etc (including protection of finishes below whilst roof work are in progress)
- Mechanical – full scope including the lift.
- Electrical – full scope including temporary works.
- Demolition of Hawkers Stalls
- Removal of Asbestos
- Temporary Emergency Entrances/Exits

1. PREAMBLE

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

ECDC, as the Client and the appointed CHS Agent African Helical Pile and Anchor Company CC t/a SHEHAWK Consultants on its behalf, shall provide a project specific Health & Safety Specification (PSHSS) for the project and provide the Principal Contractor/s making a bid or appointed to perform construction work for the project, or parts thereof.

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

The PSHSS is a performance specification, based on an Operational building, to ensure that the Client and any bodies that enter into formal agreements with the Client viz. Agents, Professional Service Consultants (Engineers, Quantity Surveyors and Architects), Principal Contractors and Contractors achieve an acceptable level of OHS performance. No advice, approval of any document required by the PSHSS, such as hazard identification and risk

assessments, or any other form of communication from the Client shall be construed as acceptance by the Client of any obligation that absolves the Principal Contractor from achieving the required level of performance and compliance with legal requirements. Furthermore, there is no acceptance of liability by the Client, which may result from the Principal Contractor failing to comply with the PSHSS, i.e. the Principal Contractor remains responsible for achieving the required performance levels.

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

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

Environmental management shall receive due attention as per the requirements of the Environmental Control Officer (ECO), but will be managed by the ECO directly.

We highlight that this project will take place while various sections of the building will be occupied and with the surrounding area being operational as usual. This area is a highly populated area; therefore special care needs to be taken throughout the project to ensure the safety of the community and the tenants of the building and surrounding buildings. It should be noted that this OHSS in no way relieves the Contractor of any of his responsibilities set out in the Act and Regulations.

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

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

This specification must be read in conjunction with the OHS Act, Regulations (as amended) and any other standards relating to work being done, and ensure compliance thereto. The information relative to the scope of the project, the works etc. are detailed in the tender, are to be considered when developing the H&S plan and associated documentation. The summary of risks is included in Section 2 of the PSHSS.

The OHS Act S.37.2 Mandatory Agreement must be fully completed by the PC, supplied by the Client. These documents shall be deemed to form part of the returnable Contract Documents.

No work may commence without written approval of the H&S plan by the Health and Safety Agent – African Helical Pile and Anchor Company CC t/a SHEHawk Consultants, or the responsible person in ECDC.

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

The CHS Agent, African Helical Pile and Anchor Company CC t/a SHEHawk Consultants will visit the project as deemed necessary by ECDC to ensure compliance and to limit risks. All activities on the site and all appropriate documentation will be monitored on a monthly basis. The findings as per the visits will be reported to the project team and ECDC on a monthly basis.

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

1.3 Requirements at Tender Stage

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

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

The PC shall ensure adequate information is submitted as supporting documentation with his completed Tender. Such information will be assessed against the criteria listed and a score provided to the Bid Award Committee (BAC) for consideration. Failure to provide such information could render the tender application non-responsive.

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

- A declaration to the effect that he has the competence and necessary resources to carry out the work safely in compliance with the Occupational Health and Safety Act and its Regulations;
- A valid Letter of Good Standing;
- Incident Investigation Reports for other projects of a similar nature undertaken by the tenderer
- Claims ratio receipt from FEM or the Compensation Commissioner for the previous review period;
- Detailed technical method statements for approval by the Designer and appropriate risk assessments and safe work procedures for approval by African Helical Pile and Anchor Company CC t/a SHEHawk Consultants or ECDC:
 - Site establishment including:
 - Clearing and grubbing;
 - Exposure of services, power, telecommunication etc.;
 - Arrangements for hoarding, traffic accommodation;
 - Specific Site Layout Plan to be provided
 - Dealing with existing structures
 - Demolishing existing structures;
 - Excavating
 - Access Control
 - Welding Work
 - Temporary Works
 - An emergency plan indicating how and where emergencies will be handled
 - Biological Hazards (refer to sewer)
 - Working at heights (Specific requirements with reference to Scaffolding)
 - Sequencing of work (Partially Occupied Building)
 - Hoarding and erecting of walkways for public use.
 - Dust Control
 - Noise Control
 - Asbestos removal identification and removal.
 - Temporary Emergency Entrances/Exits
 - Lift Installations

Further method statements are to be submitted prior to, and during the project where changes or new work is required, and the approval of the Designer/ ECDC is required before work on that aspect or activity can commence. The CHS Officer is to be included in production planning sessions/meetings to ensure that the appropriate risk assessments, safe work procedures and communication required are available and completed timeously. Penalties will be applied should this not be adhered to, and deemed a serious offence.

2. GENERAL REQUIREMENTS

2.1 Summary of Risks identified during Design

The intention of the summary of findings from the design risk assessment is to highlight the residual risks identified during the design phase. The full design risk assessment can be found in the tender document.

The summary of risks provided is to point the contractor towards some risks he may not be aware of during tendering stage and while developing his formal risk assessments for the project.

The design risks and the management thereof should be included in the Principal Contractors (PC) risk assessments. Where there are other Contractors appointed to do work, the PC is to ensure that Contractors include such information in their risk assessments.

The summary is to be developed following the completion of the Design risk assessment, and to include the residual risks as they apply to the project. The items noted are for information only and must be expanded on as required by the project.

ACTIVITY	HAZARD
Site establishment	Incorrect equipment, haphazard congestion
Roof works	Falling from heights Materials falling from heights
Demolishing	Objects falling Personnel falling Structure collapse Dust in vicinity of public and occupied areas
High Rise Scaffolding	Personnel falling Equipment falling Structure collapse
Handling of material	Removing articles from delivery truck Waste material Incorrect storage of material
Ladders	Falling off ladders
Labor work on wet surfaces	Falling off or through elevated structures
Perform work outdoors in windy conditions	Falling off or through elevated structures
Storage of material and equipment	Cluttered and congested work areas due to poor/bad housekeeping
Waste	Accumulation of waste on site Poor/bad housekeeping
24 hour Site security	To prevent unauthorised people entering site Access control to be managed
Delivery of material Movement of construction plant and vehicles	Inadequate traffic control Public can enter Access onto site an concern
Working at heights	Inadequate fall arrest equipment Inadequate protection against falling objects
Barricading/ hoarding	Public can enter the construction site. Walkways for public Barricading for working at heights (at Last three meter) Rubble shoot to be barricaded
Plant and vehicles	Personnel struck by Public struck by Property damage

Site Office	Delivery with crane, no load test, no competency,
Waste Removal	Removal from roof and first storey building Objects falling Personnel falling Structure collapse Dust in vicinity of Public and occupied areas
Asbestos removal	Exposure to Asbestos. Removal of Hazardous Waste
No Emergency Exits	Existing Emergency Exits to be repaired as a temporary measure
Lift Installation and Lift Shaft	Hoarding of Lift Shafts Specialised Installers to be appointed. Shutdown Procedures

2.2 Specified Hazardous Chemical Substances

The following lists of products or substances are those which have been identified as likely to be used on the project. This list is not inclusive and other products may be considered. Where the PC is likely to supply the product as the product has not been specified, materials data sheets (MDSs) need to be considered prior to all selections.

PRODUCT	POTENTIAL HEALTH OR OTHER RISKS
Cement	Hand mixing may occur, will be used for structures, stabilizing. 50kg bags delivered on pallets, ergonomic risk from handling, dust exposure, chromates. Eye, skin and respiratory irritant
Shutter Oil	Usually hand application prior to placing formwork in position. Volatiles present. Skin and respiratory irritant.
Retro-reflective Road paint	High levels of volatiles, Products have narcotic effect
Lime	Dust, eye and respiratory irritation
Petrol/diesel/lubricants	Storage tanks/ bowsers on site. Fire, spillage, fumes
Superphosphate fertilizers	Eye, respiratory and skin irritant
Limestone ammonium nitrate fertilizer (LAN)	Prolonged skin or eye contact could cause irritation. Explosive and will release toxic fumes if heated
Formula 2:3:2 fertilizer	Prolonged skin or eye contact could cause irritation. Explosive and will release toxic fumes if heated.
Creosote (pre-treated poles)	Eye and skin irritation and minor burns, carcinogen
Herbicides and ant poison	Type not specified, but will be used. Principal Contractor to ensure use of SDSs and appropriate protection measures
Epoxies and epoxy resins	Type not specified, but will be used. Principal Contractor to ensure use of SDSs and appropriate protection measures
Coatings	Type not specified, but will be used. Principal Contractor to ensure use of SDSs and appropriate protection measures

PRODUCT	POTENTIAL HEALTH OR OTHER RISKS
Grouts	Will be determined by the Principal Contractor; various grouts will be required, cementitious or other, may contain silica (crystalline - quartz), hexavalent chromium, respiratory, skin and eye irritant
Asbestos	To be identified and removed by a Level 3 Asbestos Contractor. Discarding of waste to be included within method statements.

3. OCCUPATIONAL HEALTH & SAFETY MANAGEMENT

3.1 Structure and Organization of H&S Responsibilities

3.1.1 Application for a Construction Work Permit

This project has an estimated value that excess R 40 million. As per the requirements within legislation the Client (ECDC) must acquire a “Construction Work Permit” from the Department of Labour as per CR3.

Work may not commence without the “Application for a Permit to do Construction Work” form being completed by ECDC and accepted by the Department of Labour. This includes, inter alia, the Contractor’s Health and Safety Plan as accepted by ECDC.

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

The Principal Contractor will ensure that the Site-Specific number is conspicuously displayed at the main entrance of the site for which that number is assigned.

4. HEALTH AND SAFETY PLAN FRAMEWORK

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

The current legislative requirements, SANS codes, SANS 10400 and any other standards that may guide practice are to be taken into consideration. The following aspects must be addressed in the H&S Plan, as they have been identified in section 2, as playing a role in reducing the overall risk of a particular activity, or section of the project. The CHS Agent may from time to time request additions or systems as they relate to the works or legislative requirements at the time.

As per the instructions of the client, ECDC, work within the Mdantsane Mall, NU2 (Hi-Way) will be undertaken while various sections of the building will be occupied and with the surrounding area being operational as usual. This area is a highly populated area; therefore special care needs to be taken throughout the project to ensure the safety of the community and the tenants of the building and surrounding buildings.

Please ensure that the recommendation by the client for the sequencing of works is taken in consideration when planning and preparing the site layout drawings:

The PC is to prepare a site layout drawing for each section as per the sequence these site layout plans have to indicate at least the following:

- The positions of site offices of all Contractors, toilets, drinking water and worker rest areas;
- Indicate the positions of emergency personnel and equipment (fire, first aiders, first aid posts);
- Protection of plant and pedestrians (with special reference walkways, complete with roof cover), indicate parking, and
- Storage areas (materials and equipment, waste etc.)
- Access and egress to site for deliveries and intended temporary traffic management
- Emergency assembly point
- Placement of Hoarding.

- Emergency exists
- Entrances into building for Construction team.

Such layouts are to be updated regularly throughout the project.

4.1 Appointment of Competent Site Personnel

The CEO (OHSA S16.1) of the PC will take overall responsibility for the appointment of competent site staff for the duration of the project. Should the CEO not be personally involved in the project, the H&S responsibilities are to be delegated to the Site Agent (OHSA 16.2). Knowledge and training in H&S is required, and certificates indicating H&S training as well as experience to be included in CVs.

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

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

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

4.1.1 Construction Supervision

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

Multiple competent Assistant Construction Managers (CR8.2) may be appointed where justified by the scope and complexity of the works.

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

4.1.2 Construction Health and Safety Officer

The PC will employ at least one competent, full-time CHS Officer (CR8.5) for the duration of the contract. The CHS Officer's CV is to be submitted for approval by the CHS Agent or the Client, at time of tender. The PC is to ensure adequate resources are provided in order to undertake all responsibilities (i.e. mobile phone, computer and internet access, vehicle etc.) Qualifications shall include at least Grade 12 SAMTRAC/NEBOSH/Diploma in H&S qualifications or similar, with exposure to civil engineering and building that is appropriate given the level of project complexity preferably in an OHS capacity. He should also have undergone training in the Act and Regulations. In the case of a contract where contractors are employed, the CHS Officer must have a competence to evaluate the Contractors Health and Safety plans.

If proof of registration as a Construction Health and Safety Officer with SACPCMP is supplied, the above requirements will not be required.

This person may not hold any other position on the site staff.

The site supervisor may not act as the CHS Officer.

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

- Senior site staff and supervision, Contractors are to follow systems, instructions etc. given by the CHS Officer at all times;
- No new workers or Contractors may commence work without approval or following the H&S plan as submitted, and
- No inductions of Contractor staff until the H&S documentation is approved by the CHS Officer.

- The CHS Officer/s may not be removed or replaced without the approval of the CHS Agent, nor may the site be left unattended for more than 1 day without adequate, competent cover.

A monthly report of all H&S activities and incidents is required by the end of the first week of each month, or at a date agreed to by the CHS Agent/Client and the CHS Officer. An example of the monthly report is attached as an Annexure D.

The CHS Officer will be responsible for collating the H&S documentation at the close out of the project in electronic format. A list of the typical aspects that should be provided is available as Annexure B to this document. The PC is to ensure that all Contractors documentation follows the same requirements and closed out H&S documentation must be completed and be available with the close out of the main contract.

Failure to do so will be considered a serious offence and penalties applied.

4.1.3 Traffic Safety

A Traffic Safety Officer will be responsible for ensuring that daily traffic management is adequately managed.

No worker may be transported in, or on the rear of construction vehicles (bakkies included), or with plant and materials to, on, or from site. The number of passengers in any vehicle is limited to what is stated on the license disc. Vehicles used to transport workers to, from, or on site, shall have secure seats and be covered. No canopies may be used.

Tenderers must indicate in their OHS plans what type of transport is envisaged and how this will be managed.

Where there is an interface between the works and any public thoroughfare, typical traffic accommodation drawings will be provided by the Designer for general traffic management. The PC is to draw up a traffic accommodation plan for approval by the Designer. The standards of the SARTSM Ch. 13 Vol. 2 will be used. Any changes suggested, or required are to be discussed and approved by the Designer or OHS Agent. Additional care must be taken where workers and public interface.

Penalties will be issued for non-compliances noted.

4.1.4 Health and Safety Representatives and H&S meetings

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

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

Minutes are to be kept for all H&S interventions and meetings. Failure to do so will be deemed to be a moderate offence.

4.2 Appointment of Competent Contractors

The Principal Contractor is to ensure compliance with ECDC' s minimum standards and all legislative requirements. The same H&S standards required of the PC are to be applied to all Contractors (this include Plant Hire companies). An index of all Contractors and Suppliers is to be on file and kept updated at all times. The PC is to ensure there is sufficient funding for H&S compliance by each Contractor.

The following minimum aspects are applicable to any Contractor appointed:

- The CHS Officer is to ensure a Contractors appointment and approval of H&S documentation at least seven (7) working days prior to commencing work.
- No Contractor may work under the PC's Compensation registration number. If required the PC may assist SMMEs with their registration with the Compensation Commissioner. However, such Contractors will not be able to commence work until proof of registration or Letter of Good Standing has been received.
- No work may commence without Mandatary agreements between parties in place.

The following aspects are applicable to Suppliers or short-term works (surveying, repairs, servicing, deliveries etc.). Cognisance is to be taken of the level of risk involved and the CHS Officer is to ensure the level of H&S documentation is appropriate:

- Mandatory agreements in place
- Letter of Good Standing
- Method statements and risk assessments
- Available information relative to:
 - Load testing and registers for cranes or lifting devices
 - Medical certificates of fitness
 - Safety data sheets (SDSs)

Failure to provide written approval of H&S documentation will be considered a serious offense, and could result in aspects of, or all the activities being stopped, and penalties implemented.

5. GENERAL RISK MANAGEMENT

Work within the Mdantsane Mall, NU2 (Hi-Way) will be undertaken while various sections of the building will be occupied and with the surrounding area being operational as usual. This area is a highly populated area; therefore special care needs to be taken throughout the project to ensure the safety of the community and the tenants of the building and surrounding buildings.

While undertaking construction within the occupied building and food outlets, several requirements and considerations come into play, especially concerning the safety and well-being of patrons, employees, and the general public. The following important aspects must be kept in mind for the duration of the project:

- Ensure compliance with local building codes especially fire safety measures, accessibility standards, noise regulations and dust control.
- Minimize environmental impacts with special reference to Noise, dust and waste control. Please ensure that engineering controls is set in place to reduce these impacts. Where Engineering controls are not available please ensure that all other methods are communicated through method statements and procedures.
- Accessibility of the patrons, employees and the general public cannot be impede by construction activities especially patrons with disabilities. Temporary ramps or alternative entrances will be needed during construction. These access points need to be maintained.
- Communication and coordination of all activities at least 7 days before commence of the activities will be a requirements. Method statement to be provided to be approved by the Project Manager and Client.
- Appropriate safety barriers and signage to protect pedestrians and to guide them safely around the construction site. This will be applicable for the duration of the project as the project is undertaken within a highly populated area.
- Proper planning with regards to utilities and infrastructure is essential. The disruption of existing services to be prevented at all costs.
- Occupational Health and Safety Standards as per the Occupational Health and Safety Act and relevant regulations needs to be adhered to. Specified health and safety requirements will be discussed below. It should be noted that this OHSS in no way relieves the Contractor of any of his responsibilities set out in the Act and Regulations.

5.1 Health Risks and Medical Surveillance

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

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

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

Environmental monitoring results and risk assessments are to be made available to the occupational health professionals doing the medical surveillance. The use of occupational risk exposure profiling (OREPS) and job descriptions are to be used to determine specific exposures for management.

All permanent workers (including those of Contractors) are required to be in possession of a medical certificate of fitness prior to commencing work.

Medical surveillance will commence at pre-employment. All workers (including Contractors) are required to be in possession of a medical certificate of fitness prior to commencing work. Annual medical surveillance is required (unless identified as being required more frequently), as well as an exit medical. Arrangements for keeping medical records for the required time are to be noted. It is preferable that the PC has a medical surveillance plan. Full medical records are not to be placed in the H&S file. A procedure for managing the medical records which require safekeeping for prescribed periods are to be addressed

Given the potential health risks the following aspects are to be included in each medical surveillance intervention:

- Full medical, surgical and occupational history;
- Full physical examination of all systems; and
- Referral if required for the management of identified health issues that may affect the worker.

Specific testing for existing conditions and limitations relative to exposure could include, but are not limited to:

- Audiometry (hearing tests); and
- Any other tests identified as relevant from chemical or specifically identified risks of exposure

Failure to do so will be considered a serious offence.

5.1.1 General Environmental Conditions

Construction within the occupied building and food outlets can lead to excessive dust which may have a Health and Safety effect on patrons, employees, and the general public. Therefore compliance with the Environmental Regulations (as amended), among others is required.

Environmental monitoring of ventilation, lighting and dusts may be deemed to be required by the Approved Inspection Authority used to measure the environment. Copies of the relevant reports and actions taken in respect of these are to be placed in the H&S file.

Testing and reporting for airborne silica as required by the 2008 amendment to the HCS Regulations is required.

5.1.2 Noise Risks

Construction within the occupied building and food outlets can lead to excessive noise which may have a Health and Safety effect on patrons, employees, and the general public. All plant from plant hire companies (suppliers) or that of the PC is to be compliant with the Noise Induced Hearing Loss Regulations. Plant identified that has not been tested and marked for noise emissions will result in having to be tested at the Contractors or PCs expense. Failure to do so within a reasonable time period will result in such plant being removed from site.

Works executed after 5pm to 8am weekdays, work over weekends and public holidays shall be agreed with the Principal Agent prior to commencement. Written permission to be given Noise to be kept at a minimum during normal working hours.

Audiometric testing of all workers is noted as required in the medical surveillance programme for all workers prior to work commencing. Temporary labour working in identified noise areas will require testing if the noise levels are indicated on plant or through processes as greater than 85dB. Audiometry records are to be available in the H&S file. Suitable SANS approved hearing protective equipment shall be issued and worn. Where several items of construction plant are in operation at or near to each other, the noise zone for the combined plant should be established and suitable hearing protective equipment used within this zone
Failure to do so will be considered a serious offence.

5.2 Emergency Procedures

An emergency plan and procedure that is appropriate to the risks is required prior to commencement on site. This emergency plan must be implemented in collaboration with the emergency procedures issued by the management of the building as the building is occupied. In the instance where there is no Emergency Plan available for the occupants it is advised that the PC compile an Emergency Plan and procedures for the building. This emergency Plan and procedures needs to be distributed, discussed, adapted and implemented for the whole building. The system should be simple and easy for patrons, employees, and the general public to follow. The plan may be adapted should new information or risks are identified.

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

- Appointment of a competent emergency response co-ordinator
 - Fire;
 - Public injury, Motor vehicle accidents;
 - Falls from heights;
 - Serious injury to workers (medical or work-related); and
 - Any other major risks identified during risk assessments
 - Temporary Emergency Exits
 - Assembly Points
 - High Wind Speeds
 - Wet Conditions
 - Extreme temperatures

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

Local emergency telephone numbers must be displayed and made part of the emergency procedure.

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

5.2.1 First Aiders and First Aid Equipment

At least 2 first aiders will be trained to Level 3. First aiders shall be available and accessible on site at all times, and be able to work as a team when responding to any emergency on the project.

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

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

5.2.2 Fires and Emergency Management

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

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

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

Appointment of a competent emergency response co-ordinator and wardens;

- Lists of first aiders, and
- Requirement in terms of identified risks:
 - Fire;
 - Public injury, Motor vehicle accidents;

- Falls from heights;
- Serious injury to workers (medical or work-related); and
- Any other major risks identified during risk assessments
- Temporary Emergency Exits
- Assembly Points
- High Wind Speeds
- Wet Conditions
- Extreme temperatures

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

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

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

5.2.3 Incident Management and Compensation Claims

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

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

ECDC views the reporting of near misses as a critical component in creating a positive health and safety awareness culture on site. ECDC retains the right to enforce the reporting of near misses within 24 hours of occurrence.

5.3 Personal Protective Equipment (PPE) and Clothing

The PC is to provide a procedure as an addendum to indicate how PPE is managed within the Company.

The wearing of the identified SANS approved PPE at all times is non-negotiable. The PC shall ensure that all workers (Including Contractors) are issued with and shall wear:

- Hard hats;
- Protective footwear;
- Overalls that ensure worker visibility.
- Eye protection (if required)
- Hearing protection;
- Reflective jackets (no bibs)
- Respiratory protection (minimum of FF2), and
- Any other necessary PPE identified from SDSs and/or risk assessments.

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

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

Failure to comply will result in penalties being applied.

5.4 Occupational Health and Safety Signage

As per the instructions of the client, ECDC, work within the Mdantsane Mall, NU2 (Hi-Way) will be undertaken while various sections of the building will be occupied and with the surrounding area being operational as usual. This area is a highly populated area; therefore special care needs to be taken throughout the project to ensure the safety of the community and the tenants of the building and surrounding buildings.

Please ensure that the recommendation by the client for the sequencing of works is taken in consideration when planning and preparing the placing of the site safety signage:

:

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

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

- Report to site office/ 'Warning: Construction Site – Keep out' or similar;
- Site office' (if relevant);
- Hard hat area' or other PPE requirements noted;
- First aid box positions (including vehicles); and
- Fire extinguishers.
- Assembly Area
- Walkways and direction boards
- High noise zones
- Working at heights
- Scaffolding Safe/unsafe to use
- Emergency exits
- Traffic control signs

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

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

Failure to comply will result in penalties being applied.

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

5.5.1 Induction Training

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

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

All training must be closely aligned with the risk profile of the project; procedures must be in place to ensure that all workers are aware of the consequences of their work activities and benefits of improved H&S performance.

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

5.5.2 General Health and Safety Training

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

Training for all employees dealing with HIV & Aids and other related diseases record of training to be kept in the Health and Safety File.

5.6 Management of Construction Vehicles, Mobile Plant and Equipment

Close control of plant and equipment is required, including that of Contractors.

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

Only competent, fit plant operators are to be used. Medical certificates of fitness are required for all operators. Any plant or slings used to lift plant or material require annual load testing by an AIA, and all certificates must have the testers LMI/E number. Operators are to be adequately trained and certified to operate mobile cranes or crane trucks. Certificates and registers are to be placed in the H&S file. Movement of plant in closures and in confined working areas is to be closely monitored and managed by the supervisors. The blind spots of plant are to be taken into account and workers and Contractors protected accordingly. Failure to do so will be considered a serious offence.

5.7 Excavations

A procedure for managing excavations is to be provided as an addendum to the H&S plan describing how excavations are to be managed.

Excavation method statements are to be approved by the Designer and associated risk assessments are required. Designs by competent persons are required where ground conditions are deemed to require shoring.

A competent person is to be appointed for managing all excavations. A permit system is to be available and used for all excavations. All equipment and ground conditions to be checked daily and prior to work commencing.

Excavations should preferably not be open beyond what can be closed daily. Where excavations need to remain open, all excavations are to be properly protected. Adequate stakes with 1m high demarcation and berms/spoil are required to be a safe distance from the edge of the angle of repose. Candy tape may not be used to demarcate excavations. Cognisance is required of the surrounding area and increased levels of protection are required where work is in communities.

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

5.8 Working at heights

A fall protection plan is to be available and supplied as an addendum to the H&S plan to include scaffolding at extreme heights of 12 meter and higher. The fall protection plan must be appropriate for the project. Method statements, appropriate risk assessments, safe work procedures and training are to be available prior to work commencing.

Construction drawings shall be required for all specialist scaffolding and temporary structures as they relate to the project. The drawings shall be accompanied by full calculations, design loads and any relevant test results as required by the SANS code, and ensure adequate allowance for the development of appropriate documentation and training. All drawings are to be checked and signed by a competent structural engineer (registered with ECSA).

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

The relevant SANS codes are to be applied as they apply to the works and the project, such as:

- SANS 10085
- SANS 10333 (parts 1-3)
-

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

- The public or users of buildings are to be protected at all times by way of hoarding, barricading or fencing
- Notices to be posted
- Restrictions or stoppage when weather conditions are deemed hazardous
- Permit system for working at heights
- Prevention of falling tools or equipment
- Link to emergency plan regarding rescue
- Netting of scaffolding to prevent falling objects.
- Rubble shoots to be erected to assist with the building rubble with special reference to the roof work and the cladding.

All workers are to be in possession of valid certificates of fitness that extend for the duration of the works. Note the requirements in the section relating to medical surveillance.

Registers and all relevant documentation are to be placed in the H&S file.

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

5.9 Cranes and lifting equipment

This will be used at Site Establishment, roof work and rubble shoot erecting. Should any form of lifting device or crane (fixed or mobile) be used during the project for deliveries, moving of supplies or equipment, the appropriate documentation must be made available. Method statements, risk assessments, safe work procedures and training are to be available prior to work commencing. A procedure for managing loads and lifting must be made available as an addendum to the H&S Plan.

5.10 Temporary Works (Specialised Scaffolding)

The recommendation by the client for the sequencing of works must be taken in consideration when planning and designing the specialised scaffolding.

Specialised scaffolding must be properly designed and signed off by a competent person for each phase in the sequence or works. In these instances a competent person is defined as a Professional Engineer or Professional Technologist (registered with ECSA) who has sufficient experience in the design of specialised scaffolding to be able to assess the design. The appropriate competent persons are to be appointed to manage and monitor such works to the satisfaction of the Engineer and CHS Agent. Records and registers are to be properly completed and kept in the H&S file. If the Specialised Scaffolding is to be erected by a Contractor, this must be notified to the Designer/CHS Agent. All necessary calculations and drawings of temporary works must be kept on site and available to the PA and CHSA. The Specialized Scaffolding erected by the PC must still be designed and signed off by a competent person is defined as a Professional Engineer or Professional Technologist (registered with ECSA) who has sufficient experience in the design of specialised scaffolding

Failure to do so will be considered a serious offence.

5.11 Demolition

The Contractor shall execute the activity as required according to the construction regulations and other applicable regulations of the Act.

Care is to be taken during demolition of walls; a stability survey should be carried out. All rubble to be disposed of at a controlled refuse site.

Demolition plan to be submitted for approval by the Principal Contractor before any demolition commences.

5.12 Mechanical installations

All mechanical installations are to be carried out in conformity with the manufacturer's instructions. Method statements and risk analyses must be compiled for each type of installation. A competent person must be designated to supervise the work.

5.13 Safety and Switching procedures for electrical Installations (Document attached)

NOTE:

The guidelines and conditions provided in this attached document form an integral constituent of the Health and Safety Specifications. It is therefore a condition of acceptance that no Health and Safety Plan shall be complete unless all relevant elements of this document applicable to the above project have been included in the Health and Safety Plan. The final approval of the Health and Safety Plan in terms of CR 5 shall be subject to this requirement based on the following certification by the Principal Contractor or his Agent:

*" I hereby certify that I have taken cognisance of the content of the document titled '**SAFETY AND SWITCHING PROCEDURES FOR ELECTRICAL INSTALLATIONS**' and have included the relevant elements of the document applicable to the above project in my Health and Safety Plan and shall ensure adherence to the requirements thereof."*

The content of CR 5 is pivotal when mandatory appointments are contemplated.

5.14 Auditing

Frequency of external auditing by the CHS Agent or Client will be as agreed with the Client and Designer but will at least conform to the requirements of the Construction Regulations. The site will be inspected and the documentation audited relative to the activities and H&S plan. The CHS Officer of the PC must accompany the Client, or the CHS Agent, on all audits and inspections. Not all audits will be, or need be announced.

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

Internal audits are to include site conditions as well as ensuring H&S files are appropriate, and compliant. Comprehensive audit reports are to be made available; the format of the audit reports must be acceptable by the CHS Agent.

The PC will be audited using a template as supplied in the tender document. The audit template will be adjusted from time to time relative to the activities on site. A similar process is to be used by the PC when auditing their Contractors on site. Compliance with legislative requirements and the systems provided by the PC to manage the H&S on site will be measured. Full compliance is required. Time limits for corrective actions will be set and must be adhered to.

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

5.15 Communication on Site

All H&S communication during the project between the CHS Agent and the PC will be done through the Principal Agent and be in writing, including the issue and responses to non-conformances and H&S audit results.

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

5.16 Care of Workers on Site (Welfare)

Adequate toilets, clean, safe drinking water and decent shelter must be afforded workers at all times. Toilets will be within reasonable distance of workers, or placed with each working team in safe, with reasonable privacy. Hand washing facilities will be provided. The Contractor will make provision for adequate change rooms for his employees on site. Existing facilities may not be shared with existing users. No substances containing Formaldehyde may be used in Chemical Toilets.

Failure to ensure compliance will be considered a serious offence.

5.17 Discipline, Alcohol and Substance Abuse

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

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

These requirements are applicable to any employee of any organization providing services on site. Penalties may also be applied by the Client, OHS Agent or Engineer.

5.18 Electrical Equipment

In addition to the requirements of the Electrical Machinery Regulations and the General Machinery Regulations any electrical distribution board used for construction work shall be fitted with suitable earth leakage protection. Leads must be properly and firmly connected. Plugs and sockets shall be in good and safe condition.

All electrical apparatus, other than electrical hand tools, shall have a physical "lock out" system which will prevent any operation other than that authorized by a supervisor. A "lock out" sign shall be displayed when the apparatus is not in use.

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

5.19 Explosive Power tools

The Principal Contractor to ensure that a competent person is appointed in writing to control the issuing of the Explosive Powered Tools & cartridges and the service, maintenance and cleaning. Register to be kept of all issuing, servicing, maintenance and cleaning. Empty cartridge cases/nails/fixing bolts returns recorded. Ensure that all tools are cleaned daily after use. Work areas are must be demarcated.

5.20 Hazardous Chemical Substances

The Principal Contractor to ensure that competent Person/s with specific knowledge and experience designated to Control the Storage & Usage of HCS (including Flammables). Written Proof of Competence of above appointee available on Site. Risk Assessment carried out. Register of HCS kept/used on Site. Separate, purpose made storage available for full and empty containers.

5.21 Pressure Equipment

The Principal Contractor to ensure that competent Person/s with specific knowledge and experience designated to supervise the use, storage, maintenance, statutory inspections & testing of pressure equipment. Written Proof of Competence of above appointee available on Site.

Pressure Equipment identified/numbered/placed on register. Regular Inspections/maintenance carried out the pressure equipment. Results must be recorded and kept in the Health and Safety File.

5.22 Hot work

The Principal Contractor has to ensure that all operations will be carried out by authorised/trained persons to use the equipment. Permission to be obtained prior to work commencing from Supervisor. Principal Contractor to ensure that all work carried out is done so in designated hot work area. All equipment must be good working condition check lists and registers must be available in the Health and Safety File. Sufficient PPE to be provided to employees working in the area. Sufficient signage must be erected to prevent unauthorised access into the area.

Gas welding equipment must have working flashback arrestors fitted at cylinders and gauges. Hoses in good condition/correct type/all connections with clamps Cylinders stored, used and transported in upright position, secured in trolley / cradle / to structure. All cylinders regularly checked for leaks, leaking cylinders returned immediately.

Fire prevention/control methods applied/hot work permits.

Principal Contractor to ensure that sufficient firefighting equipment is available in this area where work is done.

5.23 Security Arrangements / Access Control

The Principal Contractor will establish site access rules and implement and maintain these rules on each of the sections of the sequencing of works. Construction area must be sufficiently fenced off with semi-permanent hoarding to ensure that the public cannot gain access into the construction site for the period that the section will be an active site area as per the sequencing of works. Access control must include the rule that non- employees shall at all times be provided with fulltime supervision while on site.

The Principal Contractor will develop a set of security rules and procedures and maintain these rules on each of the sections of the sequencing of works. If not already tasked to the OHS Officer, appointed in terms of Construction Regulation 8(5), the Principal Contractor will appoint a competent Emergency Controller whom must develop contingency plans for any emergency that may arise on site as indicated by the risk assessments. These plans must include at least a 3-month practice/testing Programme for the plans. These practices/test runs must include all persons on site at the time of the practices/test runs as well as the patrons, employees and the general public.

5.24 Housekeeping

Good housekeeping will be maintained at all times as per Construction Regulation No. 27. Poor housekeeping contributes to three major problems, namely, costly or increased accidents, fire or fire hazards and reduction in production. Good housekeeping will enhance production time.

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

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

5.25 Barricading

All barricading shall be of the rigid type unless the use of non-rigid barricading has been approved in writing by ECDC Project Manager. The contractors' barricading standard shall be included in the Health and Safety Plan.

Where more than one contractor is working on a site, the fixed barricading shall be clearly marked with the company's name, site contact person as well as the contact number/s.

5.26 Existing Services

There is existing services on site i.e. Eskom, Telkom present. Eskom and Telkom must be notified by the PC of the construction work. Eskom and Telkom would be responsible to locate and re-locate if required, their own services the PC may not attend to the re-location of these services.

5.27 Asbestos

There is possible Asbestos piping/ cladding and ceiling boards present on site and the Principle Contractor must take special care when working with the "Asbestos cement" (AC).

The Principle Contractor, when they suspect that they found Asbestos on site, arranges that the necessary testing in this regards are done to establish whether this "asbestos Cement" contains dangerous levels of Asbestos. These results must be presented to the Consultants to enable the Consultants to discuss the matter with the client.

WARNING: Under no circumstances shall any work of any nature whatsoever on any ASBESTOS material is undertaken unless the work is entrusted and mandated to a "REGISTERED ASBESTOS CONTRACTOR" in terms of the Asbestos Regulations. [CR 12(9)] (Contact the Regional Manager's Office)

5.28 Public Health and Safety

Having being aware that the project is taking place on a highly populated area, the Contractor shall ensure that each person working on or visiting a site, and the surrounding community, shall be made aware of the dangers likely to arise from on-site activities and the precautions to be observed to avoid or minimise those dangers. Appropriate health and safety signage shall be posted at all times.

The Contractor have a duty in terms of the OHS Act to do all that is reasonably practicable to prevent members of the public and others being affected by the construction processes to be aware and put preventative measures in place. The visitors to site shall go through a brief health and safety induction detailing hazards and risks they may be exposed to and what measures are in place to control these hazards and risks.

The contractor shall erect proper solid hoarding as well as well executed walkways to ensure that members of the public are kept out of the construction area and they can only gain access to the building through a proper access entrance/exit.

6. HEALTH AND SAFETY FILE

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

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

- The PSHSS;
- The H&S Plan and the approval by Client;
- Appointment by Client;
- Mandatory agreement with Client;
- Notification of construction work;
- A record of all working drawings, calculations and design where applicable;
- Detailed list of Contractors with contact details, appointments, Mandatories etc., H&S specifications issued;
- Record of Competencies (CVs) and appointments;
- Training Records;
- Permits;
- Method statements;
- Risk assessments;
- Safe work procedures;
- Emergency and injury management;

- Safety data sheets
- Medical surveillance records;
- Registers; and
- Records of audits, minutes etc.
- Plant lists
- Temporary electrical installations
- Employee records (who is on site)

7. NON-CONFORMANCES

Should, at any time, the works, or part of the works, be stopped due to unsafe acts or non-compliance with the Clients or PCs H&S Plan; neither the PC nor any other Contractor shall have a claim for extension of time or any other compensation.

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

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

7.1 Failure to Comply with Provisions

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

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

8. MEASUREMENT AND PAYMENT

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

Item and Unit

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

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

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

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

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

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

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

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

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

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

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

C.05 Provision of part-time or Full Time Construction Health and Safety Officer (Month)

The Tender sum shall include for the cost of a Construction Health and Safety Officer on a fulltime if the Client should allow a part-time CHSO the amount tendered will be prorated according to the amount of time spent on the project.

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

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

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

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

C.07 Induction Training (Unit (No))

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

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

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

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

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

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

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

This amount will be paid only once the Principal Contractor has met all his obligations in respect of the Occupational Health and Safety Act and the Construction Regulations and has submitted his Health and Safety File complete as envisaged on this specification to the Client's satisfaction. This must be done prior to the issue of a Certificate of Completion.

ANNEXURE A CLOSE OUT REQUIREMENTS

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

Health and Safety close out file requirements include:

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

Defect and Liability Period

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

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

**ANNEXURE B
NON-CONFORMANCES**

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

ANNEXURE C:

CONTRACTORS MONTHLY HEALTH AND SAFETY REPORT

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

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

CHS Officer	Signature	Date:
Site Agent		
_____	Signature	Date: _____

SAFETY AND SWITCHING
PROCEDURES

FOR

ELECTRICAL INSTALLATIONS

CONTENTS

	PAGE
1 REGULATIONS AND DEFINITION OF A COMPETENT PERSON	4
1.1 REGULATIONS	4
1.2 DEFINITION OF A COMPETENT PERSON	4
2. SAFETY EQUIPMENT	4
3. DEFINITION OF OPERATING TERMS	4
3.1 Alive or Live	4
3.2 Dead	5
3.3 Earthing	5
3.4 Isolate	6
3.5 Circuit-Breaker	7
3.6 Link	7
3.7 Operating Methods	8
4. GENERAL SAFETY PRECAUTIONS	8
5. ACCESS TO HIGH VOLTAGE ENCLOSURES	9
6. SWITCHING	9
7. WORK IN SUBSTATIONS AND SWITCHING STATIONS CONTAINING EXPOSED LIVE CONDUCTORS	9
7.1 Safety Clearances to Live Conductors	9
7.2 Insufficient Clearances	9
7.3 Ladders and Other Long Objects	10
8. WORK ON METAL CLAD SWITCHGEAR SPOUTS	10
9. WORK ON TRANSFORMERS	10
10 WORK ON CABLES, CONDUCTORS AND OVERHEAD LINES	10
10.1 Cables and Conductors	10
10.2 Overhead Lines	10
APPENDIX I:	
EMERGENCY FIRST AID, RESCUE AND RESUSCITATION IN THE CASE OF ELECTRIC SHOCK	11
1 FIRST AID	11
1.1 Burns	11
1.2 Shock	11

1.3	Drinks	11
2	RESCUE	11
3	RELEASES FROM CONTACT WITH LIVE CONDUCTORS	11
3.1	Low Voltage	11
3.2	High Voltage	12
4.	RESUSCITATION AFTER CONTACT WITH LIVE CONDUCTORS	12
4.1	Patient Breathing	12
4.2	Patient Not Breathing	12
4.3	Circulation	12
4.4	General	13
4.5	Artificial Respiration	13
4.5.1	Expired Air Artificial Respiration	14
4.5.2	Mouth-to Mouth Method	14
4.5.3	Mouth-to-Nose Method	15
4.5.4	Filling the Lungs	16
5.	EXTERNAL CARDIAC (HEART) MASSAGE	16
5.1	Technique	16
	<u>APPENDIX II</u>	18
	TESTING PROCEDURES AND PRECAUTIONS FOR COMMISSIONING OF ELECTRICAL CABLES.	18
1.	LOW VOLTAGE CABLES	18
1.1	Initial Tests	18
1.2	Voltage Tests	18
2	MEDIUM/HIGH VOLTAGE	18
2.1	Paper Insulated Cables	18
2.2	XLPE Insulated Cables	19
2.2.1	Preliminary tests	19
2.2.2	Testing	20
2.2.3	Circuit-breaker closure	22

1. REGULATIONS AND DEFINITION OF COMPETENT PERSON:

1.1 REGULATIONS:

All persons who carry out or arrange for work of any description for the Department in connection with electrical apparatus shall make themselves acquainted with the Occupational Health and Safety Act (Act 85 1993) with particular reference to the Electrical Machinery Regulations, Regulations 1 to 23 inclusive.

Access to the above Act and its Regulations can be arranged with the Regional Manager.

1.2 DEFINITION OF COMPETENT PERSON:

“competent person” in relation to machinery, means any person who—

- (a) has served an apprenticeship in an engineering trade which included the operation and maintenance of machinery, or has had at least five years’ practical experience in the operation and maintenance of machinery, and who during or subsequent to such apprenticeship or period of practical experience, as the case may be, has had not less than one year’s experience in the operation and maintenance appropriate to the class of machinery he is required to supervise;
- (b) has obtained an engineering diploma in either the mechanical or electro technical (heavy current) fields with an academic qualification of at least T3 or N5, or of an equivalent level, and who subsequent to achieving such qualification has had not less than two years’ practical experience in the operation and maintenance appropriate to the class of machinery he is required to supervise;
- (c) is a graduate engineer and has had not less than two years’ post-graduate practical experience in the operation and maintenance appropriate to the class of machinery he is required to supervise and who has passed the examination on the Act and the regulations made there-under, held by the Commission of Examiners in terms of regulations E5 (2) of the regulations published under Government Notice R.929 of 28 June 1963; or
- (d) is a certificated engineer;

2 SAFETY EQUIPMENT

The following equipment required for working on electrical installations and distribution systems, must be maintained in good order and repair and must be made available:-

Safety belt, overalls, hard hat, safety shoes or boots, rubber gloves, "Men Working" notice boards, locks for locking off switches, buss bar shutters in truck-type switchgear, isolators or earthing links, rubber sheet and length of rope with short circuiting earthing-chains, earthing sticks and testing/phasing sticks rated for the voltage of the equipment to be tested.

Under no circumstances shall work be carried out on electrical apparatus unless the proper safety equipment is used

With regard to overhead linesmen, no work shall be carried out unless use is made of a non-metallic ladder and the appropriate safety belt, rubber gloves, overalls, hardhat and safety shoes or boots are worn. The buddy system must also be implemented.

3 DEFINITION OF OPERATING TERMS

3.1 Alive or live

This means electrically connected to the power system and/or electrically charged.

Consider an isolated overhead line that is not earthed. An overhead line can be electrically connected to the system in the following ways:

- (a) By means of a metallic conductor such as links and breakers or switches. This is the normal way of transmitting electrical energy.
- (b) Electromagnetic induction or transformer action from a nearby current carrying line will induce a dangerous voltage in the isolated lines and are a hazard to all personnel that must work on or with the line.
- (c) Electrostatic induction or condenser action from a nearby live line will induce a dangerous voltage in any isolated, but not earthed, overhead line. Electrically charged means at a potential difference or voltage above zero

3.2 Dead

This means that any apparatus so described is isolated from the power system. Rotating plant shall not be regarded as dead until it is stationary or is being slowly rotated by means of barring gear and is not excited.

The Occupational Health and Safety Act define dead as: "dead" means at or about zero potential and isolated from any live system. Disconnected has the same meaning as isolated. An overhead line disconnected from all sources of supply but not earthed, cannot be regarded as dead because:

- (a) It can retain a static charge.
- (b) It can acquire a static charge due to atmospheric conditions.
- (c) It can accidentally be made alive.
- (d) Nearby lines continually induce voltage in them.

The regulations recognise only the following devices as disconnects or isolators:-

- (a) Links.
- (b) Fuses.
- (c) Truck type switchgear.

3.3 Earthing

This means the connecting of apparatus electrically to the general mass of earth in such a manner as will ensure at all times an immediate safe discharge of electrical energy. This is done through an earth bar or spike by means of a good metallic conductor.

To fully appreciate this definition we must refer to the Electrical Machinery Regulations, Regulation 3 of the Occupational Health and Safety Act which states:

"Work on Disconnected Electrical Machinery. —Without derogating from any specific duty imposed on employers or users of machinery by the Act, the employer or user shall, whenever work is to be carried out on any electrical machinery which has been disconnected from all sources of electrical energy but which is liable to acquire or to retain an electrical charge, as far as is practicable, cause precautions to be taken by earthing or other means to discharge the electrical energy to earth from such electrical machinery or any adjacent electrical machinery if

there is danger if there is danger therefrom before it is handled and to prevent any electrical machinery from being charged or made live while persons are working thereon."

Electrical apparatus and in particular overhead lines may become charged due to:-

- (a) Direct lightning strokes.
- (b) Electro magnetically induced currents due to a lightning stroke in the immediate vicinity of the line.
- (c) Electro statically induced charges on the lines due to the presence of thunderclouds.
- (d) Electrostatic charges imparted to the line by the friction of dust or snow blowing past the conductors.
- (e) Electrostatic charges imparted to the line due to changes in line altitude"

These changes are responsible for tremendously high voltages between overhead lines and earth, in fact, sometimes high enough to cause a flash over on insulators. A spark may span several centimetres of air to a person's hand should he approach too closely to an isolated unearthed overhead line.

An overhead line or apparatus can be made alive by:

- (a) Unauthorised operating, i.e., closing the wrong links and breaker.
- (b) Faulty wiring on consumer's stand-by sets. (Back feed from consumer)
- (c) A broken overhead conductor from a different line falling onto the isolated line.
- (d) Synchronising plugs.

From the foregoing paragraphs it is clear that the purpose of earthing isolated lines and apparatus are:

- (a) To discharge them should there be a residual voltage or charge.
- (b) To prevent them acquiring a static charge.
- (c) To prevent danger to persons working on apparatus in the event of someone accidentally making it alive.
- (d) To dissipate induced voltages continuously and safely.

Earthing gear means the fixed or portable appliances used for earthing electrical apparatus. The dangers from inadequate or improper earth connections are:

- (a) Electrocutation.
- (b) Burns from arcing.
- (c) Electric shock leading to falls.

Earthing may be done by the closing of earthing links, or by the attaching of fixed earthing devices or by the affixing of portable earthing straps. In each case the main idea is to ensure the safety of personnel.

In affixing portable earth straps, the connection to the earth bar or earthed metal or spike must be made first and in removing such earthing straps, the disconnecting from the earth bar or earthed metal or spike must be done last. Also, a link stick or an insulated stick should be used to connect the earth wires to the overhead lines or apparatus.

These requirements are most important because connecting the portable strap first to earth and then to the conductors by means of a link stick avoids the risk of a shock to the operator from static charges or induced voltages.

REMEMBER: Always safety test before applying earths.

3.4 Isolate

This means to disconnect from all Sources of electrical potential by means of opening of links or fuses or the withdrawal of truck-type circuit-breakers.

All sources of electrical potential mean all points or circuits from where the apparatus can be made alive. Links fuses and truck-type switchgear can be regarded as isolators because:

- (a) They leave a visible air gap in a circuit when open, removed or withdrawn.
- (b) They contain no stored energy and will not close due to defects.
- (c) They can be locked in a physical condition and thus can only be operated by the person with the correct key.

Opening links and locking them in the open position; removing fuses and locking them away; withdrawing truck-type switchgear and locking the buss bar shutters are the only safe methods of isolating.

3.5 Circuit Breaker

This is a device designed to make or break electric current under normal and fault conditions. A breaker can make or break an electric current because it is designed to extinguish the arc very rapidly and effectively. It is also designed to withstand the tremendous forces under short circuit conditions. The arc-extinguishing medium for high-voltage breakers is normally air, oil or vacuum and should this medium be lost, the breaker becomes a link. Never use a breaker without an arc-extinguishing medium to interrupt current flow because the breaker will probably explode or it will sustain severe damage.

A fault condition is any condition that will cause an excessive amount of current flow. The normal fault conditions are:

- (a) Phase faults.
- (b) Earth faults.
- (c) Open circuit in one line of a three-phase system (Single-phasing).
- (d) Too low a voltage. (Motors will draw a large current or even stall).
- (e) Too high a voltage.
- (f) Overloading.

For the following reasons breakers cannot be regarded as isolators:

- (a) They leave no visible gap in a circuit.
- (b) They contain stored energy and can close on their own due to various defects.
- (c) It is normally not possible to lock them in an open position.
- (d) Oil circuit-breakers are subjected to carbon tracking which could cause a flash-over between contacts.

3.6 Link

This is a device for making or breaking a circuit when no load current is flowing. Links differ from breakers and switches in the following respects:

- (a) They are not equipped with an arc extinguishing medium/device.
- (b) Their movement is very slow.

Should current be interrupted by means of links, an uncontrollable arc will be struck at the points where the contacts part.

The temperature of the arc is so high (+ 2 000°C) that it will simply melt the parting contacts. As the contacts move further apart, the arc will lengthen and burn everything away. Molten metal could splash onto the operator and cause severe injuries.

As the arc lengthens, considerable noise is generated and the light intensity is so severe that the operator could suffer from “welding flash” of the eyes.

When apparatus equipped with earthing links is required to be earthed at more than one place, the earthing links shall always be closed first and thereafter, any necessary portable earthing gear may be affixed to the apparatus.

In removing the earths in readiness for making the apparatus alive, all portable earthing gear shall first be removed and earthing links shall be opened last.

Closing the earthing links first ensures maximum safety to the operator. These links are easily operated; make good contact and the operating handles are at a safe distance from the contact points.

Locks and keys shall also be provided for links. The operating mechanism of all manually operated links shall be fitted with fastenings for locks. The operating mechanisms of each set of manually operated links shall normally be locked whether the links are in the open or in the closed position.

The locking of links provides a safeguard against their being opened or closed in error by other persons apart from the one with the correct key and a written instruction to operate.

3.7 Operating methods

This means switching, linking, safety testing and earthing. This definition also indicates the order of operating when making apparatus safe to work on.

- (a) Switching -
 - (i) Open breaker or switch to interrupt current flow safely, i.e. prevent arcs.
 - (ii) Close breaker or switch to start current flow - the only safe way.
- (b) Linking - open at least one set of links from where the apparatus can be made alive and lock the links in the open position. Always ensure that you are not going to start or interrupt current flow with the links by ensuring that the breaker or switch is open.
- (c) Safety test - test all three phases to ensure that the apparatus is disconnected from all sources of supply and that there is no back-feed from a consumer's standby set or other source.
- (d) Apply earths - ensure safety of the workers by:-
 - (i) Discharging the line or apparatus.
 - (ii) Preventing the line from acquiring a static charge.
 - (iii) Preventing the line or apparatus from being accidentally made alive.

Before applying portable earths, ensure that they are mechanically and electrically in good condition. There should be no broken strands, the clamps should be rigid and without defect and when applied properly, should make intimate contact with the conductors and earth bar or spike. The earthing cable tails should be as short as possible. The current carrying capacity of the portable earth is greatly reduced by broken strands. It will act as a fuse and increase the danger to workmen.

4 GENERAL SAFETY PRECAUTIONS

No person shall carry out work of any description (including maintenance, repairs, cleaning and testing) on any part of electrical apparatus unless such parts of the apparatus are:

- (a) dead;
- (b) disconnected, isolated and all practicable steps taken to lock off from live conductors;
- (c) efficiently connected to earth with the appropriate earthing sticks or gear designed for this purpose at all points of disconnection of supply;
- (d) screened where necessary to prevent danger, and caution and danger notices fixed;

and unless such person is fully conversant with the nature and extent of the work to be done.

It is the duty of the competent person in charge of the work to ensure that the foregoing provisions are complied with. He shall also ensure that when the work has been completed, the apparatus is safe to be made alive and that all earths and temporary danger notices have been removed.

Provided that cleaning and painting of earthed metal enclosures, connections or disconnections of circuits to or from live systems may be carried out in accordance with instructions issued by the competent person concerned.

Provided also that where the design of the apparatus precludes the strict compliance with all details of these precautions, the work shall be carried out to the instructions of the senior competent person present.

When any person receives instructions: regarding work on or the operation of high voltage apparatus he shall report any objection to the carrying out of such instructions to the competent person who shall have the matter investigated and, if necessary, referred to higher authority.

5 ACCESS TO HIGH VOLTAGE ENCLOSURES AND APPARATUS

Enclosures, chambers, cubicles or cells containing high voltage conductors shall be kept locked and shall not be opened except by a competent person.

6 SWITCHING:

- (a) No switching shall be carried out without the sanction of the appropriate competent person except for agreed routine switching or in cases of emergency.

All telephone instructions/messages relating to the switching operation shall be written down and be repeated in full to the sender to ensure that the message has been accurately received.

- (b) When a switch shows any sign of distress after operating, its condition shall be immediately reported to the appropriate competent person, and it shall be examined before further operation.
- (c) The examination of and necessary adjustments including inspection and/or changing of oil of any high voltage oil immersed circuit-breaker which has operated under fault conditions shall be carried out if possible before the circuit-breaker is re-closed, or at the earliest available opportunity thereafter.

7 WORK IN SUBSTATIONS AND SWITCHING STATIONS CONTAINING EXPOSED LIVE CONDUCTORS.

7.1 Safety Clearances to Live Conductors:

Unless the whole equipment is "dead", the section which is made dead for work to be carried out shall be defined by the use of barriers or roping such that the minimum clearance from the nearest exposed conductor to ground level or platform or access way shall be:-

Rated Voltage	Clearance
Up to 11 kV	3.0 m.
From 11kV to 33kV	3.4 m

The area at ground level shall be only that in which the work is to be carried out.

7.2 Insufficient Clearances

If the above clearances are not sufficient to avoid danger, other suitable arrangements shall be made to provide the requisite degree of safety.

7.3 Ladders and Other Long Objects

Ladders and other long objects shall not be used without the permission of the senior authorised person in charge of the work and the movement and erection of such ladders shall be under his/her direct supervision at all times.

8 WORK ON METAL CLAD SWITCHGEAR SPOUTS:

- (i) The section of bus bars on which work is to be carried out shall be made dead and isolated from all points of supply.
- (ii) The shutters of live spouts shall be locked closed.
- (iii) The busbars shall be earthed with approved earthing equipment if possible, at a panel other than that at which work is to be carried out. Temporary earths shall in any case be applied to all phases on the busbar at the point of work. These earths may then be removed one phase at a time for work to be carried out. Each phase earth shall be replaced before a second phase earth is removed.

For the earthing of metal clad switchgear, approved appliances only shall be used. The insertion of the hand or any other tool in contact spouts for this purpose is forbidden.

9 WORK ON TRANSFORMERS:

When work is carried out on transformers, both the primary and secondary switches and isolators shall be opened. The transformer shall also be isolated from all common neutral earthing equipment from which it may become live. This does not require the disconnection of solidly earthed neutrals.

10 WORK ON CABLES, CONDUCTORS AND OVERHEAD LINES:

10.1 Cables and Conductors

- (a) No person shall touch the insulation, which covers or supports any high voltage conductor unless the conductor is dead and earthed.
- (b) Before carrying out work involving cutting into a high voltage cable, the responsible person shall satisfy himself that the cable has been made dead, isolated and earthed where practicable and identified. In all cases of doubt, the cable shall be spiked in an approved manner.

10.2 Overhead Lines

- (a) All persons while at work on towers, poles and high structures or when working on live lines shall make proper use of their safety belts and safety equipment, and no man shall work alone at any tower or high structure, or on live equipment.
- (b) The senior authorised person in charge of the work shall satisfy himself that the line conductors are short circuited and earthed before work is commenced. When work has been completed, the responsible person shall ensure that all temporary earths have been removed and that the line is safe to be made alive.
- (c) When work is carried out on a high voltage line, earths shall be placed at the point or points where the work is being done in addition to the earths provided at the points of disconnection.
- (d) In the event of the near approach of a lightning storm, all work on overhead lines shall cease immediately and the authorised person in general charge of the work shall be informed.
- (e) For the safety of the public, strain insulators shall be placed in all stays on overhead lines.

APPENDIX 1

EMERGENCY FIRST AID, RESCUE AND RESUSCITATION IN THE CASE OF ELECTRIC SHOCK

1. FIRST AID:

1.1 Burns:

Treat with Vaseline to exclude air.

1.2 Shock:

In addition to suffering from electric shock, it is also probable that the patient will be suffering from physical shock and important that this condition be treated.

The patient must be kept warm with blankets and/or coats, and if available, hot water bottles should be applied to the feet.

1.3 Drinks:

Drinks must on no account be administered unless the patient is fully conscious.

Alcoholic drinks should not be administered unless recommended by a doctor.

2. RESCUE

The procedure to rescue persons from contact with a live conductor cannot definitely be laid down for all cases. However, certain principles and methods are outlined which all persons working on electrical apparatus or assisting in such work should know.

3. RELEASES FROM CONTACT WITH LIVE CONDUCTORS

3.1 Low voltage

- (a) Observe quickly the general circumstances of the case, whether special difficulties are involved and if special precautions are necessary. Every second is precious and delay may be fatal; be prepared, therefore, to act promptly. Speed of action must be accompanied with due care.
- (b) Take precautions against receiving a shock yourself. Remember that the patient, until released, is electrified at the same voltage of the live conductor.
- (c) In cases where the contact has been made on a live conductor with adjacent switch control, the switch should be opened immediately and then the patient pulled clear. If in doubt about which switch to open, all switches should be opened; but assume all conductors are still alive unless some method is available to determine that the conductors are dead.
- (d) When conductors cannot be de-energised immediately by adjacent switch control, the procedure will depend on the voltage of the live conductor.

In all cases it is necessary for the rescuer to be adequately insulated against shock from a conductor to earth and against shock from a conductor to conductor, or by touching the patient.

For low and medium voltage (up to 650 V) rubber gloves, rubber sheeting or dry cloth, including loose portions of the patients clothing, provide adequate insulation for the rescuer's hands. The use of such insulating guards should always be aimed for; but a dry pole with no associated earthed metal on it provides adequate insulation for the rescuer against shock from a conductor (or patient's body to earth).

- (e) Cutting away a conductor (carrying up to 650 V only) may provide a quick and easy method of release in some cases. It is useful especially when delay might otherwise occur in releasing the patient. This method requires that the rescuer has sound knowledge of what he/she is doing.
- (f) Prevention of patient falling from aloft; when a patient is being rescued above ground level, care must be taken to ensure that he does not fall from a dangerous height when pulled clear or when conductors are de-energised.
- (g) Be prepared to use considerable force when releasing a patient who is holding a live conductor. Punch the wrist heavily on the inner side or strike the back of the hand. It may be easier in some cases to use one's foot to force the patient's hand clear.

3.2 High voltage

For high voltage it is necessary to put an extra-long, say 2 m or more, dry insulating material, such as wood or rope, between the rescuer's hands and the patient to enable the patient to be pushed or pulled clear of the conductor, or enable the conductor to be cleared from the patient.

4. **RESUSCITATION AFTER CONTACT WITH LIVE CONDUCTORS**

Immediately after rescue, a rapid but careful examination of the patient must be made to determine the extent of treatment necessary.

Electric shock may cause breathing to stop because of a sudden paralysis of the respiratory centre and it may also cause a failure of the circulation because the shock has affected the heart.

The method of resuscitation will therefore depend on the patient's condition.

4.1 Patient breathing

If the patient is breathing and his heart is beating then in a large majority of cases recovery will be rapid.

Do not apply artificial respiration if the patient is breathing. Let the patient have plenty of fresh air. If the patient is in a collapsed condition, lay him on his back in as comfortable a position as practicable with his head tilted slightly back. This will keep his airway open and assist breathing. A pad, if available, placed under the patient's shoulders will assist in keeping his head back. Loosen any tight clothing.

4.2 Patient not breathing

If breathing has stopped or is very weak or appears to be failing, commence artificial respiration without delay.

4.3 Circulation

In cases of electric shock, failure of the heart should be suspected if the patient does not quickly show some response to artificial respiration. Circulation should be assessed within fifteen seconds after the commencement of artificial respiration.

Feel for a pulse in one of the carotid arteries in the patient's neck. This is done with the pads of the fingers at the level of and at either side of the Adam's apple. Do not feel both carotid arteries at the same time, as this would stop the flow of blood to the brain. If the heart is beating, a pulse will be felt.

If no pulse is felt, lift the patient's eyelids. If the heart is not beating the pupils of the eyes will be large and will not become smaller when exposed to light by the lifting of the eyelids. If the heart is beating the pupils will become smaller when exposed to the light.

The absence of a pulse in the carotid artery and the enlarged pupil of the eye, which does not become smaller when exposed to light, indicate that the heart has stopped beating.

- (a) Patient's heart beating. Do not apply external cardiac (heart) massage when a pulse can be felt.
- (b) Patient's heart not beating. If the heart has stopped beating commence external cardiac (heart) massage without delay.

4.4 General

Immediately resuscitation is commenced, send for medical assistance and an ambulance and notify the hospital if applicable.

If the patient is not breathing and his heart has stopped beating, artificial respiration by the expired air method should be carried out in conjunction with external cardiac (heart) massage.

Every second you wait can cause severe brain damage through lack of blood and oxygen.

Artificial respiration and external cardiac (heart) massage must be commenced without delay and should be continued until breathing is restored and the heart starts beating or until a doctor advises that further efforts will be of no avail.

Care should be taken to avoid, as far as possible, aggravating any injuries the patient may have sustained.

4.5 Artificial respiration

If available in order to reduce the risk of infection it is recommended that a facemask or shield be used for both mouth to mouth or mouth to nose artificial respiration. However, time should not be lost in getting a face mask/shield.

Examples of Masks



Alternatively a clean cotton handkerchief can be used to cover the mouth.

It is not necessary to be highly trained in resuscitation methods to carry out artificial respiration effectively.

Simply stated, artificial respiration is a means of supplying oxygen to the patient's lungs, and thus, through the blood, to his brain to keep him alive while his own breathing is suspended.

The expired air method of artificial respiration is recommended as the best universally applicable field type of artificial respiration.

For artificial respiration the patient's head must be kept well back to ensure a free passage to the lungs. Exact rhythm and timing in carrying out artificial respiration are unimportant. The only purpose of artificial respiration is to get oxygen into the patient's lungs.

Artificial respiration must be continued until breathing is restored or until a doctor advises that further efforts will be of no avail.

4.5.1 Expired air artificial respiration

In the expired air method of artificial respiration the rescuer breathes his own exhaled breathe into the patient's lungs.

The normal air we breathe in contains 20 per cent oxygen. The air we exhale contains about 16 per cent oxygen and this is ample to keep the oxygen content in the patient's blood normal if it is breathed into him at about the rate of normal breathing.

Therefore, quickly ensure that the patient's throat is free from foreign matter. Next place him on his back and tilt the head well back (Fig.A1.1) this ensures an open passageway to the lungs. Placing a pad under the patient's shoulders will make the tilting of the head easier. However, time should not be lost in getting a pad.

The rescuer may then breathe into the patient's mouth or nose.

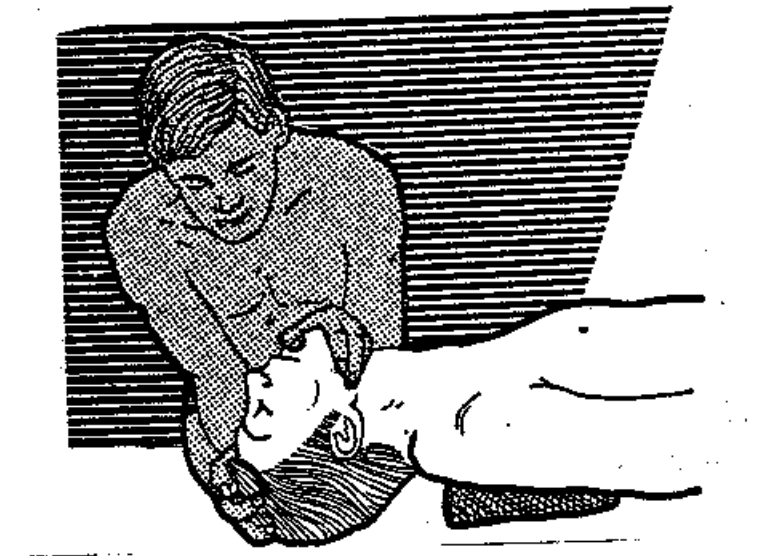


Figure A1.1

Lift the neck and tilt the head back. Hold the head tilted so that the skin over the throat is stretched tight. With one hand push the crown of the head down, remove the other from below the neck and use it to pull up the chin. This prevents the tongue from causing an obstruction.

4.5.2 Mouth-to-mouth method

The patient's head is tilted well back as in Figure A1.1 his mouth is opened and the rescuer opens his mouth wide and makes an air-tight seal around the patient's mouth as shown in Figure A.1.2. The rescuer's cheeks will normally seal the patient's nostrils, but if necessary the nostrils must be pinched closed with the fingers. The rescuer then breathes into the

patient. The resistance to the rescuer's breath is about the same as that experienced when blowing up a balloon. The chest should be seen to rise.

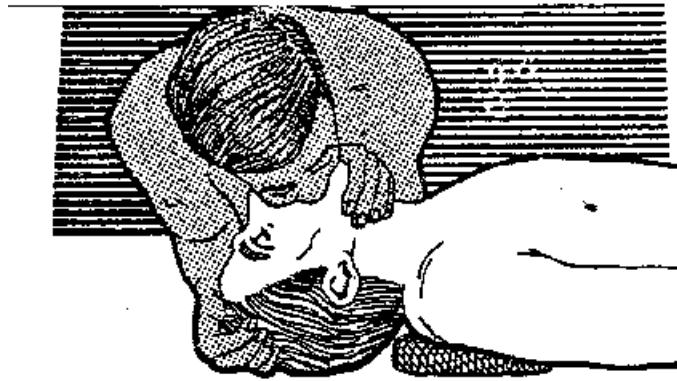


Figure A1.2

Seal your lips widely around the victim's mouth. Fold his lower lip down to keep his mouth open during inflation and exhalation. To prevent leakage, press your cheek against his nostrils during inflation. Blow air into the victim until you see the chest rise. Then remove your mouth to let him breathe out. Take your next breath as you listen to the sound of his breath escaping. Re-inflate his lungs as soon as he has exhaled.

Having breathed into the patient's lungs, the rescuer removes his mouth and, turning his face to one side to avoid the patient's exhaled breath, takes another deep breath and again breathe into the patient's lungs. This is kept up at a steady rate of from ten to fifteen times per minute.

One rescuer can take over from another. Remember rhythm and timing are not important but the patient must under no circumstances be left without air for longer than a minute.

4.5.3 Mouth-to-nose method:

The patient's head is tilted well back as in Figure A1.1. The rescuer opens his mouth and places it right over the patient's nose making an airtight contact (Figure A1.3) The lips do not contact the nostrils as this would tend to close them. The patient's mouth is held closed and the rescuer breathes into his patient as in the mouth-to-mouth method.

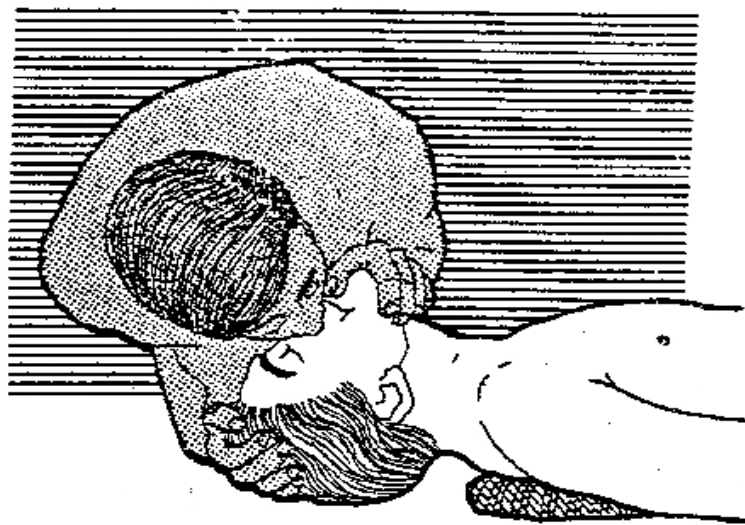


Figure A1.3 ~ Mouth-to-nose method

4.5.4 Filling the lungs:

The rescuer blows steadily and firmly, not with a jerk, and the patient's chest should be seen to rise. If air does not appear to be entering the lungs, quickly look for any blockage in the air passage, check the head again, making sure the jaw is well forward and the head tilted well back, and commence blowing again.

About ten good quick breaths should first be breathed into the patient as soon as he is reached. This will oxygenate his blood and give the rescuer a minute or so to get his patient into a more convenient location for continuing artificial respiration, for example, to lower a linesman from a pole.

5. EXTERNAL CARDIAC (HEART) MASSAGE

The lives of people whose hearts have ceased to function can often be saved by the prompt application of a form of resuscitation known as external cardiac (heart) massage (for example, massage of the heart without opening the chest). This massage may be performed by anyone.

The heart is in the centre of the chest between the breast-bone and the spine and if pressure is applied to the lower half of the breast-bone, the heart is compressed and the blood is squeezed out of it into the arteries. When the pressure is released the breast-bone springs back into place, the heart, like a rubber ball, resumes its shape and in so doing allows blood from the veins to enter. Valves in the heart prevent blood flowing back into the heart from the arteries.

In this way a heart which has either stopped beating altogether or which has gone into ventricular fibrillation (a state of ineffective quivering often caused by electric shock) can be made to circulate the blood.

This compressing and releasing of pressure on the heart carried out rhythmically at a rate of approximately 60 compressions per minute is called external cardiac (heart) massage. It can keep a person alive if breathing is maintained, until his heart resumes its proper beating. A heart in ventricular fibrillation will require hospital treatment to restore normal heartbeat, but the heart can be made to circulate blood by external cardiac (heart) massage until the necessary medical aid is obtained.

It is desirable that adequate training in external cardiac (heart) massage be given to develop the technique. This can best be achieved with a training aid.

5.1 Technique:

Lay the patient on his back on a firm surface.

Feel for the notch at the top of the breast-bone (sternum) with one hand and for the lower end with the other. It is on the lower half of this bone that the pressure has to be made (see Figure A1 4)

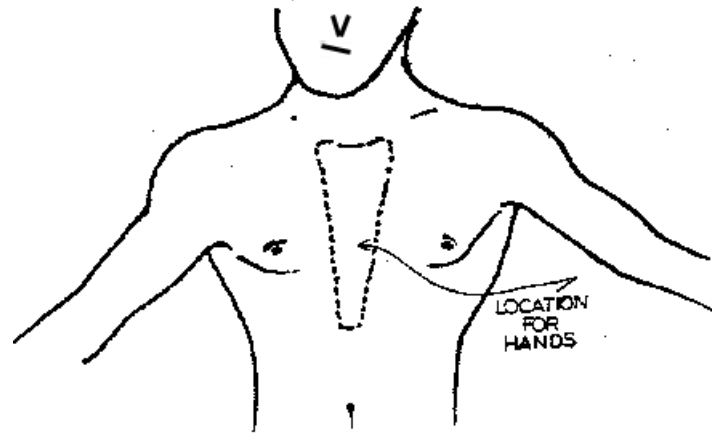


Fig A1.4: Location of the rescuers hands for external cardiac (heart) massage.

The rescuer leans directly over the patient and places the heel of one hand (either hand) on the lower half of the patient's breast-bone and places the heel of his other hand on the back of the first (one hand for a child' two fingers for an infant). The fingers should not press on the patient's chest as this would reduce the effectiveness of the pressure on the heels of the hands.

Keeping the arms straight, the rescuer presses down sharply and firmly to depress the patient's breast-bone from 30 to 50 mm in the case of an adult, depending on his build. Immediately release the pressure to allow the chest wall to recoil. If the technique is correctly applied it will not damage the patient's ribs.

If the patient is not breathing, external cardiac (heart) massage will be of no avail unless artificial respiration (expired air method) is carried out at the same time.

If only one rescuer is available, two breaths are given by the expired air method followed by fifteen chest compressions at the rate of approximately one per second.

Where two rescuers are available, one breathes into the patient and the other gives five chest compressions between each chest inflation. The rescuer giving the breaths should also feel for the pulse in the patient's carotid artery during resuscitation.

The chest should not, of course, be compressed at the same time as it is being inflated.

APPENDIX II

TESTING PROCEDURES AND PRECAUTIONS FOR COMMISSIONING OF ELECTRICAL CABLES

The aim of this section is to create an awareness of the latest standards and testing procedures for the commissioning of new and the re-commissioning of repaired electrical cables.

Before commissioning or re-commissioning cables tests must be carried out to ensure the integrity of the cable/s and to ensure the safety of operating personnel.

1. Low voltage Cables

1.1 Initial Tests

Carry out a meter test to ensure that the insulation resistance complies with the manufactures and the relevant SABS requirements. For L.V. cables a 500V d.c. meter is adequate for this purpose.

1.2 Voltage Tests

This covers extruded solid dielectric cables (covered by SABS 1507); voltage ranges are as indicated in Table 1

After installation the cable has to be tested to ensure the integrity of the cable and the quality of the work. A.C. testing of solid dielectric cables is preferred. Very low frequency high voltage sinusoidal electrical testing methods are recommended to avoid the use of cumbersome large testing equipment.

Method: The test voltage should be applied between conductors and between each conductor and the metallic protection or earthed surroundings of the cable as appropriate. The voltage to be raised gradually to the specified values in the table and maintained for 15 minutes.

Table1 -Test Voltages After Installation

1	2	3	4
Nominal operating voltage	The test voltage is to be applied	Test Voltage V	
		a.c. (r.m.s)	d.c.
300/500	Between Conductors and conductors/earth))
600/1000	Between Conductors and conductors/earth))
1900/3300	Between conductors))
1900/3300	Between Conductors and conductors/earth))

2. Medium/High Voltage

Each section of the cable installation between substations shall be subjected to a preliminary voltage or insulation resistance test to prove the insulation resistance.

The installation resistance can be measured with a high voltage meter with a rating of 5000V.

2.1 Paper Insulated Lead covered Double Steel Tape or Wire Armoured Cable (covered by SABS 97), voltage ranges are as indicated in Table 2

The test voltage should be applied between conductors and between each conductor and the metal sheath, which should be held at earth potential. In each case, the voltage should be increased steadily to the stipulated value and maintained at this value for 15 minutes.

Table 2 in-situ test voltages.

1	2	3	4	5	6	7
Voltage Rating of Cable kV	Test Voltage					
	Belted Cables				Single-core and screened cables	
	Between conductors		From conductor to sheath		Between conductor and sheath or screen	
	a.c.	d.c.	a.c.	d.c.	a.c.	d.c.
3.3/3.3	7	9	7	9	-	-
3.8/6.6	13	19	8	11	8	11
6.6/6.6	13	19	13	19	-	-
6.35/11	22	31	13	19	13	19
11/11	22	31	22	31	-	-
12.7/22	-	-	-	-	25	36
19/33	-	-	-	-	38	54

2.2 XLPE-Insulated Cables covered by SABS 0198 Part 13.

NOTE: If circumstances necessitate testing that is not in accordance with the recommendations of this section, the cable manufacturer or a test expert should be consulted before any testing is carried out.

The use of inappropriate or excessive test voltages or of unsuitable fault location methods can damage XLPE-insulated cables. Cables that are particularly prone to damage during testing are those that have water trees and those that have a construction that differs from that specified in the 1981 and in subsequent editions of SABS 1339.

The Types of Test Waveforms to be applied are:

- Very low frequency (VLF): An Alternating waveform that is either sinusoidal or pseudo-square/cosine rectangular, of nominal frequency 0,1 Hz.
- Power frequency: An alternating sinusoidal waveform of frequency in the range 25 Hz to 100 Hz.
- Surge: A step waveform that has a rise time of a few microseconds and that gradually decays to zero within 5 s.

These waveforms are referred to in the various test tables below.

Note: Where the capacity of the test set permits, all three cores of a three-core cable may be tested together.

2.2.1 PRELIMINARY TESTS

2.2.1.1 Leakage Resistance. Before carrying out any testing or fault location, determine and accurately record the leakage resistance to earth and, if relevant, between conductors. Use an instrument that generates a d.c test voltage of not less than 250 V and not more than 5 kV. Typical minimum values of leakage resistance are given in Table 3.

TABLE 3—MINIMUM LEAKAGE RESISTANCE

1	2	3	4	5
Cable Operating voltage U , kV	Minimum leakage resistance, $M\Omega$			
	Cable length, m			
	100	300	1 000	3 000
6,6	150	50	15	5
11	240	80	24	8
22	460	153	46	15
33	680	227	68	23

NOTE:

- 1 The value of leakage resistance multiplied by the cable length should not be less than $(2 U + 2) M\Omega.km$, where U is the voltage rating of the cable in kilovolt.
- 2 This test is repeated after the required sequence of tests (see 2.2.2.7).

2.2.2 TESTING

- 2.2.2.1 Over voltage Commissioning Tests. When newly installed cables are being commissioned, they should be tested at the test voltages given in Table 4, appropriate to the test waveforms and test durations given in columns 1 and 2 of the table.

TABLE 4—COMMISSIONING TEST VOLTAGES (r.m.s.)

1	2	3	4	5	6
Test waveform (see 2.2)	Duration, Min	Commissioning test voltage, kV			
		Cable Operating voltage, kV			
		6.6	11	22	33
VLF (0,1 Hz)	60	11	19	38	57
Power frequency	60	8	13	25	38

NOTE:

1. Test sets for the above are commercially available.
 2. Where the above test levels cannot be achieved, a reduced voltage for an extended time may be negotiated.
- 2.2.2.2 Overvoltage Maintenance/Repair Tests. When cables are tested for maintenance or repair purposes, they should be tested at the test voltages given in Table 5, appropriate to the waveforms and test durations given in columns 1 and 2 of the table.
- 2.2.2.3 Surge Test Method (see Table 5). The surge test is intended to be a practical basic safety test. It can be used as a non-damaging means of identifying fairly serious existing or potential faults when power frequency or VLF equipment is not available. The test avoids the application of a continuous d.c. voltage (see 2.2.2.4), but it is not as conclusive or rigorous as the other methods.

CAUTION: During the surge test, a peak voltage of up to twice the test voltage can be generated in the cable.

Method. Charge the surge generator to the appropriate test voltage given in Table 5. Using single-shot mode, release a surge into the cable and then soft-discharge the cable (see 2.2.5.5) within 5 s. Repeat the procedure up to five times and then fully discharge the cable by solidly earthing it for at least 5 min.

TABLE 5—MAINTENANCE/REPAIRS TEST VOLTAGES (r.m.s.)

1	2	3	4	5	6
Test waveform (see 2.2)	Duration	Maintenance/repair test voltage, kV			
		Cable operating voltage, kV			
		6.6	11	22	33
VLF (0,1 Hz)	15 min	8	13	25	38
Power frequency	15 min	7	11	22	33
Surge test (see 2.2.1.3)	5 surges, max.	7	11	22	33

2.2.2.4 **D.c. Over voltage Testing.** D.c. over voltage testing is likely to cause irreversible damage to XLPE-insulated cable systems, particularly if the cables have water trees. It often fails to identify potentially hazardous conditions in the cable. If d.c. testing has to be carried out because no other test methods are available, the voltage and duration should be limited to the appropriate values given in Table 6, which are recommended for quick identification of gross faults only. Use a d.c. test set or a surge generator in d.c. mode to apply the test voltage. After applying the voltage, soft-discharge the cable (see 2.2.2.5), using either the d.c. test set or a discharge stick. Fully discharge the cable by solidly earthing it for at least 8 h but preferably for 24 h.

TABLE 6—D.C. TEST VOLTAGES

1	2	3	4	5
Duration, s	D.c. test voltage, kV			
	Cable operating voltage, kV			
	6.6	11	22	33
10	6	10	20	30

2.2.2.5 **SOFT DISCHARGE OF CABLE.** An XLPE-insulated cable should always be soft-discharged through a resistance of at least 200 k Ω , for example by using a discharge stick. Discharging a conductor direct to earth by short-circuiting it with a lead can severely damage the cable. After the initial discharge, a cable should be solidly earthed for at least 5 min. If the cable has been subjected to any form of d.c. test, it should be solidly earthed for at least 8 h, but preferably for 24 h.

2.2.2.6 **CABLE SHEATH TESTING.** To avoid problems caused by the ingress of water into the cable, a cable should be subjected to sheath testing:

- a) at commissioning,
- b) annually, and
- c) after the location and repair of a fault.

Cable sheath testing can also be used to locate conductor earth faults that have punctured the outer sheath, provided that multiple sheath faults are not present. A direct current sheath test voltage of 5 kV should be applied for 1 min, with a leakage current of 1 mA/km being regarded as acceptable.




2.2.2.7 **AFTER TESTING.** After completion of any of the above tests, the leakage test described in 2.2.1.1 should be repeated. A tenfold reduction in the value of leakage resistance could indicate a potential problem.

2.2.3 CIRCUIT-BREAKER CLOSURE

2.2.3.1 **Faulty or Unknown Cable Conditions.** Closing a circuit-breaker on an untested cable can be hazardous to the operator and can damage the cable. A fault should never be re-established by repeated closing of a circuit-breaker.

2.2.3.2 **Voltage Doubling.** During switch-in onto open circuit, voltage doubling occurs at the remote end of the cable. Voltages of up to 20 kV can occur on an 11 kV system. Switching onto a load such as a transformer avoids this voltage doubling.

C3.4.1 Baseline Risk Assessment

HAZARD IDENTIFICATION AND RISK ASSESSMENT	<u>BASELINE RISK ASSESSMENT</u>				SAFETY HEALTH ENVIRONMENTAL MANAGEMENT SYSTEM															
	PREPARED BY:	Barinda Gretton																		
	APPROVED BY:	Mr G Cowley																		
	CURRENT REVISION:	1																		
	PREVIOUS REVISION:	0			<table border="1"> <tr> <td>low</td> <td>med</td> <td>high</td> </tr> <tr> <td>1</td> <td>4</td> <td>12</td> </tr> <tr> <td>2</td> <td>6</td> <td>18</td> </tr> <tr> <td>3</td> <td>8</td> <td>27</td> </tr> </table>				low	med	high	1	4	12	2	6	18	3	8	27
low	med	high																		
1	4	12																		
2	6	18																		
3	8	27																		
PROJECT NAME :		 																		
THE EASTERN CAPE DEVELOPMENT CORPORATION MDANTSANE MALL, NU2 (HI-WAY) Professional service provider for repairs, refurbishment and maintenance.																				
PROJECT NUMBER:																				
ECDC/INFRA/02/052022																				
DATE OF ASSESSMENT:						Risk Rating multiplier: Low = 1; Medium = 2; High = 3														
29th of April 2024																				

The base line risk assessment is to highlight hazards emanating from project risks identified. This list of risks is therefore not the replacement of the contractor's risk assessment but rather to point the contractor towards some risks he might not be aware of during tendering stage and while conducting his formal risk assessment.

Note, this HIRA is a guide only and does not cover all risks. It must be read in conjunction with the Site Specific OHS Specification in the Contract document. The Contractor must supply a full risk assessment for all activities on site

REF where apt.	Operation	Hazard	Design Risks identified as present	Describe the obvious control measures to be part of design	Baseline risk				Extra control measures necessary to reduce risk / Redesign by Client and / or Designer	Residual risk				Accountability
					Likely consequences of an incident	Frequency of Exposure	Probability of harm	Risk rating and risk category		Likely consequences of an accident	Frequency of Exposure	Probability of harm	Risk rating and risk category	

DECANTING AS PER SEQUENCING AND WORK DIAGRAM

Decanting of the current tenants as per sequencing and work diagram	Relocation within operational building.	Injuries during relocations	Use of the correct equipment for the relocation, Proper training of staff	3	2	3	18	Experienced supervision by site staff and P A. Competent Inspection	3	2	2	12	Contractor, Construction Manager, CHSO, Social Developer
		Accidents during relocation	Use of properly trained staff.	3	2	3	18	Experienced supervision by site staff and P A. Competent Inspection	2	2	2	8	
		Physical and mental wellbeing of the tenants	Communication between the contractor and the tenants	2	1	1	2	Involvement of a Social Developer	2	1	1	2	
		Exposure to HCS during relocation	Erect warning signs, inform workers of Risks, correct measures and protocols in place during activities	1	2	2	4	Experienced supervision by site staff and P A. Competent Inspection	1	1	2	2	

DECANTING AS PER SEQUENCING AND WORK DIAGRAM														
		Cultural and social Impact	Disruptions of everyday life	Communication between the contractor and the tenants. Proper Planning	3	2	2	12	Involvement of a Social Developer	3	2	1	6	Contractor, Construction Manager, CHSO, Social Developer
		Legal and Human Rights	Processes not adhering to Legislation	Communication between the contractor and the tenants. Proper Planning	3	2	2	12	Involvement of a Social Developer	2	2	1	4	Contractor, Construction Manager, CHSO, Social developer
		Communication and Information	Lack of communication	Communication between the contractor and the tenants. Proper Planning	3	2	2	12	Involvement of a Social Developer	3	1	2	6	Contractor, Construction Manager, CHSO, Social Developer
		Vulnerable Groups	Children, elderly and disabled individuals	Communication between the contractor and the tenants. Proper Planning	3	2	2	12	Involvement of a Social Developer	2	2	2	8	Contractor, Construction Manager, CHSO, Social Developer
SITE ESTABLISHMENT														
CR 24	Existing Services	Electrical	Contact with electrical cable overhead	Erect warning signs, inform workers	3	3	3	27	Experienced supervision by site staff and P A. Competent Inspection	3	2	2	12	Contractor, Construction Manager, CHSO
			Contact with underground cable	Erect warning signs, inform workers	3	3	3	27	Experienced supervision by site staff and P A. Competent Inspection	3	2	2	12	
			Use of equipment under HV cable	Erect warning signs, inform workers no work under cable without permission and compliance with ESKOM requirements	3	3	3	27	Experienced supervision by site staff and P A. Competent Inspection	3	2	2	12	
		Sewer lines	Exposure to Sewer, Illnesses	Hepatitis B Injections for staff to prevent Infection.	3	3	2	18	Experienced supervision by site staff and P A. Competent Inspection	3	3	1	9	Contractor, Construction Manager, CHSO
		Telephone	Overhead cables	Erect warning signs, inform workers	1	3	2	6	Experienced supervision by site staff and P A. Competent Inspection	1	1	1	1	Contractor, Construction Manager, CHSO
		High Density due to high population	Limited space for site camp	Erect warning signs, Traffic Plants for access control, secure site areas with proper hording.	3	3	3	27	Experienced supervision by site staff and P A. Competent Inspection	3	2	2	12	Contractor, Construction Manager, CHSO
		Limited space and traffic congestion	Difficulty to deliver material to site office	Traffic Accommodation Plan	3	3	3	27	Experienced supervision by site staff and P A. Competent Inspection and implementation of Traffic Control Plan.	3	2	2	12	Contractor, Construction Manager, CHSO, Traffic Officer.
LIFTING EQUIPMENT														
CR22	Lifting Equipment	Uneven ground, loose soft soil, overhead power lines or other obstructions	Machine could tilt or become bogged down and causing a dangerous situation. Resulting in injury/property damage/Death	Correct inspection and evaluation of the working area. Ensure working area is clean and that the machine will be stable	3	3	3	27	Correct inspection and evaluation of the working area Ensure working area is clean and that the machine will be stable.	3	2	2	12	Contractor, Construction Manager, CHSO, Lifting Operator, Lifting Inspector
		Checking out the machine to ensure that all is in good working order	Controls not functioning correctly, oil leaks. Machine failure causing damage and injury to employees	All operators & employees to be inducted.	3	2	3	18	Daily checklists and Tool Box Talks must be done	3	2	2	12	

LIFTING EQUIPMENT														
CR22	Lifting Equipment	Correct positioning of equipment ensuring it is level before carrying out the lift	Machine could tip over in on e particular direction. Property/equipment damage/employee injury	Ensure that the machine is correctly positioned and will not be over extended in any particular direction of operation. Barricade the area to prevent unauthorised entry.	3	2	3	18	Ensure competent operators to position machine correctly to ensure maximum usage are are one lift / Method statements/ Risk Assessments/Safe Work Procedures Tool Box Talks	3	2	2	12	Contractor, Construction Manager, CHSO, Lifting Operator, Lifting Inspector
ROOF WORK														
	Roof Work	Use of scaffolding, working at heights, use of ladders. Crane - Please refer to Lifting Equipment	Roof structure collapse, fall from roof, part of structure falls on worker, fall from scaffold, tools or material falls on worker. Scaffold collapse. Injury to worker	<p>The Principal contractor will be required to submit with health and safety plan the fall prevention plan, including a risk assessment.</p> <p>Include in the fall prevention plan is also a process for the evaluation of the employee's medical fitness.</p> <p>No employee is permitted to work on roofs during inclement weather</p> <p>The plan is to be project specific and provide a systemic approach towards eliminating or reducing the risk of falling from heights and ensuring that all reasonable fall protection measures and methods have been taken prior to the commencement of work.</p> <p>Roof erectors are to be competent to carry the work Safe access to the roof must be carefully planned in order to select the most appropriate method and equipment.</p>	3	3	3	27	<p>The Principal contractor will be required to submit with health and safety plan the fall prevention plan, including a risk assessment.</p> <p>Include in the fall prevention plan is also a process for the evaluation of the employee's medical fitness.</p> <p>No employee is permitted to work on roofs during inclement weather</p> <p>The plan is to be project specific and provide a systemic approach towards eliminating or reducing the risk of falling from heights and ensuring that all reasonable fall protection measures and methods have been taken prior to the commencement of work.</p> <p>Roof erectors are to be competent to carry the work Safe access to the roof must be carefully planned in order to select the most appropriate method and equipment.</p>	3	2	2	12	Contractor, Construction Manager, CHSO
DEMOLISHING														
CR14	Demolishing: 1. Roof 2. Corbelling 3. Hawkers Stalls	Breakdown structure	Break wall from top to bottom. Injury to all body parts can occur	Ensure to break structure from top to bottom. Employees to be trained.	3	3	3	27	Regular inspection and evaluation of the working area prior to work. Employees to be trained and regular tool box talks to be conducted.	3	2	2	12	Contractor, Construction Manager, CHSO
		Dust	Inhaling of dust causing sinus	All employees to be inducted correct PPE to be worn: Dust Masks.	3	2	3	18	Correct PPE, Daily checklists and Tool Box Talks must be done. Communication with tenants to ensure minimum dust exposure during work hours	3	2	2	12	
		Working Area	Loose bricks laying around, Workers can fall over bricks - Injuries to all body parts can occur	Ensure proper housekeeping is maintained at all times. Work area to be kept clear of loose materials	3	2	3	18	Correct PPE, Daily checklists and Tool Box Talks must be done. Communication with tenants to ensure minimum dust exposure during work hours	3	2	2	12	

DEMOLISHING

CR14	Demolition 1. Roof 2. Corbelling 3. Hawkers Stalls	Building Rubble	Rubble to be moved from first floor down to the ground level.	Ensure that the correct equipment is provided to ensure the safe removal of building rubble from second floor and roof.	3	2	3	18	Correct PPE, Daily checklists and Tool Box Talks must be done. Communication with tenants to ensure minimum dust exposure during work hours	3	2	2	12	Contractor, Construction Manager, CHSO
		Structural Instability	Safety of the employees, damage to adjacent structures	Engineers Structural Inspection Report to be provided. Communication between Contractor, Principle Contractor and SMME	3	3	3	27	Engineers Structural Report to be given to the Contractor. Communication and preventative measures to be implemented.	3	3	2	18	Contractor, Construction Manager, CHSO, Social Developer
		Public Safety	Accidents and Incidents due to lack of crowd control	Proper Barricading, and communication between the public and the Contractor	3	3	3	27	Strict access control, gates locked or manned at all times. Trained security staff on duty. Induction for all visitors. Special care to be taken to ensure people are safe.	3	3	2	18	Contractor, Construction Manager, CHSO, Social developer
		Pollution	Noise, Dust and impact on environment	Communication between the contractor and the tenants. Proper Planning	3	3	2	18	Regular inspection and evaluation of the working area prior to work. Employees to be trained and regular tool box talks to be conducted.	3	2	1	6	Contractor, Construction Manager, CHSO, Social Developer
		Existing services	Damages to existing services and unknown services	Existing Services survey to be conducted, Proper Shutdown Procedures and Communication between Contractors and the Mechanical and Electrical Engineers	3	3	3	27	Regular inspection and evaluation of the working area prior to work. Employees to be trained and regular tool box talks to be conducted.	3	3	2	18	Contractor, Construction Manager, CHSO, Social Developer
		Regulatory Compliance	Non compliance with legislation	Supervision of SMME by Principle Contractor	3	3	2	18	Experienced supervision by site staff and P A. Competent Inspection	3	2	2	12	Contractor, Construction Manager, CHSO, Social Developer

EXCAVATIONS

CR13	Excavations	Plant & Manual	Injury or death to employees, tenants	Proper training of operator: Medicals, machine in good working order	3	2	3	18	Excavation barricaded/shored as required. Proper supervision	3	2	2	12	Contractor, Construction Manager, CHSO, Excavation Supervisor
------	-------------	----------------	---------------------------------------	--	---	---	---	----	--	---	---	---	----	---

WORKING AT HEIGHTS SCAFFOLDING

CR 10	Specialised Designed Scaffolding	Scaffold not properly erected	Scaffold collapse	calculate load capacity of scaffold. Proper design of scaffold	3	3	3	27	Specification must ensure design is done by competent person. Method statements. Before work commences	3	2	2	12	Contractor, Scaffold Erector, Competent Scaffold inspector
		Scaffold not properly erected	Fall from height	Fall protection Plan by a competent fall planner	3	3	3	27	Experienced supervision by site staff and P A / Scaffold erectors Competent Inspection. Method statements	3	2	2	12	Contractor, Scaffold Erector, Competent Scaffold inspector
		Scaffold not properly erected	Falling objects	Use of toe boards, proper decking, debris netting	3	3	3	27	Experienced supervision by site staff and P A. Competent Inspection. Method statements	3	2	2	12	Contractor, Scaffold Erector, Competent Scaffold inspector

WORKING AT HEIGHTS STEELWORK														
CR22	Lifting Equipment	Uneven ground, loose soft soil, overhead power lines or other obstructions	Machine could tilt or become bogged down and causing a dangerous situation. Resulting in injury/property damage/Death	Correct inspection and evaluation of the working area. Ensure working area is clean and that the machine will be stable	3	3	3	27	Correct inspection and evaluation of the working area Ensure working area is clean and that the machine will be stable.	3	2	2	12	Contractor, Construction Manager, CHSO, Lifting Operator, Lifting Inspector
		Checking out the machine to ensure that all is in good working order	Controls not functioning correctly, oil leaks. Machine failure causing damage and injury to employees	All operators & employees to be inducted.	3	2	3	18	Daily checklists and Tool Box Talks must be done	3	2	2	12	
		Correct positioning of equipment ensuring it is level before carrying out the lift	Machine could tip over in on e particular direction. Property/equipment damage/employee injury	Ensure that the machine is correctly positioned and will not be over extended in any particular direction of operation. Barricade the area to prevent unauthorised entry.	3	2	3	18	Ensure competent operators to position machine correctly to ensure maximum usage are any one lift / Method statements/ Risk Assessments/Safe Work Procedures Tool Box Talks	3	2	2	12	
CR 10	Specialised Designed Scaffolding	Scaffold not properly erected	Scaffold collapse	calculate load capacity of scaffold. Proper design of scaffold	3	3	3	27	Specification must ensure design is done by competent person. Method statements. Before work commences	3	2	2	12	Contractor, Scaffold Erector, Competent Scaffold inspector
		Scaffold not properly erected	Fall from height	Fall protection Plan by a competent fall planner	3	3	3	27	Experienced supervision by site staff and P A / Scaffold erectors Competent Inspection. Method statements	3	2	2	12	
		Scaffold not properly erected	Falling objects	Use of toe boards, proper decking, debris netting	3	3	3	27	Experienced supervision by site staff and P A. Competent Inspection. Method statements	3	2	2	12	
WORKING AT HEIGHTS SCAFFOLDING														
CR 10	Specialised Designed Scaffolding	Strong Winds	Collapse of Scaffolding	Scaffolding to be anchored to the building	3	3	3	27	Specification must ensure design is done by competent person. Method statements. Before work commences	3	2	2	12	Contractor, Scaffold Erector, Competent Scaffold inspector
WORKING AT HEIGHTS LADDERS														
GSR 13A	Working at Heights Ladders	Use of ladders	Persons falling	Ladders conform to General Safety regulation 13a	2	3	3	18	Worker training. Experienced supervision by site staff and P A. Competent Inspection. Method statements	2	2	2	8	Contractor, Ladder Inspector
STACKING AND STORAGE														
CR28	Stacking and Storage	Storage of Materials and equipment	Physical injury –tripping and falling	Regular toolbox talks to be done. Stacking and storage is to be maintained at all times. Regular inspection of all stacking is to be conducted and record of this is to be made available in the H&S File.	3	2	2	12	Worker training. Experienced supervision by site staff and P A. Competent Inspection. Method statements	2	2	2	8	Contractor, stacking Supervisor, CHSO

ENVIRONMENTAL														
Environmental and facilities regs	Weather is a factor to be considered, raised temperatures in summer, with high humidity levels. Very cold weather may be encountered with the possibility of frost	Working in wet, extreme hot conditions Temperature range 2 to 40 deg C	Possible hypo- or hyper-thermic/low efficiency of workers	Work stoppage in rain or following rain that would affect the works. Cold weather protective clothing may become necessary. Hot weather may require work stoppage. Adequate supply of drinking water.	3	3	2	18	Use of weather stations to monitor temperature, Work to be assessed should discomfort index reach 100, work may be stopped at 105 if deemed problematic. Adequate water intake. Sheltered areas for rest and eating	2	3	2	12	Contractor, Construction Manager, CHSO
	Office facilities	Working in cramped unventilated or poor lighting conditions	Health issues	Office set-up to be checked for suitability	2	2	2	8	Avoid the use of containers for offices unless properly modified for use as offices	2	1	1	2	Contractor, Construction Manager, CHSO
	Waste Management	Use of temporary toilets	Health Issues	Use of chemical Toilets, at least one per 20 workers male and female separated	2	2	3	12	No Formaldehyde in chemicals. Serviced and cleaned at least once weekly by competent service providers.	1	2	1	2	Contractor, Construction Manager, CHSO
		Waste disposal	Health and Environmental issues	All waste properly disposed of to certificated rubbish dump	2	2	3	12	No burning of cement bags or other refuse on site. Site to be kept tidy. Removal of all waste at regular intervals by competent service providers.	2	1	1	2	Contractor, Construction Manager, CHSO
ACCESS CONTROL														
	Public Access	Persons in dangerous areas. Public gaining access to construction area	Injury to person's	Separate general public from construction site. Sufficient barricading to be erected. Extra care to be taken to ensure tenants do not gain access to the construction activities	3	3	3	27	Spec to require: Access control. Induction for visitors. Security control. Safety Notices. Extra Observation. Sufficient Barricading.	3	3	2	18	Contractor, Construction Manager, CHSO
	Access Control	Tenants, Public and employees may gain access to site	Fall into excavation, injury from plant, tools or at workplace / construction activities.	Access control to be in place, hoardings erected to separate site from public. Extra hoarding to be in place to ensure tenants are kept out of the construction site.	3	3	3	27	Strict access control, gates locked or manned at all times. Trained security staff on duty. Induction for all visitors. Special care to be taken to ensure people are safe.	3	3	2	18	Contractor, Construction Manager, CHSO, Security, Head Master
CONSTRUCTION PLANT AND EQUIPMENT														
CR 23	Use of Construction Plant and Equipment	Struck by vehicle	Injury to persons/tenants	Vehicle fitted with acoustic warning devices, hooter and reverse warning	3	3	3	27	Competent supervision and adequate pre-task training will be required. Competent medically fit operators	3	2	2	12	Contractor, Plant manager
		Vehicle overturns	Injury to persons. Damage to vehicle	Proper operation of vehicle	3	3	3	27	Competent supervision and adequate pre-task training will be required. Competent medically fit operators	3	2	2	12	Contractor, Plant manager
		Untrained operator	Injury to persons. Damage to vehicle	Only employ competent operators	3	3	3	27	Competent supervision and adequate pre-task training will be required. Competent medically fit operators	3	2	2	12	Contractor, Plant manager. CHSO

CONSTRUCTION PLANT AND EQUIPMENT														
CR 23	Use of Construction Plant and Equipment	Unsilenced plant	Noise induced hearing loss	Fit or repair silencer	2	3	3	18	Proper supervision, operator training, Establishment of noise zones by AIA. Correct PPE including ear defenders/plugs	2	2	1	4	Contractor, Plant manager. CHSO
N-IH I Regs	Exposure to Noise	Over 85 Db for long period: When activities are in process	Hearing Loss	Avoid exposure to noise where possible	2	3	3	18	Specification to require establishment of noise zones by AIA. Communication with the tenants	2	2	2	8	Contractor, Plant manager. CHSO
	Exposure to Dust	If severe lack of clear vision; Breathing problems. When activities are in process	Loss of Lung Function	Dust prevention	2	3	3	18	Specification to include dust palliative requirements. Communication with the tenants to ensure minimum exposure to tenants	2	2	2	8	Contractor, Plant manager. CHSO
ASBESTOS														
	Removal of Asbestos	Exposure to Asbestos	Possible illnesses	Appointment of a Level 3 Asbestos Contractor	3	2	2	12	Specialised Contractors registered with Department of Labour to be used	3	1	2	6	Contractor, Specialist Contractor and supervision
EMERGENCY PLANNING - FIRE ESCAPES														
	Fire Escapes not accessible due to lack of maintenance.	Limited fire escapes available on site	Injury during emergency, Employees stuck within building during emergency.	Repairs of fire extinguishers for temporary purposes	3	2	2	12	National Building regulations to be implemented with all repairs .	3	2	1	6	Contractor, Construction Manager and supervision
CR 10	Working at heights	Scaffold not properly erected	Scaffold collapse	calculate load capacity of scaffold. Proper design of scaffold	3	3	3	27	Specification must ensure design is done by competent person. Method statements. Before work commences	3	2	2	12	Contractor, Scaffold Erector, Competent Scaffold inspector
		Scaffold not properly erected	Fall from height	Fall protection Plan by a competent fall planner	3	3	3	27	Experienced supervision by site staff and P A / Scaffold erectors Competent Inspection. Method statements	3	2	2	12	Contractor, Scaffold Erector, Competent Scaffold inspector
		Scaffold not properly erected	Falling objects	Use of toe boards, proper decking, debris netting	3	3	3	27	Experienced supervision by site staff and P A. Competent Inspection. Method statements	3	2	2	12	Contractor, Scaffold Erector, Competent Scaffold inspector

LIFT INSTALLATION														
	Open Shaft	People falling down the elevator shaft	Possible death. Injuries of employees and Public	Proper Hoarding to be used to close Shaft when no activities taking place within the Shaft.	3	3	3	27	Experienced supervision by site staff and P A / Regular Inspections and proper Hoarding	3	2	3	18	Contractor, Construction Manager and supervision
	Work in confined spaces	Dark and confined spaces	Possible death. Injuries of employees and Public	Lightning to be provided when working within the Shaft	3	3	2	18	Experienced supervision by site staff and P A / Regular Inspections and proper Hoarding	3	2	2	12	Contractor, Construction Manager and supervision
CR 10	Working at heights	Scaffold not properly erected	Scaffold collapse	calculate load capacity of scaffold. Proper design of scaffold	3	3	3	27	Specification must ensure design is done by competent person. Method statements. Before work commences	3	2	2	12	Contractor, Scaffold Erector, Competent Scaffold inspector
		Scaffold not properly erected	Fall from height	Fall protection Plan by a competent fall planner	3	3	3	27	Experienced supervision by site staff and P A / Scaffold erectors Competent Inspection. Method statements	3	2	2	12	Contractor, Scaffold Erector, Competent Scaffold inspector
		Scaffold not properly erected	Falling objects	Use of toe boards, proper decking, debris netting	3	3	3	27	Experienced supervision by site staff and P A. Competent Inspection. Method statements	3	2	2	12	Contractor, Scaffold Erector, Competent Scaffold inspector
CONCRETE WORK														
CR 20	Outsourced supply	Delivery by truck	Person struck by truck	Reverse warning Driver training	3	2	2	12	Worker training. Experienced supervision	3	1	2	6	Contractor. Batch plant and Concrete Supervisor, CHSO
			Person struck by concrete poured into shuttering	Proper training of employees and supervision	2	2	2	8	Area to be kept clear of all but essential workers	2	1	2	4	
	Machine mixing	Batch Plant	Use of wheel barrows	Proper training	2	2	2	8	Adequate supervision. Well maintained equipment	2	1	2	4	Contractor. Batch plant and Concrete Supervisor, CHSO
			Trapped by machine	Check plant for pinch points	2	2	2	8	Pinch points guarded. Proper supervision	2	1	2	4	
			Use of access ramps	Proper construction of ramp / Worker training	3	2	3	18	Experienced supervision by site staff. Competent Inspection. Use of proper equipment	3	2	2	12	
Hand mixing	Use of small tools	Contact with cement	Care in opening cement bags	2	2	2	8	Ensure workers fit for work. Proper supervision	2	1	2	4	Contractor. Batch plant and Concrete Supervisor, CHSO	

CONCRETE WORK														
CR 20	Hand Mixing	Use of small tools	Inhale cement dust	Care in opening cement bags	2	2	2	8	Ensure workers fit for work. Proper supervision	2	1	2	4	Contractor. Batch plant and Concrete Supervisor, CHSO
			Ergonomic risks	Rotate work	2	3	3	18	Ensure workers fit for work. Proper supervision	2	3	1	6	
	Steel fixing	Use of small tools	Bending; cramped position; injuries from slipping and fixing wire	Care in using tools	2	2	2	8	Experienced supervision by site staff. Competent Inspection. Use of proper equipment	2	1	2	4	Contractor. Concrete Supervisor, CHSO
				Rotate work	2	2	3	12	Experienced supervision by site staff. Competent Inspection. Use of proper equipment	2	2	1	4	
	Use of concrete vibrator	Injury to persons	Noise, vibration, contact with vibrating head, contact with wet concrete	Operator training	2	2	3	12	Experienced supervision by site staff. Competent Inspection. Use of proper equipment	2	2	1	4	Contractor. Concrete Supervisor, CHSO
	BRICK WORK													
	Delivery by truck	Struck by truck	Injury to persons	Vehicle fitted with acoustic warning devices, hooter and reverse warning. Vehicle checklists to be done	3	3	3	27	Experienced supervision by site staff and P A. Competent Inspection	3	2	2	12	Contractor, Building Supervisor, CHSO
	Moving bricks	Use of wheel barrow	Injury to person's ergonomic risks	Training of workers. Job rotation	2	2	3	12	Experienced supervision by site staff. Competent Inspection. Use of proper equipment	2	2	1	4	Contractor, Building Supervisor, CHSO
		Use of Brick lift	Injury to persons	Training of workers in use of equipment	3	2	2	12	Experienced supervision by site staff. Competent Inspection. Use of proper equipment	3	2	1	6	Contractor, Building Supervisor, CHSO
	Use of support work	Collapse of support work	Injury to persons	Training of workers in use of equipment Method statements	3	2	2	12	Experienced supervision by site staff. Competent Inspection. Use of proper equipment proper calculation of loads involved by competent person	3	2	1	6	Contractor, Building Supervisor, CHSO
	Use of access scaffolding and Ladders	Working with ladders and low scaffolds	Worker Falls, slips	Fall protection plan. Ladders to GSR13A	3	2	2	12	Training, proper supervision. Ladder inspection	3	1	2	6	Contractor, Building Supervisor,, Scaffolding Inspector CHSO
	Working with glass	Glass breaking	Cuts and other injuries	Training of workers in use of equipment	3	2	2	12	Experienced supervision by site staff and P A. Competent Inspection	3	2	1	6	Contractor, Building Supervisor,, Scaffolding Inspector CHSO

PLUMBING														
	Plumbing Contractor	Unregistered, incompetent contractor	Poor work, cost overruns, no municipal connection No Certificate of Compliance	Ensure appointment of registered, competent contractor	3	2	3	18	Project specific H&S Specification and HIRA in tender Document	3	2	2	12	Contractor, Construction Manager, CHSO
PAINTING														
GSR 13A	Painting	Working with ladders and low scaffolds	Worker Falls, slips	Fall protection plan. Ladders to GSR13A	3	2	2	12	Training, proper supervision. Ladder inspection	3	1	2	6	Contractor, Construction Manager, Ladder Inspector, CHSO
		Ingestion of Paint	Gastric irritation, nausea	Training; clean site	2	2	2	8	Tool box talks, proper supervision	1	2	2	4	Contractor, Painting Supervisor, CHSO
		Cleaning Brushes	Use of thinners, benzene, possible carcinogens; highly flammable	Supply MSDS Use alternative brush cleaner Keep away from open flames	2	2	2	8	Use of Turpentine, Proper supervision Training	1	2	2	4	Contractor, Painting Supervisor, CHSO
TILING														
	Tile Cutter and Grinder	Use of Tile Cutter and grinder	Injury to worker	Ensure operator competent	2	2	2	8	Ensure Correct PPE, toolbox talks proper supervision	2	1	2	4	Contractor, Supervisor, CHSO
ELECTRICAL INSTALLATION (see also Electrical installation regulations)														
	Electrical Contractor	Unregistered, incompetent contractor	Poor work, cost overruns, no municipal connection	Ensure appointment of registered, competent contractor	3	2	3	18	Project specific H&S Specification and HIRA in tender Document	1	2	2	4	Contractor, Construction Manager, CHSO, Electrical Supervisor
SMALL ELECTRICAL TOOLS AND HAND TOOLS														
	Use of small electrical tools	Contact with electricity	Electric shock	Certificate of Compliance for electrical supply	3	2	2	12	Ensure all connections secure, no breaks in cable. Proper routing of cables on site	3	2	1	6	Contractor, Construction Manager, CHSO, Electrical Supervisor
	Hand tools	Use of Hand tools	Injury to worker	Care in using tools	2	2	2	8	Experienced supervision by site staff. Competent Inspection. Use of proper equipment	2	1	2	4	Contractor. Supervisor, CHSO
HAZARDOUS CHEMICALS (see also Hazardous Chemical Regulations)														
HCS Regulations	Use/supply of hazardous Chemicals	Improper use/storage of hazardous Chemicals	Fire, explosion poisoning of persons	Supply appropriate materials safety data information (MSDS)	3	2	3	18	Competent person appointed to check stores. Proper storage. Provision of fire extinguishers. Emergency plan.	3	1	2	6	Contractor, Construction Manager, CHSO HCS supervisor, SMME Contractor(if employed)
	Plastering	Cement Mortar	Used across the project for a range of tasks,	Avoid contact with cement. Supply MSDS	3	3	2	18	Dust control, PPE (eye and respiratory) Use of distributor when stabilizing road. Rotation of workers	2	3	1	6	
	Tiling	Tile grout and Adhesives	Contact with materials	Avoid contact with grouts and Adhesives. Supply SDS	2	2	2	8	Proper PPE. Worker training	2	1	2	4	
	Carpentry	Wood glue & Varnish	Health Risk to Workers	Avoid over exposure	2	2	2	8	Ensure proper ventilation	2	1	2	4	

HAZARDOUS CHEMICALS (see also Hazardous Chemical Regulations)														
	Plastering, Tiling, Carpentry	Ergonomic risks	Working in confined areas, bending,	Rotate work	2	2	2	8	Proper supervision, competent trained workers	2	1	2	4	Contractor, Construction Manager, CHSO HCS supervisor, SMME Contractor(if employed)
EXPLOSIVE POWER TOOLS														
	Use of Power Tools	Contact with electricity / Ricochet of object	Electric shock / Injury to persons	Only competent operators / Good working equipment / sufficient PPE	3	2	2	12	Ensure competent operators. / Method statements/ Risk Assessments/Safe Work Procedures Tool Box Talks	3	2	1	6	Contractor, Construction Manager, CHSO, Operator
HOT WORK														
	Welding operation	Contact with electricity / contact with gas	Incompetent operator / Defective Machinery . Burns / Injury to hand and eyes	Competent operators. Sufficient training to be provided to employees in the use thereof. Suitable Fire Extinguishers placed nearby. Employees to wear the correct PPE.	3	3	3	27	Ensure operation by competent welders. Hazardous awareness training. All vessels and equipment to be inspected regularly. Registers to be kept	3	2	2	12	Contractor, Construction Manager, CHSO, Operator
PRESSURE EQUIPMENT														
	Pressure Equipment	Strike with uncontrolled hose or coupling.	Incompetent Operator: Impact • Pressurised content • Electricity • Ergonomics • Slips/trips/falls	Competent operators. Ensure sufficient training for operators. Wear appropriate PPE (e.g. goggles and water proof clothing etc.). Ensure equipment is not directed at people or animals. Ensure sufficient rest breaks are taken whilst operating the machinery.	3	3	3	27	Ensure operation by competent . Hazardous awareness training. Ensure equipment is operated and maintained in accordance with manufacturer's instructions. Ensure regular maintenance is maintained. Inspection records to be kept.	3	2	2	12	Contractor, Construction Manager, CHSO, Operator
PUBLIC AN SURROUNDING AREAS														
	Public Safety	Not informing employees and public what the site rules are	Injuries to persons and/ or the public. Public liability .Court Claims	Erect warning signs, Traffic Plan for access control, secure site areas with proper hording.	3	3	3	27	Induction of workers and visitors , warning signs to be displayed	2	2	2	8	Contractor, Construction Manager, CHSO, Operator
	Designation of laydown areas	With inadequate space various materials will be stacked on top of each other causing unstable stacks	Unstable stacks of material may fall onto persons resulting in serious injuries/even fatalities	Erect warning signs, Traffic Plan for access control, secure site areas with proper hording.	3	2	3	18	laydown areas to be sufficient in size, timber poles and/or other suitable material to be available to stack material on . Laydown areas to be of firm level ground	2	2	2	8	Contractor, Construction Manager, CHSO, Operator

PUBLIC AN SURROUNDING AREAS

	Public seeking employment	Unauthorised entry of the public	Injuries to public, Theft	Access control to be in place, hoardings erected to separate site from public. Extra hoarding to be in place to ensure tenants are kept out of the construction site.	3	3	3	27	Site to be fenced off and method statements and risk assessment to reflect management of same	3	3	4	18	Contractor, Construction Manager, CHSO. Operator
	Obstruction of entrances for public as the building will be partially occupied	Unauthorised attempts to enter into the building through barricaded areas	Injuries to public, Theft	Temporary deviations and walkways to be provided to provided access to the occupied Mall	3	2	3	18	Walkways with sufficient roofs and hand rails to be erected. Complete with toe boards. Signage to be provided on site as well as advisory signs to provide sufficient information to the public. Walkways design to be approved by the Principal Agent.	3	2	2	12	Contractor, Construction Manager, CHSO. Operator
	Access control for deliveries in highly populated area	Vehicle and Truck Accidents.	Death of pedestrian. Damage to material and equipment	A deviation for public road users to be approved by the Principal Agent	3	3	3	27	Construction drawings to be provided, all accommodation in line with SARTSM Ch 13 Vol 2. Method statements and risk assessments to reflect management of same. Traffic Accommodation Plan to be approved by the Principal Agent.	3	2	2	12	Contractor, Construction Manager, CHSO. Operator

C4 Drawings (Separately attached)