CIDB CATEGORY: 7CE OR HIGHER

BID No: 94 of 2022

CONSTRUCTION OF DZANANI TAXI RANK
BID AND CONTRACT DOCUMENT

Name of Bidder	:	_____
Telephone no.	:	_____
Fax no.	:	_____
Address	:	_____
	:	_____
	:	_____
Bid Sum	:R	_____ Incl.V.A.T
CIDB No.	:	_____

ISSUED BY:
MAKHADO LOCAL MUNICIPALITY
PRIVATE BAG X2596
MAKHADO
0920
TEL: 015 519 3000

PREPARED BY:
NEMORANGO CONSULTING ENGINEERS
10A HANS VAN RENSBURG STREET
POLOKWANE
0700
TEL: +27 15 295 2023/291 1467
EMAIL: takalani@nemorango.co.za

CLOSING DATE: 03rd February 2023

EXPANDED PUBLIC WORKS PROGRAMME
Creating opportunities towards human fulfilment

MAKHADO
LOCAL MUNICIPALITY

TENDER NOTICE

All suitable service providers are hereby invited to bid for the below mentioned projects. Bidders are requested to bid as per specification attached to the bid documents that will be obtainable from **21 December 2022** at non –refundable amount of **R600.00** per document at the Procurement Office No. B043 Ground Floor, 83 Krogh Street, Civic Center, Makhado or can be downloaded from e-tender portal for free **https://etenders.treasury.gov.za/content/advertised-tender** or **www.makhado.gov.za**.

BID NO:	DESCRIPTION	COMPULSORY BRIEFING SESSION	EVALUATION CRITERIA	SPECIAL REQUIREMENT	TECHNICAL ENQUIRIES	REFERENCE AND NOTICE NO.	CLOSING DATE AND TIME
89 of 2022	Manage Engine Patch Manager Plus Enterprise (PMPE) Software to Monitor and Report on Windows Security Patches and Updates		80/20 preferential points		**Director Corporate Services:** Mr SG Maguga or Mr ZE Tharini at 015 519 3000	Ref: 8/3/2/1983 Notice no: 157/2022	30 January 2023 at 12H00pm
90 of 2022	Supply, Delivery, Installation, commissioning, and Licensing for security firewall back-up product		80/20 preferential points with functionality		**Director Corporate Services:** Mr SG Maguga or Mr ZE Tharini at 015 519 3000	Ref: 8/3/2/1984 Notice no: 158/2022	30 January 2023 at 12H00pm
91 of 2022	Replace Local Area Network (LAN) Cabling at Dzanani Traffic Station Offices	17 January 2023 at 10:00am at Dzanani Traffic Station	80/20 preferential points		**Director Corporate Services:** Mr SG Maguga or Mr ZE Tharini at 015 519 30000	Ref: 8/3/2/1985 Notice no: 159/2022	30 January 2023 at 12H00pm
92 of 2022	Replace Local Area Network (LAN) Cabling at Dzanani Regional Offices	17 January 2023 at 11:00am at Dzanani Regional Offices	80/20 preferential points		**Director Corporate Services:** Mr SG Maguga or Mr ZE Tharini at 015 519 3000	Ref: 8/3/2/1986 Notice no: 160/2022	30 January 2023 at 12H00pm
93 of 2022	Supply, Delivery and Commissioning of Sound and Recording System for Council Chamber		80/20 preferential points		**Director Corporate Services:** Mr SG Maguga or Mr M Mabala at 015 519 3000	Ref: 8/3/2/1987 Notice no: 161/2022	30 January 2023 at 12H00pm
94 of 2022	Construction Of Dzanani Taxi Rank	17 January 2023 at 12:00pm at Dzanani taxi rank (Biaba)	80/20 preferential points with functionality	• CIDB Grading 07CE or higher • Attach three year audited financial statement (only those who are required by law)	**Director Technical Services:** Ms DG Siboiboi or Ms L Thulare at 015 519 3000	Ref: 8/3/2/1988 Notice no: 162/2022	03 February 2023 at 12H00pm
95 of 2022	Rehabilitation of Waterval Clinic Ring Road	18 January 2023 at 11:00am at Waterval clinic	80/20 preferential points with functionality	• CIDB Grading 06CE or higher • Attach three year audited financial statement (only those who are required by law)	**Director Technical Services:** Ms DG Siboiboi or Ms L Thulare at 015 519 3000	Ref: 8/3/2/1989 Notice no: 163/2022	03 February 2023 at 12H00pm
96 of 2022	Supply and delivery of wall paints		80/20 preferential points		**Director Technical Services:** Ms DG Siboiboi or Ms L Thulare at 015 519 3000	Ref: 8/3/2/1990 Notice no: 164/2022	30 January 2023 at 12H00pm

Completed bid documents signed by a duly authorized person, sealed in an envelope clearly marked **"As mentioned above"** must reach the undersigned by depositing it into the tender box at the foyer of the main entrance to the Civic Centre by not later than **"As mentioned above"** when all tenders received will be opened in public in the Council Chamber, Ground Floor, Civic Centre, No.83 Krogh Street, Makhado.

The Municipality is not bound to accept the lowest or any bid and reserves the right to accept any part of a bid. Bids must remain valid for a period of ninety (90) days after closing date of submission thereof. Submitted tenders will be evaluated as mentioned above.

Bids which are late, incomplete, unsigned, or submitted in pencil or by telegraph or facsimile or electronically by e-mail, or not having the following documents attached for evaluation or not complying with the tender specifications, will not be evaluated, and will be disqualified: • Valid Tax compliance status pin issued by SARS • A copy of company registration documents (CK) • Certified copy/copies of company owner(s) ID book(s), not older than three (03) months certification. • Attach proof of payment for municipal rates not owing for more than (03) months or formal lease agreement for rental premises or letter from the traditional authority in cases of non-ratable areas. (Attach for both entity and directors of the company)• Copy of central supplier database (CSD) summary report.

PRE-QUALIFICATION CRITERIA FOR PREFERENTIAL PROCUREMENT FOR BID 94 OF 2022 : CONSTRUCTION OF DZANANI TAXI RANK WILL BE CONSIDERED

NOTE: ONLY A TENDERER

• Subcontracting a minimum of 30% to an EME or QSE which is at least 51% owned by black people including youth, women, people with disabilities, people living in rural areas or townships, and military veterans. • A tender that fails to meet pre-qualifying criteria stipulated in this advert and tender document is unacceptable tender.

NB: • Service provider must submit their certified BBBEE verification certificate from verification agency accredited by South African National Accreditation system (SANAS) or sworn affidavit.• All Service Provider doing business with Makhado municipality are required to register on the CSD (Central Supplier Database).• A copy of a certified copy will not be accepted.

All procurement enquiries should be directed to Ms. P Mudau or Mr. M Ramabulana at Tel no. (015) 519 3044/3024

Civic Centre
83 Krogh Street
MAKHADO

MR KM NEMANAME
MUNICIPAL MANAGER

A611792

(INVITATION TO TENDER)

Short description of requirements	CONSTRUCTION OF DZANANI TAXI RANK
Tender number:	**94 of 2022**
Tender documents available from: 18 /12/2020 (Monday to Friday except public holidays between 8:30 and 15:00)	Makhado Local Municipal Offices 83 Krogh Street Makhado 0920
Price of tender documents:	R 600.00
Closing date:	03rd February 2023
Address for Submission of tenders:	Makhado Local Municipal Offices 83 Krogh Street Makhado 0920
Applicable PPPFA point system:	**80/20 or 90/10**

Compulsory Subcontracting requirements:	**No** ☐ **Yes** ☐ If "yes "only those tenderers meeting the compulsory minimum subcontracting requirements of at least 30% of the value of the contract will be evaluated (Subcontracting Agreement/s must be submitted together with the document): **Minimum subcontracting requirements applicable to this tender:**	
	An EME or QSE	
	An EME or QSE which is at least 51% owned by black people:	
	An EME or QSE which is at least 51% owned by black people who are youth:	
	An EME or QSE which is at least 51% owned by black people who are women:	
	An EME or QSE which is at least 51% owned by black people with disability:	
	An EME or QSE which is at least 51% owned by black people living in rural or underdeveloped areas or townships:	
	A cooperate which is at least 51% owned by black people:	
	An EME or QSE which is at least 51% owned by black people who are military veterans.	
	Note: Bidders should ensure that at least 30% of the contract value is subcontracted to the following target group to proceed to the next stage:	
	Military Veterans	
	People with disability	
	People living in rural or underdeveloped areas or townships	
	Youth	
	Subcontracting agreements/arrangements must be submitted together with the tender offer. Bidders that fails to meet the prescribed minimum percentages for sub-contracting will be disqualified.	

Work packages that are feasible to be subcontracted	• Brickwork • Painting and plumbing • Paving • Carpentry and Joinery • Ceilings • Kerbing • Ironmongery • Metalworks • Plastering • Tiling **Note: The Municipality reserve the right to increase work packages that are feasible to be subcontracted in case the mentioned packages are less than 30% of the contract value.**

Stipulated CIDB registration requirement:	**No** ☐ **Yes** ☐ **Minimum required CIDB grading** **7CE or higher** Only tenderers that meets the minimum stipulated CIDB grading will be evaluated.

Functionality requirements:	**No** ☐ **Yes** ☐ If "yes" this tender will be evaluated against functionality and only tenders that obtain the required minimum score indicated in the Tender documents will be further evaluated. **Bidders must obtain a minimum of 70 points to be considered for further evaluation (price and preference) Total Functionality: 100 points.** **Functionality Criteria:**

Functionality Criteria	**Weighting Factor**
Company Experience	60
Key Personnel	20
Plant and Equipment	10
Bank Ratings	10

Administrative Compliance Requirements	
Invitation to bid (MBD 1)	X
Tax Clearance status (MBD 2)	X
Pricing schedule for firm prices (MBD 3.1)	X
Pricing schedule for non-firm prices (MBD 3.2)	
Pricing schedule for professional services (MBD 3.3)	
Declaration of interest (MBD 4)	X
National Industrial Participation Programme (MBD 5)	
Preference Points Claim Form (MBD 6.1)	X
Purchase of goods/works(MBD 7.1)	X
Rendering of services(MBD 7.2)	X
Declaration of bidder's past supply chain management practices (MBD 8)	X
Certificate of Independent Bid Determination (MBD 9)	X
Required CIDB Grading certificate: 7CE or higher	X
Attendance of compulsory site briefing meeting	N/A
Submission of a completed form of offer and acceptance	X
B-BBEE level of contribution certificate or affidavit if B-BBEE points are claimed (at level 1 to 4 only)	X
B-BBEE level of contribution certificate or affidavit for intended	X

subcontractors		
A consolidated B-BBEE level of contribution certificate in the case of Joint Ventures (If Applicable) (at level 1 to 4 only)		X
CSD registration report (CSD suppliers' reference (MM number) the CSD report will include the MM number)		X
Submission of a valid Tax Clearance Certificate or a Pin that will grant the third-party access to the bidder's tax compliance status		X
Submission of the Audited Financial Statement (The Audited Financial Statement must be within 18 months from the closing date of the advert.)		X
Certified copies of the Founding Statement - CK1		X
Certificate of Incorporation – CM1		X
A signed statement of the Company's Secretary confirming that the Company is a public Company.		X
Joint venture agreement (if applicable)		X
Provide subcontractors agreement between tenderer and subcontractor/s		X
Certified copy of the Identity Document of owners		X
Proof of registration with professional bodies*(specify)*	SACPCMP	X
	ECSA	

	Objective Criteria	Applicable
Objective Criteria applicable to this Procurement	The Municipality will conduct a thorough risk analysis with regard to price of the tenderer that scored the highest points for price and B-BBEE points. If it is found during evaluation that such a supplier constitutes high risk despite adhering to functionality requirements such a bid may be disqualified. Reasons for such risk profile must be stated.	Yes
	If financial information is presented to the Municipality that the supplier will not be financially able or capable to execute the contract despite information submitted in the tender documents the Municipality may disqualify such a tenderer.	Yes
	If the Municipality through the evaluation process discover fraudulent activities such a tender will be disqualified	Yes

Enquiries technical:	Mrs. L.A Thulare livhuwanit@makhado.gov.za

	015 519 3109

Enquiries general:	Ms P. Mudau 015 519 3000/3044

Note to tenderers This tender is subject to the General Conditions and Special Conditions of Contract the Preferential Procurement Policy Framework Act no 5 of 2000 and its Regulations of 2017

PROJECT NO: 94 of 2022

CONSTRUCTION OF DZANANI TAXI RANK

CIDB GRADING: 7 CE OR HIGHER

T1.2 TENDER DATA

General

The conditions of tender are the Standard Conditions of Tender as contained in Annex F of Board Notice 136 of 2015 in Government Gazette 38960 of 10 July 2015, Construction Industry Development Board (CIDB) Standard for Uniformity in Construction Procurement. See www.cidb.org.za.

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

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

Clause No.	TENDER DATA
F1.1	**The Employer is:** Makhado Local Municipality Private Bag x 2596 Makhado 0920 **The Tender document's contents is as follows:**
F.1.2	**<u>THE TENDER</u>** **Part T1: Tender Procedures (Pink)** T1.1 Tender notice and invitation to Tender T1.2 Tender Data **Part T2: Returnable Documents (Pink)** T2.1 List of returnable documents T2.2 Returnable schedules

	THE CONTRACT **Part C1: Agreements and Contract Data (Yellow)** C1.1 Form of Offer and Acceptance C1.2 Contract Data C1.3 Form of Guarantee C1.4 Occupational Health and Safety C1.5 Corporate Governance Breach Clause **Part C2: Pricing Data (Yellow)** C2.1 Pricing Instructions C2.2 Bill of Quantities **Part C3: Scope of Work (Blue)** C3.1 Description of Works C3.2 Engineering C3.3 Construction C3.4 Procurement C3.5 Management of Works C3.6Health and Safety C3.7 Technical Specifications **Part C4: Site Information (White)** C4 Site Information
F1.3	**Interpretation** 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 Tender conditions.
F.1.4	**The Principal Agent is:** (Makhado Local Municipality)
	The Employers' (Principal Agent) Representative is: Technical Queries Ms D.G Siboiboi / Mrs L.A Thulare Telephone: (015) 519 3000 Bidding Procedures Queries Ms P. Mudau Telephone : (015) 519 3000/3044

F.1.5	**Reject or Accept** The Employer may accept or reject any variation, deviation, Tender offer, or alternative Tender offer, and may cancel the Tender process and reject all Tender offers at any time before the formation of a contract. The employer shall not accept or incur any liability to a bidder for such a cancellation and rejection, but will give written reasons for such action upon written request to do so.
F2.1	**Eligibility requirements** Only those tenderers who can demonstrate that they will have in their employ management and supervisory staff satisfying the requirement of the scope of work for labour-intensive competencies for supervisory and management staff during the validity of the contract are eligible to submit tenders
F.2.2	**CIDB Requirements** 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 an 7 CE or higher class of construction work, are eligible to have their tenders evaluated. Joint ventures are eligible to submit tenders provided that: 1. every member of the joint venture is registered with the CIDB; 2. the lead partner has a contractor grading designation in the 7 CE OR HIGHER class of construction work; and 3. the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a 7 CE OR HIGHER class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.
F.2.3	**Cost of Bidding** Accept that the Employer will not compensate the Bidders 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 satisfy requirements
F.2.4	**Check documents** The Tenderer shall satisfy himself that the set of tender documents is complete and in accordance with the index. If any page has been omitted or duplicated, or if the script or dimensions, or anything else in the tender document is indistinct, or if doubt exists as to the meaning of any description, or if the tender document contains any obvious errors, the Tenderer shall immediately notify the Employer's Agent accordingly, in writing, so that such discrepancy or indistinctness can be clarified and rectified, as Makhado Local Municipality or the Agent will not accept any responsibility or consider any claim in connection with such discrepancy or indistinctness, which are not rectified during the tender period.
F.2.5	**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 proposal offer in response to the invitation.
F2.6	**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
F2.7	**Acknowledge Addenda** Acknowledge receipt of addenda to the proposal documents, which the employer may issue, and if necessary apply for an extension of the closing time stated in the Tender data, in order to take the addenda into account.
F.2.9	**Seek clarification** Questions or queries must be submitted to the Employer at least five (5) working days before the stipulated closing date and time of the Tender. However, Makhado Local Municipality shall not be liable nor assume liability for failure of the bidder to receive response to any questions and / or queries raised by the bidder by the closing time.
F.2.10	**Pricing the Tender** State the rates and prices in South African Rand (ZAR). **Please note that only firm prices would be accepted by Makhado Local Municipality.**
F.2.11	**Alterations to documents** Bidder must not make any alterations or additions to the proposal documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the bidder. All signatories to the Tender offer shall sign next to all such alterations. Erasures and the use of masking fluid are prohibited. Copies are not allowed, only original documents will be accepted.
F.2.13	**Submitting a Tender offer** No late, faxed, emailed or other form of Tender will be accepted. Completed Tenders with attached documents, if any, must be submitted in Black ink in sealed envelopes and clearly marked: **"CONTRACT NO: 94 of 2022** **"CONSTRUCTION OF DZANANI TAXI RANK"** And must be placed in Tender Box at Makhado Local Municipality's Office Accept that the tender submitted to the employer cannot be withdrawn or substituted. **No substitute tender offers will be considered**. All Tenders received by Makhado Local Municipality will remain in the Company's possession.
F.2.14	**Information and data to be completed in all respects** To facilitate review of this Tender by Makhado Local Municipality, it is requested that submissions conform to the following format: 1. **Coversheet:** List Tender Statement, the name of your firm, and the name, address and telephone number of a contact person for questions concerning the Tender submitted. 2. **Executive Summary:** Provide a brief overview of the project, description of the overall approach to the project, key features of the technologies offered, and an overview of the

	performance guaranteed. 3. **Relevant Experience and Reference Projects:** Information of similar sized projects completed by the Tenderer (in South Africa and worldwide) using the specific technologies requested must be provided. The referenced projects must be comparable in size, complexity and performance achieved to the tendered project. Operation and maintenance experience must also be included here. 4. **Project Team:** Provide a project team organogram showing the structure and composition of the proposed team. A CV highlighting the relevant project specific experience for each team member must be supplied. Permanent staff and contracted staff must be distinguished. 5. **Project Schedule:** A detailed project schedule must be submitted showing details with respect to the different phases of the project as well as the different aspects pertaining to engineering, procurement, construction, installation, commissioning and start up. The key milestones during the project must be indicated. 6. **Construction of Taxi Rank Facilities**: All information asked for regarding the upgrading shall be included here. 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. Responsive Tenders are ONLY those Tenders with all documents and pages, contained herein, that have been signed by the responsible person duly authorised to sign all documents indicated on the returnable document **"FORM C Authority of Signatory".** The above is to be read in conjunction with F3.11 below as well as the Project Specifications detailed in Section C3: Scope of Works.
F.2.15	**Closing time** Closing date:**03rd February 2023** Closing Time: **12H00**
F.2.16	**Tender offer validity** The Tender offer validity period is 90 Days.
F.2.17	**Provide other information** **The bidders are required to submit following documents and if requested to resubmit in case if it was not initially submitted, it will result in automatic disqualification:** (1) an original valid Tax Clearance Certificate issued by the South African Revenue Services; (2) completion of MBD 1,2, 3.1,3.2, 3.3,4, 5, 6.1, 7.1,7.2,7.3, 8 and 9 forms (3) copy of municipal Statement or letter from landlord stating not older than 3 months (4) In case of Joint Venture – the Joint Venture Agreement (5) Letter of intent to submit **Third Party Liability Insurance and All risk contractors insurance** to cover this contract **NB: - Please note that non-compliance to specification may be deemed as an automatic disqualification. Service Providers must quote for all aspects as per the specification.**
F2.18	The tenderer must submit to the Employer, 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 eligibility requirements.
F.2.20	**Certificates**

	The Tenderer is required to submit with his Tender a letter of intent from an approved insurer undertaking to provide the Performance Guarantee to the format included in Part C1.3 of this Tender Document.
F3.4	**Opening of tender** Tenders will be opened in public at the Makhado Local Municipality's Office.
F3.5	**Two-envelope System** A two-envelope procedure will **NOT** be followed.
F3.6	**Non-disclosure** After the opening of the Tender offers, no information relating to the clarification, determination of responsiveness, evaluation and comparison of Tender offers and recommendations concerning the award of the Tender shall be disclosed to any other Bidder or persons not concerned with such process until the award of the Tender has been announced by Makhado Local Municipality.
F3.9	**Arithmetical errors, omissions and discrepancies** Makhado Local Municipality is to check BID offers for arithmetical errors in the following manner: a) Where there is a discrepancy between the amounts in words and amounts in figures, the amount in words shall govern. b) 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. c) 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. Consider the rejection of a tender offer if the tenderer does not correct or accept the correction of the arithmetical error in the manner described above.
F3.11	**Evaluation of tender offers** The Bidders notice is drawn to the fact that the evaluation, adjudication and awarding of this Tender will be in terms of the Supply Chain Management Policy of Makhado Local Municipality and the Preferential Procurement Regulations of 2017. If the submitted Tender does not comply with the Tender conditions, the Tender may be rejected. If specifications are not met, the Tender may also be rejected. With regard to the above, certain actions or errors are unacceptable, and warrant **REJECTION OF THE TENDER,** for example: ▪ Non submission of company registration certificates. Pages that were to be completed being removed from the Tender document and have therefore not been submitted. ▪ Failure to fully complete form of offer. ▪ Scratching out without initialling next to the amended rates or information. ▪ Writing over / painting out rates / the use of Tippex or any erasable substance. ▪ Failure to attend compulsory briefing meetings ▪ The Tender has not been properly signed by a party having the authority to do so,

according to the **Form C– "Authority for Signatory".**

- No authority for signatory submitted.
- Particulars required in respect of the proposal have not been provided – non-compliance of Tender requirements and/or specifications.
- The Bidder's attempts to influence, or has in fact influenced the evaluation and/or awarding of the contract.
- The Proposal has been submitted after the relevant closing date and time.
- If any municipal rates and taxes or municipal service charges owed by that Bidder or any of its directors to the company, or to any other company or municipal entity, are in arrears for more than three months (90 days).
- If any Bidder who during the last five years has failed to perform satisfactorily on a previous contract with the company or any other organ of state after written notice was given to that Bidder that performance was unsatisfactory.

2. Good standing with SA Revenue Services

- Determine whether an original valid tax clearance has been submitted.
- To assist with the evaluation process of your bid we require your consent to check your SARS tax compliance via e-filing. Kindly complete the table in the returnable document schedule authorising Makhado Local Municipality to check TCC for tender purposes only.

If the Tender does not meet the requirements contained in the Makhado Local Municipality Supply Chain Policy, and the mentioned framework, it will be rejected and may not subsequently be made acceptable by correction or withdrawal of the non-conforming deviation or reservation.

3. Penalties

Makhado Local Municipality will, if upon investigation it is found that a preference in terms of the Preferential Procurement Policy Framework Act, 2000 and these regulations has been obtained on a fraudulent basis, or any specified goals are not attained in the performance of the contract, one or more of the following penalties will be imposed:

- Cancel the contract and recover all losses or damages incurred or sustained from the Bidder.
- Impose a financial penalty of twice the theoretical financial preference associated with the claim, which was made in the Tender.
- Restrict the firm, its shareholders and directors on obtaining any business from Makhado Local Municipality for a period of 5 years and blacklisted on the National Treasury database of restricted suppliers.

4. Evaluation Criteria

Makhado Local Municipality will establish a Bid Evaluation Committee (BEC) whose responsibility it is to make recommendations to the Bid Adjudication Committee (BAC). The Bid Evaluation Committee will short list and evaluate the bid document in accordance with the criteria below and make recommendations to the BAC.

1) Pre compliance evaluation to be done and pre-qualified bidders goes through for the functionality evaluation. Where some pre compliance information is not provided the Makhado Local Municipality supply chain will contact the responsible bidder to submit within 5 working days and failure to do so will result in disqualification.
2) Score Bid evaluation points for functionality and exclude all Bids that do not achieve 60% for functionality. Confirm that Bidders progressing to second stage are eligible for

	the preferences claimed, and if so, score Bid evaluation points for preference 3) Score Bid evaluation points for price and preference points. 4) Calculate total Bid evaluation points, to two decimal places. 5) Rank Bid offers from the highest number of Bid evaluation points to the lowest. 6) Recommend Bidders with the highest number of Bid evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.
	FUNCTIONALITY CRITERIA: - Note: The minimum required score/threshold for functionality is **70%**. Bidders scoring less than **70%** on functionality shall not proceed to the next stage of the evaluation. Functionality criteria maximum points in respect of each criterion shall be as set out at the bottom of this table. All Tender submission will be evaluated by at least three evaluators against the Table below. Tenderers shall ensure that their tender submissions are sufficiently detailed and that all required information is included in their submissions. Information not provided will result in zero points awarded for the respective item. The minimum number of evaluation points for functionality is **70%**. Submissions that do not meet these criteria shall not be considered in further evaluations. **Tender evaluation points** Tender evaluation points will be allocated as per the Supply Chain Management policy and the Preferential Procurement Policy Framework Act, 2000: Preferential Procurement Regulations, 2017 including the following: The following preference point systems are applicable to all bids: • 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). Preference points for this bid shall be awarded for: (a) Price; and (b) B-BBEE Status Level of Contribution.

	The maximum points for this bid are allocated as follows: **POINTS** **PRICE** 80 90 **B-BBEE STATUS LEVEL OF CONTRIBUTION** **20** **10** **Total points for Price and B-BBEE must not exceed** **100** **100** Regulations of disputes, objections, complaints and queries will be handled in accordance with the Supply Chain Management Policy of Makhado Local Municipality.
F3.17	**Provide copies of the contracts** The number of paper copies of the signed contract to be provided by the Employer is **one**.
	BID Award Makhado Local Municipality requires bidders to perform work of high quality as set out in this bid. **The lowest tender will not necessarily be accepted and Makhado Local Municipality reserves the right to accept a tender either as a whole or in part, has the right to award the bid to more than one bidder, or not accept any bid.**
	The additional conditions of the proposal are: **1)** Makhado Local Municipality may also request that the Bidder provide written evidence that his financial, labour and resources are adequate for carrying out the project. **2)** Makhado Local Municipality reserves the right to appoint a firm of chartered accountants and auditors and / or execute any other financial investigations on the financial resources of any Bidder. The Bidders shall provide all reasonable assistance in such investigations.

1.1 TECHNICAL / FUNCTIONALITY EVALUATION

Potential service providers will have to achieve a minimum of **70 points out of 100** for their technical proposals before their financial proposals and B-BBEE status are evaluated. This is required so that there is a level of comfort that the potential service provider can deliver the project with the required professionalism and quality.

1.1.1 SCORING PROCESS

The Technical /Functionality Evaluation Team will evaluate the bids during the Scoring process to determine the following:

- Whether or not the Bidder understood the project specifications.
- The bidders experience with similar projects.
- The suitability of the bidder's proposed Plant and Equipment.

No alteration of technical/functionality proposals will be permitted after the deadline for receipt of bids. Questions may be asked for clarification needed to evaluate their proposals, but bidders would not be permitted to change the substance or price of their bids after bid opening. Requests for clarification and the bidder's responses would be made in writing. No interviews will be conducted in this regard.

Table 8: CONSTRUCTION OF DZANANI TAXI RANK – 7CE or Higher

COMPANY EXPERIENCE	KEY PERSONNEL EXPERIENCE	PLANT & EQUIPMENT	BANK RATING
(MAX 60 POINTS)	**(MAX 20 POINTS)**	**(MAX 10 POINTS)**	**(MAX 10 POINTS)**
Bidders must complete Form T in section T2.1 and add supporting documentation Failure to submit the required **APPOINTMENT LETTER & FINAL COMPLETION CERTIFICATE** for each project signed by all parties namely: the Employer, Engineer, will result in the bidder getting zero points.	Bidders must complete Form K in section T2.1 and add supporting documentation Failure to submit the required **CV'S & CERTIFIED QUALTIFICATIONS** for each key personnel will result in the bidder getting zero points. Key personnel must be unencumbered, available full time and unique to this project	Bidders must complete Form W in section T2.1 and add supporting documentation Failure to submit **PROOF OF OWNERSHIP OR LETTER OF INTENT** for Plant and Equipment hire is signed by both the lessee and the lessor will result in the bidder getting zero Points.	Bidders must complete Form D in section T2.1 and add supporting documentation Failure to submit a **LETTER FROM THE BANK** will result in the bidder getting zero points Bank Ratings may be verified with the bank by the Employer
Five (05) largest completed projects of **SIMILAR NATURE** with appointment letters & final completion certificates attached will be assessed as follows: **(Max 60 points)** ➢ Completed project with value of **>R10 million – 12 points each** ➢ Completed project with value of **R5 million to R10 million – 8 points each** ➢ Completed project with value of **R2 million to R5 million – 4 points each** ➢ Completed project with value of **<R2 million – 2 points each**	**CONTRACT MANAGER**: A Construction Manager with a Civil Engineering or Project Management degree or B-Tech **(MAX 5 Points)** **EXPERIENCE:** ➢ >10 years experience – **5 points** ➢ 5-10 years experience – **3 points** ➢ <5 years experience – **1point** **SITE AGENT**: A Construction Manager with a Civil Engineering or Project Management degree or BTech or Diploma or higher: **(MAX 10 Points)** **EXPERIENCE:** ➢ >10 years experience – **10 points** ➢ 5-10 years experience – **6 points** ➢ 2-5 years experience – **3points** ➢ <2 years experience – **no points** **SAFETY OFFICER:** registered as a construction health and safety officer with SACPMP with a minimum diploma qualification must be permanently based on the site for the duration of the project. **(MAX 5 Points)** **EXPERIENCE:** ➢ >Registered with SACPCMP – 5 **points** ➢ SAMPRAC – **2 points**	**Minimum required:** ➢ **1 x Grader (1 point)** ➢ **1 x TLB (1 point)** ➢ **1 x Pedestrian Roller (1 point)** ➢ **1 x 12 ton roller (1 point)** ➢ **2 x Tipper Truck (2 points)** ➢ **1 x LDV (1 point)** ➢ **1 x Water tanker (1 point)** ➢ **1 x Excavator (1 point)** ➢ **1 x Crane (1 point)**	**(MAX 10 Points)** **POINTS:** ➢ Bank Rating A or B: **10 Points** ➢ Bank Rating C: **8 Points** ➢ Bank Rating D: **5 Points** ➢ Bank Rating E or lower: **2 Points**

PRE-QUALIFICATION ASSESSMENT – POINTS SCORING			
Pre-Qualification Category & Description		**Points Allocation**	**Allocated Points**
Experience		**Total = 60**	
Projects of a similar nature comprising nature of civil and structural engineering work successfully completed by the Construction Service provider. This to be demonstrated by providing proof of appointment letter and final completion certificates for each project. **NB: Points can only be claimed by attaching credible appointment letters with Completion Certificate from previous clients**			
Company Experience in the civil engineering and structural engineering projects: Portfolio of evidence should be provided as Completion Certificates or Reference letters	**Portfolio of evidence should be provided with five (5) appointment letters and completion certificates or letter of recommendation or / JV the lead partner to provide five (5) appointment letters and completion certificates for the construction of civil engineering projects. Number of letters to be used and interpolated if less than five (5).**	**60**	
	Completed project with value of >R10 million – 12 Points		
	Completed project with value of R5 million to R10 million – 8 Points		
	Completed project with value of R2 million to R5 million – 4 Points		
	Completed project with value of <R2 million – 2 Points		
	No submission – 0 Points		
Expertise		**Total = 20**	
The Contract Manager • A Construction Manager with a Civil Engineering or Project Management degree or B-Tech (5 points): ➢ >10 years experience – **5 points** ➢ 5-10 years experience – **3 points** ➢ <5 years experience – **1point**		**5**	
Site Agent • A Construction Manager with a Civil Engineering or Project Management Diploma or Degree or B-Tech or higher (10 points): ➢ >10 years experience – **10 points** ➢ 5-10 years experience – **6 points** ➢ 2-5 years experience – **3points** ➢ <2 years experience – **no points**		**10**	
Safety Officer • A registered as a construction health and safety officer with SACPMP with a minimum diploma qualification must be permanently based on the site for the duration of the project. (5 points): ➢ >Registered with SACPCMP – 5 **points** ➢ SAMPRAC – **2 points** **NOTE: Points can only be claimed by submitting CV with certified copies of qualification.**		**5**	
Plant and Equipment		**Total = 10**	

<table>
<tr><td>Company Resources</td><td>The tenderer must provide the list of plant to be used for the successful completion of the project. Highlight your understanding of the project by providing relevant plant and equipment required specifically for this project: 10 points maximum.

Bidders must prove the ownership of the plant or ownership of the plant from the plant hire firm. The ownership must be proved in a form of licencing registration documents or certificates.

<table><tr><th>Plant Description</th><th>Quantity</th><th>Point</th></tr><tr><td>Grader</td><td>1</td><td>1</td></tr><tr><td>Excavator</td><td>1</td><td>1</td></tr><tr><td>Crane</td><td>1</td><td>1</td></tr><tr><td>10m³ Tipper Trucks</td><td>2</td><td>2</td></tr><tr><td>10 000ℓ Water Tanker</td><td>1</td><td>1</td></tr><tr><td>12 Ton Drum Roller</td><td>1</td><td>1</td></tr><tr><td>Pedestrian Roller</td><td>1</td><td>1</td></tr><tr><td>TLB</td><td>1</td><td>1</td></tr><tr><td>LDV</td><td>1</td><td>1</td></tr></table></td><td>10</td><td></td></tr>
<tr><td>Bank Rating</td><td></td><td>Total = 10</td><td></td></tr>
<tr><td rowspan="5">Bank Rating</td><td>All bidders to submit the letter from the bank demonstrating the ratings. Bank ratings may be verified with the bank by the employee.</td><td rowspan="5">10</td><td rowspan="5"></td></tr>
<tr><td>Bank Rating A or B: 10 Points</td></tr>
<tr><td>Bank Rating C: 8 Points</td></tr>
<tr><td>Bank Rating D: 5 Points</td></tr>
<tr><td>Bank Rating E or lower: 2 Points</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>TOTAL</td><td>Bidder must score a minimum of 70 points to be considered for further evaluation</td><td>Total = 100</td><td></td></tr>
</table>

PROJECT NO: 94 of 2022

CONSTRUCTION OF DZANANI TAXI RANK

CIDB GRADING: 7 CE OR HIGHER

T 2.1 LIST OF RETURNABLE DOCUMENTS

1. Failure to fully complete and sign the relevant returnable documents shall render such a tender offer unresponsive.

2. Bidders shall note that their signatures appended to each returnable form represents a declarationthattheyvouchfortheaccuracyandcorrectnessoftheinformation provided, including the information provided by candidates proposed for the specified key positions.

3. Notwithstanding any check or audit conducted by or on behalf of the Employer, the information provided in the returnable documents is accepted in good faith and as justification for entering into a contract with a Bidder. If subsequently any information is found to be incorrect such discovery shall be taken as willful misrepresentation by that Bidder to induce the contract. In such event the Employer has the discretionary right to terminate the contract.

THE BIDDER MUST COMPLETE AND SIGN THE FOLLOWING RETURNABLE SCHEDULES:

RETURNABLE SCHEDULES REQUIRED FOR TENDER EVALUATION PURPOSES

Returnable Documents that will be incorporated into the contract

CONTRACT DOCUMENTS		
C1.1	Offer Portion of Form of Offer and Acceptance	
MBD 7.2	CONTRACT FORM: WORKS	
	PART 1: (TO BE COMPLETED BY THE BIDDER)	
	PART 2: (TO BE COMPLETED BY MAKHADO LOCAL MUNICIPALITY)	
C1.2	Contract Data (Part 2)	
C1.3	Form of Guarantee (Third party Liability and All risk insurance)	

The documents and schedules the tender shall submit with the tender shall include, but not limited to those set below

RETURNABLE DOCUMENT	YES	NO
1. COMPANY REGISTRATION DOCUMENT (CERFIED COPIES PREFERRED)		
2. ID COPIES COMPANY DIRECTORS: CERTIFIED.		
3. ORIGINAL SIGNATORY AUTHORISATION LETTER ON A COMPANY LETTER HEAD.		
4. RECENT COMPLIANT CENTRAL SUPPLIER DATABASE, JV SHOULD SUBMIT FOR BOTH COMPANIES PRINTED BEFORE ADVERT CLOSING DATE		
5. CIDB, JV SHOULD SUBMIT CONSOLIDATED CIDB		
6. LETTER OF GOOD STANDING:CERTIFIED (COIDA)		
7. BBBEE CERTIFICATE: SANAS ACCREDITATION, JOIN VENTURES TO SUBMIT A CONSOLIDATED BBBEE CERTIFICATE: CERTIFIED OR SWORN AFFIDAVIT.(FOR THE PURPOSE OF PREFERENTIAL POINT SYSTEM)		
8. RECENT ORIGINAL STAMPED LETTER OR ELECTRONIC STAMPED FROM THE BANK WITH RATING (FOR PURPOSE OF FUNCTIONALITY)		
9. BOTH COMPANYS AND COMPANIES PROOF OF MUNICIPAL ACCOUNT FOR WATER AND LIGHTS ARE NOT IN ARREARS MORE THAN 3 MONTHS; AND SHOULD NOT BE OLDER THAN 3 MONTHS/ RECENT AND ORIGINAL PROOF OF RESIDENCE FROM TRADITIONAL AUTHORITY OR INDUNA/VALID LEASE AGREEMENT ACCOMPANIED BY RECENT PROOF OF PAYMENT FOR MUNICIPAL RATES AND TAXES OF THE LESSOR SHOULD NOT BE IN ARREARS FOR MORE THAN 90 DAYS		
10. COMPANY PROFILE/SCHEDULE INDICATING BIDDER'S EXPERIENCE		
11. PROGRAME OF WORKS.		
12. SCHEDULE OF MONTHLY EXPENDITURE (CASH FLOW)		
13. AUDITED FINANCIAL STATEMENT (RECENT) IF COMPANY IS OLDER THAN THREE(3) YEARS, SUBMIT PAST THREE YEARS FINANCIAL STATEMENT (2019/2020 - 2020/2021 -2021/2022)		
14. JOIN VENTURE AGREEMENT: WHERE APPLICABLE a. CIDB CONSOLIDATED		
15. LETTER OF INTENT FROM A REGISTERED FINANCIAL INSTITUTION AS A GUARANTOR IN THE AMOUNT OF 10% FOR SURETY.		
16. COMPLETE THE DOCUMENT WITH A BLACK INK INITIAL WHERE ALTERED AND INITIAL EVERY PAGE, COMPLETE FORM OF OFFER. **THE DOCUMENT SHOULD NOT BE RE-ARRANGED.**		
17. COMMISSIONER OF OATH STAMP.		

PROJECT NO: 94 of 2022

CONSTRUCTION OF DZANANI TAXI RANK

CIDB GRADING: 7 CE OR HIGHER

T2.2 RETURNABLE SCHEDULES

MBD 1

INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE MAKHADO LOCAL MUNICIPALITY

BID NUMBER: 94 of 2022 CLOSING DATE: 03rd February 2023 CLOSING TIME: 12h00

DESCRIPTION: CONSTRUCTION OF DZANANI TAXI RANK

The successful bidder will be required to fill in and sign a written Contract Form (MBD 7).

DEPOSITED IN THE BID BOX SITUATED AT *MAKHADO MUNICIPALITY OFFICES*

Bidders should ensure that bids are delivered timeously to the correct address. If the bid is late, it will not be accepted for consideration.

The bid box is generally open 24 hours a day, 7 days a week.

ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS – (NOT TO BE RE-TYPED)

THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2011, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT

NB: NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE (as defined in Regulation 1 of the Local Government: Municipal Supply Chain Management Regulations)

THE FOLLOWING PARTICULARS MUST BE FURNISHED
(FAILURE TO DO SO MAY RESULT IN YOUR BID BEING DISQUALIFIED)

NAME OF BIDDER .....

POSTAL ADDRESS .....

STREET ADDRESS .....

TELEPHONE NUMBER CODE.....NUMBER.....

CELLPHONE NUMBER .....

FACSIMILE NUMBER CODE ..... .NUMBER.....

E-MAIL ADDRESS .....

VAT REGISTRATION NUMBER.....

HAS AN ORIGINAL AND VALID TAX CLEARANCE CERTIFICATE BEENATTACHED? (MBD 2)
YES/NO

HAS A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE BEEN SUBMITTED? (MBD 6.1)
YES/NO

IF YES, WHO WAS THE CERTIFICATE ISSUED BY?

AN ACCOUNTING OFFICER AS CONTEMPLATED IN THE CLOSE CORPORATION ACT (CCA)
☐
A VERIFICATION AGENCY ACCREDITED BY THE SOUITH AFRICAN NATIONAL ACCREDITATION SYSTEM (SANAS)
☐
A REGISTERED AUDITOR
☐
(Tick applicable box)

(A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE)

ARE YOU THE ACCREDITED REPRESENTATIVE?
IN SOUTH AFRICA FOR THE GOODS/SERVICES/WORKS OFFERED?

YES/NO
(IF YES ENCLOSE PROOF)

SIGNATURE **OF** BIDDER
.....

DATE.....
.....

CAPACITY UNDER WHICH THIS BID IS SIGNED.....

TOTAL BID PRICE..... TOTAL NUMBER OF ITEMS OFFERED .....

ANY ENQUIRIES REGARDING THE BIDDING PROCEDURE MAY BE DIRECTED TO:

Municipality / Municipal Entity: .....

Department: .....

Contact Person: .....

Tel: .....

Fax: .....

ANY ENQUIRIES REGARDING TECHNICAL INFORMATION MAY BE DIRECTED TO:

Contact Person: .....

Tel: .....

Fax: .....

MBD 2

TAX CLEARANCE CERTFICATE REQUIREMENTS

It is a condition of bid that the taxes of the successful bidder must be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the bidder's tax obligations.

NEED A TAX CLEARANCE? GO ONLINE

- Electronically request your Tax Compliance Status which will include a unique PIN which you can provide to any third party (if requested) to enable them to verify your tax compliance status online via e-Filing.
- Request a TCC via e-filing which will give you the option to print the TCC.
- Or request a TCC at a SARS branch where a SARS agent will be able to print or e-mail the TCC to you.
- To register for e-filing go to: www.sarsefiling.co.za

A tax compliant status is a holistic view of your tax compliance level across all your registered tax types.

Is your tax compliance status green?

- Ensure all tax returns are submitted
- No outstanding debt owed to SARS
- SARS has been notified of any change of residential or business address
- Your business is registered for all required tax types e.g. PAYE, VAT, income tax.

Check your tax compliance status by logging onto your e-filing profile and viewing your "my compliance Profile" and rectify any non-compliance.

THIRD PARTY AUTHORISATION TO VIEW BIDDER TCS:

To assist with the evaluation process of your bid we require your consent to check your SARS tax compliance via e-filing. Kindly complete the table below authorising Makhado Local Municipality to check TCS for tender purposes only.

TCS Details	
Tax payer name	
Trading Name	
Purpose of request	TENDER
Request Reference number	
PIN	
PIN EXPIRY DATE	

Note: Bidders may attach their Tax compliance status printout to the bidding document.

I, _____ in my capacity as _____ duly appointed as authorised signatory holder, hereby grant **Makhado Local Municipality** permission to check the TCC status of _____ and it is duly understood that the search is for tender purposes only.

_____ **NAME AND SURNAME**

_____ **DESIGNATION**

_____ **DATE**

_____ **SIGNATURE**

FOR MAKHADO LOCAL MUNICIPALITY OFFICE USE ONLY: CSD TAX COMPLIANCE STATUS VERIFIED ☐YES / ☐NO

MBD 3.1

PRICING SCHEDULE – FIRM PRICES (PURCHASES)

NOTE: **ONLY FIRM PRICES WILL BE ACCEPTED. NON-FIRM PRICES (INCLUDING PRICES SUBJECT TO RATES OF EXCHANGE VARIATIONS) WILL NOT BE CONSIDERED**

IN CASES WHERE DIFFERENT DELIVERY POINTS INFLUENCE THE PRICING, A SEPARATE PRICING SCHEDULE MUST BE SUBMITTED FOR EACH DELIVERY POINT

Name of Bidder……Bid Number……

Closing Time ……Closing Date ……

OFFER TO BE VALID FOR……DAYS FROM THE CLOSING DATE OF BID.

ITEM NO.	QUANTITY	DESCRIPTION	BID PRICE IN RSA CURRENCY **(ALL APPLICABLE TAXES INCLUDED)

- Required by: ……
- At: ……
  ……
- Brand and Model ……
- Country of Origin
  ……
- Does the offer comply with the specification(s)? *YES/NO
- If not to specification, indicate deviation(s) ……
- Period required for delivery ……
  *Delivery: Firm/Not firm
- Delivery basis ……

Note: All delivery costs must be included in the bid price, for delivery at the prescribed destination.

** "all applicable taxes" includes value- added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies.

*Delete if not applicable

MBD 3.2

PRICING SCHEDULE – NON-FIRM PRICES (PURCHASES)

NOTE: PRICE ADJUSTMENTS WILL BE ALLOWED AT THE PERIODS AND TIMES SPECIFIED IN THE BIDDING DOCUMENTS.

IN CASES WHERE DIFFERENT DELIVERY POINTS INFLUENCE THE PRICING, A SEPARATE PRICING SCHEDULE MUST BE SUBMITTED FOR EACH DELIVERY POINT

Name of Bidder..... **Bid number**.....

Closing Time ..... **Closing Date** .....

OFFER TO BE VALID FOR.....DAYS FROM THE CLOSING DATE OF BID.

ITEM NO.	QUANTITY	DESCRIPTION	BID PRICE IN RSA CURRENCY **(ALL APPLICABLE TAXES INCUDED)

- **Required by:** .....
- **At:** .....
- **Brand and model** .....
- **Country of origin** .....
- **Does the offer comply with the specification(s)?** ***YES/NO**
- **If not to specification, indicate deviation(s)** .....
- **Period required for delivery** .....
- **Delivery:** ***Firm/Not firm**

** "all applicable taxes" includes value- added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies.

***Delete if not applicable**

MBD 3.2

PRICE ADJUSTMENTS

A NON-FIRM PRICES SUBJECT TO ESCALATION

1. IN CASES OF PERIOD CONTRACTS, NON FIRM PRICES WILL BE ADJUSTED (LOADED) WITH THE ASSESSED CONTRACT PRICE ADJUSTMENTS IMPLICIT IN NON FIRM PRICES WHEN CALCULATING THE COMPARATIVE PRICES

2. IN THIS CATEGORY PRICE ESCALATIONS WILL ONLY BE CONSIDERED IN TERMS OF THE FOLLOWING FORMULA:

$$Pa = (1-V)Pt\left(D1\frac{R1t}{R1o} + D2\frac{R2t}{R2o} + D3\frac{R3t}{R3o} + D4\frac{R4t}{R4o}\right) + VPt$$

Where:

Pa = The new escalated price to be calculated.
(1-V) Pt= 85% of the original bid price. Note that Pt must always be the original bid price and not an escalated price.
D1, D2.. = Each factor of the bid price e.g. labour, transport, clothing, footwear, etc. The total of the various factors D1,D2...etc. must add up to 100%.
R1t, R2t..... = Index figure obtained from new index (depends on the number of factors used).
R1o, R2o = Index figure at time of bidding.
VPt = 15% of the original bid price. This portion of the bid price remains firm i.e. it is not subject to any price escalations.

3. The following index/indices must be used to calculate your bid price:

Index..... Dated..... Index..... Dated..... Index..... Dated.....

Index..... Dated..... Index..... Dated..... Index..... Dated.....

4. FURNISH A BREAKDOWN OF YOUR PRICE IN TERMS OF ABOVE-MENTIONED FORMULA. THE TOTAL OF THE VARIOUS FACTORS MUST ADD UP TO 100%.

FACTOR (D1, D2 etc. eg. Labour, transport etc.)	P PERCENTAGE OF BID PRICE

MBD 3.2

B PRICES SUBJECT TO RATE OF EXCHANGE VARIATIONS

1. Please furnish full particulars of your financial institution, state the currencies used in the conversion of the prices of the items to South African currency, which portion of the price is subject to rate of exchange variations and the amounts remitted abroad.

PARTICULARS OF FINANCIAL INSTITUTION	ITEM NO	PRICE	CURRENCY	RATE	PORTION OF PRICE SUBJECT TO ROE	AMOUNT IN FOREIGN CURRENCY REMITTED ABROAD
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		

2. Adjustments for rate of exchange variations during the contract period will be calculated by using the average monthly exchange rates as issued by your commercial bank for the periods indicated hereunder: (Proof from bank required)

AVERAGE MONTHLY EXCHANGE RATES FOR THE PERIOD:	DATE DOCUMENTATION MUST BE SUBMITTED TO THIS OFFICE	DATE FROM WHICH NEW CALCULATED PRICES WILL BECOME EFFECTIVE	DATE UNTIL WHICH NEW CALCULATED PRICE WILL BE EFFECTIVE

MBD 3.3

PRICING SCHEDULE
(Professional Services)

Name of Bidder:..... Bid Number: .....

Closing Time: ..... Closing Date .....

OFFER TO BE VALID FOR .....DAYS FROM THE CLOSING DATE OF BID.

ITEM NO	DESCRIPTION	BID PRICE IN RSA CURRENCY **(ALL APPLICABLE TAXES INCLUDED)

1. The accompanying information must be used for the formulation of proposals.

2. Bidders are required to indicate a ceiling price based on the total estimated time for completion of all phases and including all expenses inclusive of all applicable taxes for the project.

R.....

3. PERSONS WHO WILL BE INVOLVED IN THE PROJECT AND RATES APPLICABLE (CERTIFIED INVOICES MUST BE RENDERED IN TERMS HEREOF)

4. PERSON AND POSITION	HOURLY RATE	DAILY RATE
----------	R----------	----------
----------	R----------	----------
----------	R----------	----------
----------	R----------	----------
----------	R----------	----------

5. PHASES ACCORDING TO WHICH THE PROJECT WILL BE COMPLETED, COST PER PHASE AND MAN-DAYS TO BE SPENT

----------	R----------	---------- days
----------	R----------	----------days
----------	R----------	----------days
----------	R----------	---------- days

5.1 Travel expenses (specify, for example rate/km and total km, class of airtravel, etc). Only actual costs are recoverable. Proof of the expenses incurred must accompany certified invoices.

DESCRIPTION OF EXPENSE TO BE INCURRED	RATE	QUANTITY	AMOUNT
----------	.....	.....	

R.....

---------- ....

R.....

---------- ....

R.....

---------- ....

R.....

**"all applicable taxes" includes value-added taxes, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies.

5.2 Other expenses, for example accommodation (specify, e.g. Three star hotel, bed and breakfast, telephone cost, reproduction cost, etc.). On basis of these particulars, certified invoices will be checked for correctness. Proof of the expenses must accompany invoices.

DESCRIPTION OF EXPENSE TO BE INCURRED RATE QUANTITY AMOUNT

---------- ....

R.....

---------- ....

R.....

---------- ....

R.....

---------- ....

R.....

TOTAL: R.....

6. Period required for commencement with project after acceptance of bid .....

7. Estimated man-days for completion of project .....

8. Are the rates quoted firm for the full period of contract? .....YES/ NO.

9. If not firm for the full period, provide details of the basis on which adjustments will be applied for, for example consumer price index.....

.....

.....

.....

*Delete if not applicable

MBD 4

DECLARATION OF INTEREST

1. No bid will be accepted from persons in the service of the state[1].

2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority.

3 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

3.1 Full Name of bidder or his or her representative:.....

3.2 Identity Number: .....

3.3 Position occupied in the Company (director, trustee, hareholder[2]):.....

3.4 Company Registration Number: .....

3.5 Tax Reference Number:.....

3.6 VAT Registration Number: .....

3.7 The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.

3.8 Are you presently in the service of the state? **YES / NO**

3.8.1 If yes, furnish particulars. .....

.....

[1]MSCM Regulations: "in the service of the state" means to be –
(a) a member of –
  (i) any municipal council;
  (ii) any provincial legislature; or
  (iii) the national Assembly or the national Council of provinces;

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

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

3.9 Have you been in the service of the state for the past twelve months? .....**YES / NO**

3.9.1 If yes, furnish particulars.....

.....

3.10 Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid? ..... **YES / NO**

3.10.1 If yes, furnish particulars.

.....

.....

3.11 Are you, aware of any relationship (family, friend, other) between any other bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid? **YES / NO**

3.11.1 If yes, furnish particulars

.....

.....

3.12 Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**

3.12.1 If yes, furnish particulars.

.....

.....

3.13 Are any spouse, child or parent of the company's directors trustees, managers, principle shareholders or stakeholders in service of the state?**YES / NO**

3.13.1 If yes, furnish particulars.

.....

.....

3.14 Do you or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract. **YES / NO**

3.14.1 If yes, furnish particulars:

.....

.....

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

Full Name	Identity Number	State Employee Number

.....
Signature

.....
Date

.....
Capacity

.....
Name of Bidder

1 MSCM Regulations: "in the service of the state" means to be –

(a) A member of –
- *any municipal council/entity;*
- *any provincial legislature; or*
- *the national Assembly or the national Council of provinces;*

(b) a member of the board of directors of any municipal entity;
(c) an official of any municipality or municipal entity;
(d) an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the public Finance Management Act, 1999 (Act No 1 of 1999);
(e) a member of the accounting authority of any national or provincial public entity; or
(f) an employee of Parliament or a provincial legislature.

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

CERTIFICATION

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

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

_____ _____
SIGNATURE **DATE**

_____ _____
POSITION **NAME OF BIDDER**

MBD 5

DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (ALL APPLICABLE TAXES INCLUDED)

For all procurement expected to exceed R10 million (all applicable taxes included), bidders must complete the following questionnaire:
**** Delete if not applicable***

1 Are you by law required to prepare annual financial statements for auditing?

***YES/NO**

1.1 If yes, submit audited annual financial statements for the past three years or since the date of establishment if established during the past three years.

_____

_____

2 Do you have any outstanding undisputed commitments for municipal services towards any municipality for more than three months or any other service provider in respect of which payment is overdue for more than 30 days?

***YES/NO**

2.1 If no, this serves to certify that the bidder has no undisputed commitments for municipal services towards any municipality for more than three months or other service provider in respect of which payment is overdue for more than 30 days.

2.2 If yes, provide particulars.

_____

_____

_____

_____

3 Has any contract been awarded to you by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract?

***YES/ NO**

3.1 If yes, furnish particulars

_____

_____

4. Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality / municipal entity is expected to be transferred out of the Republic?

***YES / NO**

1.13 If yes, furnish particulars

_____

_____

CERTIFICATION

I, THE UNDERSIGNED (NAME) _____

CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT.

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

_____ _____
SIGNATURE **DATE**

_____ _____
POSITION **NAME OF BIDDER**

MBD 6.1

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

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

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

1. GENERAL CONDITIONS

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

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

1.2 The value of this bid is estimated not to exceed R50 000 000 (all applicable taxes included) and 80/20 preference point system shall be applicable to this tender.

1.3 Preference points for this bid shall be awarded for:

(a) Price; and
(b) B-BBEE Status Level of Contribution.

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

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

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

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

2. DEFINITIONS

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

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

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

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

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

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

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

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

i. B-BBEE Status level certificate issued by an authorized body or person;

ii. A sworn affidavit as prescribed by the B-BBEE Codes of Good Practice;

iii. Any other requirement prescribed in terms of the B-BBEE Act;

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

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

3. POINTS AWARDED FOR PRICE

3.1 THE 80/20 PREFERENCE POINT SYSTEMS

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

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

Where:

Ps = Points scored for comparative price of bid under consideration
Pt = Comparative price of bid under consideration
Pmin = Comparative price of lowest acceptable bid

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

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

B-BBEE Status Level of Contributor	Number of points (80/20 system)	Kindly tick the applicable level and points
1	20	
2	18	
3	14	
4	12	
5	8	
6	6	
7	4	
8	2	

Non-compliant contributor	0	

5. BID DECLARATION

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

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

6.1 B-BBEE Status Level of Contribution: = (maximum of 20 points)

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

7. SUB-CONTRACTING

It is compulsory to sub-contract 30% of the works and the monetary value of the project appointment amount to a local sub-contractor with a CIDB Grading not exceeding 3 CE. The sub-contractor/s must be from the jurisdiction of Makhado Local Municipality.

7.1 Will any portion of the contract be sub-contracted? YES [ ] NO [ ]

(Tick applicable box)

7.1.1 If yes, indicate:

i) What percentage of the contract will be subcontracted_____%?

ii) The name of the sub-contractor_____

iii) The B-BBEE status level of the sub-contractor _____

iv) Whether the sub-contractor is an EME or QSE ***(Tick applicable box)*** YES [ ] NO [ ]

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

7.1.2 BIDDERS DECLARATION FOR SUB-CONTRACTING AMINIMUMOF 30% OF THE VALUE OF THE CONTRACT TO THE FOLLOWING ADVANCED DESIGNATED GROUPS:

NO.	ADVANCE DESIGNATED G R O U P S	RAND VALUE	% OF TOTAL CONTRACT
1	an EME or QSE which is at least 51% owned by black people		
2	an EME or QSE which is at least 51% owned by black people who are youth;		
3	an EME or QSE which is at least 51% owned by black people who are women;		

8. DECLARATION WITH REGARD TO COMPANY/FIRM

8.1 Name of company/firm: _____

8.2 VAT registration number _____

8.3 Company registration number: _____

8.4 **TYPE OF COMPANY/ FIRM**

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

8.5 **DESCRIBE PRINCIPAL BUSINESS ACTIVITIES**

_____

_____

_____

8.6 **COMPANY CLASSIFICATION**

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

8.7 **MUNICIPAL INFORMATION**

Municipality where business is situated: _____

Registered Account Number: _____

Stand Number: _____

8.8 Total number of years the company/firm has been in business: _____

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

i) The information furnished is true and correct;

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

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

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

(a) disqualify the person from the bidding process;

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

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

(d) recommend that the bidder or contractor, its shareholders and directors, or only the

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

(e) forward the matter for criminal prosecution.

WITNESSES:

1. _____

2. _____

DATE: _____

_____

SIGNATURE(S) OF BIDDER(S)

ADDRESS: _____

_____

_____

NB – BIDDERS MUST TAKE NOTE THAT MAKHADO LOCAL MUNICIPALITY ONLY ACCEPTS THE FOLLOWING FORMATS OF SWORN AFFIDAVIT FOR EME's OR QSE's WHERE YOUR ANNUAL TURNOVER IS LESS THAN R10 MILLION.

NO SWORN AFFIDAVITS WILL BE ACCEPTED WHERE A BEE CERTIFICATE HAS BEEN ISSUED TO A BIDDER.

WHERE A BEE CERTIFICATE AND SWORN AFFIDAVIT HAS BEEN ATTACHED, THE ORIGINAL OR CERTIFIED BEE CERTIFICATE WILL TAKE PRESENDENCE AND POINTS WILL BE AWARDED BASED ON THE CERTIFICATE ONLY.

Please note that that the form is completed only once annually, as the certificate is valid for a period of one year from date of signature of affidavit.

PART A – SWORNAFFIDAVIT: B-BBEE EXEMPTEDMICRO ENTERPRISE

I, the undersigned,

Full name &Surname	
Identity number	

Hereby declare under oath as follows:

1. The contents of this statement are to the best of my knowledge a true reflection of the facts.
2. I am a member / director /owner of the following enterprise and am duly authorized to act on its behalf:

Enterprise Name	
Trading Name	
Registration Number	
Enterprise Address	

3. I hereby declare under oath that:

- The enterprise is_____%black owned;
- The enterprise is_____%black woman owned;
- Based on the management accounts and other information available on the_____ financial year, the income did not exceed R10,000,000.00(ten million rands);
- Please confirm on the table below the B-BBEE level contributor, **by ticking the applicable box.**

100%blackowned	**Level One** (135%B-BBEE procurement recognition)	
More than 51%black owned	**Level Two** (125%B-BBEE procurement recognition)	
Less than 51%black owned	**Level Four** (100% B-BBEE procurement recognition)	

4. The entity is an empowering supplier in terms of **the dti** Codes of Good Practice.

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

6. The sworn affidavit will be valid for a period of12 months from the date signed by commissioner.

Deponent Signature:_____

Date: _____

Commissioner of Oaths Signature & Stamp: _____

COMMISSIONER OF OATHS STAMP

PART B – SWORNAFFIDAVIT: B-BBEE QUALIFYING SMALL ENTERPRISE

I, the undersigned,

Full name &Surname	
Identity number	

Hereby declare under oath as follows:

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

2. I am a member / director /owner of the following enterprise and am duly authorized to act on its behalf:

Enterprise Name	
Trading Name	
Registration Number	
Enterprise Address	

3. I hereby declare under oath that:
   - The enterprise is_____%black owned;
   - The enterprise is_____%black woman owned;
   - Based on the management accounts and other information available on the _____ financial year, the income did not exceed R50,000,000.00(Fifty Million Rand);
   - The entity is an Empowering Supplier in terms of Clause 3.3(a) or (b) or (c)or (d) or as amended 3.3 (e)**(select one)**_____of **the DTI** Codes of Good Practice.
   - Please confirm on the table below the B-BBEE level contributor, **by ticking the applicable box.**

100%blackowned		**Level One** (135%B-BBEEprocurementrecognition)	
Morethan51%blackowned		**Level Two** (125%B-BBEEprocurementrecognition)	
(a)Atleast25%ofcostofsales,(excluding labour costs and depreciation) must be procurement from local producers or suppliers in South Africa; for the services industry include labour costs but capped at15%,		(b)Job Creation–50% of jobs created are for black people, provided that the number of black employees in the immediate prior verified B- BBEE measurement is maintained	
(c)Atleast 25% transformation of raw material/ beneficiation which include local manufacturing, production and/or assembly, and/or packaging		(d)At least 12 days per annum of productivity deployed in assisting QSE and EME beneficiaries to increase their operation or financial capacity	
(e)At least 85% of labour costs should be paid to South African employees by service industry entities.			

4. I know and understand the contents of this affidavit and I have no objection to take the prescribed oath and consider the oath binding on my conscience and on the owners of the enterprise which I represent in this matter.
5. The sworn affidavit will be valid for a period of12 months from the date signed by Commissioner.

Deponent Signature:_____

Date: _____

Commissioner of Oaths Signature & Stamp: _____

COMMISSIONER OF OATHS STAMP

CONTRACT FORM: PURCHASE OF GOODS/WORKS

MBD7.1

THIS FORM MUST BE FILLED IN DUPLICATE BY BOTH THE SUCCESSFUL BIDDER (PART 1) AND THE PURCHASER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SUCCESSFUL BIDDER AND THE PURCHASER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS.

PART 1 (TO BE FILLED IN BY THE BIDDER)

1. I hereby undertake to supply all or any of the goods and/or works described in the attached bidding documents to (name of institution) _____ in accordance with the requirements and specifications stipulated in bid number **94 of 2022** at the price/s quoted. My offer/s remain binding upon me and open for acceptance by the purchaser during the validity period indicated and calculated from the closing time of bid.

2. The following documents shall be deemed to form and be read and construed as part of this agreement:

   (i) Bidding documents, *viz*
   - Invitation to bid;
   - Pricing schedule(s);
   - Technical Specification(s);
   - Preference claims for Broad Based Black Economic Empowerment Status Level of Contribution in terms of the Preferential Procurement Regulations 2017;
   - Declaration of interest;
   - Declaration of bidder's past SCM practices;
   - Certificate of Independent Bid Determination;
   - Special Conditions of Contract;

   (ii) General Conditions of Contract

3. I confirm that I have satisfied myself as to the correctness and validity of my bid; that the price(s) and rate(s) quoted cover all the goods and/or works specified in the bidding documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.

4. I accept full responsibility for the proper execution and fulfillment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfillment of this contract.

5. I declare that I have no participation in any collusive practices with any bidder or any other person regarding this or any other bid.

6. I confirm that I am duly authorized to sign this contract.

NAME (PRINT)_____

CAPACITY _____

SIGNATURE _____

NAME OF FIRM _____

DATE _____

WITNESSES

1 _____

2 _____

MBD7.1

CONTRACT FORM: PURCHASE OF GOODS/WORKS

PART 2 (TO BE FILLED IN BY THE MAKHADO LOCAL MUNICIPALITY REPRESENTATIVE)

1. I _____ in my capacity as

_____ accept your bid under reference number:

94 of 2022 dated _____ for the supply of goods/works indicated hereunder and/or further specified in the annexure(s).

2. An official order indicating delivery instructions is forthcoming.

3. I undertake to make payment for the goods/works delivered in accordance with the terms and conditions of the contract, within 30 (thirty) days after receipt of an invoice accompanied by the delivery note.

ITEM NO.	PRICE (ALL APPLICABLE TAXES INCLUDED)	BRAND	DELIVERY PERIOD	B-BBEE STATUS LEVEL OF CONTRIBUTION	MINIMUM THRESHOLD FOR LOCAL PRODUCTION AND CONTENT (if applicable)
	Kindly refer to the pricing schedule/BOQ				

4. I confirm that I am duly authorized to sign this contract.

NAME (PRINT)_____

CAPACITY _____

SIGNATURE _____

NAME OF FIRM _____

DATE _____

WITNESSES

1) _____

2) _____

MBD 7.2

CONTRACT FORM - RENDERING OF SERVICES

THIS FORM MUST BE FILLED IN DUPLICATE BY BOTH THE SERVICE PROVIDER (PART 1) AND THE PURCHASER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SERVICE PROVIDER AND THE PURCHASER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS.

PART 1 (TO BE FILLED IN BY THE SERVICE PROVIDER)

7. I hereby undertake to render services described in the attached bidding documents to (name of the institution)..... in accordance with the requirements and task directives / proposals specifications stipulated in Bid Number..... at the price/s quoted. My offer/s remain binding upon me and open for acceptance by the Purchaser during the validity period indicated and calculated from the closing date of the bid.

8. The following documents shall be deemed to form and be read and construed as part of this agreement:

(iii) Bidding documents, *viz*
- Invitation to bid;
- Tax clearance certificate;
- Pricing schedule(s);
- Filled in task directive/proposal;
- Preference claims for Broad Based Black Economic Empowerment Status Level of Contribution in terms of the Preferential Procurement Regulations 2011;
- Declaration of interest;
- Declaration of Bidder's past SCM practices;
- Certificate of Independent Bid Determination;
- Special Conditions of Contract;

(iv) General Conditions of Contract; and
(v) Other (specify)

9. I confirm that I have satisfied myself as to the correctness and validity of my bid; that the price(s) and rate(s) quoted cover all the services specified in the bidding documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.

10. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfillment of this contract.

11. I declare that I have no participation in any collusive practices with any bidder or any other person regarding this or any other bid.

12. I confirm that I am duly authorised to sign this contract.

NAME (PRINT) .....

CAPACITY .....

SIGNATURE .....

NAME OF FIRM .....

DATE .....

WITNESSES

1.

MBD 7.2

CONTRACT FORM - RENDERING OF SERVICES

PART 2 (TO BE FILLED IN BY THE PURCHASER)

4. I..... in my capacity as..... accept your bid under reference number .....dated.....for the rendering of services indicated hereunder and/or further specified in the annexure(s).

5. An official order indicating service delivery instructions is forthcoming.

6. I undertake to make payment for the services rendered in accordance with the terms and conditions of the contract, within 30 (thirty) days after receipt of an invoice.

DESCRIPTION OF SERVICE	PRICE (ALL APPLICABLE TAXES INCLUDED)	COMPLETION DATE	B-BBEE STATUS LEVEL OF CONTRIBUTION	MINIMUM THRESHOLD FOR LOCAL PRODUCTION AND CONTENT (if applicable)

4. I confirm that I am duly authorised to sign this contract.

SIGNED AT ..... ON .....

NAME (PRINT) .....

SIGNATURE .....

OFFICIAL STAMP

WITNESSES

MBD 7.3

CONTRACT FORM - SALE OF GOODS/WORKS

THIS FORM MUST BE FILLED IN DUPLICATE BY BOTH THE SUCCESSFUL BIDDER (PART 1) AND THE SELLER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SUCCESSFUL BIDDER AND THE SELLER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS.

PART 1 (TO BE FILLED IN BY THE BIDDER)

13. I hereby undertake to purchase all or any of the goods and/or works described in the attached bidding documents from (name of institution)..... in accordance with the requirements stipulated in (bid number)..... at the price/s quoted. My offer/s remain binding upon me and open for acceptance by the seller during the validity period indicated and calculated from the closing time of bid.

14. The following documents shall be deemed to form and be read and construed as part of this agreement:

(vi) Bidding documents, *viz*
- Invitation to bid;
- Tax clearance certificate;
- Pricing schedule(s);
- Declaration of interest;
- Declaration of Bidder's past SCM practices;
- Special Conditions of Contract;

(vii) General Conditions of Contract; and
(viii) Other (specify)

15. I confirm that I have satisfied myself as to the correctness and validity of my bid; that the price(s) quoted cover all the goods and/or works specified in the bidding documents; that the price(s) cover all my obligations and I accept that any mistakes regarding price(s) and calculations will be at my own risk.

16. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfillment of this contract.

17. I undertake to make payment for the goods/works as specified in the bidding documents.

18. I declare that I have no participation in any collusive practices with any bidder or any other person regarding this or any other bid.

19. I confirm that I am duly authorised to sign this contract.

NAME (PRINT) .....

CAPACITY .....

SIGNATURE .....

NAME OF FIRM .....

DATE .....

WITNESSES

MBD 7.3

CONTRACT FORM - SALE OF GOODS/WORKS

PART 2 (TO BE FILLED IN BY THE SELLER)

7. I…… in my capacity as…… accept your bid under reference number ……dated……for the purchase of goods/works indicated hereunder and/or further specified in the annexure(s).

8. I undertake to make the goods/works available in accordance with the terms and conditions of the contract.

ITEM NO.	DESCRIPTION	PRICE (ALL APPLICABLE TAXES INCLUDED)		

4. I confirm that I am duly authorized to sign this contract.

SIGNED AT ……ON……

NAME (PRINT) ……

SIGNATURE ……

OFFICIAL STAMP

WITNESSES

MBD 8

DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

1 This Municipal Bidding Document must form part of all bids invited.

2 It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.

3 The bid of any bidder may be rejected if that bidder, or any of its directors have:

a. abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
b. been convicted for fraud or corruption during the past five years;
c. willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
d. been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).

4 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

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

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

CERTIFICATION

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

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

....
Signature **Date**

....
Position **Name of Bidder**

MBD 9

CERTIFICATE OF INDEPENDENT BID DETERMINATION

1 This Municipal Bidding Document (MBD) must form part of all bids[1] invited.

2 Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).[2] Collusive bidding is a pe se prohibition meaning that it cannot be justified under any grounds.

3 Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:

a. take all reasonable steps to prevent such abuse;

b. reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and

c. cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.

4 This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.

5 In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid:

[1] Includes price quotations, advertised competitive bids, limited bids and proposals.

[2] Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.

MBD 9

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid:

_____

(Bid Number and Description)

in response to the invitation for the bid made by:

_____

(Name of Municipality / Municipal Entity)

do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of:_____that:

(Name of Bidder)

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:

    (a) has been requested to submit a bid in response to this bid invitation;
    (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
    (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder

MBD 9

6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium[3] will not be construed as collusive bidding.
7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
    (a) prices;
    (b) geographical area where product or service will be rendered (market allocation)
    (c) methods, factors or formulas used to calculate prices;
    (d) the intention or decision to submit or not to submit, a bid;
    (e) the submission of a bid which does not meet the specifications and conditions of the bid; or
    (f) bidding with the intention not to win the bid.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

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

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

.....	.....
Signature	Date
.....	.....
Position	Name of Bidder

FORM A

MUNICIPAL SERVICES, RATES AND TAXES CLEARANCE CERTIFICATE FOR SUPPLY CHAIN MANAGEMENT PURPOSE

The purpose of this form is to obtain prove that municipal services, rates and taxes of the service provider are **not more than three months in arrears** with the relevant municipality / landlord in the municipal area where the service provider conduct his / her business. Kindly attach the latest municipal rates and taxes account not older than 3 months from date of advertising of bid.

Where bidders are not owners of a property and cannot submit a copy of the municipal account, the following must be completed together with a Rental/lease agreement:

(TO BE COMPLETED BY THE LANDLORD)			
Name of the Landlord:			
Property Physical Address:			
Please tick below		**Yes**	**No**
Rental:	in arrears for more than 3 months		
Municipal services:	in arrears for more than 3 months		
Landlord Signature:			
Date: _____			
Landlord's business stamp here (where applicable)			

FORM B

CONFIRMATION OF REGISTRATION ON NATIONAL TREASURY CENTRALISED SUPPLIER DATABASE

CONFIRMATION OF CSD VENDOR INFORAMTION		
1	VENDOR NAME	
2	CSD APPROVED NUMBER	**MMMM**_____
3	COMPANY REG NUMBER	
4	COMPANY TAX NUMBER	
5	COMPANY VAT NUMBER	
6	COMPANY BEE LEVEL	
7	CONTACT PERSON	
8	OFFICE TEL. NUMBER	
9	OFFICE FAX NUMBER	
10	E-MAIL ADDRESS	
11	CELL NUMBER	

I, _____ in my capacity as _____ being the authorized signatory, hereby declare that the above information is true and correct.

_____ _____

AUTHORISED SIGNATORY DESIGNATION **NAME AND SURNAME**

_____

RESOLUTION DATE: AUTHORISED SIGNATORY APPOINTMENT

_____ _____

SIGNATURE **DATE**

FORM C

AUTHORITY OF SIGNATORY TO SIGN BIDS

The bid shall be signed by a person duly authorized thereto and the following is applicable:

Company: A resolution by its board of directors authorizing a director or other official of the company to sign the documents on behalf of the company.

Close Corporation: A resolution by its members authorizing a member or other official of the corporation to sign the documents on each member's behalf.

Partnership: All the partners shall sign the documents unless one partner or a group of partners has been authorised to sign on behalf of each partner, in which case proof of such authorization shall be included in the bid.

Joint Venture: Should two or more firms jointly submit a bid, the bid shall be accompanied by the document of establishment of the joint venture, duly registered and authenticated by a notary public or other official deputed to witness sworn statements, which defines the conditions under which the joint venture will function, the period of duration, the persons authorized to represent the Joint Venture and who are obligated thereby, the participation of the several firms forming the joint venture, and well as any other information necessary to permit a full appraisal of its functioning.

One Man Concern: This shall be clearly stated and all documents shall be signed accordingly.

Details of person responsible for Bid Document process:

Name : ----------

Contact number : ----------

Office address : ----------

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

PRO-FORMA FOR COMPANIES AND CLOSE CORPORATIONS

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

Prof./Dr/Mr/Ms _____

has been duly authorized to sign all documents in connection with the Bid Document for Contract Number _____ and any Contract which may arise there from on behalf of

_____

(BLOCK CAPTIALS)

SIGNED ON BEHALF OF THE COMPANY _____

IN HIS CAPACITY AS _____

DATE _____

FULL NAMES OF SIGNATORY _____

AS WITNESSES: 1. _____

2. _____

PRO-FORMA FOR JOINT VENTURES:
Certificate of Authority for Joint Ventures

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

NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
		Signature: ..... Name: ..... Designation: .....
		Signature: ..... Name: ..... Designation: .....
		Signature: ..... Name: ..... Designation: .....
		Signature: ..... Name: ..... Designation: .....

N.B.: THE DULY SIGNED AND DATED ORIGINAL OR CERTIFIED COPY OF AUTHORITY OF SIGNATORY ON COMPANY LETTERHEAD SHOULD BE INCLUDED IN THE RETURNABLE DOCUMENTS PACK

FORM D

FINANCIAL REFERENCES/ BIDDERS'S CREDIT RATING AND DETAILSOF BIDDERS BANKING INFORMATION

Notes to Bidder:

1. The Bidder shall attach to this form a letter from the bank confirming the bank account and details. Failure to provide the required letter with the Bid Document submission shall render the Bidder's offer unresponsive.
2. The Bidder's banking details as they appear below shall be completed.
3. In the event that the Bidder is a joint venture enterprise, details of all the members of the joint venture shall be similarly provided and attached to this form.

BANK NAME:	
ACCOUNT NAME: *(e.g. ABC Civil Construction cc)*	
ACCOUNT TYPE: *(e.g. Savings, Cheque etc)*	
ACCOUNT NO:	
ADDRESS OF BANK:	
CONTACT PERSON:	
TEL. NO. OF BANK / CONTACT:	
How long has this account been in existence:	0-6 months ☐ 7-12 months ☐ 13-24 months ☐ More than 24 months ☐ (Tick which is appropriate)

_____

Signature on behalf of Bidder

N.B.: ORIGINAL LETTER FROM BANK OR BANK STATEMENT (NOT OLDER THAN THREE MONTHS) SHOULD BE INCLUDED IN THE RETURNABLE DOCUMENTS PACK.

FORM E

RECORD OF ADDENDA TO BID DOCUMENTS

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

	Date	Title of Details

SIGNATURE ON BEHALF OF BIDDER

FORM F

CERTIFICATE OF AUTHORITY FOR SIGNATORY TO AGREEMENT IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO 85 OF 1993)

The signatory for the company that is the Contractor in terms of the above-mentioned Contract and the Mandatory in terms of the above-mentioned Act shall confirm his or her authority thereto by attaching to this page a duly signed and dated copy of the relevant resolution of the board of directors.

By resolution of the board of directors passed at a meeting held on _____ 20 _____,

Mr//Ms_____ whose signature

appears below, has been duly authorised to sign the AGREEMENT IN TERMS OF THE

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT 85 OF 1993) on behalf of

---

SIGNED ON BEHALF OF THE COMPANY : _____

IN HIS/HER CAPACITY AS : _____

DATE : _____

SIGNATURE OF SIGNATORY : _____

WITNESS: _____ **WITNESS:** _____

NAME (in capitals): _____ **NAME:** _____

FORM G

OCCUPATIONAL HEALTH AND SAFETY AGREEMENT /PLAN (WHERE APPLICABLE)

The tenderer must attach herein or make reference for his/her Occupational Health and Safety Agreement/Plan

FORM H

CERTIFIED COPY OF ID DOCUMENT/S OF OWNERS/MEMBERS/SHAREHOLDERS

FORM I

CURRENT CERTIFICATE OF GOOD STANDING FROM COMPENSATION COMMISSIONER

FORM J

PROGRAMME OF WORKS

Work Plan

(Detailed Programme of works and Project associated cash flow)

Note: For programme and cash flow:
Five (No5) components must be stated in writing/or be visible on a programme and cash flow spreadsheet **per plant;**

(1) Milestones,
(2) Critical Path
(3) Resource allocation
(4) Task dependency map
(5) Monthly project cash flow, (cash flow must be in-line with the project cost and programme of works).

FORM K

EXPERTISE OF THE KEY PERSONNEL

1. **Personnel / Individual adequacy**: Portfolio of evidence (CV) should be provided. Indicating similar projects / jobs by Team leader, middle manager and supervisors.

2. **Qualifications;** Portfolio of evidence should be provided for the key staff with supporting Qualifications (Professional Status i.e. ECSA/ SACNASP registration) and detailed **organogram**

The tenderer shall state below what project personnel will be available for this contract.

(Note: Failure to provide shall lead to technical non-compliance and therefore automatic disqualification)

Position on this contract	Name	Qualifications	No. of relevant experience

Position on this contract	Name	Qualifications	No. of relevant experience

Position on this contract	Name	Qualifications	No. of relevant experience

SIGNATURE ON BEHALF OF BIDDER

FORM L

PROOF OF RELEVANT REGULATORY CERTIFICATION OR OTHER REQUIREMENTS IN TERMS OF THE REQUIRED REGULATORY AUTHORITY AS SET OUT IN THE SCOPE OF WORKS

INCLUDE STANDARDS SECTION

1. **CIDB GRADING 7 CE OR HIGHER**
2. **SANS 1200**
3. **COLTO**

FORM M

LETTER OF INTENT TO SUBMIT THIRD PARTY LIABILITY INSURANCE AND ALL RISK CONTRACTORS INSURANCE TO COVER THIS CONTRACT

FORM N

COPY OF COMPANY REGISTRATION DOCUMENTS

1. **For Closed Corporations**

CK1 or CK2 or CK9 as applicable (Founding Statement).

2. **For Companies:**

- A letter from the auditors confirming shareholding percentages or
- A copy of the Certificate of Incorporation
- Certified Copies of the ID's of the Directors and
- The shareholders' register.

3. **For Joint Venture Agreements**

- Copy of the Joint Venture Agreement between all the parties,
- As well as the documents in MBD 1, MBD 6.1, Form C and Form D of each Joint Venture member.

4. **For Partnership**

- Certified Copies of the ID's of the partners

5. **One-person Business / Sole trader/Sole Proprietor**

- Certified Copy of ID

FORM O

AUDITED FINANCIAL STATEMENTS FOR THE PAST THREE YEARS FOR BIDS WHERE THE THRESHOLD EXCEEDS R10 MILLION

*NB: A complete set of financial statements is required for grading designation 3 to 9 accompanied by SARS VAT 201forms with a corresponding **VAT Statement of Account** OR **stamped business bank statements** for the period in question for verification of turnover as stated on the financial statements (NOT compulsory for audited financial statements but May be requested where necessary).

Management Financial statements are not acceptable, however interim Financial Statements will be accepted

FORM P

SUB-CONTRACTING AS CONDITION OF TENDER FOR A CONTRACT ABOVE 30 MILLION

4. Regulation 9 of the Preferential Procurement Policy Act, 2000 (Act 5 of 2000) – Preferential Procurement Regulations, 2017 provides the following:

Subcontracting as condition of tender

9.*(1) If feasible to subcontract for a contract above R30 million, an organ of state must apply subcontracting to advance designated g r o u p s .*

(2) If an organ of state applies subcontracting as contemplated in sub regulation (1), the organ of state must advertise the tender with a specific tendering condition that the successfultenderermustsubcontractaminimumof30%ofthevalueofthecontractto-

(a) an EME or QSE;

(b) an EME or QSE which is at least 51% owned by black p e o p l e ;

(c) an EME or QSE which is at least 51% owned by black people who are youth;

(d) an EME or QSE which is at least 51% owned by black people who are women;

(e) an EME or QSE which is at least 51% owned by black people with disabilities;

(f) an EME or QSE which is 51% owned by black people living in rural or underdeveloped areas or townships;

(g) a cooperative which is at least 51% owned by black p e o p l e ;

(h) an EME or QSE which is at least 51% owned by black people who are military veterans;or

(i) more than one of the categories referred to in paragraphs (a) to (h).

(3) The organ of state must make available the list of all suppliers registered on a database approved by the National Treasury to provide the required goods or services in respect of the applicable designated groups mentioned in sub regulation (2) from which the tenderer must select a supplier.

3. Bidders attention is drawn to the definitions applicable to this section as set out in the MBD 6.1 form.

4. BIDDERS DECLARATION FOR SUB-CONTRACTING AMINIMUM OF 30% OF THE VALUE OF THE CONTRACTOR THE FOLLOWING ADVANCED DESIGNATED GROUPS:

NO.	ADVANCE DESIGNATED G R O U P S	RAND VALUE	% OF TOTAL CONTRACT
1	a CE		
2	a CE which is at least 51% owned by black p e o p l e ;		
3	a CE which is at least 51% owned by black people who are youth;		
4	a CE which is at least 51% owned by black people who are women;		
5	a CE which is at least 51% owned by black people with disabilities;		
6	a CE which is 51% owned by black people living in rural or underdeveloped areas or townships;		
7	a cooperative which is at least 51% owned by black p e o p l e ;		
8	a CE which is at least 51% owned by black people who are military veterans;or		
9	more than one of the categories referred to in paragraphs (a) to (h).		

5. <u>DETAILS OF THE SUB-CONTRACTING PARTY:</u>

- Name of the sub-contractor: _____
- Sub-contracting company registration number: _____
- Rates and taxes not older than 3 months attached: **Yes/No**
- MBD 4 of contracting party attached: **Yes/No**
- BBBEE Level: _____ (Certified or original to be attached)
- CSD number: MAAA_____

6. <u>LIT OF NATIONAL TREASURY ACCREDITED SUPPLIERS:</u>

A list of all suppliers registered on a database approved by the National Treasury is available from National Treasury's Centralised Supplier Database at: www.cd.org.za.

Kindly contact the Supply Chain Unit should you require any assistance relating to the extraction of the data.

7. I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the advanced designated groups claimed, based on the B-BBEE status level of contribution indicated above of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

i. The information furnished is true and correct;

ii. In the event of a contract being awarded as a result of advanced designated groups claimed as shown in paragraph 3, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;

iii. If the B-BBEE status level of the advanced designated groups has been claimed or obtained on a fraudulent

basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –

a. disqualify the person from the bidding process;

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

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

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

e. forward the matter for criminal prosecution.

WITNESSES:

1. _____

2. _____

DATE:_____

_____

SIGNATURE(S) OF BIDDER(S)

FORM Q

PREFERENTIAL PROCURMENT REGULATION 9: IMPLEMENTATION PLAN

Employer	
Project Description	
Tender Number	
Project Reference Number	

1. **Contract Parameters**

Contract participation goal applicable to the contract	%	
Contract sum at time of award(VAT Exclusive)	R	
Less : Preliminary & General	R	
Less : Contingencies	R	
Less : Escalation	R	
Net Amount	**R**	**(a)**

2. **Achieving the contract participation goal**

I/We commit to achieve the CPG (Contract Participation Goal) by subcontracting/Sub- consulting to targeted enterprises

3. **Documentation**

In support of my/our contract participation goal requirements, I/we submit the following documents:

- Targeted Enterprise Declaration Affidavit
- Letter of undertaking to perform as subcontractors/ Sub-consultants
- Contract Participation Goal Implementation Plan

(i)
.....
(ii)
.....
(iii)
.....
(iv)
.....
(v)
.....

Note: Provide sufficient number of pages as required by the bidder.

4. Contracting of targeted enterprise as subcontractors/Sub-consultants:

Note: The financial value of the participation claimed towards the contract participation goal shall exclude preliminaries, contingencies, escalation and value added tax.

I/we certify that I/we will be contracting the following targeted enterprises as subcontractors/Sub-consultant.

(*Note: Provide sufficient number of pages as required by the bidder*)

i. Name of Sub-Contractor	
Address	
Contact person	
Telephone	
Fax	
Service/work to be performed	
Company/Enterprise income tax reference number	
Financial value of participation claimed towards CPG	R
Percentage participation claimed towards contract participation goal	%

ii. Name of Sub-Contractor	
Address	
Contact person	
Telephone	
Fax	
Service/work to be performed	
Company/Enterprise income tax reference number	
Financial value of participation claimed towards CPG	R
Percentage participation claimed towards contract participation goal	%
iii. Name of Sub-Contractor	

Address	
Contact person	
Telephone	
Fax	
Service/work to be performed	
Company/Enterprise income tax reference number	
Financial value of participation claimed towards CPG	R
Percentage participation claimed towards contract participation goal	%

iv. Name of Sub-Contractor	
Address	
Contact person	
Telephone	
Fax	
Service/work to be performed	
Company/Enterprise income tax reference number	
Financial value of participation claimed towards CPG	R
Percentage participation claimed towards contract participation goal	%

v. Name of Sub-Contractor	

Address	
Contact person	
Telephone	
Fax	
Service/work to be performed	
Company/Enterprise income tax reference number	
Financial value of participation claimed towards CPG	R
Percentage participation claimed towards contract participation goal	%

vi. Name of Sub-Contractor	
Address	
Contact person	
Telephone	
Fax	
Service/work to be performed	
Company/Enterprise income tax reference number	
CIDB Registration Number (If applicable):	
CIDB Contractor Grading Designation (If applicable):	
Financial value of participation claimed towards CPG	R
Percentage participation claimed towards contract participation goal	%

5. Summary of targeted enterprises participation

Name of contracted Sub-Contractor	**Financial value of Subcontractors/Sub-consultants**	**Percentage participation claimed towards contract participation**
i)	R	%
ii)	R	%
iii)	R	%
iv)	R	%
v)	R	%
vi)	R	%
Total Contribution towards CPG	**R**	**%(b)**

Targeted Contract Participation Goal: = (b)/(a) x 100 =_____%

6. Undertaking

I/We certify to the best of my/our knowledge that the above information, facts and representations are correct and that the proposed targeted enterprises named are able to perform commercially useful functions in the performance of the contract and are *bona fide* targeted enterprises

SIGNED FOR THE CONTRACTOR/CONSULTANT:

Name of contractor	Signature	Date

WITNESSED BY:

Name of contractor	Signature	Date

_____
SIGNATURE ON BEHALF OF BIDDER

FORM R

TARGETED ENTERPRISE DECLARATION AFFIDAVIT

Target Enterprise Declaration Affidavit

Employer	
Project description	**CONSTRUCTION OF DZANANI TAXI RANK**
Tender number	**94 of 2022**

1. Name of target enterprise

i)
ii)
iii)
iv)
v)

2. Legal Entity

Company or Close Corporation ……	OR	Natural Person or Partnership: ……
and: Whose registration number is: ……		Whose registration number is/are: ……
and: Whose Income Tax Reference Number is: ……		Whose Income Tax Reference Number is/are: ……

3. And who is:

Represented herein, and who is duly authorized to do so, by Mr/Mrs/Ms …… In his/her capacity as: ……	Note: A resolution / Power of Attorney, signed by all the Directors / Members / Partners of the Legal Entity must accompany this Affidavit, authorizing the representative to make this affidavit.

4. Principal business activities:

5. ***Domiciliumcitandiexecutandi***

The targeted enterprise elects as its *domiciliumcitandi et executandi* in the republic of South Africa, where any and all legal may be serve, as (physical address)

6. List a maximum of five contracts which you are presently engaged in and have not yet completed:

Contract description	Location	Employer	Contract person & telephone number	Contract amount

7. List the four largest contract contracts / assignments completed by you in the three years:

Work performed	Employer	Contract Person & telephone number	Contract amount

8. Declaration (to be signed in the presence of a Commissioner of Oaths):

I.....the undersigned,

(a) Warrant that I am duly authorized to depose to this on behalf ....., and

(b) Confirm that the contents of this Affidavit are within my personal knowledge, and are save where stated otherwise, to the best of my knowledge and belief both true and correct.

_____

SIGNED BY THE DEPONENT:

Name of deponent	Signature	Date

Duly authorized to sign on behalf of:	Address:	Telephone:

Signed and sworn to before me at.....

On this the..... day of .....20..... by the deponent, who has acknowledged that he/she knows and understands the contents of this Affidavit, that it is true and correct to the best of his/her knowledge and that he/she has no objection to taking the prescribed oath, and the prescribed oath will be binding on his/her conscience.

Signed: Commissioner of Oaths.....

Official Stamp:

Note: All pages of this Affidavit must be initialled by both the Deponent and the Commissioner of Oaths

SIGNATURE ON BEHALF OF BIDDER

FORM S (1)

LETTER OF UNDERTAKING FROM A TARGETED ENTERPRISE TO ACT AS A SUB-CONTRACTOR

Employer:	
Project Description:	**CONSTRUCTION OF DZANANI TAXI RANK**
Bid Number:	**94 of 2022**
From: (Name and address of targeted enterprise)	
Name:	
Address:	
To: (Name and address of main contractor/joint venture/subcontractor)	
Name:	
Address:	

The undersigned undertakes to perform the following work/provide the following services or goods

In connection with the above-mentioned contract:

……

……

……

For an estimated amount of R …… Excluding preliminaries, contingencies, escalation and value added tax subject to the terms of any agreement made between us for the purposes of the contract.

The status of the undersigned as a targeted enterprise is confirmed in the attached targeted enterprise declaration affidavit.

Signature: . . . .

Name: . . . .

Designation: . . . . . .

Date: . . . . . .

who duly warrants that he/she is authorized to sign this letter

SIGNATURE ON BEHALF OF BIDDER

FORM S (2)

LETTER OF UNDERTAKING FROM A TARGETED ENTERPRISE TO ACT AS A SUB-CONTRACTOR

Employer:	
Project Description:	**CONSTRUCTION OF DZANANI TAXI RANK**
Bid Number:	**94 of 2022**
From: (Name and address of targeted enterprise)	
Name:	
Address:	
To: (Name and address of main contractor/joint venture/subcontractor)	
Name:	
Address:	

The undersigned undertakes to perform the following work/provide the following services or goods

In connection with the above-mentioned contract:

.....

.....

.....

For an estimated amount of R ..... Excluding preliminaries, contingencies, escalation and value added tax subject to the terms of any agreement made between us for the purposes of the contract.

The status of the undersigned as a targeted enterprise is confirmed in the attached targeted enterprise declaration affidavit.

Signature: . . . .

Name: . . . .

Designation: . . . . . .

Date: . . . . . .

who duly warrants that he/she is authorized to sign this letter

_____

SIGNATURE ON BEHALF OF BIDDER

FORM S (3)

LETTER OF UNDERTAKING FROM A TARGETED ENTERPRISE TO ACT AS A SUB-CONTRACTOR

Employer:	
Project Description:	**CONSTRUCTION OF DZANANI TAXI RANK**
Bid Number:	**94 of 2022**
From: (Name and address of targeted enterprise)	
Name:	
Address:	
To: (Name and address of main contractor/joint venture/subcontractor)	
Name:	
Address:	

The undersigned undertakes to perform the following work/provide the following services or goods

In connection with the above-mentioned contract:

……

……

……

For an estimated amount of R …… Excluding preliminaries, contingencies, escalation and value added tax subject to the terms of any agreement made between us for the purposes of the contract.

The status of the undersigned as a targeted enterprise is confirmed in the attached targeted enterprise declaration affidavit.

Signature: . . . .

Name: . . . .

Designation: . . . . . .

Date: . . . . . .

who duly warrants that he/she is authorized to sign this letter

_____

SIGNATURE ON BEHALF OF BIDDER

FORM S (4)

LETTER OF UNDERTAKING FROM A TARGETED ENTERPRISE TO ACT AS A SUB-CONTRACTOR

Employer:	
Project Description:	**CONSTRUCTION OF DZANANI TAXI RANK**
Bid Number:	**94 of 2022**
From: (Name and address of targeted enterprise)	
Name:	
Address:	
To: (Name and address of main contractor/joint venture/subcontractor)	
Name:	
Address:	

The undersigned undertakes to perform the following work/provide the following services or goods

In connection with the above-mentioned contract:

.....

.....

.....

For an estimated amount of R ..... Excluding preliminaries, contingencies, escalation and value added tax subject to the terms of any agreement made between us for the purposes of the contract.

The status of the undersigned as a targeted enterprise is confirmed in the attached targeted enterprise declaration affidavit.

Signature: . . . .

Name: . . . .

Designation: . . . . . .

Date: . . . . . .

who duly warrants that he/she is authorized to sign this letter

SIGNATURE ON BEHALF OF BIDDER

FORM S (5)

LETTER OF UNDERTAKING FROM A TARGETED ENTERPRISE TO ACT AS A SUB-CONTRACTOR

Employer:	
Project Description:	**CONSTRUCTION OF DZANANI TAXI RANK**
Bid Number:	**94 of 2022**
From: (Name and address of targeted enterprise)	
Name:	
Address:	
To: (Name and address of main contractor/joint venture/subcontractor)	
Name:	
Address:	

The undersigned undertakes to perform the following work/provide the following services or goods

In connection with the above-mentioned contract:

……

……

……

For an estimated amount of R …… Excluding preliminaries, contingencies, escalation and value added tax subject to the terms of any agreement made between us for the purposes of the contract.

The status of the undersigned as a targeted enterprise is confirmed in the attached targeted enterprise declaration affidavit.

Signature: . . . .

Name: . . . .

Designation: . . . . . .

Date: . . . . . .

who duly warrants that he/she is authorized to sign this letter

SIGNATURE ON BEHALF OF BIDDER

FORM S (6)

LETTER OF UNDERTAKING FROM A TARGETED ENTERPRISE TO ACT AS A SUB-CONTRACTOR

Employer:	
Project Description:	**CONSTRUCTION OF DZANANI TAXI RANK**
Bid Number:	**94 of 2022**
From: (Name and address of targeted enterprise)	
Name:	
Address:	
To: (Name and address of main contractor/joint venture/subcontractor)	
Name:	
Address:	

The undersigned undertakes to perform the following work/provide the following services or goods

In connection with the above-mentioned contract:

……

……

……

For an estimated amount of R …… Excluding preliminaries, contingencies, escalation and value added tax subject to the terms of any agreement made between us for the purposes of the contract.

The status of the undersigned as a targeted enterprise is confirmed in the attached targeted enterprise declaration affidavit.

Signature: . . . .

Name: . . . .

Designation: . . . . . .

Date: . . . . . .

who duly warrants that he/she is authorized to sign this letter

_____

SIGNATURE ON BEHALF OF BIDDER

FORM T

COMPANY PROFILE AND EXPERIENCE

1. Attach company profile

2. Company experience in similar projects; Portfolio of evidence should be provided with five (5) completion certificate or / JV the lead partner to provide 5 completion certificate for similar projects). Number of letters to be used and interpolated if less than five (5).**Appointment letters shall not be accepted.**

Note to tenderer:

The tenderer shall enter in the spaces provided below a complete list of the last ten similar contracts awarded to him.

Employer (Name, Tel No. & Fax No.)	Nature of Work	Value of Work	Year Completed
Employer (Name, Tel No. & Fax No.)	Nature of Work	Value of Work	Year Completed

SIGNATURE ON BEHALF OF BIDDER

FORM U

TECHNICAL IMPLEMENTATION

1. Technical Implementation and Work Methodology: Provide clear method statement / proposal on approaching the job. Technicality of work to be in line with the scope and the BOQ. Full method statement including plant to be utilised, etc.

2. Quality Plan: Provide a detailed plan covering the aspects of the scope of work

FORM V

SCHEDULE OF ESTIMATED MONTHLY EXPENDITURE

The tenderer shall state his estimated value of the work to be completed every month, based on his preliminary programme for the consulting services in the table below.

Month	Value	Month	Value

SIGNATURE ON BEHALF OF BIDDER

FORM W

LIST OF COMPANY OWNED PLANT AND ASSURANCE LETTER TO HIRE

LIST OF PLANT	QUANTITY

_____

SIGNATURE ON BEHALF OF BIDDER

PROJECT NO: 94 of 2022

CONSTRUCTION OF DZANANI TAXI RANK

CIDB GRADING: 7 CE OR HIGHER

C. AGREEMENTS AND CONTRACT DATA

Part C1: Agreements and Contract Data

C1.1	Form of Offer and Acceptance
MBD 7.2	Contract Forms: Works
C1.2	Contract Data
C1.3	Form of Guarantee
C1.4	Occupational Health and Safety
C1.5	Corporate Governance Breach Clause

Part C2: Pricing Data

C2.1	Pricing Instructions

Part C3: Scope of Work

C3.1	Scope of Work

Part C4: Site Information

C4	Site Information

PROJECT NO: 94 of 2022

CONSTRUCTION OF DZANANI TAXI RANK

CIDB GRADING: 7 CE OR HIGHER

C1 AGREEMENTS AND CONTRACT DATA

Part C1: Agreements and Contract Data

C1.1	Form of Offer and Acceptance
MBD 7.2	Contract Forms: Works
C1.2	Contract Data
C1.3	Form of Guarantee
C1.4	Occupational Health and Safety
C1.5	Corporate Governance Breach Clause

C1.1 FORM OF OFFER AND ACCEPTANCE

OFFER

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract in respect of the following works: **"PROJECT NO: 94 of 2022 and CONTRACT DESCRIPTION: CONSTRUCTION OF DZANANI TAXI RANK"**

The Bidder, 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 Bidder, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance, the Bidder 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 FOR ALL THE WORKS (THE PRICES INCLUSIVE OF VALUE ADDED TAX) IS:

.....

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

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

Signature(s) ....

Name(s) ....

Capacity ....

For the Bidder .....
(Name and address of organisation)

Name & Signature
Of Witness ....
Name Date

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Bidder's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Bidder's Offer shall form an agreement between the Employer 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:

- 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 above stated terms.

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

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

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

Signature(s) ....

Name(s) ....

Capacity ....

For the Bidder .....
(Name and address of organisation)

Name & Signature
Of Witness ....
Name Date

SCHEDULE OF DEVIATIONS

Notes:

1. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.

2. A Bidder'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 documents and which it is agreed by the Parties becomes an obligation of the contract, shall also be recorded here.

4. Any change or addition to the tender documents arising from the above agreements and recorded here shall also be incorporated into the final draft of the Contract.

1 Subject .....

Details .....

.....

2 Subject .....

Details .....

.....

3 Subject .....

Details .....

.....

4 Subject .....

Details .....

.....

5 Subject .....

Details .....

.....

By the duly authorised representatives signing this Schedule of Deviations, 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 Tender Data and addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the terms of the Offer agreed by the Bidder and the Employer during this process of Offer and Acceptance. It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the Tender documents and the receipt by the 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.

FOR THE BIDDER:

Signature(s) ....

Name(s) ....

Capacity ....

For the Bidder .....
(Name and address of organisation)

Name & Signature
Of Witness ....
Name Date

FOR THE EMPLOYER

Signature(s) ....

Name(s) ....

Capacity ....

For the Bidder .....
(Name and address of organisation)

Name & Signature
Of Witness ....
Name Date

CONTRACT FORM: PURCHASE OF GOODS/WORKS

MBD7.1

THIS FORM MUST BE FILLED IN DUPLICATE BY BOTH THE SUCCESSFUL BIDDER (PART 1) AND THE PURCHASER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SUCCESSFUL BIDDER AND THE PURCHASER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS.

PART 1 (TO BE FILLED IN BY THE BIDDER)

1. I hereby undertake to supply all or any of the goods and/or works described in the attached bidding documents to (name of institution) _____ in accordance with the requirements and specifications stipulated in bid number **94 of 2022** at the price/s quoted. My offer/s remain binding upon me and open for acceptance by the purchaser during the validity period indicated and calculated from the closing time of bid.

2. The following documents shall be deemed to form and be read and construed as part of this agreement:

   (i) Bidding documents, *viz*
   - Invitation to bid;
   - Pricing schedule(s);
   - Technical Specification(s);
   - Preference claims for Broad Based Black Economic Empowerment Status Level of Contribution in terms of the Preferential Procurement Regulations 2017;
   - Declaration of interest;
   - Declaration of bidder's past SCM practices;
   - Certificate of Independent Bid Determination;
   - Special Conditions of Contract;

   (ii) General Conditions of Contract

3. I confirm that I have satisfied myself as to the correctness and validity of my bid; that the price(s) and rate(s) quoted cover all the goods and/or works specified in the bidding documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.

4. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfilment of this contract.

5. I declare that I have no participation in any collusive practices with any bidder or any other person regarding this or any other bid.

6. I confirm that I am duly authorised to sign this contract.

NAME (PRINT)_____

CAPACITY _____

SIGNATURE _____

NAME OF FIRM _____

DATE _____

WITNESSES

1 _____

2 _____

MBD7.1

CONTRACT FORM: PURCHASE OF GOODS/WORKS

PART 2 (TO BE FILLED IN BY THE MAKHADO LOCAL MUNICIPALITY REPRESENTATIVE)

1. I _____ in my capacity as

_____ accept your bid under reference number:

94 of 2022 dated _____ for the supply of goods/works indicated hereunder and/or further specified in the annexure(s).

2. An official order indicating delivery instructions is forthcoming.

3. I undertake to make payment for the goods/works delivered in accordance with the terms and conditions of the contract, within 30 (thirty) days after receipt of an invoice accompanied by the delivery note.

ITEM NO.	PRICE (ALL APPLICABLE TAXES INCLUDED)	BRAND	DELIVERY PERIOD	B-BBEE STATUS LEVEL OF CONTRIBUTION	MINIMUM THRESHOLD FOR LOCAL PRODUCTION AND CONTENT (if applicable)
	Kindly refer to the pricing schedule/BOQ				

4. I confirm that I am duly authorized to sign this contract.

NAME (PRINT)_____

CAPACITY _____

SIGNATURE _____

NAME OF FIRM _____

DATE _____

WITNESSES

1) _____

2) _____

1.2 CONTRACT DATA

GENERAL CONDITIONS OF CONTRACT

This Contract will be based on the "General Conditions of Contract for Construction Works *General Conditions of Contract 2015 (GCC 2015, Third Edition*)

Documents can be ordered from SAICE who can be contacted through their website www.saice.org.za. Physical address: SAICE House, Block 9, Thorn hill Office Park, Bekker Street, Midrand, Johannesburg. Telephone number: (011) 805 5947.

It is agreed that the only variations from the General Conditions of Contract 2015 are those set out hereafter under "Special Conditions of Contract".

SPECIAL CONDITIONS OF CONTRACT

These Special Conditions of Contract (SCC) form an integral part of the Contract. The Special Conditions of Contract shall amplify, modify or supersede, as the case may be, the General Conditions of Contract 2015 to the extent specified below, and shall take precedence and shall govern.

The clauses of the Special Conditions hereafter are numbered "SCC" followed in each case by the number of the applicable clause or subclause in the General Conditions of Contract 2015, and the applicable heading, or (where a new special condition that has no relation to the existing clauses is introduced) by a number that follows after the last clause number in the General Conditions, and an appropriate heading.

AMENDMENTS TO THE GENERAL CONDITIONS OF CONTRACT

DATA PROVIDED BY THE EMPLOYER

Clause	Data
	Definitions The definitions contained in Clause 1.1 are hereby amended and/or supplemented as follows:
SCC 1.1.1.13	The Defects Liability Period is **12** months from the date of the Certificate of Completion.
SCC 1.1.1.14	The Overall Works shall be completed within **52** weeks from the commencement date.
SCC 1.1.1.15 **1.2.1.2**	The Name of the Employer is **MAKHADO LOCAL MUNICIPALITY** The address of the Employer is: **The Managing Director** Makhado Local Municipality Private Bag x 2596 Makhado 0920 Tel No: (015) 519 3000 Fax No: (015) 516 1195
1.1.1.16	The Name of the Principal Agent is **MAKHADO LOCAL MUNICIPALITY**

Clause	Data
1.1.1.17	The Name of the Employer's Representative is Ms DG Siboiboi
1.2.1.2	The address of the Engineer is: 10A Hans Van Rensburg, Polokwane, 0700 Telephone: (015) 295 2023/291 1467
SCC 1.1.1.26	The Pricing Strategy is a Re-measurement Contract
SCC 3.2.3	**Add the following:** Approval of the Employer is required for; i). Cessions – issuing of cessions by the Contractor is expressly prohibited except if and when prior written approval of the Employer under the signature of the Municipal Manager for the issue of the cession has been requested and obtained ii). Use of contingencies – for all items for which rates have not been approved in terms the contract. iii). Extension of Time – extension of time can only be granted by the Employer.
SCC 4.1.2	**Add the following:** "When completed, the parts of the works designed by the Contractor, to the extent specified in the Contract, shall be fit for the purposes for which the Works are intended"
SCC 4.4.1	**Add the following:** The Contractor is to submit to the Employer's Agent in writing a request for appointment of a particular sub-contractor. Accompanying this request is to be the full detail of the sub-contractor, including: ▪ Previous experience ▪ Work which will be sub-contracted to him/her ▪ Approximate value of the work to be sub-contracted (*Refer to Form P- minimum of 30% of the contract value to be sub-contracted*) Before the Employer's Agent in terms of Clause 6.10 hereof issues any certificate that includes any payment in respect of work done or goods supplied by any sub-contractor appointed in accordance with the provisions of Clause 4.4 of the General Conditions of Contract for Construction works (2015, Third Edition), he shall be entitled to call upon the Contractor to furnish reasonable proof that all payments (less retention moneys) included in previous certificates in respect of the work or goods of such sub-contractors have been made or discharged by the Contractor, in default of which, unless the Contractor: ▪ Informs the Employer's Agent in writing that he has reasonable cause for withholding or refusing such payment; and ▪ Submits to the Employer's Agent reasonable proof that he has so informed such sub-contractor in writing.
SCC 4.9.1	**Add the following:** "All equipment on site shall be in a good working order, and is to be in such a condition that it can achieve production rates which are typical of the industry standards. Should any equipment, in the opinion of the Employer's Agent, be substandard or breaks down frequently to such an extent that it affects the progress on the project, the Employer's Agent may instruct the Contractor to replace such equipment."
SCC 5.3.1	**Add the following to 5.3.1:** The documentation required before Commencement of the Works are: • Health & Safety Plan (Refer to Cl. 4.3) • Initial Programme (Refer to Cl. 5.6) • Security (Deed of Guarantee) (refer to Cl. 6.2)

Clause	Data
	• Insurances (Refer to Cl. 8.6) • Cash Flow Projections
SCC 5.3.1	**Add the following:** Commencement of the Works shall be within **1** day after date of meeting the Contractual obligations
SCC 5.3.3	**Add the following:** The time to the documentation required before Commencement of the Works execution is 14 days
SCC 5.4.1	**Add the following:** The Commencement Date shall be the date the contractor is given possession of site.
SCC 5.8.1	**Add the following:** The special non-working days are the official builder's holiday plus all statutory public holidays. The year-end break commences on 15 December 2023 and ends on 8 January 2024.
SCC 5.12	**Add the following:** A delay caused by inclement weather conditions will be regarded as a delay only if, in the opinion of the Employer's Agent, all progress on an item or items of work on the critical path of the working programme of the contractor has been brought to a halt. Delays on working days only (based on a five-day working week) will be taken into account for the extension of time, but the Contractor shall make provision in his programme of work for an expected delay of "n" working days caused by normal rainy weather, for which he will not receive any extension of time, where "n" equals 5 days. Extension of time during working days will be granted to the degree to which actual delays, as defined above, exceed the number of "n" workings days.
SCC 5.12.2.1	**Add the following:** Extensions of time in respect of clause 5.12 in respect of abnormal rainfall shall be calculated using the following formula for each calendar month or part thereof: $V = (Nw - Nn) + \frac{(Rw - Rn)}{X}$ Where: V = Extension of time in calendar days in respect of the calendar month under consideration. Nw = Actual number of days during the calendar month on which a rainfall of 10 mm or more has been recorded. Nn = Average number of days in the relevant calendar month , as derived from existing rainfall records, on which a rainfall of 20mm or more has been recorded for the calendar month. Rw = Actual average rainfall in mm recorded for the calendar month under consideration. Rn = Average rainfall in mm for the calendar month as derived from existing rainfall records as stated in the Site Information. For purposes of the Contract Nn, Rn, X and Y shall have those values assigned to them in the South African Weather Service's rainfall records of the nearest station to the site. If V is negative and its absolute value exceeds Nn, then V shall be taken as equal to minus Nn. The total extension of time shall be the algebraic sum of all monthly totals for the period under consideration, but if the total is negative the time for completion shall not be reduced due to

Clause	Data
	subnormal rainfall. Extensions of time for part of a month shall be calculated using pro rata values of Nn and Rn. This formula does not take account flood damage which could cause further or concurrent delays and will be treated separately as far as extension of time is concerned. The factor (Nw – Nn) shall be considered to represent a fair allowance for variations from the average in the number of days during which rainfall exceeds 10 mm. The factor (Rw-Rn) shall be considered to represent a fair allowance for variations from the average in the number of days during which the rainfall did not exceed 10 mm but wet conditions prevented or disrupted work. For the purpose of applying the formula, accurate rain gauging shall be taken at a suitable point on the Site and the Contractor shall at his own expense, take all necessary precautions to ensure that rain gauges cannot be interfered with by unauthorized persons.
SCC 5.13.1	**Add the following:** The penalty for failing to complete the works is: **Penalty** = Contract Value x $\frac{0.04}{100}$per day. = Contract Value x **0.04%** per day
SCC 6.2.1	**Add the following:** The Security to be provided by the Contractor shall be the Performance guarantee liability of **10** % of the Contract Sum. This guarantee shall be delivered within 14 days of the Commencement Date.
SCC 6.2.2	**Add the following:** The Form of Guarantee is to contain the wording of the pro-forma document included in the General Conditions of Contract (Pro-forma included in section C1.3 to this document). Form of Guarantee: construction guarantee: the successful bidder will be required to submit a construction guarantee that is equal to 10% of the total contract value all-inclusive and must be submitted to the SCM office within 14 working days from date of appointment. Only original guarantees issued by an accredited and registered financial institution will be accepted and will only be released on final completion of works."
SCC 6.9.1	All materials shall comply with the requirements of the South African Bureau of Standards, and shall bear the official standardization mark. Where SABS standard does not exist for a certain material, or a material does not bear the official standardization mark, the Client's Representatives approval of such material must be gained before use thereof.
SCC 6.10.1.5	**Add the following:** The percentage advance on materials not yet built into the Permanent Works but received on site is **80** %.
SCC 6.10.3	**Add the following:** The percentage retention on the amounts due to the Contractor is **10**%.
SCC 6.10.3	**Add the following:** The limit of retention money is **10** % of the contract value.
SCC 7.2.1	**Add the following:** All materials shall comply with the requirements of the South African Bureau of Standards, and shall bear the official standardization mark. Where SABS standard does not exist for a certain material, or a material does not bear the official standardization mark, the Employer's Agents approval of such material must be gained before use thereof.

Clause	Data
SCC 8.6.1.5	**Add the following:** In addition to the insurances required in terms of the GCC Clauses 8.6.1.1 to 8.6.1.4 the following is also required: **Add to 8.6.1.** The Contractor shall insure in the joint names of the Employer, the Contractor and all Sub-Contractors (whether nominated or otherwise) for an amount of R2 million per occurrence against the liability stated in Sub-Clause 8.6.1.
SCC 8.6.1.1.2	**Add the following:** The value of the materials supplied by the Employer to be included in the insurance sum is nil.
SCC 8.6.1.1.3	**Add the following:** The required insured amount to cover professional fees for repairing damaged infrastructure and equipment and loss of time on the construction schedule is to be 15% of the contract value.
SCC 8.6.1.3	**Add the following:** The limit of indemnity for liability insurance is 10 % of contract value. Public Liability Insurance to a minimum of R20 million to be provided.
SCC 8.6.1.4	**Payment for labour-intensive component of the works** Payment for works identified in the Scope of Works as being labour-intensive shall only be made in accordance with the provisions of the Contract if the works are constructed strictly in accordance with the provisions of the Scope of Work. Any payment for such works shall not relieve the Contractor in any way from his obligations either in contract or in delict
SCC 8.6.1.5	**Linkage of payment for labour-intensive component of works to submission of project data** The Contractor's payment invoices shall be accompanied by labour information for the corresponding period in a format specified by the employer. If the contractor chooses to delay submitting payment invoices, labour returns shall still be submitted as per frequency and timeframe stipulated by the Employer. The contractor's invoices shall not be paid until all pending labour information has been submitted.
SCC 8.6.1.6	**Applicable Labour Laws** The current Ministerial Determination (also downloadable at www.epwp.gov.za), Expanded Public Works Programmes, issued in terms of the Basic Condition of Employment Act of 1997 by the Minister of Labour in Government Notice, shall apply to works described in the scope of work as being labour-intensive and which are undertaken by unskilled workers.

PART 2: DATA PROVIDED BY THE CONTRACTOR

Sub-Clause	Data
1.1.17	The Contractor is: Name: ..... The Address of the Contractor is: Address (physical): .... Address (postal): .... Telephone: ..... Facsimile: ..... E-mail: .....
1.1.22	Contractors Representative Name: ..... Telephone: ..... Facsimile: ..... E-mail: .....

C1.3 FORM OF GUARANTEE

FORM OF GUARANTEE

PROJECT NO: 94 of 2022
CIDB: 7 CE OR HIGHER

CONSTRUCTION OF DZANANI TAXI RANK

WHEREAS .....

at.....
(Hereinafter referred to as "the Employer")

Entered into, on the ..... day of .....20 ..... , at ..... .

a Contract with .....

at.....
(Hereinafter referred to as "the Contractor")

for the construction of .....

.....

AND WHEREAS it is provided by such Contract that the Contractor shall provide the Employer with security by way of surety ship for the due and faithful fulfilment of such Contract by the Contractor;

AND WHEREAS .....
has/ have at the request of the Contractor, agreed to give such security;

NOW THEREFORE WE, ... hereby guarantee and bind ourselves jointly and severally as Sureties and Co-principal Debtors to the Employer under renunciation of the benefits of division and excursion for the due and faithful performance by the Contractor of all the terms and conditions of the said Contract, subject to the following conditions.

1. The Employer shall, without reference and/or notice to us, have complete liberty of action to act in any manner authorised and/or contemplated by the terms of the said contract, and/or to agree to any modifications, variations, alterations, directions or extensions of the Due Completion Date of the Works under the said Contract, and that its rights under this guarantee shall in no way be prejudiced nor our liability hereunder be affected by reason of any steps which the Employer may take under such Contract, or of any modification, variation, alterations of the Due Completion Date which the Employer may make, give, concede or agree to under the said Contract.

2. The Employer shall be entitled, without reference to us, to release any securities held by it, and to give time to or compound or make any other arrangement with the Contractor.

3. This guarantee shall remain in full force and effect until the issue of the Certificate of Completion in terms of the Contract, unless we are advised in writing by the Employer before the issue of the said Certificate of his intention to institute claims, and the particulars thereof, in which event this guarantee shall remain in full force and effect until all such claims have been paid or liquidated.

4. Our total liability hereunder shall not exceed the sum of (R.....).
5. We hereby choose *domicilium citandi etexecutandi* for all purposes arising hereof at

.....

IN WITNESS WHEREOF this guarantee has been executed by us at ..... on this day of ..... 20.....

As witnesses:

1. ..... Signature

2. ..... Signature

Duly authorised to sign on behalf of .....

Address

.....

.....

.....

C1.4 OCCUPATIONAL HEALTH AND SAFETY

AGREEMENT IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO 85 OF 1993)

THIS AGREEMENT IS made at .....

on the ..... day of ..... in the year .....

Between MAKHADO LOCAL MUNICIPALITY (hereinafter called "the Employer") of the one

part, herein represented by .....

In his capacity as .....

and delegate of the Employer in terms of the Employer's standard powers of delegation pursuant to the provisions of Act No 7 of 1998,

and .....

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

.....

in his capacity as .....

and being duly authorized by virtue of a resolution appended hereto as Annexure A;

WHEREAS the Employer requires certain works be constructed, viz **CONSTRUCTION OF DZANANI TAXI RANK** and has accepted a Bid by the Mandatory for the construction, completion and maintenance of such Works and whereas the Employer and the Mandatory have agreed to certain arrangements and procedures to be followed in order to ensure compliance by the Mandatory with the provisions of the Occupational Health and Safety Act, 1993 (Act 85 of 1993).

NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS:

1 The Mandatory shall execute the work in accordance with the Contract Documents pertaining to this Contract.

2 This Agreement shall hold good from its Commencement Date, which shall be the date of a written notice from the Employer or engineer requiring him to commence the execution of the Works, to either -

(a) the date of the Final Approval Certificate issued in terms of Clause 5.16 of the General Conditions of Contract 2015 (hereinafter referred to as "the GCC"), as contained in the Contract Documents pertaining to this Contract, or

(b) The date of termination of the Contract in terms of Clauses 9.1, 9.2, 9.3 of the GCC.

3 The Mandatory declares himself to be conversant with the following:

(a) All the requirements, regulations and standards of the Occupational Health and Safety Act (Act 85 of 1993), hereinafter referred to as "The Act", together with its amendments and with special reference to the following Sections of The Act:

(i) Section 8 : General duties of Employers to their employees

(ii) Section 9 : General duties of Employers and self-employed persons to persons other than employees

(iii) Section 37 : Acts or omissions by employees or mandatories

(iv) Sub-section 37(2) relating to the purpose and meaning of this Agreement

(b) The procedures and safety rules of the Employer as pertaining to the Mandatory and to all his subcontractors.

4 In addition to the requirements of Clause 8.4 of the GCC (as amended by Special Condition of Contract) and all relevant requirements of the above-mentioned Volume, the Mandatory agrees to execute all the Works forming part of this Contract and to operate and utilize all machinery, Plant and equipment in accordance with the Act.

5 The Mandatory is responsible for the compliance with the Act; the safety procedures and rules of the employer by all his subcontractors, whether or not selected and/or approved by the Employer.

6. The Mandatory warrants that all his and his subcontractors' workmen are covered in terms of the Compensation for Occupational Injuries and Diseases Act, 1993 (Act No 130 of 1993), which cover, shall remain in force whilst any such workmen are present on site. A letter of good standing from the Compensation Commissioner to this effect must be produced to the Employer upon signature of the agreement.

7. The Mandatory undertakes to ensure that he and/or subcontractors and/or their respective employers will at all times comply with the following conditions:

a) The Mandatory shall assume the responsibility in terms of Section 16.1 of the Act. The Mandatory shall not delegate any duty in terms of Section 16.2 of this Act without the prior written approval of the Employer. If the Mandatory obtains such approval and delegates any duty in terms of section 16.2 a copy of such written delegation shall immediately be forwarded to the Employer.

b) All incidents referred to in the Act shall be reported by the Mandatory to the Department of Labour as well as to the Employer. The Employer will further be provided with copies of all written documentation relating to any incident.

c) The Employer hereby obtains an interest in the issue of any formal enquiry conducted in terms of section 32 of the Act into any incident involving the Mandatory and/or his employees and/or his subcontractors.

In witness hereof the parties are to set their signatures hereon in the presence of the subscribing witnesses:

SIGNED FOR AND ON BEHALF OF THE EMPLOYER : .....

Witness ..... Witness .....

(Name) ..... (Name) .....
(Print) (Print)

SIGNED FOR AND ON BEHALF OF THE MANDATORY : .....

Witness ..... Witness .....

(Name) ..... (Name) .....
(Print) (Print)

ANNEXURE A

CERTIFICATE OF AUTHORITY FOR SIGNATORY TO AGREEMENT IN TERMS OF OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO 85 OF 1993)

The signatory for the company that is the Contractor in terms of the above-mentioned Contract and the Mandatory in terms of the above-mentioned Act shall confirm his or her authority thereto by attaching to this page a duly signed and dated copy of the relevant resolution of the board of directors.

By resolution of the board of directors passed at a meeting held on ..... 20.....,

Mr//Ms ..... whose signature

appears below, has been duly authorised to sign the AGREEMENT IN TERMS OF THE

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT 85 OF 1993) on behalf of .....

.....

SIGNED ON BEHALF OF THE COMPANY : .....

IN HIS/HER CAPACITY AS : .....

DATE : .....

SIGNATURE OF SIGNATORY : .....

WITNESS : ..... WITNESS : .....

NAME (in capitals): ..... NAME : .....

C1.5 CORPORATE GOVERNANCE BREACH CLAUSE

1. ("MAKHADO LOCAL MUNICIPALITY") requires [insert name of company] ("the Company") to comply, mutatis mutandis with the Code contained in the King III Report and Code of Good Corporate Governance (below "the Code") for the term of this Agreement and any extension thereof.

2. The Company irrevocably undertakes and agrees that it will, mutatis mutandis, comply with the Code for the term of this Agreement and any extensions thereof.

3. The Company acknowledges and agrees that:

   3.1 It is essential that the Company complies with the Code, in order to discharge all of its obligations under and in terms of the Agreement in a proper, efficient and professional manner, and

   3.2 MAKHADO LOCAL MUNICIPALITY will be prejudiced and may suffer damages in the event of the Company failing to comply with the Code.

4. The Company shall be required, within seven (7) days of the end of each calendar month during the term of this Agreement (and any extensions thereof), to furnish MAKHADO LOCAL MUNICIPALITY with a written certificate, signed by the directors of the Company [alternatively members of the Close Corporation], certifying that the Company has complied with the provisions of the Code during the preceding months.

5. MAKHADO LOCAL MUNICIPALITY shall have the right, without assigning any reason therefore and at any time, to appoint either the Institute of Directors of South Africa or a firm of chartered accountants or attorneys, to conduct an audit of the business and affairs of the Company in order to ascertain whether the Company is indeed complying with the terms of the Code. To this end, the Company irrevocably undertakes and agrees to co-operate fully with the party conducting such investigation for and on behalf of MAKHADO LOCAL MUNICIPALITY and to make available to such party all such documentation and all such information as the investigation party may require to fully discharge its obligations under and in terms hereof and to report fully to MAKHADO LOCAL MUNICIPALITY. In the event of it being found that the Company is not complying with the Code, then MAKHADO LOCAL MUNICIPALITY shall be entitled to (a) regard this as a breach of the agreement and (b) recover the costs of the investigation, on an attorney and client basis, from the Company. In the event of it being found that the Company is, in fact, discharging its obligations under and in terms of the Code, then MAKHADO LOCAL MUNICIPALITY shall bear the costs incurred in such investigation. In either of the afore-going events, the Company shall be entitled to receive a copy of the written report once same has been concluded by the investigating party.

6. In the event of the Code being replaced with another Code (or similar document), then such replacement document shall replace the Code and a reference to the Code shall be deemed to be a reference to such replacement document. The reference to the Code shall be deemed to include any statutory codification of directors' obligations and duties which may be enacted in the Republic of South Africa at any time in the future.

7. In entering into this Agreement, the Company represents and warrants to MAKHADO LOCAL MUNICIPALITY that it is familiar with the Code, that it fully understands and appreciates the rights, obligations and recommendations therein contained and agrees to be bound thereby as herein recorded.

Initial: _____

PROJECT NO: 94 of 2022

CONSTRUCTION OF DZANANI TAXI RANK

CIDB GRADING: 7 CE OR HIGHER

C2 PRICING DATA

C2.1 Pricing Instructions
C2.2 Schedule of Quantities

PROJECT NO: 94 of 2022

CONSTRUCTION OF DZANANI TAXI RANK

CIDB GRADING: 7 CE OR HIGHER

C2.1 PRICING INSTRUCTIONS

1. The applicable Conditions of Contract, the Contract Data, the Specifications (including the Project Specifications) and the Drawings shall be read in conjunction with the Bill of Quantities.

2. The Bill comprises items covering the Contractor's profit and costs of general liabilities and of the construction of Temporary and Permanent Works.

   Although the Tenderer is at liberty to insert a rate of his own choosing for each item in the Bill, he should note the fact that the Contractor is entitled, under various circumstances, to payment for additional work carried out and that the Engineer is obliged to base his assessment of the rates to be paid for such additional work on the rates the Contractor inserted in the Bill.

3. Descriptions in the Bill of Quantities are abbreviated and may differ from those in the Standardized and Project Specifications. No consideration will be given to any claim by the Contractor submitted on such a basis.

4. Unless stated to the contrary, items are measured net in accordance with the specification and the Drawings without any allowance having been made for waste.

5. The amounts and rates to be inserted in the Bill of Quantities shall be the full inclusive amounts to the Employer for the work described under the several items. Such amounts shall cover all the costs and expenses that may be required in and for the construction of the work described, and shall cover the costs of all general risks, profits, taxes (but excluding value-added tax), liabilities and obligations set forth or implied in the documents on which the Tender is based.

6. The quantities set out in the schedule of quantities are only approximate quantities. The quantities of work finally accepted and certified for payment, and not the quantities given in the schedule of quantities, will be used to determine payments to the contractor.

7. An amount or rate shall be entered against each item in the Bill of Quantities, whether or not quantities are stated. An item against which no amount or rate is entered will be considered to be covered by the other amounts or rates in the Bill.
   The Tenderer shall also fill in a rate against the items where the words "rate only" appears in the amount column. Although no work is foreseen under these items and no quantities are consequently

given in the quantity column, the tendered rates shall apply should work under these items actually be required.

Should the Tenderer group a number of items together and Tender one sum for such group of items, the single tendered sum shall apply to that group of items and not to each individual item, or should he indicate against any item that full compensation for such item has been included in another item, the rate for the item included in another item shall be deemed to be nil.

The tendered rates, prices and sums shall, subject only to the provisions of the applicable Conditions of Contract, remain valid irrespective of any change in the quantities during the execution of the Contract.

8. The quantities of work as measured and accepted and certified for payment in accordance with the applicable Conditions of Contract, and not the quantities stated in the Bill of Quantities, will be used to determine payments to the Contractor. The validity of the Contract shall in no way be affected by differences between the quantities in the Bill of Quantities and the quantities certified for payment.

Ordering of materials is not to be based on the Bill of Quantities, but only on information issued for construction purposes.

9. The Contract Data provides for the application of the Contract Price Adjustment Factor after 12 months and the adjustment will be done in accordance to Form MBD 3.2. The value of certificates issued in terms of Clause 6.10.1 (excluding the value of those special materials referred to in Clause 6.8.3) shall be increased or decreased by applying a "Contract Price Adjustment Factor" calculated according to the formula and the conditions set out in the Contract Price Adjustment Schedule.

10. For the purposes of this Bill of Quantities, the following words shall have the meanings hereby assigned to them:

Unit	:	The unit of measurement for each item of work as defined in the Standardized, Project or Particular Specifications
Quantity	:	The number of units of work for each item
Rate	:	The payment per unit of work at which the Tenderer Tenders to do the work
Amount	:	The quantity of an item multiplied by the tendered rate of the (same) item
Sum	:	An amount tendered for an item, the extent of which is described in the Bill of Quantities, the Specifications or elsewhere, but of which the quantity of work is not measured in units
LS	:	Items to be performed by Local Sub-Contractors

11. The units of measurement indicated in the Bill of Quantities are metric units. The following abbreviations may appear in the Bill of Quantities:

mm	=	millimetre
m	=	metre
km	=	kilometre
km-pass	=	kilometre-pass
m^2	=	square metre
m^2-pass	=	square metre-pass
ha	=	hectare
m^3	=	cubic metre
m^3-km	=	cubic metre-kilometre
kW	=	kilowatt
kN	=	kilo Newton
kg	=	kilogram
t	=	ton (1 000 kg)
%	=	per cent
MN	=	mega Newton
MN-m	=	mega Newton-metre
PC Sum	=	Prime Cost Sum
Prov Sum	=	Provisional Sum

12. Those parts of the contract to be constructed using labour-intensive methods have been marked in the bill of quantities with the letters LI in a separate column or as a prefix or suffix 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 works, is a deviation from 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.

13. 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.

14. **Rates tendered for BOQ items are deemed to include for all required tools, equipment, plant, materials, labour and supervision necessary to complete that bill item. Off cuts and wastage are to be included in the tendered rate.**

15. Mistakes made by the Tenderer in completion of the BoQ shall not be erased or covered with correcting fluid. A line shall be drawn through the incorrect entry and the correct entry shall be written above the deletion and initialled by the Tenderer. Failure to observe this Condition may lead to the Tender being disqualified.

16. By nature, a Design and Build Contract BOQ will contain a significant amount of sums.
In order to facilitate payment during the Design Build period, it is in the Contractors interest to append a detailed Bill of Quantity for each sum detailing what the sum is made up of.

17. Ordering of materials is not to be based on the Bill of Quantities, but only on information issued for construction purposes.

18. **Crossing-out of allocated Provisional Sums on the Bill of Quantities shall lead to disqualification of the Bidder.**

19. **.The actual work shall be re-measurable during construction.**
"Re-measurement Contract" means the Contractor is paid an amount determined from the actual quantities of work completed multiplied by the rates or prices for such work subject to adjustments in accordance with the Contract.

20. Where minimum labour intensity is specified by the design the contractor is expected to use their initiative to identify additional activities that can be done labour-intensively in order to comply with the set minimum labour intensity target.

21. 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.

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE A: PRELIMINARY AND GENERAL

SECTION A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (RAND)
	SANS 1200 A	PRELIMINARY AND GENERAL				
	8.3	FIXED-CHARGE ITEMS AND VALUE-RELATED ITEMS				
	8.3.1	Contractual Requirements	Sum			
	8.3.2	Establish Facilities on the Site :				
	8.3.2.1	Facilities for Engineer				
		a) Offices and storage sheds	Sum			
		b) Telephones	Sum			
		c) Nameboards	Sum			
	8.3.2.2	Facilities for the Contractor				
		a) office and storage sheds	Sum			
		b) workshops	Sum			
		c) living accomodation	Sum			
		d) ablution and latrine facilities	Sum			
		e) Water supplies, electric power and communications	Sum			
		h) dealing with water	Sum			
		i) access	Sum			
		j) plant	Sum			
	8.3.3	Other	Sum			
	8.3.4	Removal of site establishment	Sum			
	8.4	TIME RELATED ITEMS				
	8.4.1	Contractural requirements	Sum			
	8.4.2	Operation and maintenance of facilities on site, for Duration of Construction, except where otherwise stated.				
	8.4.2.1	Facilities for Engineer				
		a) Offices and Storage sheds	Sum			
		b) telephone	Sum			
		c) survey assistance and materials	Sum			
	8.4.2.2	Facilities for Contractor				
		a) office and storage sheds	Sum			
Total Carried Forward						

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE A: PRELIMINARY AND GENERAL

SECTION A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (RAND)
Brought Forward						
	8.5	Provisional Sums				
	8.5.1	SHE Rep				
		Provide the sum of R54 000.00 (Eighteen Thousand Rand) for the employment of a SHE Rep for the duration of the contractthe employment of a SHE Rep for the duration of the contract @ R4 500,00 / person / month	Prov-sum			54000
	8.5.2	Student Training				
		Provide the sum of R120 000.00 (Hundred and Twenty Thousand Rand) for two student training for the duration of the contract @ R5000,00 / student / month	Prov-sum			120000
	8.5.3	CLO				
		Provide the sum of R60 000.00 (Sixty Thousand Rand) for the employment of a CLO for the duration of the contract @ R5000,00 / person / month	Prov-sum			60000
	8.5.4	PSC				
		Provide the sum of R14 000.00 (Fourteen Thousand Rand) for Six PSC Members for the duration of the contract @ R200,00 / member/ Seating / month	Prov-sum			14000
	8.5.5	Handling fee for items 8.5.1 to 8.5.4	%	248000		
Total Carried Forward To Summary						

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE A: PRELIMINARY AND GENERAL

SUMMARY OF SECTIONS

SECTION	DESCRIPTION		AMOUNT (RAND)
	SECTION A: PRELIMINARY AND GENERAL		
Total Carried Forward To Summary Of Schedules			

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE B: CIVIL WORKS

SECTION B1: SITE CLEARANCE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (RAND)
B1		**SECTION B1: SITE CLEARANCE**				
B1.1	SANS 1200 C	CLEAR SITE				
B1.1.1	8.2.1	Clear and grub Site	ha	0.0		Rate Only
	8.2.2	Remove and grub large trees and tree stumps of girth over				
B1.1.2		a) 1m and up to 2m	No.	3		
B1.1.3		b) 2m and up to 3m	No.	4		
	PS8.2.5	Take down existing fences				
B1.1.4		a) concrete palisades	m	Rate Only		Rate Only
B1.1.6						
	PS8.2.8	Demolish and remove structures/buildings				
B1.1.8		a) Existing Informal stalls	m^2	1 000		
B1.1.10		c) Paving	m^2	2 500		
B1.1.12		c) Kerbs	m	900		
B1.1.13	8.2.9	Transport materials and debris to unspecified sites and dump (provisional)	$m^3.km$	2 000		
Total Carried Forward To Summary						

SCHEDULE B: CIVIL WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (RAND)
B2		**SECTION B2: BULK EARTHWORKS**				
B2.1	SANS 1200DM	EARTHWORKS				
	8.3.2	Preparation of site				
B2.1.1		a) Remove topsoil to a depth of 150mm, stockpille and maintain.	m^3	200		
	8.3.3	Treatment of road-bed				
B2.1.2		a) Road-bed preparation and compaction of material	m^3	Rate Only		Rate Only
	8.3.4	Cut to fill, borrow to fill				
B2.1.3		a) Compact to 90% of Modified AASHTO maximum density	m^3	1 390		
	8.3.6	Extra-over items 8.3.4 and 8.3.5 for excavating and breaking down material in;				
B2.1.4		b) hard excavation	m^3	350		
B2.1.5		c) Boulder excavation	m^3	10		
	8.3.7	Cut to spoil or stockpile from				
B2.1.6		a) soft excavation	m^3	750		
B2.1.8		c) hard excavation	m^3	50		
B2.1.9		d) Boulder excavation	m^3	50		
B2.1.10	8.3.11	Extra-over items 8.3.2, 8.3.4, or 8.3.5 for temporary stockpiling of material	m^3	1 450		
	8.3.13	Surface finishes (for areas other than sport field and warm-up zone)				
B2.1.11		a) topsoiling	m^2	1 000		
Total Carried Forward To Summary						

SCHEDULE B: CIVIL WORKS

SECTION B3: STORMWATER DRAINAGE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (RAND)
B3		**SECTION B3:STORMWATER DRAINAGE SITE CLEARANCE AND EXCAVATION**				
B3.1	SANS 1200DB	EARTHWORKS (PIPE TRENCHES)				
	8.3.2	Excavate				
		a) Excavate in all materials, select, backfill, compact and dispose of all surplus and unsuitable material. Pipes with diameter up to 2000mm for depths:				
B3.1.1		i) 0m to 1m	m^3	61		
B3.1.2		ii) over 1m to 2m	m^3	2 700		
B3.2	SANS 1200LB	BEDDING (PIPE)				
	PS8.2.1	Provision of bedding from trench excavation				
B3.2.1		a) Selected fill material	m^3	250		
B3.2.2		b) Selected granular material	m^3	700		
B3.3	SANS 1200LE	STORMWATER DRAINAGE				
	PS8.2.1	Supply, handle, lay stormwater pipes in specified bedding:				
B3.3.1		1) 1800mm Nominal Diameter ,class 100D on class B bedding	m	Rate Only		Rate Only
B3.3.2		2) 1650mm Nominal Diameter ,class 100D on class B bedding	m	Rate Only		Rate Only
B3.3.3		3) 1500mm Nominal Diameter ,class 100D on class B bedding	m	Rate Only		Rate Only
B3.3.4		4) 1200mm Nominal Diameter ,class 100D on class B bedding	m	130		
	8.2.4	Extra-over item 8.2.1 for cutting end units for culverts on site				
B3.3.5		a) Pipe culverts				
	8.2.8	MANHOLES Construct complete with covers and frames				
B3.3.6		a) Brick manholes 1,5 m deep	No.	3		
	8.2.8	Supply and Install Manholes, Catchpits, and the like				
B3.3.7		a) Field inlets	No.	2		
B3.4		MISCELLANEOUS				
B3.4.1	8.2.11	Anchors for pipes	No.	2		
B3.4.2	8.2.12	Extra-over item ...3 for construction of inclined pipe culverts up to 1850 mm diameter	m	Rate Only		Rate Only
B3.5		BRICKWORK				
Total Carried Forward						

SCHEDULE B: CIVIL WORKS

SECTION B3: STORMWATER DRAINAGE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (RAND)
Brought Forward						
B3.5.1	8.2.9(a)	115 mm thick	m^2	20		
B3.5.2		230 mm thick	m^2	30		
B3.5.3	8.2.9(c)	Benching in prescribed mix 20 concrete with granolithic rendering	m^2	10		
B3.6	8.2.10	ACCESSORIES				
B3.6.1		Manhole covers Type A4 including frames	No.	4		
B3.6.2		Grid Inlets as detailed on drawing .....including frames	No.	3		
B3.6.3		Step irons	No.	10		
	8.2.2	Gabions				
B3.6.4		a) Hexagonal woven mesh gabion baskets of 2m x 1m x1m installed complete with rocks	m^3	700		
		b) Gabion Renno River Matrasses 3m x 1m x 0,3m installed complete with rocks	m^3	330		
		c) A4 bidim	m^2	1 300		
Total Carried Forward To Summary						

SCHEDULE B: CIVIL WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (RAND)
B4		**SECTION B4: SEWERS**				
B4.1	SANS 1200DB	EARTHWORKS (PIPE TRENCHES)				
B4.1.1	8.3.2	a) Excavate in all materials, select materials, backfill, and dispose of surplus and unsuitable material	m^3	304		
		b) Extra-over item 8.3.2 for:				
B4.1.2		1) Intermediate excavation	m^3	20		
B4.1.3		2) Hard rock excavation	m^3	20		
B4.2	SANS 1200LB	BEDDING MATERIALS				
	8.2.1	Provision of bedding from trench excavation				
B4.2.1		a) Selected granular material	m^3	91		
B4.3	SANS 1200LD	SEWERS				
	8.2.1	Supply, Lay, Joint, Bed (class flexible pipes), and Test Pipeline				
B4.3.1		110 mm diam, class 34	m	420		
	8.2.2	Extra-over item .3 for supply, lay, joint, bed and test specials				
B4.3.2		110mm dia 45 deg. access bends	No.	9		
B4.3.3		110mm dia bends all degrees	No.	6		
B4.3.4		110 mm end caps	No.	2		
	8.2.3	Manholes				
B4.3.5		1) Sewer Manhole 1,0 m 1,5 m	No.	7		
	PS8.2.5	Inspection chambers				
B4.3.6	8.2.6	Building Connection	No.	5		
B4.3.7	PS8.2.6	Rodding eyes	No.	2		
B4.3.12						
	PS8.3.0	Connection to the municipality line, supply and connect.	No	1		
Total Carried Forward To Summary						

SCHEDULE B: CIVIL WORKS

SECTION B5: WATER MAINS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (RAND)
B5		**SECTION B5: WATER MAINS**				
B5.1	SANS 1200DB	EARTHWORKS (PIPE TRENCHES)				
B5.1.1	8.3.2	a) Excavate in all materials, select materials, backfill, and dispose of surplus and unsuitable material	m^3	75		
		b) Extra-over item 8.3.2 for:				
B5.1.2		1) Intermediate excavation	m^3	140		
B5.1.3		2) Hard rock excavation	m^3	0		
B5.2	SANS 1200LB	BEDDING MATERIALS				
	8.2.1	Provision of bedding from trench excavation				
B5.2.1		a) Selected granular material	m^3	220		
B5.3	SANS 1200 L	MEDIUM PRESSURE PIPELINE				
	8.2.1	Supply, Lay and Bed (bedding for flexible pipes) Pipes Complete with Couplings				
B5.3.1		a) 25mm dia HDPE PN10 PE80	m	30		
B5.3.2		b) 50mm dia HDPE PN10 PE80	m	250		
B5.3.3		b) 75mm dia uPVC class 12	m	0		
B5.3.4		c) 110mm dia uPVC class 12	m	Rate Only		Rate Only
	8.2.2	Extra-over 8.2.1 for the supplying, laying and bedding of specials				
		a) Bends				
B5.4		1) 90°				
B5.4.1		i) 25mm ø	No.	12		
B5.4.2		ii) 50mm ø	No.	7		
B5.4.3		iii) 75mm ø	No.	9		
B5.4.4		iv) 110mm ø	No.	Rate Only		Rate Only
B5.5		2) 45°				
B5.5.1		i) 25mm ø	No.	3		
B5.5.2		ii) 50mm ø	No.	5		
B5.5.3		iii) 75mm ø	No.	3		
B5.5.4		iv) 110mm ø	No.	5		
B5.6		3) 22.5°				
B5.6.1		i) 25mm ø	No.	Rate Only		Rate Only
	8.2.3	Connection to the municipality water line (Supply and Connect)	No	1		
Total Carried Forward						

SCHEDULE B: CIVIL WORKS

SECTION B5: WATER MAINS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (RAND)
Brought Forward						
B5.6.2	8.2.4	Extra-Over 8.2.1 for Cutting of the Pipe and Supplying and Fixing of Extra Coupling	No.	45		
	8.2.11	Anchor/ Thrust Blocks and Pedestals				
B5.6.3		a) concrete	m^3	4		
B5.6.4		b) formwork	m^2	11		
	8.2.13	Valve and Hydrants, ets.				
B5.6.5		a) Valve chambers	No.	2		
B5.6.6		b) Fire Hydrants	No.	2		
B5.6.7		Borehole exploration, development, equiping and elevated PVC tanks storages	PC sum			250000
B5.6.8		overheads, charges and profit on B5.7.39 above	%	250000		
Total Carried Forward To Summary						

SCHEDULE B: CIVIL WORKS

ITEM	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
B6		**SECTION B6: CABLE DUCTS**				
B6.1	8.2.2	EXCAVATION				
B6.1.1		a) Excavate in all materials, select materials, backfill, and dispose of surplus	m^3	50		
B6.2	SANS	CABLE DUCTS				
	8.2.5	Supply, lay, bed, Ordinary HDPE Nextube kabelflex double wall pipes with				
B6.2.1		110mm ø	m	50		
B6.2.2		160 mm ø	m	50		
B6.2.3	8.2.6	Import bedding material	m^3	20		
Total Carried Forward To Summary						

SCHEDULE B: CIVIL WORKS

SECTION B8: ROAD

ITEM	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
B7		**SECTION B8: TAXI RANK PLATFORM**				
B7.1	SANS	EARTHWORKS				
	8.3.3	Treatment of roadbed				
		a) Road-bed preparation and compaction of material				
B7.1.1		2) To a minimum of 93% of modified AASHTO maximum density	m^3	900		
B7.1.2	B8.3.5	Selected layer of G6 material compacted to 93% of modified AASHTO	m^3	1 300		
B7.2	SANS	SUBBASE				
	8.3.3	Construct the subbase course with material from commercial sources or				
B7.2.1		a) 150mm thick G6 material for C4 layer compacted to 96% Mod AASHTO	m^3	900		
	8.3.5	Process subbase material by the following processes				
B7.2.2		d) Stabilization	m^3	900		
	8.3.8	Stabilizing agent				
B7.2.3		b) CEM II (AL) 32.5M Type cement	t	5		
B7.3	SANS	SEGMENTED PAVING				
	8.2.2	Construction of Pavement Complete				
B7.3.1		a) 80mm thick, gray, type C, Shape A, interlocking concrete paving blocks with	m^2	4 100		
	8.2.1	edge restraints				
B7.3.2		a) 200 x 300mm 40MPa cast in-situ concrete edge beam	m	400		
B7.4	SANS	KERBING AND CHANNELLING				
	8.2.1	Concrete Kerbing				
B7.4.1		a) Un-mountable, Fig. 5a in accordance with SANS 927 ED 3.1	m	1 320		
B7.4.2	PS8.2.11	1:6 Cement Mortar bedding mix	m^3	10		
Total Carried Forward To Summary						

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE B: CIVIL WORKS

SUMMARY OF SECTIONS

SECTION	DESCRIPTION		AMOUNT (RAND)
B1	SECTION B1: SITE CLEARANCE		
B2	SECTION B2: BULK EARTHWORKS		
B3	SECTION B3: STORMWATER DRAINAGE		
B4	SECTION B4: SEWERS		
B5	SECTION B5: WATER MAINS		
B6	SECTION B6: CABLE DUCTS		
B7	SECTION B7: ROAD		
Total Carried Forward To Summary Of Schedules			

SCHEDULE C: TAXI ADMIN BUILDING AND LOADING BAY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C1	**SECTION C1: EARTHWORKS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C1.1	SUPPLEMENTARY PREAMBLES Carting away of excavated material Descriptions of carting away of excavated material shall be deemed to include for bulking and loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site. Subterranean water No information regarding subterranean water is available. The tenderer must acquaint himself of the presence and depth of subterranean water and allow thereof in his rates.				
C1.2	EXCAVATION OTHER THAN BULK Excavation in compacted earth not exceeding 2m deep in:				
C1.2.1	Trenches for strip foundations and ground beams. Extra over excavations other than bulk in earth for excavation in:	m3	60		
C1.2.2	Soft rock.	m3	5		
C1.2.3	Hard rock.	m3	5		
C1.3	CARTING AWAY Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk):				
C1.3.1	Off site to a dumping site to be located by the Contractor.	m3	10		
C1.4	EARTH FILLING, ETC. Filling with material from excavations including hauling, spread, level, water and compact to a density of at least 93% Mod. AASHTO maximum density in 150mm thick layers:				
C1.4.1	Backfilling to trenches, holes, etc. Selected material supplied by the Contractor and spread, level, water and compact to a density of at least 95% Mod. AASHTO maximum density in 150mm thick layers:	m3	90		
C1.4.2	Under floors, paving, etc.	m3	15		
C1.5	TERMITE PROOFING Approved brand of anti-termite soil insecticide applied by a Registered Pest Control Company and guaranteed against termite infestation for ten years:				
Total Carried Forward					

SCHEDULE C: TAXI ADMIN BUILDING AND LOADING BAY

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
C1.5.1	Under floors, etc. including forming and poisoning shallow furrows against foundation walls etc., filling in furrows and ramming.	m2	100		
C1.5.2	To bottom and sides of trenches, etc.	m2	520		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C2	**SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C2.1	SUPPLEMENTARY PREAMBLES Type of cement All cement used in concrete work is to be OPC cement, no cement containing fly ash will be allowed. Formwork Descriptions of formwork shall be deemed to include use and waste only (except where described as left in or permanent), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use. The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support withou damage and shall remain in position until the newly constructed work is able to support itself. Formwork to soffits of solid slabs, etc., shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.				
C2.2	REINFORCED CONCRETE 15MPa/19mm Concrete in:				
C2.2.1	50mm Thick blinding under ground beams, etc.	m2	120		
	20MPa/19mm Concrete in:				
C2.2.2	Strip foundations	m3	45		
C2.2.3	Surface beds	m3	25		
C2.3	REINFORCED CONCRETE 20MPa/19mm Concrete in:				
C2.3.1	Pad footing	m3	30		
C2.3.2	Column	m3	25		
C2.3.3	First Floor and Staircase	m3	45		
C2.3.4	Roof and Beam	m3	9		
C2.4	CONCRETE SUNDRIES Finishing top surfaces of concrete smooth with a wood float:				
C2.4.1	Surface beds, slabs, etc.	m2	611		
C2.5	GROUTING, ETC.				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Class E non-shrink grout:				
C2.5.1	Bedding approximately 25mm thick under 200mm diameter base plate including chamfered edges all round.	No	140		
C2.5.2	Bedding approximately 25mm thick under 250mm x 250mm base plate including chamfered edges all round.	No	30		
	Casting in of holding down bolts:				
C2.5.3	Provide template for and embed set of two 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	140		
C2.5.4	Provide template for and embed set of four 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	30		
C2.6	MOVEMENT JOINTS, ETC.				
	Expansion joints with 10mm jointex between vertical concrete and brick surfaces:				
C2.6.1	Joint not exceeding 300mm high.	m	10		
C2.6.2	Joint not exceeding 300mm high circular on plan.	m	10		
	Two layers of 6mm thick smooth tempered hardboard to form slip joints between horizontal concrete and brick surfaces including cement mortar bed:				
C2.6.3	Joint not exceeding 300mm wide.	m	90		
C2.6.4	Joint not exceeding 300mm wide circular on plan.	m	10		
C2.7	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to sides of:				
C2.7.1	Ground beams.	m2	20		
C2.7.2	Ground beams circular on plan.	m2	15		
C2.8	SMOOTH SHUTTERING (DEGREE OF ACCURACY I)				
	Smooth formwork to sides of:				
C2.8.1	Beams and inverted beams.	m2	Rate Only		Rate Only
C2.8.2	Beams and inverted beams circular on plan.	m2	Rate Only		Rate Only
	Smooth formwork to sides and soffits of:				
C2.8.3	Ring beams.	m2	Rate Only		Rate Only
C2.8.4	Ring beams circular on plan exceeding 1m radius.	m2	Rate Only		Rate Only
C2.8.5	Slabs.	m2	Rate Only		Rate Only
	Boxing in or out smooth formwork to form:				
C2.8.6	Opening not exceeding 1m girth through 230mm thick beam.	No	Rate Only		Rate Only
C2.9	REINFORCEMENT				
Total Carried Forward					

SCHEDULE C: TAXI ADMIN BUILDING AND LOADING BAY

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Mild steel reinforcement to structural concrete work:				
C2.9.1	8mm Diameter bars (Strip Footings)	kg	510		
	High tensile steel reinforcement to structural concrete work:				
C2.9.2	12mm Diameter bars (Strip Footing)	kg	2 200		
C2.9.3	12mm Diameter bars (Pad Footing)	kg	3 200		
C2.9.4	12mm Diameter bars (Staircase)	kg	16		
C2.9.5	20mm Diameter bars (Starter Bars)	kg	4 100		
C2.9.6	12mm Diameter bars (First Floor Slab)	kg	500		
C2.9.7	16mm Diameter bars (First Floor Slab)	kg	40		
	Mild steel reinforcement to structural concrete work:				
C2.9.8	10mm Diameter bars (First Floor Slab)	kg	90		
	High tensile steel reinforcement to structural concrete work:				
C2.9.9	12mm Diameter bars (Roof Slab and Beam)	kg	490		
C2.9.10	16mm Diameter bars (Roof Slab and Beam)	kg	22		
	Mild steel reinforcement to structural concrete work:				
C2.9.11	8mm Diameter bars (Roof Slab)	kg	80		
C2.9.12	10mm Diameter bars (Roof Slab)	kg	4		
	High tensile steel reinforcement to structural concrete work:				
C2.9.13	12mm Diameter bars (Staircase)	kg	440		
C2.9.14	16mm Diameter bars (Staircase)	kg	120		
	Mild steel reinforcement to structural concrete work:				
C2.9.15	10mm Diameter bars (Staircase)	kg	22		
	Fabric reinforcement with minimum 400mm wide overlaps:				
C2.9.5	Type 193 Fabric reinforcement in concrete surface beds, slabs, etc.	m2	275		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C3	**SECTION C3 : MASONRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C3.1	SUPPLEMENTARY PREAMBLES Sizes in descriptions Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick. Wall ties Descriptions of solid walls (except if built in English bond) and cavity walls shall be deemed to include metal wall ties complying with SABS 28 and of the butterfly type, of the required length with each end built at least 75mm deep into brickwork, spaced at not more than 1m centres alternatively to every third course of brickwork. Cavity walls, etc. Descriptions of cavity walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole.				
C3.2	BRICKWORK: FOUNDATIONS AND SUPERSTRUCTURE Brickwork in burnt clay NFP bricks in 3:1 cement mortar:				
C3.2.1	Piers and attached piers.	m3	12		
C3.2.2	Half brick walls.	m2	109		
C3.2.3	Half brick walls in lining to concrete.	m2	10		
C3.2.4	Half brick walls in lining to concrete circular on plan.	m2	2		
C3.2.5	One brick walls.	m2	220		
C3.2.6	One brick walls circular on plan.	m2	Rate Only		Rate Only
C3.2.7	One brick parapet walls.	m2	Rate Only		Rate Only
C3.2.8	One brick parapet walls circular on plan.	m2	Rate Only		Rate Only
C3.2.9	One and a half brick walls.	m2	10		
C3.2.10	One and a half brick walls circular on plan.	m2	Rate Only		Rate Only
C3.3	FACE BRICKWORK Allow a Prime Cost Amount of R6 000.00/ 1000 bricks for face brickwork and raked out and pointed with a square pointing tool 10 mm deep:				
C3.3.1	Extra over ordinary brickwork for face brick walls	m2	150		
C3.3.2	Extra over ordinary brickwork for face brick walls circular on plan	m2	Rate Only		Rate Only
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
C3.3.3	Extra over ordinary brickwork for 220mm wide face brick on edge coping	m2	10		
C3.3.4	Extra over ordinary brickwork for 220mm wide face brick on edge coping circular on plan	m2	Rate Only		Rate Only
C3.4	BRICKWORK SUNDRIES				
	Brick reinforcement:				
C3.4.1	900mm long Galvanized hoop iron roof anchors built in vertically	No	30		
C3.4.2	75mm Wide reinforcement built in horizontally.	m	40		
C3.4.3	150mm Wide reinforcement built in horizontally.	m	750		
	Prestressed fabricated lintels:				
C3.4.4	100 x 70mm lintels in lengths not exceeding 3m.	m	20		
C3.4.5	100 x 70mm lintels in lengths exceeding 4,5m not exceeding 6m.	m	10		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C4	**SECTION C4 : WATERPROOFING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C4.1	SUPPLEMENTARY PREAMBLES Waterproofing Waterproofing of roofs, basements, etc. shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs.				
C4.2	DAMPPROOFING OF WALLS AND FLOORS One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp-proof course:				
C4.2.1	In walls, under cills, etc. One layer of 250 micron type C waterproof sheeting sealed at laps with pressure sensitive tape:	m2	45		
C4.2.2	Under surface beds, ground beams, etc.	m2	155		
C4.3	SLAB WATERPROOFING The Contractor shall allow in his rates for testing the waterproofing for water tightness by ponding the waterproofed surfaces for a period of at least 48 hours before application of a protective layer. 4mm Thick "Derbigum SP" fully bonded waterproofing guaranteed to remain watertight for a period of ten years on:				
C4.3.1	Concrete slab, beams and sides of parapets including dressing into outlets, turn-ups, etc.	m2	25		
C4.3.2	Extra over for circular cutting.	m	5		
C4.3.3	Flashing strip 300mm girth at turn-ups including sealing top edge into groove with mastic.	m	26		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C5	**SECTION C5 : ROOF COVERINGS, ETC.** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C5.1	PROFILED METAL SHEETING AND ACCESSORIES 0,58mm Thick "Klip-lock 406" industrial galvanized roof sheeting with colorbond finish on one side in single lengths fixed to steel members including all fixing brackets and fixed in strict accordance with the manufacturer's instructions:				
C5.1.1	Sheeting laid to roof with pitch not exceeding 25 degrees in single lengths (measured nett).	m2	720		
C5.1.2	Extra over for bending sheet ends to 450mm radius.	m	Rate Only		Rate Only
C5.1.3	Extra over for raking cutting at valleys.	m	26		
	0,58mm Thick flashings, etc.:				
C5.1.4	380mm Girth ridge cap flashing fixed with S10 clips and including serrated broad flute closer and polycloser.	m	10		
C5.1.5	450mm Girth gable trim flashing fixed with S10 clips.	m	10		
C5.1.6	380mm Girth valley lining.	m	10		
C5.2	ROOF INSULATION Sisalation 420 heavy industrial grade reinforced aluminium foil insulation laid taut over purlins in strict accordance with the manufacturer's instructions:				
C5.2.1	Aluminium foil roof insulation laid taut over purlins (purlins at approximately 2m centres) with minimum 150mm side laps and fixed concurrent with roof covering including galvanised steel straining wires, etc.	m2	720		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C6	**SECTION C6 : CARPENTRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C6.1	DOORS, WINDOWS, SASHES, ETC. 44mm Thick solid core laminated masonite flush door with hardwood concealed edge strips finished on both sides and hung on steel frames (frames elsewhere):				
C6.1.1	Door size overall 762 x 2032mm high.	No	Rate Only		Rate Only
C6.1.2	Door size overall 813 x 1932mm high.	No	11		
C6.1.3	Door size overall 813 x 2032mm high. 44mm Thick solid Meranti flush back slatted door with hardwood concealed edge strips finished on both sides and hung on steel frames (frames elsewhere):	No	Rate Only		Rate Only
C6.14	Door size overall 813 x 2032mm high.	No	4		
C6.1.5	Double leaf door size overall 1200 x 2032mm high. Extra over solid core laminated flush doors for:	No	2		
C6.1.6	Opening size 500 x 500mm high for ventilation grilles (elsewhere) in solid laminated flush panel door (doors elsewhere).	No	2		
Total Carried Forward					

SCHEDULE C: TAXI ADMIN BUILDING AND LOADING BAY

SECTION C7 : CARPENTRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
C6.2	SKIRTINGS				
C6.2.1	20 x 75mm High Meranti skirting including 19mm quarter round plugged to plastered walls at 500mm centres.	m	290		
Total Carried Forward To Summary					

SCHEDULE C: TAXI ADMIN BUILDING AND LOADING BAY

SECTION C9 : CEILINGS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C7	SECTION C7 : CEILINGS The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C7.1	SUSPENDED CEILINGS 600 x 1200 x 6mm Thick "Gyproc Donnceil Gyprex" embossed vinyl faced ceiling tiles laid on and including lay in exposed tee suspension ceiling system including "Donn T38" white powder coated main tees, cross tees, hold-down clips, wedges, etc., all suspended with galvanised hangers at centres not exceeding 1200mm in strict accordance with the manufacturer's instructions:				
C7.1.1	Ceiling suspended not exceeding 1m below timber roof trusses.	m2	140		
	Extra over ceiling tiles for forming openings for air grilles, diffusers, valves, etc. (elsewhere) and providing additional support:				
C7.1.2	350mm Diameter opening.	No	4		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C8	SECTION C8 : FLOOR COVERINGS The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C8.1	POLYPROPYLENE NEEDLE PUNCH ENTRANCE MATS 12mm Thick "Matco DL" heavy commercial rubber backed entrance mat comprising extruded aluminium profiles, Brushed nylon inserts, etc. fixed to recess in surface bed in strict accordance with the manufacturer's instructions:				
C8.1.1	Door mat size 1000 x 600mm wide.	No	2		
Total Carried Forward To Summary					

SCHEDULE C: TAXI ADMIN BUILDING AND LOADING BAY

SECTION C11 : IRONMONGERY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C9	SECTION C9 : IRONMONGERY The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C9.1	LOCKS AND HANDLES				
C9.1.1	Allow a Prime Cost Amount of R500.00 for lockset and striker plates complete with a pair of matching satin aluminium lever handles and fitting in position into timber doors (elsewhere).	No	6		
C9.2	DOOR CLOSERS				
C9.2.1	"DCLSA TS4000G" door closer with standard arm.	No	6		
C9.3	BATHROOM FITTINGS				
	Dispensers, etc.:				
C9.3.1	"Franke Stratos STRX 618" grade 304 (18/10) stainless steel soap dispenser plugged to wall.	No	3		
C9.3.2	"Franke Stratos STRX 672" grade 304 (18/10) stainless steel lockable type two roll recessed toilet roll holder plugged to wall.	No	6		
C9.3.3	"Franke Stratos STRX 600" grade 304 (18/10) stainless steel lockable paper towel dispenser plugged to wall.	No	3		
C9.4	PUSH PLATES, KICK PLATES, ETC.				
C9.4.1	"DCLSA 080/320" stainless steel kick plate.	No	8		
C9.4.2	"DCLSA 079/160" stainless steel push plate with male/female symbol engraved thereon.	No	8		
C9.4.3	"DCLSA 079/160" stainless steel push plate with FHR symbol engraved thereon.	No	4		
C9.5	SUNDRIES				
C9.5.1	"DCLSA 154/69" satin stainless steel hat and coat hook with rubber buffer.	No	8		
C9.5.2	"DCLSA 140/69" satin stainless steel door stop with rubber buffer.	No	14		
C9.5.3	40mm Diameter brass swivel roller fitted to steel flagpole (elsewhere) including 10mm diameter x 6m long nylon flag hoisting rope with both ends of rope fitted fith nylon toggles.	No	4		
C9.6	SIGNAGE TO BE SUPPLIED AND INSTALLED BY NOMINATED SUBCONTRACTOR				
C9.6.1	a) Metal signage boards	Prov Sum			40000
C9.6.2	b) Overhead charges and profit	%	40000		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C10	SECTION C10 : STRUCTURAL STEELWORK The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C10.1	SUPPLEMENTARY PREAMBLES Shop drawings The contractor will be required to prepare shop details for the work which must be submitted to the Engineer for approval before fabrication is started. Approval of shop details by the Engineer will include the following: a) Examination of member sizes for consistency with design requirements. b) Examination of all connections designed and/or detailed by the fabricator, for adequacy of load trasference. c) Approval of leading dimensions which are taken to include such dimensions as may influence the design (eg, depth of trusses and girders) or which may grossly affect site programme (eg, truss spans andstanchion heights). Notwithstanding any approval of these details, the contractor shall remain responsible for ensuring that the dimensions, details and workmanship result in the correct assembly of the work. Material and workmanship The steelwork is to be fabricated from mild steel to SABS 1431 Grade 300W. The whole of the fabrication and workmanship generally is to be in strict accordance with SABS 0162-1984 as amended. The material shall be of best quality throughout, free from loose rust or millscale, true to thickness and profile throughout and of the section and mass specified subject to a 2% tolerance for rolling margin. Consideration will be given to any detail variation which the contractor may wish to make with the view to the simplification of either fabrication, delivery or erection. Substitutions must be made at the contractor's own expense. The contractor shall provide Works Test Certificates where so required by the Engineer. Testing The Engineer shall be at liberty to select test pieces from steelwork in the workshop or on the site and to have them tested. The expense of such tests are to be borne by the contractor if the steelwork does not comply with the standards laid down above. A provisional sum is allowed in the bill of quantities for non-destructive testing. Holding down bolts Holding down bolts and other fixing devices which are to be embedded in concrete must be supplied to the principal contractor on request together with the necessary information, identification and templates.				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Any costs incurred by subsequent repositioning of bolts, etc resulting from the contractor having failed to furnish adequate information, identification and templates will be for the contractor's account. Welding Welding shall be in accordance with SABS 044 "Welding: Parts I, II and III". Welding shall be carried out in a manner which will prevent any distortion of the weld or the parent section. All welds shall have adequate root fusion and shall be free from cracks, porosity or other irregularities and any undercutting shall be made good by the deposition of additional runs of weld metal. Any completed welds showing cracks, cavities or other efects shall be cut out and made good at the contractor's own expense. "Mild steel electrodes shall comply with SABS 455 ""Covered Electrodes for Manual Arc Welding of Mild Steel andMedium High Tensile Steel""." Bolts Bolts shall have well-formed heads forged from the solid. Nuts shall closely fit the bolts so that they can only just be turned by hand and at least one clear thread shall project beyond the nut when fully tightened.All bolts shall have one asher under the nuts and shall be so tightened that the threaded portion does not bear on the members connected. Where bolt heads or nuts bear upon bevelled surfaces they shall be provided with tapered washers of 2,3 mm mean thickness to provide a seating square with the axis of the bolt. Friction grip bolts Connections specifying high strength friction grip bolts are to be in strict accordance with SABS 094 "Bolted Friction Grip Joints in Structural Steelwork" and the bolts used are to be in accordance with BS 3139 Part 1 : 1959 "General Grade Bolts, High Strength Friction Grip Bolts for Structural Engineering". Notwithstanding the above, the following must be rigidly adhered to: a) Two-case hardened washers, one flat or bevelled under the head and the other flat or bevelled under the nut shall be used with each bolt. b) Contact surfaces shall not be painted and shall be thoroughly cleaned free of dirt, oil, loose scale, burrs and other defects which are liable to reduce friction resistnace between surfaces. c) At all times the correct torques shall be applied to the different sizes of bolts. Erection				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The steelwork generally is to be fabricated in the contractor's works having due regard to transport and erection facilities. He must supply all erection tackle, temporary erection bracing, erect and plumb all steelworkand supply all steel wedges and tacks as required. Items may be detailed for delivery "piece small" or the contractor may prefabricate if he is satisfied that suitable arrangements for transport can be made. Connections are to be designed for the forces indicated on the drawings or to the maximum capacity of the members. Cleaning and painting All structural steel is to be thoroughly degreased to remove all grease or oil and then wire-brushed, scraped or sand-papered to remove all rust, mill-scale or surface contaminations and is to be immediately given one coat "Duram DTM" smooth epoxy paint prior to delivery to site. All damaged paintwork is to be made good on site after erection is complete. Testing of welders Tenderers must include in their rates for the testing of any welder used on the work who has not been tested within a period of six months immediately preceding his employment on this contract. Rates Rates for structural steelwork shall include for Engineering design development and certification, supply and manufacture, delivery and installation and paint finished as specified. Painting/corrosion protection specification a) All steelwork shall be mechanically wire-brushed to ST3O blast clean to SA2.				
C10.2	STEEL COLUMNS, BEAMS, POSTS, ETC.				
C10.2.1	254mm x 146mm x 31mm I-Sections	m	245		
C10.2.2	203mm x 133mm x 25mm I-sections	m	86		
C10.2.3	102mm x 3,5mm Circular Hollow Section	m	170		
C10.2.4	175mm x 50mm x 20mm x 3,5 lipped channel	m	1 490		
C10.3	BOLTS, ETC.				
C10.3.1	M8 x 75mm long chemical anchor bolts including nuts and washers with one end drilled and screwed to concrete.	No	126		
C10.3.2	M12 x 100mm long rawl bolts including nuts and washers with one end drilled and screwed to concrete.	No	Rate Only		Rate Only
C10.3.3	M16 x 150mm long chemical anchor bolts including nuts and washers with one end drilled and screwed to concrete.	No	Rate Only		Rate Only
C10.3.4	M20 x 150mm long chemical anchor bolts including nuts and washers with one end drilled and screwed to concrete.	No	21		
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C11	**SECTION C11 : METALWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C11.1	SUNDRY GALVANISED STEELWORK Bearers to brick linings, lintels, etc.:				
C11.1.1	40 x 40 x 5mm Thick angle section bearer bolted to concrete with and including M8 x 50mm long rawl bolts at 300mm centres.	m	20		
C11.2	PRESSED STEEL DOOR FRAMES 1,2mm Thick double rebated frames suitable for half brick walls complete with hoop iron anchors welded to frame, adjustable stainless steel striking plate/s suitable for mortice locks, three rubber shock absorbers in rebate and one pair of 100mm standard heavy duty butt hinges welded to frame:				
C11.2.1	Frame for door size 762 x 2032mm high.	No	Rate Only		Rate Only
C11.2.2	Frame for door size 813 x 2032mm high.	No	11		
C11.2.3	Frame for door size 1200 x 2032mm high.	No	Rate Only		Rate Only
C11.3	VENTILATION LOUVRE GRILLES, ETC.				
C11.3.1	Powdercoated aluminium louvre grille and frame size overall 500 x 500mm high, comprising standard 35mm x 1,6mm thick blades at 50mm centres including subframe and sealants in solid core laminated flush door (doors elsewhere).	No	6		
C11.4	ALUMINIUM WINDOWS, SHOPFRONTS, ETC.				
C11.5	SUPPLEMENTARY PREAMBLES General: All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. shall be designed, manufactured, supplied and installed in strict compliance with the "Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA), General Specification for Architectural Aluminium and Glass Products February 2005 Edition" and SANS 10137. All descriptions shall be deemed to include transoms, mullions, etc. as per the Architect's drawings. Design and installation: The Sub-Contractor shall be required to design the entire installation, provide all labour, materials, equipment and services required to complete the installation as specified herein. The Sub-Contractor shall ensure that the necessary wind pressure provisions have been incorporated within the design criteria. The Sub-Contractor shall submit his wind design criteria to the Architect for inspection.				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The Sub-Contractor shall allow for expansion of glass, framing, surrounding structures, etc. The Sub-Contractor shall allow for and produce fully detailed workshop drawings (3 copies) including samples of all ironmongery within 14 working days of the Main Contractors request. Fire resistance The installation shall conform to the local authorities fire resistance standards. Templates Templates formed of 25 x 25mm square hollow section steel are to be provided in each opening to ensure that all windows, doors, shopfronts, skylights, etc. are built in plumb and square. The subcontractor is to use his discretion in providing a sufficient quantity of templates as required to complete the Works as per the Main Contractors programme. Grounds 19 x 25mm Wrought SA pine grounds are to be fitted all round windows, doors, etc. Where grounds are visible they should be painted to form a shadowline. Sealing Window frames are to be sealed all round internally and externally against the building structure with approved silicone jointing compound to prevent water ingress. Weather seals All windows, doors, shopfronts, skylights, etc. are to be fitted with approved woolpile weather seals. Ironmongery to doors Door leaves are to be hung on one and a half pairs of 100 x 75mm butt hinges and fitted with one spring clip door holder. In addition double doors are to be fitted with one 150mm and one 200mm natural anodised flush lever bolt. Tenderers shall submit full specifications of ironmongery quoted which shall include all furniture, locks, handles, butt hinges, floor spring hinges, etc. The Sub-Contractor shall be required to submit ironmongery samples for approval prior to installation. Sub-Contractors are to note that the approval of shop drawings does not automatically indicate acceptance of ironmongery proposals. Rates				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. must include for all jointing, notching, cutting, etc. and for setting up and fixing in postion complete with glass, glazing beads, external cills, ironmongery, fixing brackets, lugs, bolts, timber grounds, silicone sealant, templates, etc. all as detailed and scheduled on the drawings and as necessary for the satisfactory execution of the work. Factory quality control The Sub-Contractor shall afford the Main Contractor full acces to plant, shop and assembly point to view and inspect the process and method employed in the fabricating and assembly of glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. Protection and cleaning All aluminium must be protected against damage by covering with temporary casings (masking tape, plastic coatings, etc.) and against deterioration or discolouration caused by mortar, wax, paint, etc., all to the entire satisfaction of the Principal Agent. On completion all such protection shall be removed and work cleaned down and left in proper working order. All glazing is to be protected from damage, breakage, scratches, etc. and allowances shall be made for polishing the glass as and when instructed by the Main Contractor.				
C11.6	ALUMINIUM WINDOWS Purpose made powdercoated aluminium windows complete with frames in brick openings, glazed with and including 6,7mm thick clear laminated safety glass:				
C11.6.1	Window Code PT69	No	2		
C11.6.2	Window Code PT96	No	10		
C11.6.3	Window Code PTT912	No	6		
C11.6.4	Window Code PTT189	No	2		
C11.7	SECURITY GATES				
C11.7.1	Security single leaf folding gate size overall 900 x 2100mm high.	No	2		
C11.7.2	Security single leaf folding gate size overall 1200 x 2100mm high.	No	1		
C11.7.3	Security double leaf folding gate size overall 1200 x 2100mm high.	No	Rate Only		Rate Only
Total Carried Forward					

SCHEDULE C: TAXI ADMIN BUILDING AND LOADING BAY

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
C11.11	STEEL LOCKERS				
	Greenfield steel lockers with standard baked enamel finish:				
C11.11.1	Four tier steel locker size 305mm wide x 457mm deep x 1800mm high.	No	4		
C11.12	HANDRAILS				
C11.12.1	50mm Diameter stainles steel grabrail including 12mm diameter x 300mm girth L-shaped wall brackets welded to grabrail at 800mm centres and built into sides of face brick stairs, complete with stainless steel coverplates fitted to wall brackets.	m	100		
C11.12.2	Extra for mitred angle weld.	No	4		
C11.12.3	Extra for stop end.	No	4		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C12	**SECTION C12 : PLASTERING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C12.1	EPOXY FLOOR SCREED Prepare floors by mechanical grinding and apply a three component seamless, chemically resistant non-slip self-smoothing polyurethane floor screed (55Mpa compressive strength) similar to ivory pu 700 mf installed as per manufacturer's instructions:				
C12.1.1	4mm Thick on concrete floors.	m2	4		
C12.2	GRANOLITHIC Untinted granolithic on concrete:				
C12.2.1	75mm High coved skirting against walls.	m	5		
C12.3	SCREEDS Screeds on concrete:				
C12.3.1	80mm Thick (average) on slabs to falls to receive waterproofing.	m2	21		
C12.3.2	30mm Thick on floors.	m2	140		
C12.3.3	80mm x 80mm Traingular fillet at perimeter of roof screed to receive turn-up of waterproofing.	m	10		
C12.3.4	Ditto, but circular on plan.	m	Rate Only		Rate Only
C12.4	INTERNAL PLASTER One coat cement plaster mimimum 15mm thick (5:1) wood floated to receive tiles (elsewhere) including all labours on:				
C12.4.1	Brick vertical surfaces and in narrow widths (part on concrete).	m2	360		Rate Only
C12.4.2	Brick vertical surfaces circular on plan (part on concrete).	m2	30		Rate Only
C12.5	EXTERNAL PLASTER One coat cement plaster minimum 15mm thick (5:1) steel floated including all labours on:				
C12.5.1	Brick vertical surfaces and in narrow widths (part on concrete).	m2	220		Rate Only
C12.5.2	Brick vertical surfaces circular on plan (part on concrete).	m2	5		Rate Only
Total Carried Forward To Summary					

SCHEDULE C: TAXI ADMIN BUILDING AND LOADING BAY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C13	**SECTION C13 : TILING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C14.1	WALL TILING Allow a Prime Cost Amount of R200/m2 for porcelain tiles fixed with an approved adhesive to plaster (plaster elsewhere) and flush pointed with tinted jointing compond:				
C13.1.1	On walls and in narrow widths.	m2	160		
C13.1.2	On walls circular on plan.	m2	2		
C13.2	FLOOR TILING Allow a Prime Cost Amount of R200/m2 for porcelain tiles fixed with an approved adhesive to cement screed (elsewhere) and flush pointed with tinted jointing compond:				
C13.2.1	On floors and in narrow widths.	m2	150		
C13.2.2	150mm High skirting.	m	73		
C13.2.3	150mm High skirting circular on plan.	m	1		
C13.2.4	Circular cutting and waste	m	Rate Only		Rate Only
C13.3	SUNDRIES Corner protectors, dividing strips, etc.:				
C13.3.1	12mm "Genesis" aluminium straight edge bedded into tile adhesive in strict accordance to the manufacturer's instructions.	m	10		
C13.3.2	"Genesis MXA100" aluminium movement joint with rubber infill bedded into tile adhesive in strict accordance to the manufacturer's instructions.	m	1		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C14	**SECTION C14 : PLUMBING AND DRAINAGE** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C14.1	SUPPLEMENTARY PREAMBLES Rates Pipes of the same specification whether of water, waste water, fire services, rainwater, gas, compressed air, etc. are for convenience measured separately. Rates of all piping to include for short lengths, nipples, cutting, jointing, running joints, sockets, collars, etc. and unless otherwise stated to include for fixing to walls, in ducts, ceilings, roofs, floors, columns, slabs, etc. Rates for pipes laid in trenches to include for risk of collapse, keeping excavations free from water, return filling and ramming and spreading and levelling surplus excavated material on site as directed by the Principal Agent Wire gratings Descriptions of gutter outlets, etc. shall be deemed to include wire balloon gratings. Stormwater channels Descriptions of channels shall be deemed to include all necessary excavation and disposal of surplus material. uPVC pipes and fittings Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings. Soil, waste and vent pipes and fittings shall be solvent weld jointed or sealed with butyl rubber rings. uPVC pressure pipes and fittings: Pipes of water supply shall be of the class described. Pipes of 40mm diameter and smaller shall be plain ended with solvent welded uPVC loose sockets and fittings. Pipes of 50mm diameter and greater shall have sockets and spigots with push-in type integral rubber ring joints. Bends shall be uPVC and all other fittings shall be cast iron, all with similar push-in type joints. Copper pipes Pipes shall be carbon free and of hard drawn and half-hard pipes of the class stated. Class 0 (thin walled hard drawn) pipes shall not be bent. Class 1 (thin walled half-hard), Class 2 (half-hard) and Class 3 (heavy walled half-hard) pipes shall only be bent with benders with inner and outer formers. Fittings to copper waste, vent and anti-syphon pipes shall be of capillary type solder fittings and compression fittings shall be of an approved type. Capillary solder fittings shall comply with ISO 2016. Only compression fittings shall be used in all walls or in ground.				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Copper pipes are to be installed in accordance with the latest revision of the code of Practice for Copper Plumbing soldering techniques. Flux, solder, etc. to be strictly in accordance with the manufacturer's requirements with special attention to copper flux composition. The contractor is to allow for regular inspections and monthly certification by the manufacturer to ensure compliance with the above. Exposed concrete surfaces Exposed surfaces of concrete stormwater channels, cover slabs, inspection eye marker slabs, gulley tops, cleaning eye tops, catchpits, inspection chambers, etc. shall be finished smooth with plaster. Excavation and backfilling Excavations and backfilling must be done using hand held tools only. Excavations No claim for rock excavation will be entertained unless the contractor has timeously notified the quantity surveyor thereof prior to backfilling. "Soft and Hard rock" shall be as defined in "Earthworks". Sanitary fittings Outer edges of sinks, basins, urinals, etc. are to be sealed against adjacent surfaces with approved silicone. Stainless steel basins, sinks, wash troughs, urinals, etc. Units shall have standard aprons on all exposed edges and tiling keys against wall where applicable. Waste unions Descriptions of waste unions shall be deemed to include rubber or vulcanite plugs and chains fixed to fittings. General Descriptions of pipes laid in and including trenches, inspection chambers, etc. shall be deemed to include excavation, backfilling, bedding, compaction to a minimum of 93% Modified AASHTO density and disposal of surplus material.				
C14.2	RAINWATER DISPOSAL 0,6mm Thick seamless extruded aluminium gutters and downpipes, fixed in strict accordance with the manufacturer's instructions:				
C14.2.1	125 x 100mm Square eaves gutter.	m	Rate Only		Rate Only
C14.2.2	Extra for stopped end.	No	Rate Only		Rate Only
C14.2.3	Extra for joint and outlet to 100 x 100mm square downpipe.	No	Rate Only		Rate Only
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	uPVC pipes including holderbats, etc.:				
C14.2.4	100mm Diameter rainwater downpipes.	m	27		
C14.2.5	Extra over rainwater downpipe for offset not exceeding 600mm.	No	6		
C14.2.6	220mm Steel Box Gutter complete with brackets and clips	m	50		
	"Fullbore" cast iron outlets including joint to uPVC pipes, adaptors, etc.:				
C14.2.7	100mm Diameter rainwater Steel downpipes	m	47		
C14.3	SANITARY FITTINGS				
	Approved white vitreous china:				
C14.3.1	Allow a Prime Cost Amount of R2 500.00 for white vitreous china wall hung open rim wc pan and concealed cistern complete with flushing pipe and heavy duty white double flap seat, fixing in position and connecting complete.	No	6		
C14.3.2	Allow a Prime Cost Amount of R2 500.00 for white vitreous china wall hung urinal with flush valve and flushing pipe, fixing in position and connecting complete.	No	2		
C14.3.3	Allow a Prime Cost Amount of R2 500.00 for white vitreous china drop-in wash hand basin with taps and waste outlet union complete with fixing in position on granite tops (elsehwere) including sealing with an approved silicone sealer and connecting complete.	No	3		
	Approved stainless steel type 304 (18/10):				
C14.3.4	Allow a Prime Cost Amount of R7 500.00 for stainless steel sink size overall 1800 x 500mm complete with deep double centre bowls, driptrays, splashback, frame and stand, chromium plated waste unions, chains and stays, vulcanite plugs and undersink insulation, and fixing in position including sealing with an approved waterproof sealer and connecting complete.	No	2		
C14.4	TRAPS, ETC.				
C14.4.1	40mm Rubber combination sink trap.	No	2		
C14.4.2	40mm brass deepseal brass shower trap with chromium plated grating.	No	3		
C14.4.3	40mm Chromium plated brass bottle trap.	No	5		
C14.5	TAPS, VALVES, ETC.				
	Chromium plated:				
C14.5.1	15mm "Cobra" angle stopvalve with wall flange.	No	9		
C14.5.2	15mm "Cobra Star 211" raised nose pillartap.	No	5		
C14.5.3	15mm "Cobra Star 238" undertile stopcock with wall flange.	No	6		
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
C14.5.4	15mm "Cobra Star 166" sink mixer with wall flanges and overarm swivel outlet.	No	3		
C14.5.5	15 mm "Cobra 068BJ" shower head.	No	Rate Only		Rate Only
C14.5.6	15mm "Cobra Star 027" shower arm with wall flange.	No	Rate Only		Rate Only
	Brass:				
C14.5.7	15mm Ballostop valve.	No	3		
C14.5.8	"Cobra Master Flow2" Pressure reducing valve.	No	2		
C14.5.9	22mm Garden bibtap with 22mm thread for hose coupling.	No	3		
C14.5.10	22mm Fullway wheel head gate valve.	No	3		
C14.5.11	"Cobra PB1.10" 22mm vacuum breaker.	No	1		
	Sundries:				
C16.5.12	15mm Flexihose 450mm long.	No	2		
C14.6	SOIL AND WASTE WATER DRAINAGE				
	uPVC soil and waste piping with seal ring joints in accordance with SABS 967 fixed to walls, concrete soffits, etc.:				
C14.6.1	50mm Diameter pipe.	m	96		
C14.6.2	110mm Diameter pipe.	m	0		Rate Only
C14.6.3	110mm Diameter Class 9 structured wall pipe laid in ground to falls on, including excavation in compacted earth 600mm wide and not exceeding 1000mm deep and backfilling to 95% modified AASHTO density in 150mm layers, including carting away surplus excavated material, risk of collapse, dewatering of trenches, etc.	m	35		
	Extra over uPVC pipes for fittings:				
C14.6.4	50mm Bend.	No	5		
C14.6.5	50mm Junction.	No	6		
C14.6.6	50mm Junction with inspection eye.	No	4		
C14.6.7	110mm Bend.	No	2		Rate Only
C14.6.8	110mm Bend with inspection eye.	No	7		
C14.6.9	110mm Junction.	No	0		Rate Only
C14.6.10	110mm Junction with inspection eye.	No	3		
C14.6.11	110 x 50mm Reducer.	No	4		
C14.6.12	110 x 50mm Reducing junction.	No	2		
C14.6.13	110mm Two-way vent valve.	No	4		
C14.6.14	110mm Pan connector.	No	3		
C14.6.15	110mm Bent pan connector.	No	2		
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Sumps, catch-pits, inspection chambers, etc.:				
C14.6.16	Gulley not exceeding 1000mm deep to invert comprising 110mm diameter uPVC trap and head, fitted with 190mm diameter uPVC grating, including excavating for, bedding on and encasing in 20MPa/19mm mass concrete and fitted with and including precast concrete gulley top bedded in cement mortar.	No	3		
C14.7	WATER RETICULATION				
	Copper tubing (SABS 460 Class 0) with brass fittings fixed to walls, concrete soffits, etc.:				
C14.7.1	15mm Diameter pipe.	m	3		
C14.7.2	15mm Solder fittings.	No	2		
C14.7.3	15mm Compression fittings.	No	6		
C14.7.4	22mm Diameter pipe.	m	3		
C14.7.5	22mm Solder fittings.	No	3		
C14.7.6	22mm Compression fittings.	No	9		
C14.7.7	28mm Solder fittings.	No	7		
C14.7.8	28mm Compression fittings.	No	9		
	HDPE piping (SABS ISO 9001 ClassPE63) with compression fittings, laid in ground, including excavation in compacted earth 400mm wide and not exceeding 1000mm deep and backfilling to 95% modified AASHTO density in 150mm layers, including carting away surplus excavated material, risk of collapse, dewatering of trenches, etc.:				
C14.7.9	20mm Diameter pipe.	m	3		
C14.7.10	20mm Fittings.	No	4		
C14.7.11	25mm Diameter pipe.	m	21		
C14.7.12	25mm Fittings.	No	15		
C14.7.13	40mm Diameter pipe.	m	9		
C14.7.14	40mm Fittings.	No	3		
C14.8	ELECTRIC WATER HEATERS				
	Solahart industrial water heating sytem size 2475 x 2480 x 510mm high (472kgs full) installed on sheetmetal roof with and including stainless steel straps in strict accordance with the manufacturer's instructions:				
C14.8.1	150 Litre roof mounted water heating system.	No	1		
C14.9	FIRE SERVICE				
	Hose Reels, etc.:				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
C14.9.1	Approved hose reel complete with 30m of 19mm hose all to SABS 543 incorporating 25mm chromium plated gunmetal gate valve and connection for and joint to supply pipe with brackets bolted to wall with and including four 8mm bolts with plate washers built 100mm into brickwork in cement mortar.	No	2		
C14.9.2	Approved 4,5Kg DCP cylindrical fire extinguisher fixed on and including backing boards to walls.	No	2		
C14.10	TESTING				
C14.10.1	Provide all necessary apparatus, water, etc. and allow for testing the whole of the plumbing and drainage work in Parts and Sections as completed and/or handed over to the satisfaction of the Architect and Local Authorities. All defective work is to be taken out and replaced at the Contractor's expense and the whole retested until found perfect.	Item	1		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C15	**SECTION C15 : GLAZING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C15.1	MIRRORS ETC. 6mm Thick silvered float glass copper backed mirrors with 10mm bevelled and polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in ceramic tiled wall:				
C15.1.1	Mirror size 600 x 1200mm high.	No	3		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
C16	**SECTION C16 : PAINTWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
C16.1	PLASTER Prepare and apply one coat "Dulux" plaster primer, one coat undercoat and two coats "Dulux Super Acrylic Emulsion" paint on:				
C16.1.1	Internal and external plastered walls, columns, recessed bands, etc.	m2	563		
C16.1.2	Internal and external plastered soffits.	m2	90		
C16.2	METAL Prepare and apply one coat "Dulux" steel patch primer, one coat "Dulux Duragrip" universal undercoat and two coats "Dulux Non-drip Enamel" paint on:				
C16.2.1	Frames and linings.	m2	90		
C16.2.2	Bearers, posts, edging, etc.	m	40		
C16.3	WOOD Prepare and apply one coat "Dulux Woodgard" Timbapresrvitive oil based penetrating sealer on:				
C16.3.1	General surfaces of doors.	m2	60		
C16.3.2	Skirtings, rails, etc. in narrow girths. Prepare and apply one coat "Dulux" wood primer, one coat undercoat and two coats "Dulux Pearlglo" water-based enamel paint on:	m	20		
C16.3.3	General surfaces of doors.	m2	90		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE C: TAXI ADMIN BUILDING AND LOADING BAY

SUMMARY OF SECTIONS

Section	Description		Amount (Rand)
C	SECTION C1: EARTHWORKS		
C	SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT		
C	SECTION C3 : MASONRY		
C	SECTION C4 : WATERPROOFING		
C	SECTION C5 : ROOF COVERINGS, ETC.		
C	SECTION C6 : CARPENTRY		
C	SECTION C7 : CEILINGS		
C	SECTION C8 : FLOOR COVERINGS		
C	SECTION C9 : IRONMONGERY		
C	SECTION C10 : STRUCTURAL STEELWORK		
C	SECTION C11 : METALWORK		
C	SECTION C12 : PLASTERING		
C	SECTION C13 : TILING		
C	SECTION C14 : PLUMBING AND DRAINAGE		
C	SECTION C15 : GLAZING		
C	SECTION C16 : PAINTWORK		
Total Carried Forward To Summary Of Schedules			

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D1	**SECTION D1: EARTHWORKS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D1.1	SUPPLEMENTARY PREAMBLES Carting away of excavated material Descriptions of carting away of excavated material shall be deemed to include for bulking and loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site. Subterranean water No information regarding subterranean water is available. The tenderer must acquaint himself of the presence and depth of subterranean water and allow thereof in his rates.				
D1.2	EXCAVATION OTHER THAN BULK Excavation in compacted earth not exceeding 2m deep in:				
D1.2.1	Trenches for strip foundations and ground beams. Extra over excavations other than bulk in earth for excavation in:	m3	60		
D1.2.2	Soft rock.	m3	5		
D1.2.3	Hard rock.	m3	5		
D1.3	CARTING AWAY Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk):				
D1.3.1	Off site to a dumping site to be located by the Contractor.	m3	10		
D1.4	EARTH FILLING, ETC. Filling with material from excavations including hauling, spread, level, water and compact to a density of at least 93% Mod. AASHTO maximum density in 150mm thick layers:				
D1.4.1	Backfilling to trenches, holes, etc. Selected material supplied by the Contractor and spread, level, water and compact to a density of at least 95% Mod. AASHTO maximum density in 150mm thick layers:	m3	90		
D1.4.2	Under floors, paving, etc.	m3	15		
D1.5	TERMITE PROOFING Approved brand of anti-termite soil insecticide applied by a Registered Pest Control Company and guaranteed against termite infestation for ten years:				
Total Carried Forward					

SCHEDULE D: BUS ADMIN BUILDING

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
D1.5.1	Under floors, etc. including forming and poisoning shallow furrows against foundation walls etc., filling in furrows and ramming.	m2	100		
D1.5.2	To bottom and sides of trenches, etc.	m2	520		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D2	**SECTION D2 : CONCRETE, FORMWORK AND REINFORCEMENT** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D2.1	SUPPLEMENTARY PREAMBLES Type of cement All cement used in concrete work is to be OPC cement, no cement containing fly ash will be allowed. Formwork Descriptions of formwork shall be deemed to include use and waste only (except where described as left in or permanent), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use. The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support withou damage and shall remain in position until the newly constructed work is able to support itself. Formwork to soffits of solid slabs, etc., shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.				
D2.2	REINFORCED CONCRETE 15MPa/19mm Concrete in:				
D2.2.1	50mm Thick blinding under ground beams, etc.	m2	120		
	20MPa/19mm Concrete in:				
D2.2.2	Strip foundations	m3	45		
D2.2.3	Surface beds	m3	25		
D2.3	REINFORCED CONCRETE 20MPa/19mm Concrete in:				
D2.3.1	Pad footing	m3	30		
D2.3.2	Column	m3	25		
D2.3.3	First Floor and Staircase	m3	45		
D2.3.4	Roof and Beam	m3	9		
D2.4	CONCRETE SUNDRIES Finishing top surfaces of concrete smooth with a wood float:				
D2.4.1	Surface beds, slabs, etc.	m2	611		
D2.5	GROUTING, ETC.				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Class E non-shrink grout:				
D2.5.1	Bedding approximately 25mm thick under 200mm diameter base plate including chamfered edges all round.	No	140		
D2.5.2	Bedding approximately 25mm thick under 250mm x 250mm base plate including chamfered edges all round.	No	30		
	Casting in of holding down bolts:				
D2.5.3	Provide template for and embed set of two 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	140		
D2.5.4	Provide template for and embed set of four 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	30		
D2.6	MOVEMENT JOINTS, ETC.				
	Expansion joints with 10mm jointex between vertical concrete and brick surfaces:				
D2.6.1	Joint not exceeding 300mm high.	m	10		
D2.6.2	Joint not exceeding 300mm high circular on plan.	m	10		
	Two layers of 6mm thick smooth tempered hardboard to form slip joints between horizontal concrete and brick surfaces including cement mortar bed:				
D2.6.3	Joint not exceeding 300mm wide.	m	90		
D2.6.4	Joint not exceeding 300mm wide circular on plan.	m	10		
D2.7	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to sides of:				
D2.7.1	Ground beams.	m2	20		
D2.7.2	Ground beams circular on plan.	m2	15		
D2.8	SMOOTH SHUTTERING (DEGREE OF ACCURACY I)				
	Smooth formwork to sides of:				
D2.8.1	Beams and inverted beams.	m2	Rate Only		Rate Only
D2.8.2	Beams and inverted beams circular on plan.	m2	Rate Only		Rate Only
	Smooth formwork to sides and soffits of:				
D2.8.3	Ring beams.	m2	Rate Only		Rate Only
D2.8.4	Ring beams circular on plan exceeding 1m radius.	m2	Rate Only		Rate Only
D2.8.5	Slabs.	m2	Rate Only		Rate Only
	Boxing in or out smooth formwork to form:				
D2.8.6	Opening not exceeding 1m girth through 230mm thick beam.	No	Rate Only		Rate Only
D2.9	REINFORCEMENT				
Total Carried Forward					

SCHEDULE D: BUS ADMIN BUILDING

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Mild steel reinforcement to structural concrete work:				
D2.9.1	8mm Diameter bars (Strip Footings)	kg	510		
	High tensile steel reinforcement to structural concrete work:				
D2.9.2	12mm Diameter bars (Strip Footing)	kg	2 200		
D2.9.3	12mm Diameter bars (Pad Footing)	kg	Rate Only		Rate Only
D2.9.4	12mm Diameter bars (Staircase)	kg	16		
D2.9.5	20mm Diameter bars (Starter Bars)	kg	Rate Only		Rate Only
D2.9.6	12mm Diameter bars (First Floor Slab)	kg	500		
D2.9.7	16mm Diameter bars (First Floor Slab)	kg	40		
	Mild steel reinforcement to structural concrete work:				
D2.9.8	10mm Diameter bars (First Floor Slab)	kg	90		
	High tensile steel reinforcement to structural concrete work:				
D2.9.9	12mm Diameter bars (Roof Slab and Beam)	kg	490		
D2.9.10	16mm Diameter bars (Roof Slab and Beam)	kg	22		
	Mild steel reinforcement to structural concrete work:				
D2.9.11	8mm Diameter bars (Roof Slab)	kg	80		
D2.9.12	10mm Diameter bars (Roof Slab)	kg	4		
	High tensile steel reinforcement to structural concrete work:				
D2.9.13	12mm Diameter bars (Staircase)	kg	440		
D2.9.14	16mm Diameter bars (Staircase)	kg	120		
	Mild steel reinforcement to structural concrete work:				
D2.9.15	10mm Diameter bars (Staircase)	kg	22		
	Fabric reinforcement with minimum 400mm wide overlaps:				
D2.9.5	Type 193 Fabric reinforcement in concrete surface beds, slabs, etc.	m2	275		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D3	**SECTION C3 : MASONRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D3.1	SUPPLEMENTARY PREAMBLES Sizes in descriptions Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick. Wall ties Descriptions of solid walls (except if built in English bond) and cavity walls shall be deemed to include metal wall ties complying with SABS 28 and of the butterfly type, of the required length with each end built at least 75mm deep into brickwork, spaced at not more than 1m centres alternatively to every third course of brickwork. Cavity walls, etc. Descriptions of cavity walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole.				
D3.2	BRICKWORK: FOUNDATIONS AND SUPERSTRUCTURE Brickwork in burnt clay NFP bricks in 3:1 cement mortar:				
D3.2.1	Piers and attached piers.	m3	12		
D3.2.2	Half brick walls.	m2	109		
D3.2.3	Half brick walls in lining to concrete.	m2	10		
D3.2.4	Half brick walls in lining to concrete circular on plan.	m2	2		
D3.2.5	One brick walls.	m2	220		
D3.2.6	One brick walls circular on plan.	m2	Rate Only		Rate Only
D3.2.7	One brick parapet walls.	m2	Rate Only		Rate Only
D3.2.8	One brick parapet walls circular on plan.	m2	Rate Only		Rate Only
D3.2.9	One and a half brick walls.	m2	10		
D3.2.10	One and a half brick walls circular on plan.	m2	Rate Only		Rate Only
D3.3	FACE BRICKWORK Allow a Prime Cost Amount of R6 000.00/ 1000 bricks for face brickwork and raked out and pointed with a square pointing tool 10 mm deep:				
D3.3.1	Extra over ordinary brickwork for face brick walls	m2	150		
D3.3.2	Extra over ordinary brickwork for face brick walls circular on plan	m2	Rate Only		Rate Only
Total Carried Forward					

SCHEDULE D: BUS ADMIN BUILDING

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
D3.3.3	Extra over ordinary brickwork for 220mm wide face brick on edge coping	m2	10		
D3.3.4	Extra over ordinary brickwork for 220mm wide face brick on edge coping circular on plan	m2	Rate Only		Rate Only
D3.4	BRICKWORK SUNDRIES				
	Brick reinforcement:				
D3.4.1	900mm long Galvanized hoop iron roof anchors built in vertically	No	30		
D3.4.2	75mm Wide reinforcement built in horizontally.	m	40		
D3.4.3	150mm Wide reinforcement built in horizontally.	m	750		
	Prestressed fabricated lintels:				
D3.4.4	100 x 70mm lintels in lengths not exceeding 3m.	m	20		
D3.4.5	100 x 70mm lintels in lengths exceeding 4,5m not exceeding 6m.	m	10		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D4	**SECTION C4 : WATERPROOFING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D4.1	SUPPLEMENTARY PREAMBLES Waterproofing Waterproofing of roofs, basements, etc. shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs.				
D4.2	DAMPPROOFING OF WALLS AND FLOORS One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp-proof course:				
D4.2.1	In walls, under cills, etc. One layer of 250 micron type C waterproof sheeting sealed at laps with pressure sensitive tape:	m2	45		
D4.2.2	Under surface beds, ground beams, etc.	m2	155		
D4.3	SLAB WATERPROOFING The Contractor shall allow in his rates for testing the waterproofing for water tightness by ponding the waterproofed surfaces for a period of at least 48 hours before application of a protective layer. 4mm Thick "Derbigum SP" fully bonded waterproofing guaranteed to remain watertight for a period of ten years on:				
D4.3.1	Concrete slab, beams and sides of parapets including dressing into outlets, turn-ups, etc.	m2	25		
D4.3.2	Extra over for circular cutting.	m	5		
D4.3.3	Flashing strip 300mm girth at turn-ups including sealing top edge into groove with mastic.	m	26		
Total Carried Forward To Summary					

SCHEDULE D: BUS ADMIN BUILDING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D5	**SECTION C5 : ROOF COVERINGS, ETC.** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D5.1	PROFILED METAL SHEETING AND ACCESSORIES 0,58mm Thick "Klip-lock 406" industrial galvanized roof sheeting with colorbond finish on one side in single lengths fixed to steel members including all fixing brackets and fixed in strict accordance with the manufacturer's instructions:				
D5.1.1	Sheeting laid to roof with pitch not exceeding 25 degrees in single lengths (measured nett).	m2	85		
D5.1.2	Extra over for bending sheet ends to 450mm radius.	m	Rate Only		Rate Only
D5.1.3	Extra over for raking cutting at valleys.	m	26		
	0,58mm Thick flashings, etc.:				
D5.1.4	380mm Girth ridge cap flashing fixed with S10 clips and including serrated broad flute closer and polycloser.	m	10		
D5.1.5	450mm Girth gable trim flashing fixed with S10 clips.	m	10		
D5.1.6	380mm Girth valley lining.	m	10		
D5.2	ROOF INSULATION Sisalation 420 heavy industrial grade reinforced aluminium foil insulation laid taut over purlins in strict accordance with the manufacturer's instructions:				
D5.2.1	Aluminium foil roof insulation laid taut over purlins (purlins at approximately 2m centres) with minimum 150mm side laps and fixed concurrent with roof covering including galvanised steel straining wires, etc.	m2	85		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D6	**SECTION C6 : CARPENTRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D6.1	DOORS, WINDOWS, SASHES, ETC. 44mm Thick solid core laminated masonite flush door with hardwood concealed edge strips finished on both sides and hung on steel frames (frames elsewhere):				
D.1.1	Door size overall 762 x 2032mm high.	No	Rate Only		Rate Only
D6.1.2	Door size overall 813 x 1932mm high.	No	11		
D6.1.3	Door size overall 813 x 2032mm high. 44mm Thick solid Meranti flush back slatted door with hardwood concealed edge strips finished on both sides and hung on steel frames (frames elsewhere):	No	Rate Only		Rate Only
D6.14	Door size overall 813 x 2032mm high.	No	4		
D6.1.5	Double leaf door size overall 1200 x 2032mm high. Extra over solid core laminated flush doors for:	No	2		
D6.1.6	Opening size 500 x 500mm high for ventilation grilles (elsewhere) in solid laminated flush panel door (doors elsewhere).	No	2		
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
D6.2	SKIRTINGS				
D6.2.1	20 x 75mm High Meranti skirting including 19mm quarter round plugged to plastered walls at 500mm centres.	m	290		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D7	**SECTION D7 : CEILINGS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D7.1	SUSPENDED CEILINGS 600 x 1200 x 6mm Thick "Gyproc Donnceil Gyprex" embossed vinyl faced ceiling tiles laid on and including lay in exposed tee suspension ceiling system including "Donn T38" white powder coated main tees, cross tees, hold-down clips, wedges, etc., all suspended with galvanised hangers at centres not exceeding 1200mm in strict accordance with the manufacturer's instructions:				
D7.1.1	Ceiling suspended not exceeding 1m below timber roof trusses.	m2	140		
	Extra over ceiling tiles for forming openings for air grilles, diffusers, valves, etc. (elsewhere) and providing additional support:				
D7.1.2	350mm Diameter opening.	No	4		
Total Carried Forward To Summary					

SCHEDULE D: BUS ADMIN BUILDING

SECTION C10 : FLOOR COVERINGS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D8	**SECTION D8 : FLOOR COVERINGS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D8.1	POLYPROPYLENE NEEDLE PUNCH ENTRANCE MATS 12mm Thick "Matco DL" heavy commercial rubber backed entrance mat comprising extruded aluminium profiles, Brushed nylon inserts, etc. fixed to recess in surface bed in strict accordance with the manufacturer's instructions:				
D8.1.1	Door mat size 1000 x 600mm wide.	No	2		
Total Carried Forward To Summary					

SCHEDULE D: BUS ADMIN BUILDING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D9	**SECTION D9 : IRONMONGERY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D9.1	LOCKS AND HANDLES				
D9.1.1	Allow a Prime Cost Amount of R500.00 for lockset and striker plates complete with a pair of matching satin aluminium lever handles and fitting in position into timber doors (elsewhere).	No	6		
D9.2	DOOR CLOSERS				
D9.2.1	"DCLSA TS4000G" door closer with standard arm.	No	6		
D9.3	BATHROOM FITTINGS Dispensers, etc.:				
D9.3.1	"Franke Stratos STRX 618" grade 304 (18/10) stainless steel soap dispenser plugged to wall.	No	3		
D9.3.2	"Franke Stratos STRX 672" grade 304 (18/10) stainless steel lockable type two roll recessed toilet roll holder plugged to wall.	No	6		
D9.3.3	"Franke Stratos STRX 600" grade 304 (18/10) stainless steel lockable paper towel dispenser plugged to wall.	No	3		
D9.4	PUSH PLATES, KICK PLATES, ETC.				
D9.4.1	"DCLSA 080/320" stainless steel kick plate.	No	8		
D9.4.2	"DCLSA 079/160" stainless steel push plate with male/female symbol engraved thereon.	No	8		
D9.4.3	"DCLSA 079/160" stainless steel push plate with FHR symbol engraved thereon.	No	4		
D9.5	SUNDRIES				
D9.5.1	"DCLSA 154/69" satin stainless steel hat and coat hook with rubber buffer.	No	8		
D9.5.2	"DCLSA 140/69" satin stainless steel door stop with rubber buffer.	No	14		
D9.5.3	40mm Diameter brass swivel roller fitted to steel flagpole (elsewhere) including 10mm diameter x 6m long nylon flag hoisting rope with both ends of rope fitted fith nylon toggles.	No	4		
D9.6	SIGNAGE TO BE SUPPLIED AND INSTALLED BY NOMINATED SUBCONTRACTOR				
D9.6.1	a) Metal signage boards	Prov Sum			40000
D9.6.2	b) Overhead charges and profit	%	40000		
	Total Carried Forward To Summary				

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D10	**SECTION D10 : STRUCTURAL STEELWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D10.1	SUPPLEMENTARY PREAMBLES Shop drawings The contractor will be required to prepare shop details for the work which must be submitted to the Engineer for approval before fabrication is started. Approval of shop details by the Engineer will include the following: a) Examination of member sizes for consistency with design requirements. b) Examination of all connections designed and/or detailed by the fabricator, for adequacy of load trasference. c) Approval of leading dimensions which are taken to include such dimensions as may influence the design (eg, depth of trusses and girders) or which may grossly affect site programme (eg, truss spans andstanchion heights). Notwithstanding any approval of these details, the contractor shall remain responsible for ensuring that the dimensions, details and workmanship result in the correct assembly of the work. Material and workmanship The steelwork is to be fabricated from mild steel to SABS 1431 Grade 300W. The whole of the fabrication and workmanship generally is to be in strict accordance with SABS 0162-1984 as amended. The material shall be of best quality throughout, free from loose rust or millscale, true to thickness and profile throughout and of the section and mass specified subject to a 2% tolerance for rolling margin. Consideration will be given to any detail variation which the contractor may wish to make with the view to the simplification of either fabrication, delivery or erection. Substitutions must be made at the contractor's own expense. The contractor shall provide Works Test Certificates where so required by the Engineer. Testing The Engineer shall be at liberty to select test pieces from steelwork in the workshop or on the site and to have them tested. The expense of such tests are to be borne by the contractor if the steelwork does not comply with the standards laid down above. A provisional sum is allowed in the bill of quantities for non-destructive testing. Holding down bolts Holding down bolts and other fixing devices which are to be embedded in concrete must be supplied to the principal contractor on request together with the necessary information, identification and templates.				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Any costs incurred by subsequent repositioning of bolts, etc resulting from the contractor having failed to furnish adequate information, identification and templates will be for the contractor's account. Welding Welding shall be in accordance with SABS 044 "Welding: Parts I, II and III". Welding shall be carried out in a manner which will prevent any distortion of the weld or the parent section. All welds shall have adequate root fusion and shall be free from cracks, porosity or other irregularities and any undercutting shall be made good by the deposition of additional runs of weld metal. Any completed welds showing cracks, cavities or other efects shall be cut out and made good at the contractor's own expense. "Mild steel electrodes shall comply with SABS 455 ""Covered Electrodes for Manual Arc Welding of Mild Steel andMedium High Tensile Steel""." Bolts Bolts shall have well-formed heads forged from the solid. Nuts shall closely fit the bolts so that they can only just be turned by hand and at least one clear thread shall project beyond the nut when fully tightened.All bolts shall have one asher under the nuts and shall be so tightened that the threaded portion does not bear on the members connected. Where bolt heads or nuts bear upon bevelled surfaces they shall be provided with tapered washers of 2,3 mm mean thickness to provide a seating square with the axis of the bolt. Friction grip bolts Connections specifying high strength friction grip bolts are to be in strict accordance with SABS 094 "Bolted Friction Grip Joints in Structural Steelwork" and the bolts used are to be in accordance with BS 3139 Part 1 : 1959 "General Grade Bolts, High Strength Friction Grip Bolts for Structural Engineering". Notwithstanding the above, the following must be rigidly adhered to: a) Two-case hardened washers, one flat or bevelled under the head and the other flat or bevelled under the nut shall be used with each bolt. b) Contact surfaces shall not be painted and shall be thoroughly cleaned free of dirt, oil, loose scale, burrs and other defects which are liable to reduce friction resistnace between surfaces. c) At all times the correct torques shall be applied to the different sizes of bolts. Erection				
Total Carried Forward					

SCHEDULE D: BUS ADMIN BUILDING

SECTION C12 : STRUCTURAL STEELWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The steelwork generally is to be fabricated in the contractor's works having due regard to transport and erection facilities. He must supply all erection tackle, temporary erection bracing, erect and plumb all steelworkand supply all steel wedges and tacks as required. Items may be detailed for delivery "piece small" or the contractor may prefabricate if he is satisfied that suitable arrangements for transport can be made. Connections are to be designed for the forces indicated on the drawings or to the maximum capacity of the members. Cleaning and painting All structural steel is to be thoroughly degreased to remove all grease or oil and then wire-brushed, scraped or sand-papered to remove all rust, mill-scale or surface contaminations and is to be immediately given one coat "Duram DTM" smooth epoxy paint prior to delivery to site. All damaged paintwork is to be made good on site after erection is complete. Testing of welders Tenderers must include in their rates for the testing of any welder used on the work who has not been tested within a period of six months immediately preceding his employment on this contract. Rates Rates for structural steelwork shall include for Engineering design development and certification, supply and manufacture, delivery and installation and paint finished as specified. Painting/corrosion protection specification a) All steelwork shall be mechanically wire-brushed to ST3O blast clean to SA2.				
D10.2	STEEL COLUMNS, BEAMS, POSTS, ETC.				
D10.2.1	254mm x 146mm x 31mm I-Sections	m	39		
D10.2.2	175mm x 50mm x 20mm x 3,5 lipped channel	m	104		
Total Carried Forward					

SCHEDULE D: BUS ADMIN BUILDING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D11	**SECTION D11 : METALWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D11.1	SUNDRY GALVANISED STEELWORK Bearers to brick linings, lintels, etc.:				
D11.1.1	40 x 40 x 5mm Thick angle section bearer bolted to concrete with and including M8 x 50mm long rawl bolts at 300mm centres.	m	20		
D11.2	PRESSED STEEL DOOR FRAMES 1,2mm Thick double rebated frames suitable for half brick walls complete with hoop iron anchors welded to frame, adjustable stainless steel striking plate/s suitable for mortice locks, three rubber shock absorbers in rebate and one pair of 100mm standard heavy duty butt hinges welded to frame:				
D11.2.1	Frame for door size 762 x 2032mm high.	No	Rate Only		Rate Only
D11.2.2	Frame for door size 813 x 2032mm high.	No	11		
D11.2.3	Frame for door size 1200 x 2032mm high.	No	Rate Only		Rate Only
D11.3	VENTILATION LOUVRE GRILLES, ETC.				
D11.3.1	Powdercoated aluminium louvre grille and frame size overall 500 x 500mm high, comprising standard 35mm x 1,6mm thick blades at 50mm centres including subframe and sealants in solid core laminated flush door (doors elsewhere).	No	6		
D11.4	ALUMINIUM WINDOWS, SHOPFRONTS, ETC.				
D11.5	SUPPLEMENTARY PREAMBLES General: All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. shall be designed, manufactured, supplied and installed in strict compliance with the "Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA), General Specification for Architectural Aluminium and Glass Products February 2005 Edition" and SANS 10137. All descriptions shall be deemed to include transoms, mullions, etc. as per the Architect's drawings. Design and installation: The Sub-Contractor shall be required to design the entire installation, provide all labour, materials, equipment and services required to complete the installation as specified herein. The Sub-Contractor shall ensure that the necessary wind pressure provisions have been incorporated within the design criteria. The Sub-Contractor shall submit his wind design criteria to the Architect for inspection.				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The Sub-Contractor shall allow for expansion of glass, framing, surrounding structures, etc. The Sub-Contractor shall allow for and produce fully detailed workshop drawings (3 copies) including samples of all ironmongery within 14 working days of the Main Contractors request. Fire resistance The installation shall conform to the local authorities fire resistance standards. Templates Templates formed of 25 x 25mm square hollow section steel are to be provided in each opening to ensure that all windows, doors, shopfronts, skylights, etc. are built in plumb and square. The subcontractor is to use his discretion in providing a sufficient quantity of templates as required to complete the Works as per the Main Contractors programme. Grounds 19 x 25mm Wrought SA pine grounds are to be fitted all round windows, doors, etc. Where grounds are visible they should be painted to form a shadowline. Sealing Window frames are to be sealed all round internally and externally against the building structure with approved silicone jointing compound to prevent water ingress. Weather seals All windows, doors, shopfronts, skylights, etc. are to be fitted with approved woolpile weather seals. Ironmongery to doors Door leaves are to be hung on one and a half pairs of 100 x 75mm butt hinges and fitted with one spring clip door holder. In addition double doors are to be fitted with one 150mm and one 200mm natural anodised flush lever bolt. Tenderers shall submit full specifications of ironmongery quoted which shall include all furniture, locks, handles, butt hinges, floor spring hinges, etc. The Sub-Contractor shall be required to submit ironmongery samples for approval prior to installation. Sub-Contractors are to note that the approval of shop drawings does not automatically indicate acceptance of ironmongery proposals. Rates				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. must include for all jointing, notching, cutting, etc. and for setting up and fixing in postion complete with glass, glazing beads, external cills, ironmongery, fixing brackets, lugs, bolts, timber grounds, silicone sealant, templates, etc. all as detailed and scheduled on the drawings and as necessary for the satisfactory execution of the work. Factory quality control The Sub-Contractor shall afford the Main Contractor full acces to plant, shop and assembly point to view and inspect the process and method employed in the fabricating and assembly of glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. Protection and cleaning All aluminium must be protected against damage by covering with temporary casings (masking tape, plastic coatings, etc.) and against deterioration or discolouration caused by mortar, wax, paint, etc., all to the entire satisfaction of the Principal Agent. On completion all such protection shall be removed and work cleaned down and left in proper working order. All glazing is to be protected from damage, breakage, scratches, etc. and allowances shall be made for polishing the glass as and when instructed by the Main Contractor.				
D11.6	ALUMINIUM WINDOWS Purpose made powdercoated aluminium windows complete with frames in brick openings, glazed with and including 6,7mm thick clear laminated safety glass:				
D11.6.1	Window Code PT69	No	2		
D11.6.2	Window Code PT96	No	10		
D11.6.3	Window Code PTT912	No	6		
D11.6.4	Window Code PTT189	No	2		
D11.7	SECURITY GATES				
D11.7.1	Security single leaf folding gate size overall 900 x 2100mm high.	No	2		
D11.7.2	Security single leaf folding gate size overall 1200 x 2100mm high.	No	1		
D11.7.3	Security double leaf folding gate size overall 1200 x 2100mm high.	No	Rate Only		Rate Only
Total Carried Forward					

SCHEDULE D: BUS ADMIN BUILDING

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
D11.11	STEEL LOCKERS Greenfield steel lockers with standard baked enamel finish:				
D11.11.1	Four tier steel locker size 305mm wide x 457mm deep x 1800mm high.	No	4		
D11.12	HANDRAILS				
D11.12.1	50mm Diameter stainles steel grabrail including 12mm diameter x 300mm girth L-shaped wall brackets welded to grabrail at 800mm centres and built into sides of face brick stairs, complete with stainless steel coverplates fitted to wall brackets.	m	100		
D11.12.2	Extra for mitred angle weld.	No	4		
D11.12.3	Extra for stop end.	No	4		
Total Carried Forward To Summary					

SCHEDULE D: BUS ADMIN BUILDING

SECTION C14 : PLASTERING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D12	**SECTION D12 : PLASTERING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D12.1	EPOXY FLOOR SCREED Prepare floors by mechanical grinding and apply a three component seamless, chemically resistant non-slip self-smoothing polyurethane floor screed (55Mpa compressive strength) similar to ivory pu 700 mf installed as per manufacturer's instructions:				
D12.1.1	4mm Thick on concrete floors.	m2	4		
D12.2	GRANOLITHIC Untinted granolithic on concrete:				
D12.2.1	75mm High coved skirting against walls.	m	5		
D12.3	SCREEDS Screeds on concrete:				
D12.3.1	80mm Thick (average) on slabs to falls to receive waterproofing.	m2	21		
D12.3.2	30mm Thick on floors.	m2	140		
D12.3.3	80mm x 80mm Traingular fillet at perimeter of roof screed to receive turn-up of waterproofing.	m	10		
D12.3.4	Ditto, but circular on plan.	m	Rate Only		Rate Only
D12.4	INTERNAL PLASTER One coat cement plaster mimimum 15mm thick (5:1) wood floated to receive tiles (elsewhere) including all labours on:				
D12.4.1	Brick vertical surfaces and in narrow widths (part on concrete).	m2	360		Rate Only
D12.4.2	Brick vertical surfaces circular on plan (part on concrete).	m2	30		Rate Only
D12.5	EXTERNAL PLASTER One coat cement plaster minimum 15mm thick (5:1) steel floated including all labours on:				
D12.5.1	Brick vertical surfaces and in narrow widths (part on concrete).	m2	220		Rate Only
D12.5.2	Brick vertical surfaces circular on plan (part on concrete).	m2	5		Rate Only
Total Carried Forward To Summary					

SCHEDULE D: BUS ADMIN BUILDING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D13	**SECTION D13 : TILING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D13.1	WALL TILING Allow a Prime Cost Amount of R200/m2 for porcelain tiles fixed with an approved adhesive to plaster (plaster elsewhere) and flush pointed with tinted jointing compond:				
D13.1.1	On walls and in narrow widths.	m2	160		
D13.1.2	On walls circular on plan.	m2	2		
D13.2	FLOOR TILING Allow a Prime Cost Amount of R200/m2 for porcelain tiles fixed with an approved adhesive to cement screed (elsewhere) and flush pointed with tinted jointing compond:				
D13.2.1	On floors and in narrow widths.	m2	150		
D13.2.2	150mm High skirting.	m	73		
D13.2.3	150mm High skirting circular on plan.	m	1		
D13.2.4	Circular cutting and waste	m	Rate Only		Rate Only
D13.3	SUNDRIES Corner protectors, dividing strips, etc.:				
D13.3.1	12mm "Genesis" aluminium straight edge bedded into tile adhesive in strict accordance to the manufacturer's instructions.	m	10		
D13.3.2	"Genesis MXA100" aluminium movement joint with rubber infill bedded into tile adhesive in strict accordance to the manufacturer's instructions.	m	1		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D14	**SECTION D14 : PLUMBING AND DRAINAGE** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D14.1	SUPPLEMENTARY PREAMBLES Rates Pipes of the same specification whether of water, waste water, fire services, rainwater, gas, compressed air, etc. are for convenience measured separately. Rates of all piping to include for short lengths, nipples, cutting, jointing, running joints, sockets, collars, etc. and unless otherwise stated to include for fixing to walls, in ducts, ceilings, roofs, floors, columns, slabs, etc. Rates for pipes laid in trenches to include for risk of collapse, keeping excavations free from water, return filling and ramming and spreading and levelling surplus excavated material on site as directed by the Principal Agent Wire gratings Descriptions of gutter outlets, etc. shall be deemed to include wire balloon gratings. Stormwater channels Descriptions of channels shall be deemed to include all necessary excavation and disposal of surplus material. uPVC pipes and fittings Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings. Soil, waste and vent pipes and fittings shall be solvent weld jointed or sealed with butyl rubber rings. uPVC pressure pipes and fittings: Pipes of water supply shall be of the class described. Pipes of 40mm diameter and smaller shall be plain ended with solvent welded uPVC loose sockets and fittings. Pipes of 50mm diameter and greater shall have sockets and spigots with push-in type integral rubber ring joints. Bends shall be uPVC and all other fittings shall be cast iron, all with similar push-in type joints. Copper pipes Pipes shall be carbon free and of hard drawn and half-hard pipes of the class stated. Class 0 (thin walled hard drawn) pipes shall not be bent. Class 1 (thin walled half-hard), Class 2 (half-hard) and Class 3 (heavy walled half-hard) pipes shall only be bent with benders with inner and outer formers. Fittings to copper waste, vent and anti-syphon pipes shall be of capillary type solder fittings and compression fittings shall be of an approved type. Capillary solder fittings shall comply with ISO 2016. Only compression fittings shall be used in all walls or in ground.				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Copper pipes are to be installed in accordance with the latest revision of the code of Practice for Copper Plumbing soldering techniques. Flux, solder, etc. to be strictly in accordance with the manufacturer's requirements with special attention to copper flux composition. The contractor is to allow for regular inspections and monthly certification by the manufacturer to ensure compliance with the above. Exposed concrete surfaces Exposed surfaces of concrete stormwater channels, cover slabs, inspection eye marker slabs, gulley tops, cleaning eye tops, catchpits, inspection chambers, etc. shall be finished smooth with plaster. Excavation and backfilling Excavations and backfilling must be done using hand held tools only. Excavations No claim for rock excavation will be entertained unless the contractor has timeously notified the quantity surveyor thereof prior to backfilling. "Soft and Hard rock" shall be as defined in "Earthworks". Sanitary fittings Outer edges of sinks, basins, urinals, etc. are to be sealed against adjacent surfaces with approved silicone. Stainless steel basins, sinks, wash troughs, urinals, etc. Units shall have standard aprons on all exposed edges and tiling keys against wall where applicable. Waste unions Descriptions of waste unions shall be deemed to include rubber or vulcanite plugs and chains fixed to fittings. General Descriptions of pipes laid in and including trenches, inspection chambers, etc. shall be deemed to include excavation, backfilling, bedding, compaction to a minimum of 93% Modified AASHTO density and disposal of surplus material.				
D14.2	RAINWATER DISPOSAL 0,6mm Thick seamless extruded aluminium gutters and downpipes, fixed in strict accordance with the manufacturer's instructions:				
D14.2.1	125 x 100mm Square eaves gutter.	m	Rate Only		Rate Only
D14.2.2	Extra for stopped end.	No	Rate Only		Rate Only
D14.2.3	Extra for joint and outlet to 100 x 100mm square downpipe.	No	Rate Only		Rate Only
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	uPVC pipes including holderbats, etc.:				
D14.2.4	100mm Diameter rainwater downpipes.	m	27		
D14.2.5	Extra over rainwater downpipe for offset not exceeding 600mm.	No	6		
D14.2.6	Extra over rainwater downpipe for shoe.	No	50		
	"Fullbore" cast iron outlets including joint to uPVC pipes, adaptors, etc.:				
D14.2.7	150mm Diameter side type outlet with domical grating, jointed to uPVC pipe and set in top of concrete slab.	No	47		
D14.3	SANITARY FITTINGS				
	Approved white vitreous china:				
D14.3.1	Allow a Prime Cost Amount of R2 500.00 for white vitreous china wall hung open rim wc pan and concealed cistern complete with flushing pipe and heavy duty white double flap seat, fixing in position and connecting complete.	No	6		
D14.3.2	Allow a Prime Cost Amount of R2 500.00 for white vitreous china wall hung urinal with flush valve and flushing pipe, fixing in position and connecting complete.	No	2		
D14.3.3	Allow a Prime Cost Amount of R2 500.00 for white vitreous china drop-in wash hand basin with taps and waste outlet union complete with fixing in position on granite tops (elsehwere) including sealing with an approved silicone sealer and connecting complete.	No	3		
	Approved stainless steel type 304 (18/10):				
D14.3.4	Allow a Prime Cost Amount of R7 500.00 for stainless steel sink size overall 1800 x 500mm complete with deep double centre bowls, driptrays, splashback, frame and stand, chromium plated waste unions, chains and stays, vulcanite plugs and undersink insulation, and fixing in position including sealing with an approved waterproof sealer and connecting complete.	No	2		
D14.4	TRAPS, ETC.				
D14.4.1	40mm Rubber combination sink trap.	No	2		
D14.4.2	40mm brass deepseal brass shower trap with chromium plated grating.	No	3		
D14.4.3	40mm Chromium plated brass bottle trap.	No	5		
D14.5	TAPS, VALVES, ETC.				
	Chromium plated:				
D14.5.1	15mm "Cobra" angle stopvalve with wall flange.	No	9		
D14.5.2	15mm "Cobra Star 211" raised nose pillartap.	No	5		
D14.5.3	15mm "Cobra Star 238" undertile stopcock with wall flange.	No	6		
Total Carried Forward					

SCHEDULE D: BUS ADMIN BUILDING

SECTION C16 : PLUMBING AND DRAINAGE

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
D14.5.4	15mm "Cobra Star 166" sink mixer with wall flanges and overarm swivel outlet.	No	3		
D14.5.5	15 mm "Cobra 068BJ" shower head.	No	Rate Only		Rate Only
D14.5.6	15mm "Cobra Star 027" shower arm with wall flange.	No	Rate Only		Rate Only
	Brass:				
D14.5.7	15mm Ballostop valve.	No	3		
D14.5.8	"Cobra Master Flow2" Pressure reducing valve.	No	2		
D14.5.9	22mm Garden bibtap with 22mm thread for hose coupling.	No	3		
D14.5.10	22mm Fullway wheel head gate valve.	No	3		
D14.5.11	"Cobra PB1.10" 22mm vacuum breaker.	No	1		
	Sundries:				
D16.5.12	15mm Flexihose 450mm long.	No	2		
D14.6	SOIL AND WASTE WATER DRAINAGE				
	uPVC soil and waste piping with seal ring joints in accordance with SABS 967 fixed to walls, concrete soffits, etc.:				
D14.6.1	50mm Diameter pipe.	m	96		
D14.6.2	110mm Diameter pipe.	m	0		Rate Only
D14.6.3	110mm Diameter Class 9 structured wall pipe laid in ground to falls on, including excavation in compacted earth 600mm wide and not exceeding 1000mm deep and backfilling to 95% modified AASHTO density in 150mm layers, including carting away surplus excavated material, risk of collapse, dewatering of trenches, etc.	m	35		
	Extra over uPVC pipes for fittings:				
D14.6.4	50mm Bend.	No	5		
D14.6.5	50mm Junction.	No	6		
D14.6.6	50mm Junction with inspection eye.	No	4		
D14.6.7	110mm Bend.	No	2		Rate Only
D14.6.8	110mm Bend with inspection eye.	No	7		
D14.6.9	110mm Junction.	No	0		Rate Only
D14.6.10	110mm Junction with inspection eye.	No	3		
D14.6.11	110 x 50mm Reducer.	No	4		
D14.6.12	110 x 50mm Reducing junction.	No	2		
D14.6.13	110mm Two-way vent valve.	No	4		
D14.6.14	110mm Pan connector.	No	3		
D14.6.15	110mm Bent pan connector.	No	2		
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Sumps, catch-pits, inspection chambers, etc.:				
D14.6.16	Gulley not exceeding 1000mm deep to invert comprising 110mm diameter uPVC trap and head, fitted with 190mm diameter uPVC grating, including excavating for, bedding on and encasing in 20MPa/19mm mass concrete and fitted with and including precast concrete gulley top bedded in cement mortar.	No	3		
D14.7	WATER RETICULATION				
	Copper tubing (SABS 460 Class 0) with brass fittings fixed to walls, concrete soffits, etc.:				
D14.7.1	15mm Diameter pipe.	m	3		
D14.7.2	15mm Solder fittings.	No	2		
D14.7.3	15mm Compression fittings.	No	6		
D14.7.4	22mm Diameter pipe.	m	3		
D14.7.5	22mm Solder fittings.	No	3		
D14.7.6	22mm Compression fittings.	No	9		
D14.7.7	28mm Solder fittings.	No	7		
D14.7.8	28mm Compression fittings.	No	9		
	HDPE piping (SABS ISO 9001 ClassPE63) with compression fittings, laid in ground, including excavation in compacted earth 400mm wide and not exceeding 1000mm deep and backfilling to 95% modified AASHTO density in 150mm layers, including carting away surplus excavated material, risk of collapse, dewatering of trenches, etc.:				
D14.7.9	20mm Diameter pipe.	m	3		
D14.7.10	20mm Fittings.	No	4		
D14.7.11	25mm Diameter pipe.	m	21		
D14.7.12	25mm Fittings.	No	15		
D14.7.13	40mm Diameter pipe.	m	9		
D14.7.14	40mm Fittings.	No	3		
D14.8	ELECTRIC WATER HEATERS				
	Solahart industrial water heating sytem size 2475 x 2480 x 510mm high (472kgs full) installed on sheetmetal roof with and including stainless steel straps in strict accordance with the manufacturer's instructions:				
D14.8.1	150 Litre roof mounted water heating system.	No	1		
D14.9	FIRE SERVICE				
	Hose Reels, etc.:				
Total Carried Forward					

SCHEDULE D: BUS ADMIN BUILDING

SECTION C16 : PLUMBING AND DRAINAGE

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
D14.9.1	Approved hose reel complete with 30m of 19mm hose all to SABS 543 incorporating 25mm chromium plated gunmetal gate valve and connection for and joint to supply pipe with brackets bolted to wall with and including four 8mm bolts with plate washers built 100mm into brickwork in cement mortar.	No	2		
D14.9.2	Approved 4,5Kg DCP cylindrical fire extinguisher fixed on and including backing boards to walls.	No	2		
D14.10	TESTING				
D14.10.1	Provide all necessary apparatus, water, etc. and allow for testing the whole of the plumbing and drainage work in Parts and Sections as completed and/or handed over to the satisfaction of the Architect and Local Authorities. All defective work is to be taken out and replaced at the Contractor's expense and the whole retested until found perfect.	Item	1		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D15	**SECTION D15 : GLAZING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D15.1	MIRRORS ETC. 6mm Thick silvered float glass copper backed mirrors with 10mm bevelled and polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in ceramic tiled wall:				
D15.1.1	Mirror size 600 x 1200mm high.	No	3		
Total Carried Forward To Summary					

SCHEDULE D: BUS ADMIN BUILDING

SECTION C18 : PAINTWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
D16	**SECTION D16 : PAINTWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
D16.1	PLASTER Prepare and apply one coat "Dulux" plaster primer, one coat undercoat and two coats "Dulux Super Acrylic Emulsion" paint on:				
D16.1.1	Internal and external plastered walls, columns, recessed bands, etc.	m2	563		
D16.1.2	Internal and external plastered soffits.	m2	90		
D6.2	METAL Prepare and apply one coat "Dulux" steel patch primer, one coat "Dulux Duragrip" universal undercoat and two coats "Dulux Non-drip Enamel" paint on:				
D16.2.1	Frames and linings.	m2	90		
D16.2.2	Bearers, posts, edging, etc.	m	40		
D16.3	WOOD Prepare and apply one coat "Dulux Woodgard" Timbapresrvitive oil based penetrating sealer on:				
D16.3.1	General surfaces of doors.	m2	60		
D16.3.2	Skirtings, rails, etc. in narrow girths. Prepare and apply one coat "Dulux" wood primer, one coat undercoat and two coats "Dulux Pearlglo" water-based enamel paint on:	m	20		
D16.3.3	General surfaces of doors.	m2	90		
D16.3.4	Skirtings, rails, etc. in narrow girths.	m			
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE D: BUS ADMIN BUILDING

SUMMARY OF SECTIONS

Section	Description		Amount (Rand)
D	SECTION D1: EARTHWORKS		
D	SECTION D2 : CONCRETE, FORMWORK AND REINFORCEMENT		
D	SECTION C3 : MASONRY		
D	SECTION D4 : WATERPROOFING		
D	SECTION D5 : ROOF COVERINGS, ETC.		
D	SECTION D6 : CARPENTRY		
D	SECTION D7 : CEILINGS		
D	SECTION D8 : FLOOR COVERINGS		
D	SECTION D9 : IRONMONGERY		
D	SECTION D10 : STRUCTURAL STEELWORK		
D	SECTION D11 : METALWORK		
D	SECTION D12 : PLASTERING		
D	SECTION D13 : TILING		
D	SECTION D14 : PLUMBING AND DRAINAGE		
D	SECTION D15 : GLAZING		
D	SECTION D16 : PAINTWORK		
Total Carried Forward To Summary Of Schedules			

SCHEDULE E 1: ABLUTION 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1	**SECTION E 1.1: EARTHWORKS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.1.1	SUPPLEMENTARY PREAMBLES Carting away of excavated material Descriptions of carting away of excavated material shall be deemed to include for bulking and loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site. Subterranean water No information regarding subterranean water is available. The tenderer must acquaint himself of the presence and depth of subterranean water and allow thereof in his rates.				
E 1.1.2	EXCAVATION OTHER THAN BULK Excavation in compacted earth not exceeding 2m deep in:				
E 1.1.2.1	Trenches for strip foundations and ground beams. Extra over excavations other than bulk in earth for excavation in:	m3	20		
E 1.1.2.2	Soft rock.	m3	2		
E 1.1.2.3	Hard rock.	m3	3		
E 1.1.3	CARTING AWAY Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk):				
E 1.1.3.1	Off site to a dumping site to be located by the Contractor.	m3	10		
E 1.1.4	EARTH FILLING, ETC. Filling with material from excavations including hauling, spread, level, water and compact to a density of at least 93% Mod. AASHTO maximum density in 150mm thick layers:				
E 1.1.4.1	Backfilling to trenches, holes, etc. Selected material supplied by the Contractor and spread, level, water and compact to a density of at least 95% Mod. AASHTO maximum density in 150mm thick layers:	m3	3		
E 1.1.4.2	Under floors, paving, etc.	m3	2		
E 1.1.5	TERMITE PROOFING Approved brand of anti-termite soil insecticide applied by a Registered Pest Control Company and guaranteed against termite infestation for ten years:				
Total Carried Forward					

SCHEDULE E 1: ABLUTION 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
E 1.1.5.1	Under floors, etc. including forming and poisoning shallow furrows against foundation walls etc., filling in furrows and ramming.	m2	84		
E 1.1.5.2	To bottom and sides of trenches, etc.	m2	25		
Total Carried Forward To Summary					

SCHEDULE E 1: ABLUTION 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.2	**SECTION E1.2 : CONCRETE, FORMWORK AND REINFORCEMENT** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E1.2.1	SUPPLEMENTARY PREAMBLES Type of cement All cement used in concrete work is to be OPC cement, no cement containing fly ash will be allowed. Formwork Descriptions of formwork shall be deemed to include use and waste only (except where described as left in or permanent), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use. The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support withou damage and shall remain in position until the newly constructed work is able to support itself. Formwork to soffits of solid slabs, etc., shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.				
E 1.2.2	REINFORCED CONCRETE 15MPa/19mm Concrete in:				
E 1.2.2.1	50mm Thick blinding under ground beams, etc.	m2	5		
	20MPa/19mm Concrete in:				
E 1.2.2.2	Strip foundations	m3	14		
E 1.2.2.3	Surface beds	m3	9		
E 1.2.3	REINFORCED CONCRETE				
E 1.2.4	CONCRETE SUNDRIES Finishing top surfaces of concrete smooth with a wood float:				
E 1.2.4.1	Surface beds, slabs, etc.	m2	165		
E 1.2.5	GROUTING, ETC.				
Total Carried Forward					

SCHEDULE E 1: ABLUTION 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
E 1.2.6	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to sides of:				
E 1.2.6.1	Ground beams.	m2	10		
E 1.2.7	REINFORCEMENT				
Total Carried Forward					

SCHEDULE E 1: ABLUTION 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Mild steel reinforcement to structural concrete work:				
E 1.2.7.1	8mm Diameter bars (Strip Footings)	kg	89		
	High tensile steel reinforcement to structural concrete work:				
E 1.2.7.2	12mm Diameter bars (Strip Footing)	kg	385		
	Fabric reinforcement with minimum 400mm wide overlaps:				
E 1.2.7.3	Type 193 Fabric reinforcement in concrete surface beds, slabs, etc.	m2	80		
Total Carried Forward To Summary					

SCHEDULE E 1: ABLUTION 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.3	**SECTION E 1.3 : MASONRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.3.1	SUPPLEMENTARY PREAMBLES Sizes in descriptions Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick. Wall ties Descriptions of solid walls (except if built in English bond) and cavity walls shall be deemed to include metal wall ties complying with SABS 28 and of the butterfly type, of the required length with each end built at least 75mm deep into brickwork, spaced at not more than 1m centres alternatively to every third course of brickwork. Cavity walls, etc. Descriptions of cavity walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole.				
E 1.3.2	BRICKWORK: FOUNDATIONS AND SUPERSTRUCTURE Brickwork in burnt clay NFP bricks in 3:1 cement mortar:				
E 1.3.2.1	Piers and attached piers.	m3	3		
E 1.3.2.2	Half brick walls.	m2	3		
E 1.3.2.3	Half brick walls in lining to concrete.	m2	10		
E 1.3.2.4	Half brick walls in lining to concrete circular on plan.	m2	2		
E 1.3.2.5	One brick walls.	m2	231		
E 1.3.2.6	One brick walls circular on plan.	m2	Rate Only		Rate Only
E 1.3.2.7	One brick parapet walls.	m2	Rate Only		Rate Only
E 1.3.2.8	One brick parapet walls circular on plan.	m2	Rate Only		Rate Only
E 1.3.2.9	One and a half brick walls.	m2	5		
E 1.3.2.10	One and a half brick walls circular on plan.	m2	Rate Only		Rate Only
E 1.3.3	FACE BRICKWORK Allow a Prime Cost Amount of R6 000.00/ 1000 bricks for face brickwork and raked out and pointed with a square pointing tool 10 mm deep:				
E 1.3.3.1	Extra over ordinary brickwork for face brick walls	m2	20		
E 1.3.3.2	Extra over ordinary brickwork for face brick walls circular on plan	m2	Rate Only		Rate Only
Total Carried Forward					

SCHEDULE E 1: ABLUTION 1

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
E 1.3.3.3	Extra over ordinary brickwork for 220mm wide face brick on edge coping	m2	5		
E 1.3.3.4	Extra over ordinary brickwork for 220mm wide face brick on edge coping circular on plan	m2	Rate Only		Rate Only
E 1.3.4	BRICKWORK SUNDRIES				
	Brick reinforcement:				
E 1.3.4.1	900mm long Galvanized hoop iron roof anchors built in vertically	No	24		
E 1.3.4.2	75mm Wide reinforcement built in horizontally.	m	40		
E 1.3.4.3	150mm Wide reinforcement built in horizontally.	m	340		
	Prestressed fabricated lintels:				
E 1.3.4.4	100 x 70mm lintels in lengths not exceeding 3m.	m	18		
Total Carried Forward To Summary					

SCHEDULE E 1: ABLUTION 1

SECTION C5 : WATERPROOFING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.4	**SECTION E 1.4 : WATERPROOFING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.4.1	SUPPLEMENTARY PREAMBLES Waterproofing Waterproofing of roofs, basements, etc. shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs.				
E 1.4.2	DAMPPROOFING OF WALLS AND FLOORS One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp-proof course:				
E 1.4.2.1	In walls, under cills, etc. One layer of 250 micron type C waterproof sheeting sealed at laps with pressure sensitive tape:	m2	89		
E 1.4.2.2	Under surface beds, ground beams, etc.	m2	66		
Total Carried Forward To Summary					

SCHEDULE E 1: ABLUTION 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.5	**SECTION C5 : ROOF COVERINGS, ETC.** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.5.1	PROFILED METAL SHEETING AND ACCESSORIES 0,58mm Thick "Klip-lock 406" industrial galvanized roof sheeting with colorbond finish on one side in single lengths fixed to steel members including all fixing brackets and fixed in strict accordance with the manufacturer's instructions:				
E 1.5.1.1	Sheeting laid to roof with pitch not exceeding 25 degrees in single lengths (measured nett).	m2	98		
E 1.5.1.2	Extra over for bending sheet ends to 450mm radius.	m	Rate Only		Rate Only
E 1.5.1.3	Extra over for raking cutting at valleys. 0,58mm Thick flashings, etc.:	m	2		
E 1.5.1.4	380mm Girth ridge cap flashing fixed with S10 clips and including serrated broad flute closer and polycloser.	m	3		
E 1.5.1.5	450mm Girth gable trim flashing fixed with S10 clips.	m	Rate Only		Rate Only
E 1.5.1.6	380mm Girth valley lining.	m	Rate Only		Rate Only
E 1.5.2	ROOF INSULATION Sisalation 420 heavy industrial grade reinforced aluminium foil insulation laid taut over purlins in strict accordance with the manufacturer's instructions:				
E 1.5.2.1	Aluminium foil roof insulation laid taut over purlins (purlins at approximately 2m centres) with minimum 150mm side laps and fixed concurrent with roof covering including galvanised steel straining wires, etc.	m2	98		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.6	**SECTION E 1.6 : CARPENTRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.6.1	ROOF TRUSSES AND PURLINS				
E 1.6.2	SUPPLEMENTARY PREAMBLES The timber roof constuction forv the various buildings are to be designed and certified by "MiTec Industries SA (Pty) Ltd" and designed for a sheet metal roof load. The descriptions shall be deemed to include the manufacturers design, shopdrawings, engineers certification, all components, delivery to site, and installed strictly in accordance with the manufacturer's instructions . All timber used for the roof construction is to comply to the relevant SABS codes for structural timber roof constuction.				
E 1.6.2.1	Gang-Nail Single pitch roof truss for as span of 5100mm and a pitch of 17.5 degrees.	No	11		
E 1.6.2.2	50x 76mm SA Pine purlins	m	330		
E 1.6.2.3	38 x 114mm SA Pine cross bracing	m	84		
E 1.6.2.4	38 x 228mm SA Pine roof beams	m	78		
E 1.6.3	DOORS, WINDOWS, SASHES, ETC. 44mm Thick solid core laminated masonite flush door with hardwood concealed edge strips finished on both sides and hung on steel frames (frames elsewhere):				
E 1.6.3.1	Door size overall 762 x 2032mm high.	No	Rate Only		Rate Only
E 1.6.3.2	Door size overall 813 x 1932mm high.	No	8		
E 1.6.3.3	Door size overall 813 x 2032mm high. 44mm Thick solid Meranti flush back slatted door with hardwood concealed edge strips finished on both sides and hung on steel frames (frames elsewhere):	No	Rate Only		Rate Only
E 1.6.3.4	Door size overall 813 x 2032mm high. Extra over solid core laminated flush doors for:	No	2		
E 1.7.3.6	Opening size 500 x 500mm high for ventilation grilles (elsewhere) in solid laminated flush panel door (doors elsewhere).	No	8		
E 1.6.4	SKIRTINGS				
E 1.6.4.1	20 x 75mm High Meranti skirting including 19mm quarter round plugged to plastered walls at 500mm centres.	m	89		
Total Carried Forward					

SCHEDULE E 1: ABLUTION 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.7	**SECTION E 1.7 : CEILINGS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.7.1	SUSPENDED CEILINGS 600 x 1200 x 6mm Thick "Gyproc Donnceil Gyprex" embossed vinyl faced ceiling tiles laid on and including lay in exposed tee suspension ceiling system including "Donn T38" white powder coated main tees, cross tees, hold-down clips, wedges, etc., all suspended with galvanised hangers at centres not exceeding 1200mm in strict accordance with the manufacturer's instructions:				
E 1.7.1.1	Ceiling suspended not exceeding 1m below timber roof trusses.	m2	72		
	Extra over ceiling tiles for forming openings for air grilles, diffusers, valves, etc. (elsewhere) and providing additional support:				
E 1.7.1.2	350mm Diameter opening.	No	1		
Total Carried Forward To Summary					

SCHEDULE E 1: ABLUTION 1

SECTION C11 : IRONMONGERY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.8	**SECTION E 1.8 : IRONMONGERY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.8.1	LOCKS AND HANDLES				
E 1.8.1.1	Allow a Prime Cost Amount of R500.00 for lockset and striker plates complete with a pair of matching satin aluminium lever handles and fitting in position into timber doors (elsewhere).	No	10		
E 1.8.2	DOOR CLOSERS				
E 1.8.2.1	"DCLSA TS4000G" door closer with standard arm.	No	2		
E 1.8.3	BATHROOM FITTINGS				
	Dispensers, etc.:				
E 1.8.3.1	"Franke Stratos STRX 618" grade 304 (18/10) stainless steel soap dispenser plugged to wall.	No	6		
E 1.8.3.2	"Franke Stratos STRX 672" grade 304 (18/10) stainless steel lockable type two roll recessed toilet roll holder plugged to wall.	No	8		
E 1.8.3.3	"Franke Stratos STRX 600" grade 304 (18/10) stainless steel lockable paper towel dispenser plugged to wall.	No	2		
E 1.8.4	PUSH PLATES, KICK PLATES, ETC.				
E 1.8.4.1	"DCLSA 080/320" stainless steel kick plate.	No	10		
E 1.8.4.2	"DCLSA 079/160" stainless steel push plate with male/female symbol engraved thereon.	No	2		
E 1.8.4.3	"DCLSA 079/160" stainless steel push plate with FHR symbol engraved thereon.	No	Rate Only		Rate Only
E 1.8.5	SUNDRIES				
E 1.8.5.1	"DCLSA 154/69" satin stainless steel hat and coat hook with rubber buffer.	No	8		
E 1.8.5.2	"DCLSA 140/69" satin stainless steel door stop with rubber buffer.	No	8		
E 1.8.5.3	40mm Diameter brass swivel roller fitted to steel flagpole (elsewhere) including 10mm diameter x 6m long nylon flag hoisting rope with both ends of rope fitted fith nylon toggles.	No	Rate only		Rate Only
E 1.8.6	SIGNAGE TO BE SUPPLIED AND INSTALLED BY NOMINATED SUBCONTRACTOR				
E 1.8.6.1	a) Metal signage boards	Prov Sum			3500
E 1.8.6.2	b) Overhead charges and profit	%	3500		
Total Carried Forward To Summary					

SCHEDULE E 1: ABLUTION 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.9	**SECTION E 1.9 : METALWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.9.1	PRESSED STEEL DOOR FRAMES 1,2mm Thick double rebated frames suitable for half brick walls complete with hoop iron anchors welded to frame, adjustable stainless steel striking plate/s suitable for mortice locks, three rubber shock absorbers in rebate and one pair of 100mm standard heavy duty butt hinges welded to frame:				
E 1.9.1.1	Frame for door size 762 x 2032mm high.	No	Rate Only		Rate Only
E 1.9.1.2	Frame for door size 813 x 2032mm high.	No	10		
E 1.9.1.3	Frame for door size 1200 x 2032mm high.	No	Rate Only		Rate Only
E 1.9.2	VENTILATION LOUVRE GRILLES, ETC.				
E 1.9.2.1	Powdercoated aluminium louvre grille and frame size overall 500 x 500mm high, comprising standard 35mm x 1,6mm thick blades at 50mm centres including subframe and sealants in solid core laminated flush door (doors elsewhere).	No	2		
E 1.9.4	ALUMINIUM WINDOWS, SHOPFRONTS, ETC.				
E 1.9.5	SUPPLEMENTARY PREAMBLES General: All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. shall be designed, manufactured, supplied and installed in strict compliance with the "Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA), General Specification for Architectural Aluminium and Glass Products February 2005 Edition" and SANS 10137. All descriptions shall be deemed to include transoms, mullions, etc. as per the Architect's drawings. Design and installation: The Sub-Contractor shall be required to design the entire installation, provide all labour, materials, equipment and services required to complete the installation as specified herein. The Sub-Contractor shall ensure that the necessary wind pressure provisions have been incorporated within the design criteria. The Sub-Contractor shall submit his wind design criteria to the Architect for inspection.				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The Sub-Contractor shall allow for expansion of glass, framing, surrounding structures, etc. The Sub-Contractor shall allow for and produce fully detailed workshop drawings (3 copies) including samples of all ironmongery within 14 working days of the Main Contractors request. Fire resistance The installation shall conform to the local authorities fire resistance standards. Templates Templates formed of 25 x 25mm square hollow section steel are to be provided in each opening to ensure that all windows, doors, shopfronts, skylights, etc. are built in plumb and square. The subcontractor is to use his discretion in providing a sufficient quantity of templates as required to complete the Works as per the Main Contractors programme. Grounds 19 x 25mm Wrought SA pine grounds are to be fitted all round windows, doors, etc. Where grounds are visible they should be painted to form a shadowline. Sealing Window frames are to be sealed all round internally and externally against the building structure with approved silicone jointing compound to prevent water ingress. Weather seals All windows, doors, shopfronts, skylights, etc. are to be fitted with approved woolpile weather seals. Ironmongery to doors Door leaves are to be hung on one and a half pairs of 100 x 75mm butt hinges and fitted with one spring clip door holder. In addition double doors are to be fitted with one 150mm and one 200mm natural anodised flush lever bolt. Tenderers shall submit full specifications of ironmongery quoted which shall include all furniture, locks, handles, butt hinges, floor spring hinges, etc. The Sub-Contractor shall be required to submit ironmongery samples for approval prior to installation. Sub-Contractors are to note that the approval of shop drawings does not automatically indicate acceptance of ironmongery proposals. Rates				
Total Carried Forward					

SCHEDULE E 1: ABLUTION 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. must include for all jointing, notching, cutting, etc. and for setting up and fixing in postion complete with glass, glazing beads, external cills, ironmongery, fixing brackets, lugs, bolts, timber grounds, silicone sealant, templates, etc. all as detailed and scheduled on the drawings and as necessary for the satisfactory execution of the work. Factory quality control The Sub-Contractor shall afford the Main Contractor full acces to plant, shop and assembly point to view and inspect the process and method employed in the fabricating and assembly of glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. Protection and cleaning All aluminium must be protected against damage by covering with temporary casings (masking tape, plastic coatings, etc.) and against deterioration or discolouration caused by mortar, wax, paint, etc., all to the entire satisfaction of the Principal Agent. On completion all such protection shall be removed and work cleaned down and left in proper working order. All glazing is to be protected from damage, breakage, scratches, etc. and allowances shall be made for polishing the glass as and when instructed by the Main Contractor.				
E 1.9.6	ALUMINIUM WINDOWS Purpose made powdercoated aluminium windows complete with frames in brick openings, glazed with and including 6,7mm thick clear laminated safety glass:				
E 1.9.6.1	Window Code PT66	No	8		
E 1.9.6.2	Window Code PT126	No	2		
E 1.9.7	SECURITY GATES				
E 1.9.7.2	Security single leaf folding gate size overall 1200 x 2100mm high.	No	2		
Total Carried Forward to Summary					

SCHEDULE E 1: ABLUTION 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.10	**SECTION E 1.10 : PLASTERING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.10.1	SCREEDS Screeds on concrete:				
E 1.10.1.1	30mm Thick on floors.	m2	66		
E 1.10.1.2	80mm x 80mm Traingular fillet at perimeter of roof screed to receive turn-up of waterproofing.	m	3		
E 1.10.2	INTERNAL PLASTER One coat cement plaster mimimum 15mm thick (5:1) wood floated to receive tiles (elsewhere) including all labours on:				
E 1.10.2.1	Brick vertical surfaces and in narrow widths (part on concrete).	m2	351		Rate Only
E 1.10.3	EXTERNAL PLASTER One coat cement plaster minimum 15mm thick (5:1) steel floated including all labours on:				
E 1.10.3.1	Brick vertical surfaces and in narrow widths (part on concrete).	m2	153		Rate Only
Total Carried Forward To Summary					

SCHEDULE E 1: ABLUTION 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.11	**SECTION E 1.11 : TILING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.11.1	WALL TILING Allow a Prime Cost Amount of R200/m2 for porcelain tiles fixed with an approved adhesive to plaster (plaster elsewhere) and flush pointed with tinted jointing compond:				
E 1.11.1.1	On walls and in narrow widths.	m2	130		
E 1.11.2	FLOOR TILING Allow a Prime Cost Amount of R200/m2 for porcelain tiles fixed with an approved adhesive to cement screed (elsewhere) and flush pointed with tinted jointing compond:				
E 1.11.2.1	On floors and in narrow widths.	m2	75		
E 1.11.3	SUNDRIES Corner protectors, dividing strips, etc.:				
E 1.11.3.1	12mm "Genesis" aluminium straight edge bedded into tile adhesive in strict accordance to the manufacturer's instructions.	m	5		
Total Carried Forward To Summary					

SCHEDULE E 1: ABLUTION 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.12	**SECTION E 1.12 : PLUMBING AND DRAINAGE** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.12.1	SUPPLEMENTARY PREAMBLES Rates Pipes of the same specification whether of water, waste water, fire services, rainwater, gas, compressed air, etc. are for convenience measured separately. Rates of all piping to include for short lengths, nipples, cutting, jointing, running joints, sockets, collars, etc. and unless otherwise stated to include for fixing to walls, in ducts, ceilings, roofs, floors, columns, slabs, etc. Rates for pipes laid in trenches to include for risk of collapse, keeping excavations free from water, return filling and ramming and spreading and levelling surplus excavated material on site as directed by the Principal Agent Wire gratings Descriptions of gutter outlets, etc. shall be deemed to include wire balloon gratings. Stormwater channels Descriptions of channels shall be deemed to include all necessary excavation and disposal of surplus material. uPVC pipes and fittings Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings. Soil, waste and vent pipes and fittings shall be solvent weld jointed or sealed with butyl rubber rings. uPVC pressure pipes and fittings: Pipes of water supply shall be of the class described. Pipes of 40mm diameter and smaller shall be plain ended with solvent welded uPVC loose sockets and fittings. Pipes of 50mm diameter and greater shall have sockets and spigots with push-in type integral rubber ring joints. Bends shall be uPVC and all other fittings shall be cast iron, all with similar push-in type joints. Copper pipes Pipes shall be carbon free and of hard drawn and half-hard pipes of the class stated. Class 0 (thin walled hard drawn) pipes shall not be bent. Class 1 (thin walled half-hard), Class 2 (half-hard) and Class 3 (heavy walled half-hard) pipes shall only be bent with benders with inner and outer formers. Fittings to copper waste, vent and anti-syphon pipes shall be of capillary type solder fittings and compression fittings shall be of an approved type. Capillary solder fittings shall comply with ISO 2016. Only compression fittings shall be used in all walls or in ground.				
Total Carried Forward					

SCHEDULE E 1: ABLUTION 1

SECTION C16 : PLUMBING AND DRAINAGE

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Copper pipes are to be installed in accordance with the latest revision of the code of Practice for Copper Plumbing soldering techniques. Flux, solder, etc. to be strictly in accordance with the manufacturer's requirements with special attention to copper flux composition. The contractor is to allow for regular inspections and monthly certification by the manufacturer to ensure compliance with the above. Exposed concrete surfaces Exposed surfaces of concrete stormwater channels, cover slabs, inspection eye marker slabs, gulley tops, cleaning eye tops, catchpits, inspection chambers, etc. shall be finished smooth with plaster. Excavation and backfilling Excavations and backfilling must be done using hand held tools only. Excavations No claim for rock excavation will be entertained unless the contractor has timeously notified the quantity surveyor thereof prior to backfilling. "Soft and Hard rock" shall be as defined in "Earthworks". Sanitary fittings Outer edges of sinks, basins, urinals, etc. are to be sealed against adjacent surfaces with approved silicone. Stainless steel basins, sinks, wash troughs, urinals, etc. Units shall have standard aprons on all exposed edges and tiling keys against wall where applicable. Waste unions Descriptions of waste unions shall be deemed to include rubber or vulcanite plugs and chains fixed to fittings. General Descriptions of pipes laid in and including trenches, inspection chambers, etc. shall be deemed to include excavation, backfilling, bedding, compaction to a minimum of 93% Modified AASHTO density and disposal of surplus material.				
E 1.12.2	RAINWATER DISPOSAL 0,6mm Thick seamless extruded aluminium gutters and downpipes, fixed in strict accordance with the manufacturer's instructions:				
E 1.12.2.1	125 x 100mm Square eaves gutter.	m	12		
E 1.12.2.2	Extra for stopped end.	No	1		
E 1.12.2.3	Extra for joint and outlet to 100 x 100mm square downpipe.	No	2		
Total Carried Forward					

SCHEDULE E 1: ABLUTION 1

SECTION C16 : PLUMBING AND DRAINAGE

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
E 1.12.3	SANITARY FITTINGS				
	Approved white vitreous china:				
E 1.12.3.1	Allow a Prime Cost Amount of R2 500.00 for white vitreous china wall hung open rim wc pan and concealed cistern complete with flushing pipe and heavy duty white double flap seat, fixing in position and connecting complete.	No	10		
E 1.12.3.2	Allow a Prime Cost Amount of R2 500.00 for white vitreous china wall hung urinal with flush valve and flushing pipe, fixing in position and connecting complete.	No	4		
E 1.12.3.3	Allow a Prime Cost Amount of R2 500.00 for white vitreous china drop-in wash hand basin with taps and waste outlet union complete with fixing in position on granite tops (elsehwere) including sealing with an approved silicone sealer and connecting complete.	No	6		
E 1.12.4	TRAPS, ETC.				
E 1.12.4.1	40mm Rubber combination sink trap.	No	2		
E 1.12.4.3	40mm Chromium plated brass bottle trap.	No	11		
E 1.12.5	TAPS, VALVES, ETC.				
	Chromium plated:				
E 1.12.5.1	15mm "Cobra" angle stopvalve with wall flange.	No	23		
E 1.12.5.2	15mm "Cobra Star 211" raised nose pillartap.	No	9		
E 1.12.5.3	15mm "Cobra Star 238" undertile stopcock with wall flange.	No	7		
Total Carried Forward					

SCHEDULE E 1: ABLUTION 1

SECTION C16 : PLUMBING AND DRAINAGE

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Brass:				
E 1.11.5.4	15mm Ballostop valve.	No	18		
E 1.12.5.5	"Cobra Master Flow2" Pressure reducing valve.	No	3		
E 1.12.5.6	22mm Garden bibtap with 22mm thread for hose coupling.	No	5		
E 1.12.5.7	22mm Fullway wheel head gate valve.	No	2		
E 1.12.5.8	"Cobra PB1.10" 22mm vacuum breaker.	No	2		
	Sundries:				
E 1.12.6	SOIL AND WASTE WATER DRAINAGE				
	uPVC soil and waste piping with seal ring joints in accordance with SABS 967 fixed to walls, concrete soffits, etc.:				
E 1.12.6.1	50mm Diameter pipe.	m	21		
E 1.12.6.2	110mm Diameter pipe.	m	0		Rate Only
E 1.12.6.3	110mm Diameter Class 9 structured wall pipe laid in ground to falls on, including excavation in compacted earth 600mm wide and not exceeding 1000mm deep and backfilling to 95% modified AASHTO density in 150mm layers, including carting away surplus excavated material, risk of collapse, dewatering of trenches, etc.	m	60		
	Extra over uPVC pipes for fittings:				
E 1.12.6.4	50mm Bend.	No	10		
E 1.12.6.5	50mm Junction.	No	15		
E 1.12.6.6	50mm Junction with inspection eye.	No	15		
E 1.12.6.7	110mm Bend.	No	0		Rate Only
E 1.12.6.8	110mm Bend with inspection eye.	No	14		
E 1.12.6.9	110mm Junction.	No	0		Rate Only
E 1.12.6.10	110mm Junction with inspection eye.	No	14		
E1. 12.6.11	110 x 50mm Reducer.	No	10		
E 1.12.6.12	110 x 50mm Reducing junction.	No	7		
E 1.12.6.13	110mm Two-way vent valve.	No	19		
E 1.12.6.14	110mm Pan connector.	No	14		
E 1.12.6.15	110mm Bent pan connector.	No	6		
Total Carried Forward					

SCHEDULE E 1: ABLUTION 1

SECTION C16 : PLUMBING AND DRAINAGE

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Sumps, catch-pits, inspection chambers, etc.:				
E 1.12.6.16	Gulley not exceeding 1000mm deep to invert comprising 110mm diameter uPVC trap and head, fitted with 190mm diameter uPVC grating, including excavating for, bedding on and encasing in 20MPa/19mm mass concrete and fitted with and including precast concrete gulley top bedded in cement mortar.	No	1		
E 1.12.7	WATER RETICULATION				
	Copper tubing (SABS 460 Class 0) with brass fittings fixed to walls, concrete soffits, etc.:				
E 1.12.7.1	15mm Diameter pipe.	m	0		
E 1.12.7.2	15mm Solder fittings.	No	0		
E 1.12.7.3	15mm Compression fittings.	No	99		
E 1.12.7.4	22mm Diameter pipe.	m	38		
E 1.12.7.5	22mm Solder fittings.	No	111		
E 1.12.7.6	22mm Compression fittings.	No	85		
E 1.12.7.7	28mm Solder fittings.	No	24		
E 1.12.7.8	28mm Compression fittings.	No	24		
	HDPE piping (SABS ISO 9001 ClassPE63) with compression fittings, laid in ground, including excavation in compacted earth 400mm wide and not exceeding 1000mm deep and backfilling to 95% modified AASHTO density in 150mm layers, including carting away surplus excavated material, risk of collapse, dewatering of trenches, etc.:				
E 1.12.7.9	20mm Diameter pipe.	m	40		
E 1.12.7.10	20mm Fittings.	No	40		
E 1.12.7.11	25mm Diameter pipe.	m	60		
E 1.12.7.12	25mm Fittings.	No	60		
E 1.12.7.13	40mm Diameter pipe.	m	80		
E 1.12.7.14	40mm Fittings.	No	50		
E 1.12.8	ELECTRIC WATER HEATERS				
	Solahart industrial water heating sytem size 2475 x 2480 x 510mm high (472kgs full) installed on sheetmetal roof with and including stainless steel straps in strict accordance with the manufacturer's instructions:				
E 1.12.8.1	150 Litre ceiling mounted water heating system.	No	1		
E 1.12.9	FIRE SERVICE				
	Hose Reels, etc.:				
Total Carried Forward					

SCHEDULE E 1: ABLUTION 1

SECTION C16 : PLUMBING AND DRAINAGE

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
E 1.12.9.1	Approved hose reel complete with 30m of 19mm hose all to SABS 543 incorporating 25mm chromium plated gunmetal gate valve and connection for and joint to supply pipe with brackets bolted to wall with and including four 8mm bolts with plate washers built 100mm into brickwork in cement mortar.	No	1		
E 1.12.10	TESTING				
E 1.12.10.1	Provide all necessary apparatus, water, etc. and allow for testing the whole of the plumbing and drainage work in Parts and Sections as completed and/or handed over to the satisfaction of the Architect and Local Authorities. All defective work is to be taken out and replaced at the Contractor's expense and the whole retested until found perfect.	Item	1		
Total Carried Forward To Summary					

SCHEDULE E 1: ABLUTION 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.13	**SECTION E 1.13 : GLAZING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.13.1	MIRRORS ETC. 6mm Thick silvered float glass copper backed mirrors with 10mm bevelled and polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in ceramic tiled wall:				
E 1.13.1.1	Mirror size 600 x 1200mm high.	No	4		
Total Carried Forward To Summary					

SCHEDULE E 1: ABLUTION 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
E 1.14	**SECTION E 1.14 : PAINTWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
E 1.14.1	PLASTER Prepare and apply one coat "Dulux" plaster primer, one coat undercoat and two coats "Dulux Super Acrylic Emulsion" paint on:				
E 1.14.1.1	Internal and external plastered walls, columns, recessed bands, etc.	m2	20		
E 1.14.1.2	Internal and external plastered soffits.	m2	190		
E 1.14.2	METAL Prepare and apply one coat "Dulux" steel patch primer, one coat "Dulux Duragrip" universal undercoat and two coats "Dulux Non-drip Enamel" paint on:				
E 1.14.2.1	Frames and linings.	m2	10		
E 1.14.2.2	Bearers, posts, edging, etc.	m	9		
E 1.14.3	WOOD Prepare and apply one coat "Dulux Woodgard" Timbapresrvitive oil based penetrating sealer on:				
E 1.14.3.1	General surfaces of doors.	m2	120		
E 1.14.3.2	Skirtings, rails, etc. in narrow girths. Prepare and apply one coat "Dulux" wood primer, one coat undercoat and two coats "Dulux Pearlglo" water-based enamel paint on:	m	20		
E 1.14.3.3	General surfaces of doors.	m2	120		
E 1.14.3.4	Skirtings, rails, etc. in narrow girths.	m	100		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE E 1: ABLUTION 1

SUMMARY OF SECTIONS

Section	Description		Amount (Rand)
E1	SECTION E 1.1: EARTHWORKS		
E1	SECTION E 1.2 : CONCRETE, FORMWORK AND REINFORCEMENT		
E1	SECTION E1.3 : MASONRY		
E1	SECTION E 1.4 : WATERPROOFING		
E1	SECTION E 1.5 : ROOF COVERINGS, ETC.		
E1	SECTION E 1.6: CAPENTRY		
E1	SECTION E 1.7 : CEILINGS		
E1	SECTION E 1.8 : IRONMONGERY		
E1	SECTION E 1.9 : METALWORK		
E1	SECTION E 1.10 : PLASTERING		
E1	SECTION E 1.11 : TILING		
E1	SECTION 1.12 : PLUMBING AND DRAINAGE		
E1	SECTION E 1.13 : GLAZING		
E1	SECTION E 1.14 : PAINTWORK		
Total Carried Forward To Summary Of Schedules			

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.1	**SECTION F1.1: EARTHWORKS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.1.1	SUPPLEMENTARY PREAMBLES Carting away of excavated material Descriptions of carting away of excavated material shall be deemed to include for bulking and loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site. Subterranean water No information regarding subterranean water is available. The tenderer must acquaint himself of the presence and depth of subterranean water and allow thereof in his rates.				
F 1.1.2	EXCAVATION OTHER THAN BULK Excavation in compacted earth not exceeding 2m deep in:				
F 1.1.2.1	Trenches for strip foundations and ground beams. Extra over excavations other than bulk in earth for excavation in:	m3	30		
F 1.1.2.2	Soft rock.	m3	5		
F 1.1.2.3	Hard rock.	m3	5		
F 1.1.3	CARTING AWAY Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk):				
F 1.1.3.1	Off site to a dumping site to be located by the Contractor.	m3	10		
F 1.1.4	EARTH FILLING, ETC. Filling with material from excavations including hauling, spread, level, water and compact to a density of at least 93% Mod. AASHTO maximum density in 150mm thick layers:				
F 1.1.4.1	Backfilling to trenches, holes, etc. Selected material supplied by the Contractor and spread, level, water and compact to a density of at least 95% Mod. AASHTO maximum density in 150mm thick layers:	m3	5		
F 1.1.4.2	Under floors, paving, etc.	m3	8		
F 1.1.5	TERMITE PROOFING Approved brand of anti-termite soil insecticide applied by a Registered Pest Control Company and guaranteed against termite infestation for ten years:				
Total Carried Forward					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
F 1.1.5.1	Under floors, etc. including forming and poisoning shallow furrows against foundation walls etc., filling in furrows and ramming.	m2	100		
F 1.1.5.2	To bottom and sides of trenches, etc.	m2	32		
Total Carried Forward To Summary					

SCHEDULE F 1: MARKET STALL TYPE A 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.2	**SECTION F 1.2 : CONCRETE, FORMWORK AND REINFORCEMENT**				
	The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.2.1	SUPPLEMENTARY PREAMBLES				
	Type of cement				
	All cement used in concrete work is to be OPC cement, no cement containing fly ash will be allowed.				
	Formwork				
	Descriptions of formwork shall be deemed to include use and waste only (except where described as left in or permanent), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use.				
	The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support withou damage and shall remain in position until the newly constructed work is able to support itself.				
	Formwork to soffits of solid slabs, etc., shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.				
F 1.2.2	REINFORCED CONCRETE				
	15MPa/19mm Concrete in:				
F 1.2.2.1	50mm Thick blinding under ground beams, etc.	m2	3		
	20MPa/19mm Concrete in:				
F 1.2.2.2	Strip foundations	m3	35		
F 1.2.2.3	Surface beds	m3	10		
F 1.2.3	REINFORCED CONCRETE				
	20MPa/19mm Concrete in:				
F 1.2.3.1	Concrete slab counter	m3	8		
F 1.2.4	CONCRETE SUNDRIES				
	Finishing top surfaces of concrete smooth with a wood float:				
F 1.2.4.1	Surface beds, slabs, etc.	m2	0		
F 1.2.5	GROUTING, ETC.				
Total Carried Forward					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Class E non-shrink grout:				
F 1.2.5.1	Bedding approximately 25mm thick under 200mm diameter base plate including chamfered edges all round.	No	5		
F 1.2.5.2	Bedding approximately 25mm thick under 250mm x 250mm base plate including chamfered edges all round.	No	5		
	Casting in of holding down bolts:				
F 1.2.5.3	Provide template for and embed set of two 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	3		
F 1.2.5.4	Provide template for and embed set of four 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	3		
F 1.2.6	MOVEMENT JOINTS, ETC.				
	Expansion joints with 10mm jointex between vertical concrete and brick surfaces:				
F 1.2.6.1	Joint not exceeding 300mm high.	m	10		
F 1.2.6.2	Joint not exceeding 300mm high circular on plan.	m	10		
	Two layers of 6mm thick smooth tempered hardboard to form slip joints between horizontal concrete and brick surfaces including cement mortar bed:				
F 1.2.6.3	Joint not exceeding 300mm wide.	m	90		
F 1.2.6.4	Joint not exceeding 300mm wide circular on plan.	m	10		
F 1.2.7	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to sides of:				
F 1.2.7.1	Ground beams.	m2	Rate Only		Rate Only
F 1.2.7.2	Ground beams circular on plan.	m2	Rate Only		Rate Only
F 1.2.8	SMOOTH SHUTTERING (DEGREE OF ACCURACY I)				
	Smooth formwork to sides of:				
F 1.2.8.1	Beams and inverted beams.	m2	Rate Only		Rate Only
F 1.2.8.2	Beams and inverted beams circular on plan.	m2	Rate Only		Rate Only
	Smooth formwork to sides and soffits of:				
F 1.2.8.3	Ring beams.	m2	Rate Only		Rate Only
F 1.2.8.4	Ring beams circular on plan exceeding 1m radius.	m2	Rate Only		Rate Only
F 1.2.8.5	Slabs.	m2	Rate Only		Rate Only
	Boxing in or out smooth formwork to form:				
F 1.2.8.6	Opening not exceeding 1m girth through 230mm thick beam.	No	Rate Only		Rate Only
F 1.2.9	REINFORCEMENT				
Total Carried Forward					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Mild steel reinforcement to structural concrete work:				
F 1.2.9.1	8mm Diameter bars (Strip Footings)	kg	220		
	High tensile steel reinforcement to structural concrete work:				
F 1.2.9.2	12mm Diameter bars (Strip Footing)	kg	890		
F 1.2.9.3	10mm Diameter bars (Concrete slab counter)	kg	320		
Total Carried Forward To Summary					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.3	**SECTION F 1.3 : MASONRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.3.1	SUPPLEMENTARY PREAMBLES Sizes in descriptions Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick. Wall ties Descriptions of solid walls (except if built in English bond) and cavity walls shall be deemed to include metal wall ties complying with SABS 28 and of the butterfly type, of the required length with each end built at least 75mm deep into brickwork, spaced at not more than 1m centres alternatively to every third course of brickwork. Cavity walls, etc. Descriptions of cavity walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole.				
F 1.3.2	BRICKWORK: FOUNDATIONS AND SUPERSTRUCTURE Brickwork in burnt clay NFP bricks in 3:1 cement mortar:				
F 1.3.2.1	Piers and attached piers.	m3	1		
F 1.3.2.2	Half brick walls.	m2	2		
F 1.3.2.3	Half brick walls in lining to concrete.	m2	1		
F 1.3.2.4	Half brick walls in lining to concrete circular on plan.	m2	3		
F 1.3.2.5	One brick walls.	m2	250		
F 1.3.2.6	One brick walls circular on plan.	m2	Rate Only		Rate Only
F 1.3.2.7	One brick parapet walls.	m2	Rate Only		Rate Only
F 1.3.2.8	One brick parapet walls circular on plan.	m2	Rate Only		Rate Only
F 1.3.2.9	One and a half brick walls.	m2	5		
F 1.3.2.10	One and a half brick walls circular on plan.	m2	Rate Only		Rate Only
F 1.3.3	FACE BRICKWORK Allow a Prime Cost Amount of R6 000.00/ 1000 bricks for face brickwork and raked out and pointed with a square pointing tool 10 mm deep:				
F 1.3.3.1	Extra over ordinary brickwork for face brick walls	m2	250		
F 1.3.3.2	Extra over ordinary brickwork for face brick walls circular on plan	m2	Rate Only		Rate Only
Total Carried Forward					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
F 1.3.3.3	Extra over ordinary brickwork for 220mm wide face brick on edge coping	m2	3		
F 1.3.3.4	Extra over ordinary brickwork for 220mm wide face brick on edge coping circular on plan	m2	Rate Only		Rate Only
F 1.3.4	BRICKWORK SUNDRIES				
	Brick reinforcement:				
F 1.3.4.1	900mm long Galvanized hoop iron roof anchors built in vertically	No	11		
F 1.3.4.2	75mm Wide reinforcement built in horizontally.	m	9		
F 1.3.4.3	150mm Wide reinforcement built in horizontally.	m	390		
	Prestressed fabricated lintels:				
F 1.3.4.4	100 x 70mm lintels in lengths not exceeding 3m.	m	35		
F 1.3.4.5	100 x 70mm lintels in lengths exceeding 4,5m not exceeding 6m.	m	14		
Total Carried Forward To Summary					

SCHEDULE F 1: MARKET STALL TYPE A 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.4	**SECTION C4 : WATERPROOFING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.4.1	SUPPLEMENTARY PREAMBLES Waterproofing Waterproofing of roofs, basements, etc. shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs.				
F 1.4.2	DAMPPROOFING OF WALLS AND FLOORS One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp-proof course:				
F 1.4.2.1	In walls, under cills, etc. One layer of 250 micron type C waterproof sheeting sealed at laps with pressure sensitive tape:	m2	45		
F 1.4.2.2	Under surface beds, ground beams, etc.	m2	100		
Total Carried Forward To Summary					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C6 : ROOF COVERINGS, ETC.

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.5	**SECTION F 1.5 : ROOF COVERINGS, ETC.** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.5.1	PROFILED METAL SHEETING AND ACCESSORIES 0,58mm Thick "Klip-lock 406" industrial galvanized roof sheeting with colorbond finish on one side in single lengths fixed to steel members including all fixing brackets and fixed in strict accordance with the manufacturer's instructions:				
F 1.5.1.1	Sheeting laid to roof with pitch not exceeding 25 degrees in single lengths (measured nett).	m2	160		
F 1.5.1.2	Extra over for bending sheet ends to 450mm radius.	m	Rate Only		Rate Only
F 1.5.1.3	Extra over for raking cutting at valleys.	m	8		
	0,58mm Thick flashings, etc.:				
F 1.5.1.4	380mm Girth ridge cap flashing fixed with S10 clips and including serrated broad flute closer and polycloser.	m	2		
F 1.5.1.5	450mm Girth gable trim flashing fixed with S10 clips.	m	3		
F 1.5.1.6	380mm Girth valley lining.	m	5		
F 1.5.2	ROOF INSULATION Sisalation 420 heavy industrial grade reinforced aluminium foil insulation laid taut over purlins in strict accordance with the manufacturer's instructions:				
F 1.5.2.1	Aluminium foil roof insulation laid taut over purlins (purlins at approximately 2m centres) with minimum 150mm side laps and fixed concurrent with roof covering including galvanised steel straining wires, etc.	m2	160		
Total Carried Forward To Summary					

SCHEDULE F 1: MARKET STALL TYPE A 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.6	**SECTION C6 : CARPENTRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.6.1	ROOF TRUSSES AND PURLINS				
F 1.6.2	SUPPLEMENTARY PREAMBLES The timber roof constuction forv the various buildings are to be designed and certified by "MiTec Industries SA (Pty) Ltd" and designed for a sheet metal roof load. The descriptions shall be deemed to include the manufacturers design, shopdrawings, engineers certification, all components, delivery to site, and installed strictly in accordance with the manufacturer's instructions . All timber used for the roof construction is to comply to the relevant SABS codes for structural timber roof constuction.				
F 1.6.2.1	Gang-Nail double pitch roof truss for as span of 4000mm and a pitch of 5 degrees.	No	6		
F 1.6.2.3	50x 76mm SA Pine purlins	m	36		
F 1.6.2.4	50x 76mm SA Pine eaves purlins bolted to brickwork	m	36		
F 1.6.2.5	38 x 114mm SA Pine cross bracing	m	30		
F 1.6.3	DOORS, WINDOWS, SASHES, ETC. 44mm Thick solid core laminated masonite flush door with hardwood concealed edge strips finished on both sides and hung on steel frames (frames elsewhere):				
F 1.6.3.1	Door size overall 762 x 2032mm high.	No	Rate Only		Rate Only
F 1.6.3.2	Door size overall 813 x 1932mm high.	No	Rate Only		Rate Only
F 1.6.3.3	Door size overall 813 x 2032mm high. 44mm Thick solid Meranti flush back slatted door with hardwood concealed edge strips finished on both sides and hung on steel frames (frames elsewhere):	No	Rate Only		Rate Only
F 1.6.3.4	Door size overall 813 x 2032mm high.	No	4		
Total Carried Forward					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C9 : CEILINGS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.7	**SECTION F 1.7: CEILINGS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.7.1	SUSPENDED CEILINGS 600 x 1200 x 6mm Thick "Gyproc Donnceil Gyprex" embossed vinyl faced ceiling tiles laid on and including lay in exposed tee suspension ceiling system including "Donn T38" white powder coated main tees, cross tees, hold-down clips, wedges, etc., all suspended with galvanised hangers at centres not exceeding 1200mm in strict accordance with the manufacturer's instructions:				
F 1.7.1.1	Ceiling suspended not exceeding 1m below timber roof trusses.	m2	48		
	Extra over ceiling tiles for forming openings for air grilles, diffusers, valves, etc. (elsewhere) and providing additional support:				
F 1.7.1.2	350mm Diameter opening.	No	2		
Total Carried Forward To Summary					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C11 : IRONMONGERY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.8	**SECTION F 1.8 : IRONMONGERY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.8.1	LOCKS AND HANDLES				
F 1.8.1.1	Allow a Prime Cost Amount of R500.00 for lockset and striker plates complete with a pair of matching satin aluminium lever handles and fitting in position into timber doors (elsewhere).	No	4		
Total Carried Forward To Summary					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C12 : STRUCTURAL STEELWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.9	**SECTION F 1.9 : STRUCTURAL STEELWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.9.1	SUPPLEMENTARY PREAMBLES Shop drawings The contractor will be required to prepare shop details for the work which must be submitted to the Engineer for approval before fabrication is started. Approval of shop details by the Engineer will include the following: a) Examination of member sizes for consistency with design requirements. b) Examination of all connections designed and/or detailed by the fabricator, for adequacy of load trasference. c) Approval of leading dimensions which are taken to include such dimensions as may influence the design (eg, depth of trusses and girders) or which may grossly affect site programme (eg, truss spans andstanchion heights). Notwithstanding any approval of these details, the contractor shall remain responsible for ensuring that the dimensions, details and workmanship result in the correct assembly of the work. Material and workmanship The steelwork is to be fabricated from mild steel to SABS 1431 Grade 300W. The whole of the fabrication and workmanship generally is to be in strict accordance with SABS 0162-1984 as amended. The material shall be of best quality throughout, free from loose rust or millscale, true to thickness and profile throughout and of the section and mass specified subject to a 2% tolerance for rolling margin. Consideration will be given to any detail variation which the contractor may wish to make with the view to the simplification of either fabrication, delivery or erection. Substitutions must be made at the contractor's own expense. The contractor shall provide Works Test Certificates where so required by the Engineer. Testing The Engineer shall be at liberty to select test pieces from steelwork in the workshop or on the site and to have them tested. The expense of such tests are to be borne by the contractor if the steelwork does not comply with the standards laid down above. A provisional sum is allowed in the bill of quantities for non-destructive testing. Holding down bolts Holding down bolts and other fixing devices which are to be embedded in concrete must be supplied to the principal contractor on request together with the necessary information, identification and templates.				
Total Carried Forward					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C12 : STRUCTURAL STEELWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Any costs incurred by subsequent repositioning of bolts, etc resulting from the contractor having failed to furnish adequate information, identification and templates will be for the contractor's account. Welding Welding shall be in accordance with SABS 044 "Welding: Parts I, II and III". Welding shall be carried out in a manner which will prevent any distortion of the weld or the parent section. All welds shall have adequate root fusion and shall be free from cracks, porosity or other irregularities and any undercutting shall be made good by the deposition of additional runs of weld metal. Any completed welds showing cracks, cavities or other efects shall be cut out and made good at the contractor's own expense. "Mild steel electrodes shall comply with SABS 455 ""Covered Electrodes for Manual Arc Welding of Mild Steel andMedium High Tensile Steel""." Bolts Bolts shall have well-formed heads forged from the solid. Nuts shall closely fit the bolts so that they can only just be turned by hand and at least one clear thread shall project beyond the nut when fully tightened.All bolts shall have one asher under the nuts and shall be so tightened that the threaded portion does not bear on the members connected. Where bolt heads or nuts bear upon bevelled surfaces they shall be provided with tapered washers of 2,3 mm mean thickness to provide a seating square with the axis of the bolt. Friction grip bolts Connections specifying high strength friction grip bolts are to be in strict accordance with SABS 094 "Bolted Friction Grip Joints in Structural Steelwork" and the bolts used are to be in accordance with BS 3139 Part 1 : 1959 "General Grade Bolts, High Strength Friction Grip Bolts for Structural Engineering". Notwithstanding the above, the following must be rigidly adhered to: a) Two-case hardened washers, one flat or bevelled under the head and the other flat or bevelled under the nut shall be used with each bolt. b) Contact surfaces shall not be painted and shall be thoroughly cleaned free of dirt, oil, loose scale, burrs and other defects which are liable to reduce friction resistnace between surfaces. c) At all times the correct torques shall be applied to the different sizes of bolts. Erection				
Total Carried Forward					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C12 : STRUCTURAL STEELWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The steelwork generally is to be fabricated in the contractor's works having due regard to transport and erection facilities. He must supply all erection tackle, temporary erection bracing, erect and plumb all steelworkand supply all steel wedges and tacks as required. Items may be detailed for delivery "piece small" or the contractor may prefabricate if he is satisfied that suitable arrangements for transport can be made. Connections are to be designed for the forces indicated on the drawings or to the maximum capacity of the members. Cleaning and painting All structural steel is to be thoroughly degreased to remove all grease or oil and then wire-brushed, scraped or sand-papered to remove all rust, mill-scale or surface contaminations and is to be immediately given one coat "Duram DTM" smooth epoxy paint prior to delivery to site. All damaged paintwork is to be made good on site after erection is complete. Testing of welders Tenderers must include in their rates for the testing of any welder used on the work who has not been tested within a period of six months immediately preceding his employment on this contract. Rates Rates for structural steelwork shall include for Engineering design development and certification, supply and manufacture, delivery and installation and paint finished as specified. Painting/corrosion protection specification a) All steelwork shall be mechanically wire-brushed to ST3O blast clean to SA2.				
F 1.9.2	STEEL COLUMNS, BEAMS, POSTS, ETC.				
F 1.9.2.1	IPE 200mm I-Beam	m	74		
F 1.9.2.2	150mm x 50mm x 20mm x 2 lipped channel	m	125		
F 1.9.2.3	400mm x 200mm x 10mm Base plates	No	16		
F 1.9.2.4	90mm x 90mm x 6mm Angle Iron	No	30		
F 1.9.3	BOLTS, ETC.				
F 1.9.3.1	M8 x 75mm long chemical anchor bolts including nuts and washers with one end drilled and screwed to concrete.	No	126		
Total Carried Forward					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.10	**SECTION F 1.10 : METALWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.10.1	SUNDRY GALVANISED STEELWORK Bearers to brick linings, lintels, etc.:				
F 1.10.1.1	40 x 40 x 5mm Thick angle section bearer bolted to concrete with and including M8 x 50mm long rawl bolts at 300mm centres.	m	Rate Only		Rate Only
F 1.10.2	PRESSED STEEL DOOR FRAMES 1,2mm Thick double rebated frames suitable for half brick walls complete with hoop iron anchors welded to frame, adjustable stainless steel striking plate/s suitable for mortice locks, three rubber shock absorbers in rebate and one pair of 100mm standard heavy duty butt hinges welded to frame:				
F 1.10.2.1	Frame for door size 762 x 2032mm high.	No	Rate Only		Rate Only
F 1.10.2.2	Frame for door size 813 x 2032mm high.	No	4		
F 1.10.2.3	Frame for door size 1200 x 2032mm high.	No	Rate Only		Rate Only
F 1.10.3	VENTILATION LOUVRE GRILLES, ETC.				
F 1.10.3.1	Powdercoated aluminium louvre grille and frame size overall 500 x 500mm high, comprising standard 35mm x 1,6mm thick blades at 50mm centres including subframe and sealants in solid core laminated flush door (doors elsewhere).	No	Rate Only		Rate Only
F 1.10.4	ALUMINIUM WINDOWS, SHOPFRONTS, ETC.				
F 1.10.5	SUPPLEMENTARY PREAMBLES General: All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. shall be designed, manufactured, supplied and installed in strict compliance with the "Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA), General Specification for Architectural Aluminium and Glass Products February 2005 Edition" and SANS 10137. All descriptions shall be deemed to include transoms, mullions, etc. as per the Architect's drawings. Design and installation: The Sub-Contractor shall be required to design the entire installation, provide all labour, materials, equipment and services required to complete the installation as specified herein. The Sub-Contractor shall ensure that the necessary wind pressure provisions have been incorporated within the design criteria. The Sub-Contractor shall submit his wind design criteria to the Architect for inspection.				
Total Carried Forward					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The Sub-Contractor shall allow for expansion of glass, framing, surrounding structures, etc. The Sub-Contractor shall allow for and produce fully detailed workshop drawings (3 copies) including samples of all ironmongery within 14 working days of the Main Contractors request. Fire resistance The installation shall conform to the local authorities fire resistance standards. Templates Templates formed of 25 x 25mm square hollow section steel are to be provided in each opening to ensure that all windows, doors, shopfronts, skylights, etc. are built in plumb and square. The subcontractor is to use his discretion in providing a sufficient quantity of templates as required to complete the Works as per the Main Contractors programme. Grounds 19 x 25mm Wrought SA pine grounds are to be fitted all round windows, doors, etc. Where grounds are visible they should be painted to form a shadowline. Sealing Window frames are to be sealed all round internally and externally against the building structure with approved silicone jointing compound to prevent water ingress. Weather seals All windows, doors, shopfronts, skylights, etc. are to be fitted with approved woolpile weather seals. Ironmongery to doors Door leaves are to be hung on one and a half pairs of 100 x 75mm butt hinges and fitted with one spring clip door holder. In addition double doors are to be fitted with one 150mm and one 200mm natural anodised flush lever bolt. Tenderers shall submit full specifications of ironmongery quoted which shall include all furniture, locks, handles, butt hinges, floor spring hinges, etc. The Sub-Contractor shall be required to submit ironmongery samples for approval prior to installation. Sub-Contractors are to note that the approval of shop drawings does not automatically indicate acceptance of ironmongery proposals.				
Total Carried Forward					

SCHEDULE F 1: MARKET STALL TYPE A 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. must include for all jointing, notching, cutting, etc. and for setting up and fixing in postion complete with glass, glazing beads, external cills, ironmongery, fixing brackets, lugs, bolts, timber grounds, silicone sealant, templates, etc. all as detailed and scheduled on the drawings and as necessary for the satisfactory execution of the work.				
	Factory quality control The Sub-Contractor shall afford the Main Contractor full acces to plant, shop and assembly point to view and inspect the process and method employed in the fabricating and assembly of glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc.				
	Protection and cleaning All aluminium must be protected against damage by covering with temporary casings (masking tape, plastic coatings, etc.) and against deterioration or discolouration caused by mortar, wax, paint, etc., all to the entire satisfaction of the Principal Agent. On completion all such protection shall be removed and work cleaned down and left in proper working order. All glazing is to be protected from damage, breakage, scratches, etc. and allowances shall be made for polishing the glass as and when instructed by the Main Contractor.				
F 1.10.6	SECURITY GATES				
F 1.10.6.1	Security single leaf folding gate size overall 1200 x 2100mm high.	No	4		
F 1.10.7	ROLLER SHUTTER DOORS "Roll-up/ Serranda" series 500 purpose made powdercoated steel hand-push operated roller shutter window size overall 1500 x 900mm high complete with frame, overhead protective box, end locks, Astro EPDM weatherseal and installed and bolted to brick openings all in strict accordance with the manufacturer's instructions:	No	4		
F 1.10.8	Security double leaf folding gate size overall 1400 x 850mm high.	No	9		
F 1.10.8,1	ROLLER SHUTTER DOORS "Double leaf" custom made doors fabricated from 6.0mm mild steel plates framed by welding into 100mm x 100mm x 3.0mm square tubing including hinges and hung into walls complete with frame, overhead protective box, end locks, Astro EPDM weatherseal and installed and bolted to brick openings all in strict accordance with the manufacturer's instructions:	No	9		
Total Carried Forward					

SCHEDULE F 1: MARKET STALL TYPE A 1

SECTION C14 : PLASTERING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.11	**SECTION F 1.11 : PLASTERING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.11.1	SCREEDS Screeds on concrete:				
F 1.11.1.1	30mm Thick on floors.	m2	245		
F 1.11.2	INTERNAL PLASTER One coat cement plaster mimimum 15mm thick (5:1) wood floated to receive tiles (elsewhere) including all labours on:				
F 1.11.2.1	Brick vertical surfaces and in narrow widths (part on concrete).	m2	200		Rate Only
F 1.11.5	EXTERNAL PLASTER One coat cement plaster minimum 15mm thick (5:1) steel floated including all labours on:				
F 1.11.5.1	Brick vertical surfaces and in narrow widths (part on concrete).	m2	Rate Only		Rate Only
F 1.11.5.2	Brick vertical surfaces circular on plan (part on concrete).	m2	Rate Only		Rate Only
Total Carried Forward To Summary					

SCHEDULE F 1: MARKET STALL TYPE A 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
F 1.12	**SECTION F 1.12 : PAINTWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
F 1.12.1	PLASTER Prepare and apply one coat "Dulux" plaster primer, one coat undercoat and two coats "Dulux Super Acrylic Emulsion" paint on:				
F 1.12.1.1	Internal and external plastered walls, columns, recessed bands, etc.	m2	160		
F 1.12.1.2	Internal and external plastered soffits.	m2	190		
F 1.12.2	METAL Prepare and apply one coat "Dulux" steel patch primer, one coat "Dulux Duragrip" universal undercoat and two coats "Dulux Non-drip Enamel" paint on:				
F 1.12.2.1	Frames and linings.	m2	10		
F 1.12.2.2	Bearers, posts, edging, etc.	m	3		
F 1.12.3	WOOD Prepare and apply one coat "Dulux Woodgard" Timbapresrvitive oil based penetrating sealer on:				
F 1.12.3.1	General surfaces of doors. Prepare and apply one coat "Dulux" wood primer, one coat undercoat and two coats "Dulux Pearlglo" water-based enamel paint on:	m2	15		
F 1.12.3.2	General surfaces of doors.	m2	15		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE F 1: MARKET STALL TYPE A 1

SUMMARY OF SECTIONS

Section	Description		Amount (Rand)
F 1	SECTION F 1.1: EARTHWORKS		
F 1	SECTION F 1.2: CONCRETE, FORMWORK AND REINFORCEMENT		
F 1	SECTION F 1.3: MASONRY		
F 1	SECTION F 1.4: WATERPROOFING		
F 1	SECTION F 1.5: ROOF COVERINGS, ETC.		
F 1	SECTION F 16: CARPENTRY		
F 1	SECTION F 1.7: CEILINGS		
F 1	SECTION F 1.8: IRONMONGERY		
F 1	SECTION F 1.9: STRUCTURAL STEELWORK		
F 1	SECTION F 1.10: METALWORK		
F 1	SECTION F 1.11: PLASTERING		
F 1	SECTION F 1.12 : PAINTWORK		
Total Carried Forward To Summary Of Schedules			

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
G 1	**SECTION G 1.1: EARTHWORKS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
G 1.1.1	SUPPLEMENTARY PREAMBLES Carting away of excavated material Descriptions of carting away of excavated material shall be deemed to include for bulking and loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site. Subterranean water No information regarding subterranean water is available. The tenderer must acquaint himself of the presence and depth of subterranean water and allow thereof in his rates.				
G 1.1.2	EXCAVATION OTHER THAN BULK Excavation in compacted earth not exceeding 2m deep in:				
G 1.1.2.1	Trenches for strip foundations and ground beams. Extra over excavations other than bulk in earth for excavation in:	m3	30		
G 1.1.2.2	Soft rock.	m3	3		
G 1.1.2.3	Hard rock.	m3	2		
G 1.1.3	CARTING AWAY Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk):				
G 1.1.3.1	Off site to a dumping site to be located by the Contractor.	m3	3		
G 1.1.4	EARTH FILLING, ETC. Filling with material from excavations including hauling, spread, level, water and compact to a density of at least 93% Mod. AASHTO maximum density in 150mm thick layers:				
G 1.1.4.1	Backfilling to trenches, holes, etc. Selected material supplied by the Contractor and spread, level, water and compact to a density of at least 95% Mod. AASHTO maximum density in 150mm thick layers:	m3	5		
G 1.1.4.2	Under floors, paving, etc.	m3	2		
G 1.1.5	TERMITE PROOFING Approved brand of anti-termite soil insecticide applied by a Registered Pest Control Company and guaranteed against termite infestation for ten years:				
Total Carried Forward					

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
G 1.1.5.1	Under floors, etc. including forming and poisoning shallow furrows against foundation walls etc., filling in furrows and ramming.	m2	96		
G 1.1.5.2	To bottom and sides of trenches, etc.	m2	240		
Total Carried Forward To Summary					

SCHEDULE G 1: MARKET STALL TYPE B 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
G 1.2	**SECTION G 1.2 : CONCRETE, FORMWORK AND REINFORCEMENT** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
G 1.2.1	SUPPLEMENTARY PREAMBLES Type of cement All cement used in concrete work is to be OPC cement, no cement containing fly ash will be allowed. Formwork Descriptions of formwork shall be deemed to include use and waste only (except where described as left in or permanent), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use. The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support withou damage and shall remain in position until the newly constructed work is able to support itself. Formwork to soffits of solid slabs, etc., shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.				
G 1.2.2	REINFORCED CONCRETE 15MPa/19mm Concrete in:				
G 1.2.2.1	50mm Thick blinding under ground beams, etc.	m2	7		
	20MPa/19mm Concrete in:				
G 1.2.2.2	Strip foundations	m3	24		
G 1.2.2.3	Surface beds	m3	6		
G 1.2.3	REINFORCED CONCRETE 20MPa/19mm Concrete in:				
G 1.2.3.1	Concrete slab counter	m3	12		
G 1.2.4	CONCRETE SUNDRIES Finishing top surfaces of concrete smooth with a wood float:				
G 1.2.4.1	Surface beds, slabs, etc.	m2	100		
G 1.2.5	GROUTING, ETC.				
Total Carried Forward					

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Class E non-shrink grout:				
G 1.2.5.1	Bedding approximately 25mm thick under 200mm diameter base plate including chamfered edges all round.	No	5		
G 1.2.5.2	Bedding approximately 25mm thick under 250mm x 250mm base plate including chamfered edges all round.	No	5		
	Casting in of holding down bolts:				
G 1.2.5.3	Provide template for and embed set of two 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	3		
G 1.2.5.4	Provide template for and embed set of four 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	3		
G 1.2.6	MOVEMENT JOINTS, ETC.				
	Expansion joints with 10mm jointex between vertical concrete and brick surfaces:				
G 1.2.6.1	Joint not exceeding 300mm high.	m	10		
G 1.2.6.2	Joint not exceeding 300mm high circular on plan.	m	10		
	Two layers of 6mm thick smooth tempered hardboard to form slip joints between horizontal concrete and brick surfaces including cement mortar bed:				
G 1.2.6.3	Joint not exceeding 300mm wide.	m	90		
G 1.2.6.4	Joint not exceeding 300mm wide circular on plan.	m	10		
G 1.2.7	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to sides of:				
G 1.2.7.1	Ground beams.	m2	Rate Only		Rate Only
G 1.2.7.2	Ground beams circular on plan.	m2	Rate Only		Rate Only
G 1.2.8	SMOOTH SHUTTERING (DEGREE OF ACCURACY I)				
	Smooth formwork to sides of:				
G 1.2.8.1	Beams and inverted beams.	m2	Rate Only		Rate Only
G 1.2.8.2	Beams and inverted beams circular on plan.	m2	Rate Only		Rate Only
	Smooth formwork to sides and soffits of:				
G 1.2.8.3	Ring beams.	m2	Rate Only		Rate Only
G 1.2.8.4	Ring beams circular on plan exceeding 1m radius.	m2	Rate Only		Rate Only
G 1.2.8.5	Slabs.	m2	Rate Only		Rate Only
	Boxing in or out smooth formwork to form:				
G 1.2.8.6	Opening not exceeding 1m girth through 230mm thick beam.	No	Rate Only		Rate Only
G 1.2.9	REINFORCEMENT				
Total Carried Forward					

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Mild steel reinforcement to structural concrete work:				
G 1.2.9.1	8mm Diameter bars (Strip Footings)	kg	196		
	High tensile steel reinforcement to structural concrete work:				
G 1.2.9.2	12mm Diameter bars (Strip Footing)	kg	760		
G 1.2.9.3	10mm Diameter bars (Concrete slab counter)	kg	320		
Total Carried Forward To Summary					

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
G 1.3	**SECTION GH 1.3: MASONRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
G 1.3.1	SUPPLEMENTARY PREAMBLES Sizes in descriptions Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick. Wall ties Descriptions of solid walls (except if built in English bond) and cavity walls shall be deemed to include metal wall ties complying with SABS 28 and of the butterfly type, of the required length with each end built at least 75mm deep into brickwork, spaced at not more than 1m centres alternatively to every third course of brickwork. Cavity walls, etc. Descriptions of cavity walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole.				
G 1.3.2	BRICKWORK: FOUNDATIONS AND SUPERSTRUCTURE Brickwork in burnt clay NFP bricks in 3:1 cement mortar:				
G 1.3.2.1	Piers and attached piers.	m3	1		
G 1.3.2.2	Half brick walls.	m2	2		
G 1.3.2.3	Half brick walls in lining to concrete.	m2	1		
G 1.3.2.4	Half brick walls in lining to concrete circular on plan.	m2	3		
G 1.3.2.5	One brick walls.	m2	170		
G 1.3.2.6	One brick walls circular on plan.	m2	Rate Only		Rate Only
G 1.3.2.7	One brick parapet walls.	m2	Rate Only		Rate Only
G 1.3.2.8	One brick parapet walls circular on plan.	m2	Rate Only		Rate Only
G 1.3.2.9	One and a half brick walls.	m2	5		
G 1.3.2.10	One and a half brick walls circular on plan.	m2	Rate Only		Rate Only
G 1.3.3	FACE BRICKWORK Allow a Prime Cost Amount of R6 000.00/ 1000 bricks for face brickwork and raked out and pointed with a square pointing tool 10 mm deep:				
G 1.3.3.1	Extra over ordinary brickwork for face brick walls	m2	170		
G 1.3.3.2	Extra over ordinary brickwork for face brick walls circular on plan	m2	Rate Only		Rate Only
Total Carried Forward					

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
G 1.3.3.3	Extra over ordinary brickwork for 220mm wide face brick on edge coping	m2	3		
G 1.3.3.4	Extra over ordinary brickwork for 220mm wide face brick on edge coping circular on plan	m2	Rate Only		Rate Only
G 1.3.4	BRICKWORK SUNDRIES				
	Brick reinforcement:				
G 1.3.4.1	900mm long Galvanized hoop iron roof anchors built in vertically	No	11		
G 1.3.4.2	75mm Wide reinforcement built in horizontally.	m	9		
G 1.3.4.3	150mm Wide reinforcement built in horizontally.	m	390		
	Prestressed fabricated lintels:				
G 1.3.4.4	100 x 70mm lintels in lengths not exceeding 3m.	m	27		
G 1.3.4.5	100 x 70mm lintels in lengths exceeding 4,5m not exceeding 6m.	m	Rate Only		Rate Only
Total Carried Forward To Summary					

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C5 : WATERPROOFING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
G 1.4	**SECTION G 1.4: WATERPROOFING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
G 1.4.1	SUPPLEMENTARY PREAMBLES Waterproofing Waterproofing of roofs, basements, etc. shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs.				
G 1.4.2	DAMPPROOFING OF WALLS AND FLOORS One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp-proof course:				
G 1.4.2.1	In walls, under cills, etc. One layer of 250 micron type C waterproof sheeting sealed at laps with pressure sensitive tape:	m2	45		
G 1.4.2.2	Under surface beds, ground beams, etc.	m2	100		
Total Carried Forward To Summary					

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C6 : ROOF COVERINGS, ETC.

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
G 1.5	**SECTION G 1.5: ROOF COVERINGS, ETC.** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
G 1.5.1	PROFILED METAL SHEETING AND ACCESSORIES 0,58mm Thick "Klip-lock 406" industrial galvanized roof sheeting with colorbond finish on one side in single lengths fixed to steel members including all fixing brackets and fixed in strict accordance with the manufacturer's instructions:				
G 1.5.1.1	Sheeting laid to roof with pitch not exceeding 25 degrees in single lengths (measured nett).	m2	160		
G 1.5.1.2	Extra over for bending sheet ends to 450mm radius.	m	Rate Only		Rate Only
G 1.5.1.3	Extra over for raking cutting at valleys.	m	8		
	0,58mm Thick flashings, etc.:				
G 1.5.1.4	380mm Girth ridge cap flashing fixed with S10 clips and including serrated broad flute closer and polycloser.	m	2		
G 1.5.1.5	450mm Girth gable trim flashing fixed with S10 clips.	m	3		
G 1.5.1.6	380mm Girth valley lining.	m	5		
G 1.5.2	ROOF INSULATION Sisalation 420 heavy industrial grade reinforced aluminium foil insulation laid taut over purlins in strict accordance with the manufacturer's instructions:				
G 1.5.2.1	Aluminium foil roof insulation laid taut over purlins (purlins at approximately 2m centres) with minimum 150mm side laps and fixed concurrent with roof covering including galvanised steel straining wires, etc.	m2	160		
Total Carried Forward To Summary					

SCHEDULE G 1: MARKET STALL TYPE B 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
G 1.6	**SECTION G 1.6: STRUCTURAL STEELWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
G 1.6.1	SUPPLEMENTARY PREAMBLES Shop drawings The contractor will be required to prepare shop details for the work which must be submitted to the Engineer for approval before fabrication is started. Approval of shop details by the Engineer will include the following: a) Examination of member sizes for consistency with design requirements. b) Examination of all connections designed and/or detailed by the fabricator, for adequacy of load trasference. c) Approval of leading dimensions which are taken to include such dimensions as may influence the design (eg, depth of trusses and girders) or which may grossly affect site programme (eg, truss spans andstanchion heights). Notwithstanding any approval of these details, the contractor shall remain responsible for ensuring that the dimensions, details and workmanship result in the correct assembly of the work. Material and workmanship The steelwork is to be fabricated from mild steel to SABS 1431 Grade 300W. The whole of the fabrication and workmanship generally is to be in strict accordance with SABS 0162-1984 as amended. The material shall be of best quality throughout, free from loose rust or millscale, true to thickness and profile throughout and of the section and mass specified subject to a 2% tolerance for rolling margin. Consideration will be given to any detail variation which the contractor may wish to make with the view to the simplification of either fabrication, delivery or erection. Substitutions must be made at the contractor's own expense. The contractor shall provide Works Test Certificates where so required by the Engineer. Testing The Engineer shall be at liberty to select test pieces from steelwork in the workshop or on the site and to have them tested. The expense of such tests are to be borne by the contractor if the steelwork does not comply with the standards laid down above. A provisional sum is allowed in the bill of quantities for non-destructive testing. Holding down bolts Holding down bolts and other fixing devices which are to be embedded in concrete must be supplied to the principal contractor on request together with the necessary information, identification and templates.				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Any costs incurred by subsequent repositioning of bolts, etc resulting from the contractor having failed to furnish adequate information, identification and templates will be for the contractor's account. Welding Welding shall be in accordance with SABS 044 "Welding: Parts I, II and III". Welding shall be carried out in a manner which will prevent any distortion of the weld or the parent section. All welds shall have adequate root fusion and shall be free from cracks, porosity or other irregularities and any undercutting shall be made good by the deposition of additional runs of weld metal. Any completed welds showing cracks, cavities or other efects shall be cut out and made good at the contractor's own expense. "Mild steel electrodes shall comply with SABS 455 ""Covered Electrodes for Manual Arc Welding of Mild Steel andMedium High Tensile Steel""." Bolts Bolts shall have well-formed heads forged from the solid. Nuts shall closely fit the bolts so that they can only just be turned by hand and at least one clear thread shall project beyond the nut when fully tightened.All bolts shall have one asher under the nuts and shall be so tightened that the threaded portion does not bear on the members connected. Where bolt heads or nuts bear upon bevelled surfaces they shall be provided with tapered washers of 2,3 mm mean thickness to provide a seating square with the axis of the bolt. Friction grip bolts Connections specifying high strength friction grip bolts are to be in strict accordance with SABS 094 "Bolted Friction Grip Joints in Structural Steelwork" and the bolts used are to be in accordance with BS 3139 Part 1 : 1959 "General Grade Bolts, High Strength Friction Grip Bolts for Structural Engineering". Notwithstanding the above, the following must be rigidly adhered to: a) Two-case hardened washers, one flat or bevelled under the head and the other flat or bevelled under the nut shall be used with each bolt. b) Contact surfaces shall not be painted and shall be thoroughly cleaned free of dirt, oil, loose scale, burrs and other defects which are liable to reduce friction resistnace between surfaces. c) At all times the correct torques shall be applied to the different sizes of bolts. Erection				
Total Carried Forward					

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C12 : STRUCTURAL STEELWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The steelwork generally is to be fabricated in the contractor's works having due regard to transport and erection facilities. He must supply all erection tackle, temporary erection bracing, erect and plumb all steelworkand supply all steel wedges and tacks as required. Items may be detailed for delivery "piece small" or the contractor may prefabricate if he is satisfied that suitable arrangements for transport can be made. Connections are to be designed for the forces indicated on the drawings or to the maximum capacity of the members. Cleaning and painting All structural steel is to be thoroughly degreased to remove all grease or oil and then wire-brushed, scraped or sand-papered to remove all rust, mill-scale or surface contaminations and is to be immediately given one coat "Duram DTM" smooth epoxy paint prior to delivery to site. All damaged paintwork is to be made good on site after erection is complete. Testing of welders Tenderers must include in their rates for the testing of any welder used on the work who has not been tested within a period of six months immediately preceding his employment on this contract. Rates Rates for structural steelwork shall include for Engineering design development and certification, supply and manufacture, delivery and installation and paint finished as specified. Painting/corrosion protection specification a) All steelwork shall be mechanically wire-brushed to ST3O blast clean to SA2.				
G 1.6.2	STEEL COLUMNS, BEAMS, POSTS, ETC.				
G 1.6.2.1	IPE 200mm I-Beam	m	64		
G 1.6.2.2	150mm x 50mm x 20mm x 2 lipped channel	m	103		
G 1.6.2.3	400mm x 200mm x 10mm Base plates	No	30		
G 1.6.2.4	90mm x 90mm x 6mm Angle Iron	No	30		
G 1.6.3	BOLTS, ETC.				
G 1.6.3.1	M8 x 75mm long chemical anchor bolts including nuts and washers with one end drilled and screwed to concrete.	No	58		
Total Carried Forward					

SCHEDULE G 1: MARKET STALL TYPE B 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
G 1.7	**SECTION G 1.7 : METALWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
G 1.7.1	SUNDRY GALVANISED STEELWORK Bearers to brick linings, lintels, etc.:				
G 1.7.1.1	40 x 40 x 5mm Thick angle section bearer bolted to concrete with and including M8 x 50mm long rawl bolts at 300mm centres.	m	Rate Only		Rate Only
G 1.7.2	PRESSED STEEL DOOR FRAMES 1,2mm Thick double rebated frames suitable for half brick walls complete with hoop iron anchors welded to frame, adjustable stainless steel striking plate/s suitable for mortice locks, three rubber shock absorbers in rebate and one pair of 100mm standard heavy duty butt hinges welded to frame:				
G 1.7.2.1	Frame for door size 762 x 2032mm high.	No	Rate Only		Rate Only
G 1.7.2.2	Frame for door size 813 x 2032mm high.	No	Rate Only		Rate Only
G 1.7.2.3	Frame for door size 1200 x 2032mm high.	No	Rate Only		Rate Only
G 1.7.3	VENTILATION LOUVRE GRILLES, ETC.				
G 1.7.3.1	Powdercoated aluminium louvre grille and frame size overall 500 x 500mm high, comprising standard 35mm x 1,6mm thick blades at 50mm centres including subframe and sealants in solid core laminated flush door (doors elsewhere).	No	Rate Only		Rate Only
G 1.7.4	ALUMINIUM WINDOWS, SHOPFRONTS, ETC.				
G 1.7.5	SUPPLEMENTARY PREAMBLES General: All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. shall be designed, manufactured, supplied and installed in strict compliance with the "Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA), General Specification for Architectural Aluminium and Glass Products February 2005 Edition" and SANS 10137. All descriptions shall be deemed to include transoms, mullions, etc. as per the Architect's drawings. Design and installation: The Sub-Contractor shall be required to design the entire installation, provide all labour, materials, equipment and services required to complete the installation as specified herein. The Sub-Contractor shall ensure that the necessary wind pressure provisions have been incorporated within the design criteria. The Sub-Contractor shall submit his wind design criteria to the Architect for inspection.				
Total Carried Forward					

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The Sub-Contractor shall allow for expansion of glass, framing, surrounding structures, etc. The Sub-Contractor shall allow for and produce fully detailed workshop drawings (3 copies) including samples of all ironmongery within 14 working days of the Main Contractors request. Fire resistance The installation shall conform to the local authorities fire resistance standards. Templates Templates formed of 25 x 25mm square hollow section steel are to be provided in each opening to ensure that all windows, doors, shopfronts, skylights, etc. are built in plumb and square. The subcontractor is to use his discretion in providing a sufficient quantity of templates as required to complete the Works as per the Main Contractors programme. Grounds 19 x 25mm Wrought SA pine grounds are to be fitted all round windows, doors, etc. Where grounds are visible they should be painted to form a shadowline. Sealing Window frames are to be sealed all round internally and externally against the building structure with approved silicone jointing compound to prevent water ingress. Weather seals All windows, doors, shopfronts, skylights, etc. are to be fitted with approved woolpile weather seals. Ironmongery to doors Door leaves are to be hung on one and a half pairs of 100 x 75mm butt hinges and fitted with one spring clip door holder. In addition double doors are to be fitted with one 150mm and one 200mm natural anodised flush lever bolt. Tenderers shall submit full specifications of ironmongery quoted which shall include all furniture, locks, handles, butt hinges, floor spring hinges, etc. The Sub-Contractor shall be required to submit ironmongery samples for approval prior to installation. Sub-Contractors are to note that the approval of shop drawings does not automatically indicate acceptance of ironmongery proposals. Rates				
Total Carried Forward					

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. must include for all jointing, notching, cutting, etc. and for setting up and fixing in postion complete with glass, glazing beads, external cills, ironmongery, fixing brackets, lugs, bolts, timber grounds, silicone sealant, templates, etc. all as detailed and scheduled on the drawings and as necessary for the satisfactory execution of the work. Factory quality control The Sub-Contractor shall afford the Main Contractor full acces to plant, shop and assembly point to view and inspect the process and method employed in the fabricating and assembly of glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. Protection and cleaning All aluminium must be protected against damage by covering with temporary casings (masking tape, plastic coatings, etc.) and against deterioration or discolouration caused by mortar, wax, paint, etc., all to the entire satisfaction of the Principal Agent. On completion all such protection shall be removed and work cleaned down and left in proper working order. All glazing is to be protected from damage, breakage, scratches, etc. and allowances shall be made for polishing the glass as and when instructed by the Main Contractor.				
G 1.7.6	SECURITY GATES				
G 1.7.6.1	Security double leaf folding gate size overall 1400 x 850mm high.	No	9		
G 1.7.7	"Double leaf" custom made doors fabricated from 6.0mm mild steel plates framed by welding into 100mm x 100mm x 3.0mm square tubing including hinges and hung into walls complete with frame, overhead protective box, end locks, Astro EPDM weatherseal and installed and bolted to brick openings all in strict accordance with the manufacturer's instructions:	No	9		
Total Carried Forward					

SCHEDULE G 1: MARKET STALL TYPE B 1

SECTION C14 : PLASTERING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
G 1.8	**SECTION G 1.8: PLASTERING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
G 1.8.1	SCREEDS Screeds on concrete:				
G 1.8.1.1	30mm Thick on floors.	m2	100		
Total Carried Forward To Summary					

SCHEDULE G 1: MARKET STALL TYPE B 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
G 1.9	**SECTION G 1.9: PAINTWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
G 1.9.1	PLASTER Prepare and apply one coat "Dulux" plaster primer, one coat undercoat and two coats "Dulux Super Acrylic Emulsion" paint on:				
G 1.9.1.1	Internal and external plastered walls, columns, recessed bands, etc.	m2	Rate Only		Rate Only
G 1.9.1.2	Internal and external plastered soffits.	m2	Rate Only		Rate Only
G 1.9.2	METAL Prepare and apply one coat "Dulux" steel patch primer, one coat "Dulux Duragrip" universal undercoat and two coats "Dulux Non-drip Enamel" paint on:				
G 1.9.2.1	Frames and linings.	m2	10		
G 1.9.2.2	Bearers, posts, edging, etc.	m	3		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE G 1: MARKET STALL TYPE B 1

SUMMARY OF SECTIONS

Section	Description		Amount (Rand)
G 1	SECTION G 1.1: EARTHWORKS		
G 1	SECTION G 1.2 : CONCRETE, FORMWORK AND REINFORCEMENT		
G 1	SECTION G 1.3: MASONRY		
G 1	SECTION G 1.4: WATERPROOFING		
G 1	SECTION G 1.5: ROOF COVERINGS, ETC.		
G 1	SECTION G 1.6: STRUCTURAL STEELWORK		
G 1	SECTION G 1.7: METALWORK		
G 1	SECTION G 1.8: PLASTERING		
G 1	SECTION G 1.9: PAINTWORK		
Total Carried Forward To Summary Of Schedules			

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
H 1.1	**SECTION H 1.1: EARTHWORKS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
H 1.1.1	SUPPLEMENTARY PREAMBLES Carting away of excavated material Descriptions of carting away of excavated material shall be deemed to include for bulking and loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site. Subterranean water No information regarding subterranean water is available. The tenderer must acquaint himself of the presence and depth of subterranean water and allow thereof in his rates.				
H 1.1.2	EXCAVATION OTHER THAN BULK Excavation in compacted earth not exceeding 2m deep in:				
H 1.1.2.1	Trenches for strip foundations and ground beams. Extra over excavations other than bulk in earth for excavation in:	m3	23		
H 1.1.2.2	Soft rock.	m3	3		
H 1.1.2.3	Hard rock.	m3	2		
H 1.1.3	CARTING AWAY Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk):				
H 1.1.3.1	Off site to a dumping site to be located by the Contractor.	m3	3		
H 1.1.4	EARTH FILLING, ETC. Filling with material from excavations including hauling, spread, level, water and compact to a density of at least 93% Mod. AASHTO maximum density in 150mm thick layers:				
H 1.1.4.1	Backfilling to trenches, holes, etc. Selected material supplied by the Contractor and spread, level, water and compact to a density of at least 95% Mod. AASHTO maximum density in 150mm thick layers:	m3	5		
H 1.1.4.2	Under floors, paving, etc.	m3	2		
H 1.1.5	TERMITE PROOFING Approved brand of anti-termite soil insecticide applied by a Registered Pest Control Company and guaranteed against termite infestation for ten years:				
Total Carried Forward					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
H 1.1.5.1	Under floors, etc. including forming and poisoning shallow furrows against foundation walls etc., filling in furrows and ramming.	m2	87		
H 1.1.5.2	To bottom and sides of trenches, etc.	m2	230		
Total Carried Forward To Summary					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
H 1.2	**SECTION H 1.2 : CONCRETE, FORMWORK AND REINFORCEMENT**				
	The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
H 1.2.1	SUPPLEMENTARY PREAMBLES				
	Type of cement				
	All cement used in concrete work is to be OPC cement, no cement containing fly ash will be allowed.				
	Formwork				
	Descriptions of formwork shall be deemed to include use and waste only (except where described as left in or permanent), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use.				
	The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support withou damage and shall remain in position until the newly constructed work is able to support itself.				
	Formwork to soffits of solid slabs, etc., shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.				
H 1.2.2	REINFORCED CONCRETE				
	15MPa/19mm Concrete in:				
H 1.2.2.1	50mm Thick blinding under ground beams, etc.	m2	5		
	20MPa/19mm Concrete in:				
H 1.2.2.2	Strip foundations	m3	16		
H 1.2.2.3	Surface beds	m3	5		
H 1.2.3	REINFORCED CONCRETE				
	20MPa/19mm Concrete in:				
H 1.2.3.1	Concrete slab counter	m3	9		
H 1.2.4	CONCRETE SUNDRIES				
	Finishing top surfaces of concrete smooth with a wood float:				
H 1.2.4.1	Surface beds, slabs, etc.	m2	85		
H 1.2.5	GROUTING, ETC.				
Total Carried Forward					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Class E non-shrink grout:				
H 1.2.5.1	Bedding approximately 25mm thick under 200mm diameter base plate including chamfered edges all round.	No	5		
H 1.2.5.2	Bedding approximately 25mm thick under 250mm x 250mm base plate including chamfered edges all round.	No	5		
	Casting in of holding down bolts:				
H 1.2.5.3	Provide template for and embed set of two 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	3		
H 1.2.5.4	Provide template for and embed set of four 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	3		
H 1.2.6	MOVEMENT JOINTS, ETC.				
	Expansion joints with 10mm jointex between vertical concrete and brick surfaces:				
H 1.2.6.1	Joint not exceeding 300mm high.	m	10		
H 1.2.6.2	Joint not exceeding 300mm high circular on plan.	m	10		
	Two layers of 6mm thick smooth tempered hardboard to form slip joints between horizontal concrete and brick surfaces including cement mortar bed:				
H 1.2.6.3	Joint not exceeding 300mm wide.	m	90		
H 1.2.6.4	Joint not exceeding 300mm wide circular on plan.	m	10		
H 1.2.7	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to sides of:				
H 1.2.7.1	Ground beams.	m2	Rate Only		Rate Only
H 1.2.7.2	Ground beams circular on plan.	m2	Rate Only		Rate Only
H 1.2.8	SMOOTH SHUTTERING (DEGREE OF ACCURACY I)				
	Smooth formwork to sides of:				
H 1.2.8.1	Beams and inverted beams.	m2	Rate Only		Rate Only
H 1.2.8.2	Beams and inverted beams circular on plan.	m2	Rate Only		Rate Only
	Smooth formwork to sides and soffits of:				
H 1.2.8.3	Ring beams.	m2	Rate Only		Rate Only
H 1.2.8.4	Ring beams circular on plan exceeding 1m radius.	m2	Rate Only		Rate Only
H 1.2.8.5	Slabs.	m2	Rate Only		Rate Only
	Boxing in or out smooth formwork to form:				
H 1.2.8.6	Opening not exceeding 1m girth through 230mm thick beam.	No	Rate Only		Rate Only
H 1.2.9	REINFORCEMENT				
Total Carried Forward					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Mild steel reinforcement to structural concrete work:				
H 1.2.9.1	8mm Diameter bars (Strip Footings)	kg	145		
	High tensile steel reinforcement to structural concrete work:				
H 1.2.9.2	12mm Diameter bars (Strip Footing)	kg	610		
H 1.2.9.3	10mm Diameter bars (Concrete slab counter)	kg	315		
Total Carried Forward To Summary					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
H 1.3	**SECTION H 1.3: MASONRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
H 1.3.1	SUPPLEMENTARY PREAMBLES Sizes in descriptions Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick. Wall ties Descriptions of solid walls (except if built in English bond) and cavity walls shall be deemed to include metal wall ties complying with SABS 28 and of the butterfly type, of the required length with each end built at least 75mm deep into brickwork, spaced at not more than 1m centres alternatively to every third course of brickwork. Cavity walls, etc. Descriptions of cavity walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole.				
H 1.3.2	BRICKWORK: FOUNDATIONS AND SUPERSTRUCTURE Brickwork in burnt clay NFP bricks in 3:1 cement mortar:				
H 1.3.2.1	Piers and attached piers.	m3	1		
H 1.3.2.2	Half brick walls.	m2	2		
H 1.3.2.3	Half brick walls in lining to concrete.	m2	1		
H 1.3.2.4	Half brick walls in lining to concrete circular on plan.	m2	3		
H 1.3.2.5	One brick walls.	m2	170		
H 1.3.2.6	One brick walls circular on plan.	m2	Rate Only		Rate Only
H 1.3.2.7	One brick parapet walls.	m2	Rate Only		Rate Only
H 1.3.2.8	One brick parapet walls circular on plan.	m2	Rate Only		Rate Only
H 1.3.2.9	One and a half brick walls.	m2	5		
H 1.3.2.10	One and a half brick walls circular on plan.	m2	Rate Only		Rate Only
H 1.3.3	FACE BRICKWORK Allow a Prime Cost Amount of R6 000.00/ 1000 bricks for face brickwork and raked out and pointed with a square pointing tool 10 mm deep:				
H 1.3.3.1	Extra over ordinary brickwork for face brick walls	m2	170		
H 1.3.3.2	Extra over ordinary brickwork for face brick walls circular on plan	m2	Rate Only		Rate Only
Total Carried Forward					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
H 1.3.3.3	Extra over ordinary brickwork for 220mm wide face brick on edge coping	m2	3		
H 1.3.3.4	Extra over ordinary brickwork for 220mm wide face brick on edge coping circular on plan	m2	Rate Only		Rate Only
H 1.3.4	BRICKWORK SUNDRIES				
	Brick reinforcement:				
H 1.3.4.1	900mm long Galvanized hoop iron roof anchors built in vertically	No	11		
H 1.3.4.2	75mm Wide reinforcement built in horizontally.	m	9		
H 1.3.4.3	150mm Wide reinforcement built in horizontally.	m	390		
	Prestressed fabricated lintels:				
H 1.3.4.4	100 x 70mm lintels in lengths not exceeding 3m.	m	27		
H 1.3.4.5	100 x 70mm lintels in lengths exceeding 4,5m not exceeding 6m.	m	Rate Only		Rate Only
Total Carried Forward To Summary					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C5 : WATERPROOFING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
H 1.4	**SECTION H 1.4: WATERPROOFING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
H 1.4.1	SUPPLEMENTARY PREAMBLES Waterproofing Waterproofing of roofs, basements, etc. shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs.				
H 4.1.2	DAMPPROOFING OF WALLS AND FLOORS One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp-proof course:				
H 1.4.2.1	In walls, under cills, etc. One layer of 250 micron type C waterproof sheeting sealed at laps with pressure sensitive tape:	m2	45		
H 1.4.2.2	Under surface beds, ground beams, etc.	m2	100		
Total Carried Forward To Summary					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C6 : ROOF COVERINGS, ETC.

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
H 1.5	**SECTION H 1.5: ROOF COVERINGS, ETC.** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
H 1.5.1	PROFILED METAL SHEETING AND ACCESSORIES 0,58mm Thick "Klip-lock 406" industrial galvanized roof sheeting with colorbond finish on one side in single lengths fixed to steel members including all fixing brackets and fixed in strict accordance with the manufacturer's instructions:				
H 1.5.1.1	Sheeting laid to roof with pitch not exceeding 25 degrees in single lengths (measured nett).	m2	160		
H 1.5.1.2	Extra over for bending sheet ends to 450mm radius.	m	Rate Only		Rate Only
H 1.5.1.3	Extra over for raking cutting at valleys.	m	8		
	0,58mm Thick flashings, etc.:				
H 1.5.1.4	380mm Girth ridge cap flashing fixed with S10 clips and including serrated broad flute closer and polycloser.	m	2		
H 1.5.1.5	450mm Girth gable trim flashing fixed with S10 clips.	m	3		
H 1.5.1.6	380mm Girth valley lining.	m	5		
H 1.5.2	ROOF INSULATION Sisalation 420 heavy industrial grade reinforced aluminium foil insulation laid taut over purlins in strict accordance with the manufacturer's instructions:				
H 1.5.2.1	Aluminium foil roof insulation laid taut over purlins (purlins at approximately 2m centres) with minimum 150mm side laps and fixed concurrent with roof covering including galvanised steel straining wires, etc.	m2	160		
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
H 1.6	**SECTION H 1.6: STRUCTURAL STEELWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
H 1.6.1	SUPPLEMENTARY PREAMBLES Shop drawings The contractor will be required to prepare shop details for the work which must be submitted to the Engineer for approval before fabrication is started. Approval of shop details by the Engineer will include the following: a) Examination of member sizes for consistency with design requirements. b) Examination of all connections designed and/or detailed by the fabricator, for adequacy of load trasference. c) Approval of leading dimensions which are taken to include such dimensions as may influence the design (eg, depth of trusses and girders) or which may grossly affect site programme (eg, truss spans andstanchion heights). Notwithstanding any approval of these details, the contractor shall remain responsible for ensuring that the dimensions, details and workmanship result in the correct assembly of the work. Material and workmanship The steelwork is to be fabricated from mild steel to SABS 1431 Grade 300W. The whole of the fabrication and workmanship generally is to be in strict accordance with SABS 0162-1984 as amended. The material shall be of best quality throughout, free from loose rust or millscale, true to thickness and profile throughout and of the section and mass specified subject to a 2% tolerance for rolling margin. Consideration will be given to any detail variation which the contractor may wish to make with the view to the simplification of either fabrication, delivery or erection. Substitutions must be made at the contractor's own expense. The contractor shall provide Works Test Certificates where so required by the Engineer. Testing The Engineer shall be at liberty to select test pieces from steelwork in the workshop or on the site and to have them tested. The expense of such tests are to be borne by the contractor if the steelwork does not comply with the standards laid down above. A provisional sum is allowed in the bill of quantities for non-destructive testing. Holding down bolts Holding down bolts and other fixing devices which are to be embedded in concrete must be supplied to the principal contractor on request together with the necessary information, identification and templates.				
Total Carried Forward					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C12 : STRUCTURAL STEELWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Any costs incurred by subsequent repositioning of bolts, etc resulting from the contractor having failed to furnish adequate information, identification and templates will be for the contractor's account. Welding Welding shall be in accordance with SABS 044 "Welding: Parts I, II and III". Welding shall be carried out in a manner which will prevent any distortion of the weld or the parent section. All welds shall have adequate root fusion and shall be free from cracks, porosity or other irregularities and any undercutting shall be made good by the deposition of additional runs of weld metal. Any completed welds showing cracks, cavities or other efects shall be cut out and made good at the contractor's own expense. "Mild steel electrodes shall comply with SABS 455 ""Covered Electrodes for Manual Arc Welding of Mild Steel andMedium High Tensile Steel""." Bolts Bolts shall have well-formed heads forged from the solid. Nuts shall closely fit the bolts so that they can only just be turned by hand and at least one clear thread shall project beyond the nut when fully tightened.All bolts shall have one asher under the nuts and shall be so tightened that the threaded portion does not bear on the members connected. Where bolt heads or nuts bear upon bevelled surfaces they shall be provided with tapered washers of 2,3 mm mean thickness to provide a seating square with the axis of the bolt. Friction grip bolts Connections specifying high strength friction grip bolts are to be in strict accordance with SABS 094 "Bolted Friction Grip Joints in Structural Steelwork" and the bolts used are to be in accordance with BS 3139 Part 1 : 1959 "General Grade Bolts, High Strength Friction Grip Bolts for Structural Engineering". Notwithstanding the above, the following must be rigidly adhered to: a) Two-case hardened washers, one flat or bevelled under the head and the other flat or bevelled under the nut shall be used with each bolt. b) Contact surfaces shall not be painted and shall be thoroughly cleaned free of dirt, oil, loose scale, burrs and other defects which are liable to reduce friction resistnace between surfaces. c) At all times the correct torques shall be applied to the different sizes of bolts. Erection				
Total Carried Forward					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The steelwork generally is to be fabricated in the contractor's works having due regard to transport and erection facilities. He must supply all erection tackle, temporary erection bracing, erect and plumb all steelworkand supply all steel wedges and tacks as required. Items may be detailed for delivery "piece small" or the contractor may prefabricate if he is satisfied that suitable arrangements for transport can be made. Connections are to be designed for the forces indicated on the drawings or to the maximum capacity of the members. Cleaning and painting All structural steel is to be thoroughly degreased to remove all grease or oil and then wire-brushed, scraped or sand-papered to remove all rust, mill-scale or surface contaminations and is to be immediately given one coat "Duram DTM" smooth epoxy paint prior to delivery to site. All damaged paintwork is to be made good on site after erection is complete. Testing of welders Tenderers must include in their rates for the testing of any welder used on the work who has not been tested within a period of six months immediately preceding his employment on this contract. Rates Rates for structural steelwork shall include for Engineering design development and certification, supply and manufacture, delivery and installation and paint finished as specified. Painting/corrosion protection specification a) All steelwork shall be mechanically wire-brushed to ST3O blast clean to SA2.				
H 1.6.2	STEEL COLUMNS, BEAMS, POSTS, ETC.				
H 1.6.2.1	IPE 200mm I-Beam	m	53		
H 1.6.2.2	150mm x 50mm x 20mm x 2 lipped channel	m	93		
H 1.6.2.3	400mm x 200mm x 10mm Base plates	No	26		
H 1.6.2.4	90mm x 90mm x 6mm Angle Iron	No	26		
H 1.6.3	BOLTS, ETC.				
H 1.6.3.1	M8 x 75mm long chemical anchor bolts including nuts and washers with one end drilled and screwed to concrete.	No	52		
Total Carried Forward					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
H 1.7	**SECTION H 1.7: METALWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
H 1.7.1	SUNDRY GALVANISED STEELWORK Bearers to brick linings, lintels, etc.:				
H 1.7.1.1	40 x 40 x 5mm Thick angle section bearer bolted to concrete with and including M8 x 50mm long rawl bolts at 300mm centres.	m	Rate Only		Rate Only
H 1.7.2	PRESSED STEEL DOOR FRAMES 1,2mm Thick double rebated frames suitable for half brick walls complete with hoop iron anchors welded to frame, adjustable stainless steel striking plate/s suitable for mortice locks, three rubber shock absorbers in rebate and one pair of 100mm standard heavy duty butt hinges welded to frame:				
H 1.7.2.1	Frame for door size 762 x 2032mm high.	No	Rate Only		Rate Only
H 1.7.2.2	Frame for door size 813 x 2032mm high.	No	Rate Only		Rate Only
H 1.7.2.3	Frame for door size 1200 x 2032mm high.	No	Rate Only		Rate Only
H 1.7.3	VENTILATION LOUVRE GRILLES, ETC.				
H 1.7.3.1	Powdercoated aluminium louvre grille and frame size overall 500 x 500mm high, comprising standard 35mm x 1,6mm thick blades at 50mm centres including subframe and sealants in solid core laminated flush door (doors elsewhere).	No	Rate Only		Rate Only
H 1.7.4	ALUMINIUM WINDOWS, SHOPFRONTS, ETC.				
H 1.7.5	SUPPLEMENTARY PREAMBLES General: All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. shall be designed, manufactured, supplied and installed in strict compliance with the "Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA), General Specification for Architectural Aluminium and Glass Products February 2005 Edition" and SANS 10137. All descriptions shall be deemed to include transoms, mullions, etc. as per the Architect's drawings. Design and installation: The Sub-Contractor shall be required to design the entire installation, provide all labour, materials, equipment and services required to complete the installation as specified herein. The Sub-Contractor shall ensure that the necessary wind pressure provisions have been incorporated within the design criteria. The Sub-Contractor shall submit his wind design criteria to the Architect for inspection.				
Total Carried Forward					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The Sub-Contractor shall allow for expansion of glass, framing, surrounding structures, etc. The Sub-Contractor shall allow for and produce fully detailed workshop drawings (3 copies) including samples of all ironmongery within 14 working days of the Main Contractors request. Fire resistance The installation shall conform to the local authorities fire resistance standards. Templates Templates formed of 25 x 25mm square hollow section steel are to be provided in each opening to ensure that all windows, doors, shopfronts, skylights, etc. are built in plumb and square. The subcontractor is to use his discretion in providing a sufficient quantity of templates as required to complete the Works as per the Main Contractors programme. Grounds 19 x 25mm Wrought SA pine grounds are to be fitted all round windows, doors, etc. Where grounds are visible they should be painted to form a shadowline. Sealing Window frames are to be sealed all round internally and externally against the building structure with approved silicone jointing compound to prevent water ingress. Weather seals All windows, doors, shopfronts, skylights, etc. are to be fitted with approved woolpile weather seals. Ironmongery to doors Door leaves are to be hung on one and a half pairs of 100 x 75mm butt hinges and fitted with one spring clip door holder. In addition double doors are to be fitted with one 150mm and one 200mm natural anodised flush lever bolt. Tenderers shall submit full specifications of ironmongery quoted which shall include all furniture, locks, handles, butt hinges, floor spring hinges, etc. The Sub-Contractor shall be required to submit ironmongery samples for approval prior to installation. Sub-Contractors are to note that the approval of shop drawings does not automatically indicate acceptance of ironmongery proposals. Rates				
Total Carried Forward					

SCHEDULE H 1: MARKET STALL TYPE C 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. must include for all jointing, notching, cutting, etc. and for setting up and fixing in postion complete with glass, glazing beads, external cills, ironmongery, fixing brackets, lugs, bolts, timber grounds, silicone sealant, templates, etc. all as detailed and scheduled on the drawings and as necessary for the satisfactory execution of the work. Factory quality control The Sub-Contractor shall afford the Main Contractor full acces to plant, shop and assembly point to view and inspect the process and method employed in the fabricating and assembly of glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. Protection and cleaning All aluminium must be protected against damage by covering with temporary casings (masking tape, plastic coatings, etc.) and against deterioration or discolouration caused by mortar, wax, paint, etc., all to the entire satisfaction of the Principal Agent. On completion all such protection shall be removed and work cleaned down and left in proper working order. All glazing is to be protected from damage, breakage, scratches, etc. and allowances shall be made for polishing the glass as and when instructed by the Main Contractor.				
C11.6	SECURITY GATES				
C11.6.1	Security double leaf folding gate size overall 1400 x 850mm high.	No	6		
C11.7	"Double leaf" custom made doors fabricated from 6.0mm mild steel plates framed by welding into 100mm x 100mm x 3.0mm square tubing including hinges and hung into walls complete with frame, overhead protective box, end locks, Astro EPDM weatherseal and installed and bolted to brick openings all in strict accordance with the manufacturer's instructions:	No	6		
Total Carried Forward					

SCHEDULE H 1: MARKET STALL TYPE C 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
H 1.8	**SECTION H 1.8: PLASTERING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
H 1.8.1	SCREEDS Screeds on concrete:				
H 1.8.1.1	30mm Thick on floors.	m2	100		
Total Carried Forward To Summary					

SCHEDULE H 1: MARKET STALL TYPE C 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
H 1.9	**SECTION H 1.9: PAINTWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
H 1.9.1	PLASTER Prepare and apply one coat "Dulux" plaster primer, one coat undercoat and two coats "Dulux Super Acrylic Emulsion" paint on:				
H 1.9.1.1	Internal and external plastered walls, columns, recessed bands, etc.	m2	Rate Only		Rate Only
H 1.9.1.2	Internal and external plastered soffits.	m2	Rate Only		Rate Only
H 1.9.2	METAL Prepare and apply one coat "Dulux" steel patch primer, one coat "Dulux Duragrip" universal undercoat and two coats "Dulux Non-drip Enamel" paint on:				
H 1.9.2.1	Frames and linings.	m2	10		
H 1.9.2.2	Bearers, posts, edging, etc.	m	3		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE H 1: MARKET STALL TYPE C 1

SUMMARY OF SECTIONS

Section	Description		Amount (Rand)
H 1	SECTION H 1.1: EARTHWORKS		
H 1	SECTION H 1.2 : CONCRETE, FORMWORK AND REINFORCEMENT		
H 1	SECTION H 1.3: MASONRY		
H 1	SECTION H 1.4: WATERPROOFING		
H 1	SECTION H 1.5: ROOF COVERINGS, ETC.		
H 1	SECTION H 1.6: STRUCTURAL STEELWORK		
H 1	SECTION H 1.7: METALWORK		
H 1	SECTION H 1.8: PLASTERING		
H 1	SECTION H 1.9 : PAINTWORK		
Total Carried Forward To Summary Of Schedules			

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
I 1.1	**SECTION I 1.1: EARTHWORKS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
I 1.1.1	SUPPLEMENTARY PREAMBLES Carting away of excavated material Descriptions of carting away of excavated material shall be deemed to include for bulking and loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site. Subterranean water No information regarding subterranean water is available. The tenderer must acquaint himself of the presence and depth of subterranean water and allow thereof in his rates.				
I 1.1.2	EXCAVATION OTHER THAN BULK Excavation in compacted earth not exceeding 2m deep in:				
I 1.1.2.1	Trenches for strip foundations and ground beams. Extra over excavations other than bulk in earth for excavation in:	m3	13		
I 1.1.2.2	Soft rock.	m3	3		
I 1.1.2.3	Hard rock.	m3	2		
I 1.1.3	CARTING AWAY Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk):				
I 1.1.3.1	Off site to a dumping site to be located by the Contractor.	m3	3		
I 1.1.4	EARTH FILLING, ETC. Filling with material from excavations including hauling, spread, level, water and compact to a density of at least 93% Mod. AASHTO maximum density in 150mm thick layers:				
I 1.1.4.1	Backfilling to trenches, holes, etc. Selected material supplied by the Contractor and spread, level, water and compact to a density of at least 95% Mod. AASHTO maximum density in 150mm thick layers:	m3	5		
I 1.1.4.2	Under floors, paving, etc.	m3	2		
I 1.1.5	TERMITE PROOFING Approved brand of anti-termite soil insecticide applied by a Registered Pest Control Company and guaranteed against termite infestation for ten years:				
Total Carried Forward					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
I 1.1.5.1	Under floors, etc. including forming and poisoning shallow furrows against foundation walls etc., filling in furrows and ramming.	m2	36		
1.1.5.2	To bottom and sides of trenches, etc.	m2	103		
Total Carried Forward To Summary					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
I 1.2	**SECTION I 1.2 : CONCRETE, FORMWORK AND REINFORCEMENT**				
	The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
I 1.2.1	SUPPLEMENTARY PREAMBLES				
	Type of cement				
	All cement used in concrete work is to be OPC cement, no cement containing fly ash will be allowed.				
	Formwork				
	Descriptions of formwork shall be deemed to include use and waste only (except where described as left in or permanent), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use.				
	The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support withou damage and shall remain in position until the newly constructed work is able to support itself.				
	Formwork to soffits of solid slabs, etc., shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.				
I 1.2.2	REINFORCED CONCRETE				
	15MPa/19mm Concrete in:				
I 1.2.2.1	50mm Thick blinding under ground beams, etc.	m2	3		
	20MPa/19mm Concrete in:				
I 1.2.2.2	Strip foundations	m3	10		
I 1.2.2.3	Surface beds	m3	6		
I 1.2.3	REINFORCED CONCRETE				
	20MPa/19mm Concrete in:				
I 1.2.3.1	Concrete slab counter	m3	7		
I 1.2.4	CONCRETE SUNDRIES				
	Finishing top surfaces of concrete smooth with a wood float:				
I 1.2.4.1	Surface beds, slabs, etc.	m2	36		
I 1.2.5	GROUTING, ETC.				
Total Carried Forward					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Class E non-shrink grout:				
I 1.2.5.1	Bedding approximately 25mm thick under 200mm diameter base plate including chamfered edges all round.	No	5		
I 1.2.5.2	Bedding approximately 25mm thick under 250mm x 250mm base plate including chamfered edges all round.	No	5		
	Casting in of holding down bolts:				
I 1.2.5.3	Provide template for and embed set of two 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	3		
I 1.2.5.4	Provide template for and embed set of four 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	3		
I 1.2.6	MOVEMENT JOINTS, ETC.				
	Expansion joints with 10mm jointex between vertical concrete and brick surfaces:				
I 1.2.6.1	Joint not exceeding 300mm high.	m	10		
I 1.2.6.2	Joint not exceeding 300mm high circular on plan.	m	10		
	Two layers of 6mm thick smooth tempered hardboard to form slip joints between horizontal concrete and brick surfaces including cement mortar bed:				
I 1.2.6.3	Joint not exceeding 300mm wide.	m	90		
I 1.2.6.4	Joint not exceeding 300mm wide circular on plan.	m	10		
I 1.2.7	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to sides of:				
I 1.2.7.1	Ground beams.	m2	Rate Only		Rate Only
I 1.2.7.2	Ground beams circular on plan.	m2	Rate Only		Rate Only
I 1.2.8	SMOOTH SHUTTERING (DEGREE OF ACCURACY I)				
	Smooth formwork to sides of:				
I 1.2.8.1	Beams and inverted beams.	m2	Rate Only		Rate Only
I 1.2.8.2	Beams and inverted beams circular on plan.	m2	Rate Only		Rate Only
	Smooth formwork to sides and soffits of:				
I 1.2.8.3	Ring beams.	m2	Rate Only		Rate Only
I 1.2.8.4	Ring beams circular on plan exceeding 1m radius.	m2	Rate Only		Rate Only
I 1.2.8.5	Slabs.	m2	Rate Only		Rate Only
	Boxing in or out smooth formwork to form:				
I 1.2.8.6	Opening not exceeding 1m girth through 230mm thick beam.	No	Rate Only		Rate Only
I 1.2.9	REINFORCEMENT				
Total Carried Forward					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Mild steel reinforcement to structural concrete work:				
I 1.2.9.1	8mm Diameter bars (Strip Footings)	kg	113		
	High tensile steel reinforcement to structural concrete work:				
I 1.2.9.2	12mm Diameter bars (Strip Footing)	kg	420		
I 1.2.9.3	10mm Diameter bars (Concrete slab counter)	kg	296		
Total Carried Forward To Summary					

SCHEDULE I 1: MARKET STALL TYPE D 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
I 1.3	**SECTION I 1.3 : MASONRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
I 1.3.1	SUPPLEMENTARY PREAMBLES Sizes in descriptions Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick. Wall ties Descriptions of solid walls (except if built in English bond) and cavity walls shall be deemed to include metal wall ties complying with SABS 28 and of the butterfly type, of the required length with each end built at least 75mm deep into brickwork, spaced at not more than 1m centres alternatively to every third course of brickwork. Cavity walls, etc. Descriptions of cavity walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole.				
I 1.3.2	BRICKWORK: FOUNDATIONS AND SUPERSTRUCTURE Brickwork in burnt clay NFP bricks in 3:1 cement mortar:				
I 1.3.2.1	Piers and attached piers.	m3	1		
I 1.3.2.2	Half brick walls.	m2	2		
I 1.3.2.3	Half brick walls in lining to concrete.	m2	1		
I 1.3.2.4	Half brick walls in lining to concrete circular on plan.	m2	3		
I 1.3.2.5	One brick walls.	m2	170		
I 1.3.2.6	One brick walls circular on plan.	m2	Rate Only		Rate Only
I 1.3.1.2.7	One brick parapet walls.	m2	Rate Only		Rate Only
I 1.3.2.8	One brick parapet walls circular on plan.	m2	Rate Only		Rate Only
I 1.3.2.9	One and a half brick walls.	m2	5		
I 1.3.2.10	One and a half brick walls circular on plan.	m2	Rate Only		Rate Only
I 1.3.3	FACE BRICKWORK Allow a Prime Cost Amount of R6 000.00/ 1000 bricks for face brickwork and raked out and pointed with a square pointing tool 10 mm deep:				
I 1.4.3.1	Extra over ordinary brickwork for face brick walls	m2	170		
I 1.4.3.2	Extra over ordinary brickwork for face brick walls circular on plan	m2	Rate Only		Rate Only
Total Carried Forward					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
I 1.3.3.3	Extra over ordinary brickwork for 220mm wide face brick on edge coping	m2	3		
I 1.3.3.4	Extra over ordinary brickwork for 220mm wide face brick on edge coping circular on plan	m2	Rate Only		Rate Only
I 1.3.4	BRICKWORK SUNDRIES				
	Brick reinforcement:				
I 1.3.4.1	900mm long Galvanized hoop iron roof anchors built in vertically	No	11		
I 1.3.4.2	75mm Wide reinforcement built in horizontally.	m	9		
I 1.3.4.3	150mm Wide reinforcement built in horizontally.	m	390		
	Prestressed fabricated lintels:				
I 1.3.4.4	100 x 70mm lintels in lengths not exceeding 3m.	m	27		
I 1.3.4.5	100 x 70mm lintels in lengths exceeding 4,5m not exceeding 6m.	m	Rate Only		Rate Only
Total Carried Forward To Summary					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C5 : WATERPROOFING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
I 1.4	**SECTION I 1.4 : WATERPROOFING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
I 1.4.1	SUPPLEMENTARY PREAMBLES Waterproofing Waterproofing of roofs, basements, etc. shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs.				
I 1.4.2	DAMPPROOFING OF WALLS AND FLOORS One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp-proof course:				
I 1.4.2.1	In walls, under cills, etc. One layer of 250 micron type C waterproof sheeting sealed at laps with pressure sensitive tape:	m2	26		
I 1.4.2.2	Under surface beds, ground beams, etc.	m2	36		
Total Carried Forward To Summary					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C6 : ROOF COVERINGS, ETC.

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
I 1.5	**SECTION I 1.5 : ROOF COVERINGS, ETC.** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
I 1.5.1	PROFILED METAL SHEETING AND ACCESSORIES 0,58mm Thick "Klip-lock 406" industrial galvanized roof sheeting with colorbond finish on one side in single lengths fixed to steel members including all fixing brackets and fixed in strict accordance with the manufacturer's instructions:				
I 1.5.1.1	Sheeting laid to roof with pitch not exceeding 25 degrees in single lengths (measured nett).	m2	46		
I 1.5.1.2	Extra over for bending sheet ends to 450mm radius.	m	Rate Only		Rate Only
I 1.5.1.3	Extra over for raking cutting at valleys.	m	8		
	0,58mm Thick flashings, etc.:				
I 1.5.1.4	380mm Girth ridge cap flashing fixed with S10 clips and including serrated broad flute closer and polycloser.	m	2		
I 1.5.1.5	450mm Girth gable trim flashing fixed with S10 clips.	m	3		
I 1.5.1.6	380mm Girth valley lining.	m	5		
I 1.5.2	ROOF INSULATION Sisalation 420 heavy industrial grade reinforced aluminium foil insulation laid taut over purlins in strict accordance with the manufacturer's instructions:				
I 1.5.2.1	Aluminium foil roof insulation laid taut over purlins (purlins at approximately 2m centres) with minimum 150mm side laps and fixed concurrent with roof covering including galvanised steel straining wires, etc.	m2	46		
Total Carried Forward To Summary					

SCHEDULE I 1: MARKET STALL TYPE D 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
I 1.6	**SECTION I 1.6 : STRUCTURAL STEELWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
I 1.6.1	SUPPLEMENTARY PREAMBLES Shop drawings The contractor will be required to prepare shop details for the work which must be submitted to the Engineer for approval before fabrication is started. Approval of shop details by the Engineer will include the following: a) Examination of member sizes for consistency with design requirements. b) Examination of all connections designed and/or detailed by the fabricator, for adequacy of load trasference. c) Approval of leading dimensions which are taken to include such dimensions as may influence the design (eg, depth of trusses and girders) or which may grossly affect site programme (eg, truss spans andstanchion heights). Notwithstanding any approval of these details, the contractor shall remain responsible for ensuring that the dimensions, details and workmanship result in the correct assembly of the work. Material and workmanship The steelwork is to be fabricated from mild steel to SABS 1431 Grade 300W. The whole of the fabrication and workmanship generally is to be in strict accordance with SABS 0162-1984 as amended. The material shall be of best quality throughout, free from loose rust or millscale, true to thickness and profile throughout and of the section and mass specified subject to a 2% tolerance for rolling margin. Consideration will be given to any detail variation which the contractor may wish to make with the view to the simplification of either fabrication, delivery or erection. Substitutions must be made at the contractor's own expense. The contractor shall provide Works Test Certificates where so required by the Engineer. Testing The Engineer shall be at liberty to select test pieces from steelwork in the workshop or on the site and to have them tested. The expense of such tests are to be borne by the contractor if the steelwork does not comply with the standards laid down above. A provisional sum is allowed in the bill of quantities for non-destructive testing. Holding down bolts Holding down bolts and other fixing devices which are to be embedded in concrete must be supplied to the principal contractor on request together with the necessary information, identification and templates.				
Total Carried Forward					

SCHEDULE I 1: MARKET STALL TYPE D 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Any costs incurred by subsequent repositioning of bolts, etc resulting from the contractor having failed to furnish adequate information, identification and templates will be for the contractor's account. Welding Welding shall be in accordance with SABS 044 "Welding: Parts I, II and III". Welding shall be carried out in a manner which will prevent any distortion of the weld or the parent section. All welds shall have adequate root fusion and shall be free from cracks, porosity or other irregularities and any undercutting shall be made good by the deposition of additional runs of weld metal. Any completed welds showing cracks, cavities or other efects shall be cut out and made good at the contractor's own expense. "Mild steel electrodes shall comply with SABS 455 ""Covered Electrodes for Manual Arc Welding of Mild Steel andMedium High Tensile Steel""." Bolts Bolts shall have well-formed heads forged from the solid. Nuts shall closely fit the bolts so that they can only just be turned by hand and at least one clear thread shall project beyond the nut when fully tightened.All bolts shall have one asher under the nuts and shall be so tightened that the threaded portion does not bear on the members connected. Where bolt heads or nuts bear upon bevelled surfaces they shall be provided with tapered washers of 2,3 mm mean thickness to provide a seating square with the axis of the bolt. Friction grip bolts Connections specifying high strength friction grip bolts are to be in strict accordance with SABS 094 "Bolted Friction Grip Joints in Structural Steelwork" and the bolts used are to be in accordance with BS 3139 Part 1 : 1959 "General Grade Bolts, High Strength Friction Grip Bolts for Structural Engineering". Notwithstanding the above, the following must be rigidly adhered to: a) Two-case hardened washers, one flat or bevelled under the head and the other flat or bevelled under the nut shall be used with each bolt. b) Contact surfaces shall not be painted and shall be thoroughly cleaned free of dirt, oil, loose scale, burrs and other defects which are liable to reduce friction resistnace between surfaces. c) At all times the correct torques shall be applied to the different sizes of bolts. Erection				
Total Carried Forward					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C12 : STRUCTURAL STEELWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The steelwork generally is to be fabricated in the contractor's works having due regard to transport and erection facilities. He must supply all erection tackle, temporary erection bracing, erect and plumb all steelworkand supply all steel wedges and tacks as required. Items may be detailed for delivery "piece small" or the contractor may prefabricate if he is satisfied that suitable arrangements for transport can be made. Connections are to be designed for the forces indicated on the drawings or to the maximum capacity of the members. Cleaning and painting All structural steel is to be thoroughly degreased to remove all grease or oil and then wire-brushed, scraped or sand-papered to remove all rust, mill-scale or surface contaminations and is to be immediately given one coat "Duram DTM" smooth epoxy paint prior to delivery to site. All damaged paintwork is to be made good on site after erection is complete. Testing of welders Tenderers must include in their rates for the testing of any welder used on the work who has not been tested within a period of six months immediately preceding his employment on this contract. Rates Rates for structural steelwork shall include for Engineering design development and certification, supply and manufacture, delivery and installation and paint finished as specified. Painting/corrosion protection specification a) All steelwork shall be mechanically wire-brushed to ST3O blast clean to SA2.				
I 1.6.2	STEEL COLUMNS, BEAMS, POSTS, ETC.				
I 1.6.2.1	IPE 200mm I-Beam	m	32		
I 1.6.2.2	150mm x 50mm x 20mm x 2 lipped channel	m	72		
I 1.6.2.3	400mm x 200mm x 10mm Base plates	No	6		
I 1.6.2.4	90mm x 90mm x 6mm Angle Iron	No	11		
I 1.6.3	BOLTS, ETC.				
I 1.6.3.1	M8 x 75mm long chemical anchor bolts including nuts and washers with one end drilled and screwed to concrete.	No	19		
Total Carried Forward					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
I 1.7	**SECTION I 1.7 : METALWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
I 1.7.1	SUNDRY GALVANISED STEELWORK Bearers to brick linings, lintels, etc.:				
I 1.7.1.1	40 x 40 x 5mm Thick angle section bearer bolted to concrete with and including M8 x 50mm long rawl bolts at 300mm centres.	m	Rate Only		Rate Only
I 1.7.2	PRESSED STEEL DOOR FRAMES 1,2mm Thick double rebated frames suitable for half brick walls complete with hoop iron anchors welded to frame, adjustable stainless steel striking plate/s suitable for mortice locks, three rubber shock absorbers in rebate and one pair of 100mm standard heavy duty butt hinges welded to frame:				
I 1.7.2.1	Frame for door size 762 x 2032mm high.	No	Rate Only		Rate Only
I 1.7.2.2	Frame for door size 813 x 2032mm high.	No	Rate Only		Rate Only
I 1.7.2.3	Frame for door size 1200 x 2032mm high.	No	Rate Only		Rate Only
I 1.7.3	VENTILATION LOUVRE GRILLES, ETC.				
I 1.7.3.1	Powdercoated aluminium louvre grille and frame size overall 500 x 500mm high, comprising standard 35mm x 1,6mm thick blades at 50mm centres including subframe and sealants in solid core laminated flush door (doors elsewhere).	No	Rate Only		Rate Only
I 1.7.4	ALUMINIUM WINDOWS, SHOPFRONTS, ETC.				
I 1.7.5	SUPPLEMENTARY PREAMBLES General: All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. shall be designed, manufactured, supplied and installed in strict compliance with the "Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA), General Specification for Architectural Aluminium and Glass Products February 2005 Edition" and SANS 10137. All descriptions shall be deemed to include transoms, mullions, etc. as per the Architect's drawings. Design and installation: The Sub-Contractor shall be required to design the entire installation, provide all labour, materials, equipment and services required to complete the installation as specified herein. The Sub-Contractor shall ensure that the necessary wind pressure provisions have been incorporated within the design criteria. The Sub-Contractor shall submit his wind design criteria to the Architect for inspection.				
Total Carried Forward					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The Sub-Contractor shall allow for expansion of glass, framing, surrounding structures, etc. The Sub-Contractor shall allow for and produce fully detailed workshop drawings (3 copies) including samples of all ironmongery within 14 working days of the Main Contractors request. Fire resistance The installation shall conform to the local authorities fire resistance standards. Templates Templates formed of 25 x 25mm square hollow section steel are to be provided in each opening to ensure that all windows, doors, shopfronts, skylights, etc. are built in plumb and square. The subcontractor is to use his discretion in providing a sufficient quantity of templates as required to complete the Works as per the Main Contractors programme. Grounds 19 x 25mm Wrought SA pine grounds are to be fitted all round windows, doors, etc. Where grounds are visible they should be painted to form a shadowline. Sealing Window frames are to be sealed all round internally and externally against the building structure with approved silicone jointing compound to prevent water ingress. Weather seals All windows, doors, shopfronts, skylights, etc. are to be fitted with approved woolpile weather seals. Ironmongery to doors Door leaves are to be hung on one and a half pairs of 100 x 75mm butt hinges and fitted with one spring clip door holder. In addition double doors are to be fitted with one 150mm and one 200mm natural anodised flush lever bolt. Tenderers shall submit full specifications of ironmongery quoted which shall include all furniture, locks, handles, butt hinges, floor spring hinges, etc. The Sub-Contractor shall be required to submit ironmongery samples for approval prior to installation. Sub-Contractors are to note that the approval of shop drawings does not automatically indicate acceptance of ironmongery proposals. Rates				
Total Carried Forward					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. must include for all jointing, notching, cutting, etc. and for setting up and fixing in postion complete with glass, glazing beads, external cills, ironmongery, fixing brackets, lugs, bolts, timber grounds, silicone sealant, templates, etc. all as detailed and scheduled on the drawings and as necessary for the satisfactory execution of the work.				
	Factory quality control The Sub-Contractor shall afford the Main Contractor full acces to plant, shop and assembly point to view and inspect the process and method employed in the fabricating and assembly of glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc.				
	Protection and cleaning All aluminium must be protected against damage by covering with temporary casings (masking tape, plastic coatings, etc.) and against deterioration or discolouration caused by mortar, wax, paint, etc., all to the entire satisfaction of the Principal Agent. On completion all such protection shall be removed and work cleaned down and left in proper working order.				
	All glazing is to be protected from damage, breakage, scratches, etc. and allowances shall be made for polishing the glass as and when instructed by the Main Contractor.				
I 1.7.6	SECURITY GATES				
I 1.7.6.1	Security single leaf folding gate size overall 1200 x 900mm high.	No	3		
I 1.7.7	ROLLER SHUTTER DOORS				
	"Roll-up/ Serranda" series 500 purpose made powdercoated steel hand-push operated roller shutter window size overall 1200 x 900mm high complete with frame, overhead protective box, end locks, Astro EPDM weatherseal and installed and bolted to brick openings all in strict accordance with the manufacturer's instructions:	No	3		
Total Carried Forward					

SCHEDULE I 1: MARKET STALL TYPE D 1

SECTION C14 : PLASTERING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
I 1.8	**SECTION I 1.8 : PLASTERING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
I 1.8.1	SCREEDS Screeds on concrete:				
I 1.8.1.1	30mm Thick on floors.	m2	36		
Total Carried Forward To Summary					

SCHEDULE I 1: MARKET STALL TYPE D 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
I 1.9	**SECTION I 1.9 : PAINTWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
I 1.9.1	PLASTER Prepare and apply one coat "Dulux" plaster primer, one coat undercoat and two coats "Dulux Super Acrylic Emulsion" paint on:				
I 1.9.1.1	Internal and external plastered walls, columns, recessed bands, etc.	m2	Rate Only		Rate Only
I 1.9.1.2	Internal and external plastered soffits.	m2	Rate Only		Rate Only
I 1.9.2	METAL Prepare and apply one coat "Dulux" steel patch primer, one coat "Dulux Duragrip" universal undercoat and two coats "Dulux Non-drip Enamel" paint on:				
I 1.9.2.1	Frames and linings.	m2	10		
I 1.9.2.2	Bearers, posts, edging, etc.	m	3		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE I 1: MARKET STALL TYPE D 1

SUMMARY OF SECTIONS

Section	Description		Amount (Rand)
I 1	SECTION I 1.1: EARTHWORKS		
I 1	SECTION I 1.2 : CONCRETE, FORMWORK AND REINFORCEMENT		
I 1	SECTION I 1.3 : MASONRY		
I 1	SECTION I 1.4 : WATERPROOFING		
I 1	SECTION I 1.5 : ROOF COVERINGS, ETC.		
I 1	SECTION I 1.6 : STRUCTURAL STEELWORK		
I 1	SECTION I 1.7 : METALWORK		
I 1	SECTION I 1.8 : PLASTERING		
I 1	SECTION I 1.9 : PAINTWORK		
Total Carried Forward To Summary Of Schedules			

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
J 1.1	**SECTION J 1.1: EARTHWORKS** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
J1.1.1	SUPPLEMENTARY PREAMBLES Carting away of excavated material Descriptions of carting away of excavated material shall be deemed to include for bulking and loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site. Subterranean water No information regarding subterranean water is available. The tenderer must acquaint himself of the presence and depth of subterranean water and allow thereof in his rates.				
J 1.1.2	EXCAVATION OTHER THAN BULK Excavation in compacted earth not exceeding 2m deep in:				
J 1.1.2.1	Trenches for strip foundations and ground beams. Extra over excavations other than bulk in earth for excavation in:	m3	9		
J 1.1.2.2	Soft rock.	m3	3		
J 1.1.2.3	Hard rock.	m3	2		
J 1.1.3	CARTING AWAY Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk):				
J 1.1.3.1	Off site to a dumping site to be located by the Contractor.	m3	3		
J 1.1.4	EARTH FILLING, ETC. Filling with material from excavations including hauling, spread, level, water and compact to a density of at least 93% Mod. AASHTO maximum density in 150mm thick layers:				
J 1.1.4.1	Backfilling to trenches, holes, etc. Selected material supplied by the Contractor and spread, level, water and compact to a density of at least 95% Mod. AASHTO maximum density in 150mm thick layers:	m3	5		
J 1.1.4.2	Under floors, paving, etc.	m3	2		
J 1.1.5	TERMITE PROOFING Approved brand of anti-termite soil insecticide applied by a Registered Pest Control Company and guaranteed against termite infestation for ten years:				
Total Carried Forward					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
J 1.1.5.1	Under floors, etc. including forming and poisoning shallow furrows against foundation walls etc., filling in furrows and ramming.	m2	36		
J 1.1.5.2	To bottom and sides of trenches, etc.	m2	103		
Total Carried Forward To Summary					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
J 1.2	**SECTION J1.2 : CONCRETE, FORMWORK AND REINFORCEMENT**				
	The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
J 1.2.1	SUPPLEMENTARY PREAMBLES				
	Type of cement				
	All cement used in concrete work is to be OPC cement, no cement containing fly ash will be allowed.				
	Formwork				
	Descriptions of formwork shall be deemed to include use and waste only (except where described as left in or permanent), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use.				
	The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support withou damage and shall remain in position until the newly constructed work is able to support itself.				
	Formwork to soffits of solid slabs, etc., shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.				
J 1.2.2	REINFORCED CONCRETE				
	15MPa/19mm Concrete in:				
J 1.2.2.1	50mm Thick blinding under ground beams, etc.	m2	2		
	20MPa/19mm Concrete in:				
J 1.2.2.2	Strip foundations	m3	8		
J 1.2.2.3	Surface beds	m3	4		
J 1.2.3	REINFORCED CONCRETE				
	20MPa/19mm Concrete in:				
J 1.2.3.1	Concrete slab counter	m3	5		
J 1.2.4	CONCRETE SUNDRIES				
	Finishing top surfaces of concrete smooth with a wood float:				
J 1.2.4.1	Surface beds, slabs, etc.	m2	24		
J 1.2.5	GROUTING, ETC.				
Total Carried Forward					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Class E non-shrink grout:				
J 1.2.5.1	Bedding approximately 25mm thick under 200mm diameter base plate including chamfered edges all round.	No	5		
J 1.2.5.2	Bedding approximately 25mm thick under 250mm x 250mm base plate including chamfered edges all round.	No	5		
	Casting in of holding down bolts:				
J 1.2.5.3	Provide template for and embed set of two 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	3		
J 1.2.5.4	Provide template for and embed set of four 20mm diameter x 150mm long steel holding down bolts (elsewhere) into top of concrete in exact position.	No	3		
J 1.2.6	MOVEMENT JOINTS, ETC.				
	Expansion joints with 10mm jointex between vertical concrete and brick surfaces:				
J 1.2.6.1	Joint not exceeding 300mm high.	m	10		
J 1.2.6.2	Joint not exceeding 300mm high circular on plan.	m	10		
	Two layers of 6mm thick smooth tempered hardboard to form slip joints between horizontal concrete and brick surfaces including cement mortar bed:				
J 1.2.6.3	Joint not exceeding 300mm wide.	m	90		
J 1.2.6.4	Joint not exceeding 300mm wide circular on plan.	m	10		
J 1.2.7	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to sides of:				
J 1.2.7.1	Ground beams.	m2	Rate Only		Rate Only
J 1.2.7.2	Ground beams circular on plan.	m2	Rate Only		Rate Only
J 1.2.8	SMOOTH SHUTTERING (DEGREE OF ACCURACY I)				
	Smooth formwork to sides of:				
J 1.2.8.1	Beams and inverted beams.	m2	Rate Only		Rate Only
J 1.2.8.2	Beams and inverted beams circular on plan.	m2	Rate Only		Rate Only
	Smooth formwork to sides and soffits of:				
J 1.2.8.3	Ring beams.	m2	Rate Only		Rate Only
J 1.2.8.4	Ring beams circular on plan exceeding 1m radius.	m2	Rate Only		Rate Only
J 1.2.8.5	Slabs.	m2	Rate Only		Rate Only
	Boxing in or out smooth formwork to form:				
J 1.2.8.6	Opening not exceeding 1m girth through 230mm thick beam.	No	Rate Only		Rate Only
J 1.2.9	REINFORCEMENT				
Total Carried Forward					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Mild steel reinforcement to structural concrete work:				
J 1.2.9.1	8mm Diameter bars (Strip Footings)	kg	87		
	High tensile steel reinforcement to structural concrete work:				
J 1.2.9.2	12mm Diameter bars (Strip Footing)	kg	330		
J 1.2.9.3	10mm Diameter bars (Concrete slab counter)	kg	189		
Total Carried Forward To Summary					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
J 1.3	**SECTION J 1.3 : MASONRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
J 1.3.1	SUPPLEMENTARY PREAMBLES Sizes in descriptions Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick. Wall ties Descriptions of solid walls (except if built in English bond) and cavity walls shall be deemed to include metal wall ties complying with SABS 28 and of the butterfly type, of the required length with each end built at least 75mm deep into brickwork, spaced at not more than 1m centres alternatively to every third course of brickwork. Cavity walls, etc. Descriptions of cavity walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole.				
J 1.3.2	BRICKWORK: FOUNDATIONS AND SUPERSTRUCTURE Brickwork in burnt clay NFP bricks in 3:1 cement mortar:				
J 1.3.2.1	Piers and attached piers.	m3	1		
J 1.3.2.2	Half brick walls.	m2	2		
J 1.3.2.3	Half brick walls in lining to concrete.	m2	1		
J 1.3.2.4	Half brick walls in lining to concrete circular on plan.	m2	3		
J 1.3.2.5	One brick walls.	m2	170		
J 1.3.2.6	One brick walls circular on plan.	m2	Rate Only		Rate Only
J 1.3.2.7	One brick parapet walls.	m2	Rate Only		Rate Only
J 1.3.2.8	One brick parapet walls circular on plan.	m2	Rate Only		Rate Only
J 1.3.2.9	One and a half brick walls.	m2	5		
J 1.3.2.10	One and a half brick walls circular on plan.	m2	Rate Only		Rate Only
J 1.3.3	FACE BRICKWORK Allow a Prime Cost Amount of R6 000.00/ 1000 bricks for face brickwork and raked out and pointed with a square pointing tool 10 mm deep:				
J 1.3.3.1	Extra over ordinary brickwork for face brick walls	m2	170		
J 1.3.3.2	Extra over ordinary brickwork for face brick walls circular on plan	m2	Rate Only		Rate Only
Total Carried Forward					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
J 1.3.3.3	Extra over ordinary brickwork for 220mm wide face brick on edge coping	m2	3		
J 1.3.3.4	Extra over ordinary brickwork for 220mm wide face brick on edge coping circular on plan	m2	Rate Only		Rate Only
J 1.3.4	BRICKWORK SUNDRIES				
	Brick reinforcement:				
J 1.3.4.1	900mm long Galvanized hoop iron roof anchors built in vertically	No	11		
J 1.3.4.2	75mm Wide reinforcement built in horizontally.	m	9		
J 1.3.4.3	150mm Wide reinforcement built in horizontally.	m	390		
	Prestressed fabricated lintels:				
J 1.3.4.4	100 x 70mm lintels in lengths not exceeding 3m.	m	27		
J 1.3.4.5	100 x 70mm lintels in lengths exceeding 4,5m not exceeding 6m.	m	Rate Only		Rate Only
Total Carried Forward To Summary					

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
J 1.4	**SECTION J 1.4 : WATERPROOFING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
J 1.4.1	SUPPLEMENTARY PREAMBLES Waterproofing Waterproofing of roofs, basements, etc. shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs.				
J 1.4.2	DAMPPROOFING OF WALLS AND FLOORS One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp-proof course:				
J 1.4.2.1	In walls, under cills, etc. One layer of 250 micron type C waterproof sheeting sealed at laps with pressure sensitive tape:	m2	26		
J 1.4.2.2	Under surface beds, ground beams, etc.	m2	36		
Total Carried Forward To Summary					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C6 : ROOF COVERINGS, ETC.

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
J 1.5	**SECTION J 1.5 : ROOF COVERINGS, ETC.** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
J 1.5.1	PROFILED METAL SHEETING AND ACCESSORIES 0,58mm Thick "Klip-lock 406" industrial galvanized roof sheeting with colorbond finish on one side in single lengths fixed to steel members including all fixing brackets and fixed in strict accordance with the manufacturer's instructions:				
J 1.5.1.1	Sheeting laid to roof with pitch not exceeding 25 degrees in single lengths (measured nett).	m2	46		
J 1.5.1.2	Extra over for bending sheet ends to 450mm radius.	m	Rate Only		Rate Only
J 1.5.1.3	Extra over for raking cutting at valleys.	m	8		
	0,58mm Thick flashings, etc.:				
J 1.5.1.4	380mm Girth ridge cap flashing fixed with S10 clips and including serrated broad flute closer and polycloser.	m	2		
J 1.5.1.5	450mm Girth gable trim flashing fixed with S10 clips.	m	3		
J 1.5.1.6	380mm Girth valley lining.	m	5		
J 1.5.2	ROOF INSULATION Sisalation 420 heavy industrial grade reinforced aluminium foil insulation laid taut over purlins in strict accordance with the manufacturer's instructions:				
J 1.5.2.1	Aluminium foil roof insulation laid taut over purlins (purlins at approximately 2m centres) with minimum 150mm side laps and fixed concurrent with roof covering including galvanised steel straining wires, etc.	m2	46		
Total Carried Forward To Summary					

SCHEDULE J 1: MARKET STALL TYPE E 1

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
J 1.6	**SECTION J 1.6 : STRUCTURAL STEELWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
J 1.6.1	SUPPLEMENTARY PREAMBLES Shop drawings The contractor will be required to prepare shop details for the work which must be submitted to the Engineer for approval before fabrication is started. Approval of shop details by the Engineer will include the following: a) Examination of member sizes for consistency with design requirements. b) Examination of all connections designed and/or detailed by the fabricator, for adequacy of load trasference. c) Approval of leading dimensions which are taken to include such dimensions as may influence the design (eg, depth of trusses and girders) or which may grossly affect site programme (eg, truss spans andstanchion heights). Notwithstanding any approval of these details, the contractor shall remain responsible for ensuring that the dimensions, details and workmanship result in the correct assembly of the work. Material and workmanship The steelwork is to be fabricated from mild steel to SABS 1431 Grade 300W. The whole of the fabrication and workmanship generally is to be in strict accordance with SABS 0162-1984 as amended. The material shall be of best quality throughout, free from loose rust or millscale, true to thickness and profile throughout and of the section and mass specified subject to a 2% tolerance for rolling margin. Consideration will be given to any detail variation which the contractor may wish to make with the view to the simplification of either fabrication, delivery or erection. Substitutions must be made at the contractor's own expense. The contractor shall provide Works Test Certificates where so required by the Engineer. Testing The Engineer shall be at liberty to select test pieces from steelwork in the workshop or on the site and to have them tested. The expense of such tests are to be borne by the contractor if the steelwork does not comply with the standards laid down above. A provisional sum is allowed in the bill of quantities for non-destructive testing. Holding down bolts Holding down bolts and other fixing devices which are to be embedded in concrete must be supplied to the principal contractor on request together with the necessary information, identification and templates.				
Total Carried Forward					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C12 : STRUCTURAL STEELWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Any costs incurred by subsequent repositioning of bolts, etc resulting from the contractor having failed to furnish adequate information, identification and templates will be for the contractor's account. Welding Welding shall be in accordance with SABS 044 "Welding: Parts I, II and III". Welding shall be carried out in a manner which will prevent any distortion of the weld or the parent section. All welds shall have adequate root fusion and shall be free from cracks, porosity or other irregularities and any undercutting shall be made good by the deposition of additional runs of weld metal. Any completed welds showing cracks, cavities or other efects shall be cut out and made good at the contractor's own expense. "Mild steel electrodes shall comply with SABS 455 ""Covered Electrodes for Manual Arc Welding of Mild Steel andMedium High Tensile Steel""." Bolts Bolts shall have well-formed heads forged from the solid. Nuts shall closely fit the bolts so that they can only just be turned by hand and at least one clear thread shall project beyond the nut when fully tightened.All bolts shall have one asher under the nuts and shall be so tightened that the threaded portion does not bear on the members connected. Where bolt heads or nuts bear upon bevelled surfaces they shall be provided with tapered washers of 2,3 mm mean thickness to provide a seating square with the axis of the bolt. Friction grip bolts Connections specifying high strength friction grip bolts are to be in strict accordance with SABS 094 "Bolted Friction Grip Joints in Structural Steelwork" and the bolts used are to be in accordance with BS 3139 Part 1 : 1959 "General Grade Bolts, High Strength Friction Grip Bolts for Structural Engineering". Notwithstanding the above, the following must be rigidly adhered to: a) Two-case hardened washers, one flat or bevelled under the head and the other flat or bevelled under the nut shall be used with each bolt. b) Contact surfaces shall not be painted and shall be thoroughly cleaned free of dirt, oil, loose scale, burrs and other defects which are liable to reduce friction resistnace between surfaces. c) At all times the correct torques shall be applied to the different sizes of bolts. Erection				
Total Carried Forward					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C12 : STRUCTURAL STEELWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The steelwork generally is to be fabricated in the contractor's works having due regard to transport and erection facilities. He must supply all erection tackle, temporary erection bracing, erect and plumb all steelworkand supply all steel wedges and tacks as required. Items may be detailed for delivery "piece small" or the contractor may prefabricate if he is satisfied that suitable arrangements for transport can be made. Connections are to be designed for the forces indicated on the drawings or to the maximum capacity of the members. Cleaning and painting All structural steel is to be thoroughly degreased to remove all grease or oil and then wire-brushed, scraped or sand-papered to remove all rust, mill-scale or surface contaminations and is to be immediately given one coat "Duram DTM" smooth epoxy paint prior to delivery to site. All damaged paintwork is to be made good on site after erection is complete. Testing of welders Tenderers must include in their rates for the testing of any welder used on the work who has not been tested within a period of six months immediately preceding his employment on this contract. Rates Rates for structural steelwork shall include for Engineering design development and certification, supply and manufacture, delivery and installation and paint finished as specified. Painting/corrosion protection specification a) All steelwork shall be mechanically wire-brushed to ST3O blast clean to SA2.				
J 1.6.2	STEEL COLUMNS, BEAMS, POSTS, ETC.				
J 1.6.2.1	IPE 200mm I-Beam	m	27		
J 1.6.2.2	150mm x 50mm x 20mm x 2 lipped channel	m	52		
J 1.6.2.3	400mm x 200mm x 10mm Base plates	No	5		
J 1.6.2.4	90mm x 90mm x 6mm Angle Iron	No	9		
J 1.6.3	BOLTS, ETC.				
J 1.6.3.1	M8 x 75mm long chemical anchor bolts including nuts and washers with one end drilled and screwed to concrete.	No	17		
Total Carried Forward					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
J 1.7	**SECTION J 1.7: METALWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
J 1.7.1	SUNDRY GALVANISED STEELWORK Bearers to brick linings, lintels, etc.:				
J 1.7.1.1	40 x 40 x 5mm Thick angle section bearer bolted to concrete with and including M8 x 50mm long rawl bolts at 300mm centres.	m	Rate Only		Rate Only
J 1.7.2	PRESSED STEEL DOOR FRAMES 1,2mm Thick double rebated frames suitable for half brick walls complete with hoop iron anchors welded to frame, adjustable stainless steel striking plate/s suitable for mortice locks, three rubber shock absorbers in rebate and one pair of 100mm standard heavy duty butt hinges welded to frame:				
J 1.7.2.1	Frame for door size 762 x 2032mm high.	No	Rate Only		Rate Only
C11.2.2	Frame for door size 813 x 2032mm high.	No	Rate Only		Rate Only
C11.2.3	Frame for door size 1200 x 2032mm high.	No	Rate Only		Rate Only
C11.3	VENTILATION LOUVRE GRILLES, ETC.				
C11.3.1	Powdercoated aluminium louvre grille and frame size overall 500 x 500mm high, comprising standard 35mm x 1,6mm thick blades at 50mm centres including subframe and sealants in solid core laminated flush door (doors elsewhere).	No	Rate Only		Rate Only
C11.4	ALUMINIUM WINDOWS, SHOPFRONTS, ETC.				
C11.5	SUPPLEMENTARY PREAMBLES General: All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. shall be designed, manufactured, supplied and installed in strict compliance with the "Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA), General Specification for Architectural Aluminium and Glass Products February 2005 Edition" and SANS 10137. All descriptions shall be deemed to include transoms, mullions, etc. as per the Architect's drawings. Design and installation: The Sub-Contractor shall be required to design the entire installation, provide all labour, materials, equipment and services required to complete the installation as specified herein. The Sub-Contractor shall ensure that the necessary wind pressure provisions have been incorporated within the design criteria. The Sub-Contractor shall submit his wind design criteria to the Architect for inspection.				
Total Carried Forward					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	The Sub-Contractor shall allow for expansion of glass, framing, surrounding structures, etc. The Sub-Contractor shall allow for and produce fully detailed workshop drawings (3 copies) including samples of all ironmongery within 14 working days of the Main Contractors request. Fire resistance The installation shall conform to the local authorities fire resistance standards. Templates Templates formed of 25 x 25mm square hollow section steel are to be provided in each opening to ensure that all windows, doors, shopfronts, skylights, etc. are built in plumb and square. The subcontractor is to use his discretion in providing a sufficient quantity of templates as required to complete the Works as per the Main Contractors programme. Grounds 19 x 25mm Wrought SA pine grounds are to be fitted all round windows, doors, etc. Where grounds are visible they should be painted to form a shadowline. Sealing Window frames are to be sealed all round internally and externally against the building structure with approved silicone jointing compound to prevent water ingress. Weather seals All windows, doors, shopfronts, skylights, etc. are to be fitted with approved woolpile weather seals. Ironmongery to doors Door leaves are to be hung on one and a half pairs of 100 x 75mm butt hinges and fitted with one spring clip door holder. In addition double doors are to be fitted with one 150mm and one 200mm natural anodised flush lever bolt. Tenderers shall submit full specifications of ironmongery quoted which shall include all furniture, locks, handles, butt hinges, floor spring hinges, etc. The Sub-Contractor shall be required to submit ironmongery samples for approval prior to installation. Sub-Contractors are to note that the approval of shop drawings does not automatically indicate acceptance of ironmongery proposals. Rates				
Total Carried Forward					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C13 : METALWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	All glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. must include for all jointing, notching, cutting, etc. and for setting up and fixing in postion complete with glass, glazing beads, external cills, ironmongery, fixing brackets, lugs, bolts, timber grounds, silicone sealant, templates, etc. all as detailed and scheduled on the drawings and as necessary for the satisfactory execution of the work. Factory quality control The Sub-Contractor shall afford the Main Contractor full acces to plant, shop and assembly point to view and inspect the process and method employed in the fabricating and assembly of glazed aluminium windows, sliding doors, doors, shopfronts, skylights, etc. Protection and cleaning All aluminium must be protected against damage by covering with temporary casings (masking tape, plastic coatings, etc.) and against deterioration or discolouration caused by mortar, wax, paint, etc., all to the entire satisfaction of the Principal Agent. On completion all such protection shall be removed and work cleaned down and left in proper working order. All glazing is to be protected from damage, breakage, scratches, etc. and allowances shall be made for polishing the glass as and when instructed by the Main Contractor.				
J 1.7.6	SECURITY GATES				
J 1.7.6.1	Security double leaf folding gate size overall 1400 x 850mm high.	No	6		
J 1.7.7	"Double leaf" custom made doors fabricated from 6.0mm mild steel plates framed by welding into 100mm x 100mm x 3.0mm square tubing including hinges and hung into walls complete with frame, overhead protective box, end locks, Astro EPDM weatherseal and installed and bolted to brick openings all in strict accordance with the manufacturer's instructions:	No	6		
Total Carried Forward					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C14 : PLASTERING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
J 1.8	**SECTION J 1.8 : PLASTERING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
J 1.8.1	SCREEDS Screeds on concrete:				
J 1.8.1.1	30mm Thick on floors.	m2	25		
Total Carried Forward To Summary					

SCHEDULE J 1: MARKET STALL TYPE E 1

SECTION C18 : PAINTWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
J 1.9	**SECTIONJ 1.9 : PAINTWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
J 1.9.1	PLASTER Prepare and apply one coat "Dulux" plaster primer, one coat undercoat and two coats "Dulux Super Acrylic Emulsion" paint on:				
J 1.9.1.1	Internal and external plastered walls, columns, recessed bands, etc.	m2	Rate Only		Rate Only
J 1.9.1.2	Internal and external plastered soffits.	m2	Rate Only		Rate Only
J 1.9.2	METAL Prepare and apply one coat "Dulux" steel patch primer, one coat "Dulux Duragrip" universal undercoat and two coats "Dulux Non-drip Enamel" paint on:				
J 1.9.2.1	Frames and linings.	m2	10		
J 1.9.2.2	Bearers, posts, edging, etc.	m	3		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE J 1: MARKET STALL TYPE E 1

SUMMARY OF SECTIONS

Section	Description		Amount (Rand)
J 1	SECTION J 1.1: EARTHWORKS		
J 1	SECTION J 1.2: CONCRETE, FORMWORK AND REINFORCEMENT		
J 1	SECTION J 1.3 : MASONRY		
J 1	SECTIONJ 1.4 : WATERPROOFING		
J 1	SECTION J 1.5 : ROOF COVERINGS, ETC.		
J 1	SECTION J 1.6: STRUCTURAL STEELWORK		
J 1	SECTION J 1.7 : METALWORK		
J 1	SECTION J 1.8 : PLASTERING		
J 1	SECTION J 1.9 : PAINTWORK		
Total Carried Forward To Summary Of Schedules			

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE L 1: ELECTRICAL

Item	Description	Unit	Qty	Rate	Total
A	Site Establishment & Safety				
1	Site Camp, store, personnel, rental, transport, notice board, etc.	Sum	1		
2	Payment of CLO	Sum	1		
3	Payment of Student	Sum			
4	Compliance with OHS ACT incl. Safety File and safety inspections.	Sum	1		
5	Allow for Professional Registered Occupational health and Safety officer (Prov. Amount)	Month	7		
6	Training	Sum			
7	PPE for EPWP workers (Prov. Amount)	Sum	1		
8	Payment of EPWP workers (Prov. Amount)	Sum	1		

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE L 1: ELECTRICAL

ELECTRICAL SERVICES INSTALLATION: LIGHTING & POWER INSTALLATION - Offices, Ablutions, Market Stalls

Item	Description	Unit	Qty Tender	Rate	Total
	Section 1: Power Installation				
1.1	Conduit installed in ceiling void, masonry walls, floors, etc complete with all fixing accessories, couplings, bushes, locknuts, end boxes (50 x 100mm or 100 x 100mm as the case may be), terminations and male adapters				
1.1.1	Supply and deliver				
	(a) 25mm Ø PVC	m	3000		
1.1.2	Install				
	(a) 25mm Ø PVC	m	3000		
2	Socket Outlets				
2.1	16A normal flush-mounted double switched socket outlet complete with 100 x 100 outlet box and cover plate				
	(a) Supply and deliver	No	120		
	(b) Install	No	120		
2.2	32A normal surface mounted (3p + N + E) socket outlet (Ampco or equivalent) 400V IP 44 Splash proof + Plug				
	(a) Supply and deliver	No	2		
	(b) Install	No	2		
3	Wiring				
3.1	Supply and deliver insulated stranded copper conductors				
	2.5 mm²	m	5000		
3.2	Supply and deliver insulated stranded copper earth wire				
	2.5 mm²	m	2000		
4	Cabling				
	Supply and install 1000V/400V PVC/SWA/PVC cable according to specification from main DB in lodge to sub-distribution DB's				
4.1	$16mm^2$ x 4 core				
	(a) Supply and deliver	m	100		
	(b) Install	m	100		
4.2	$16mm^2$ BCEW				
	(a) Supply and deliver	m	100		
	(b) Install	m	100		
4.3	$10mm^2$ x 3 core (Supplies all market stalls and Ablutions DB's)				
	(a) Supply and deliver	m	900		
	(b) Install	m	900		
4.4	$4mm^2$ BCEW				

	(a) Supply and deliver	m	0		
	(b) Install	m	0		
5	Distribution Boards				
	Manufacture and install new factory wired distribution board complete as per schematic diagrams and specifications. DB's to be floor standing/wall and surface mounted with double doors in case of main DB.				
5.1	DB Offices Main	No	2		
5.2	DB Offices Sub	No	2		
5.3	DB Ablutions	No	3		
5.4	DB Market Stalls	No	18		
	Section 2: Lighting Installation				
6	Luminaires				
	Light fittings complete with lamps and fixing accessories with 5Amp unswitched socket and boxes forconnection in ceiling void.				
6.1	Type L1 Vapourproof LED 50W Surface Mount 4000K				
	(a) Supply and deliver	No	138		
	(b) Install	No	138		
6.2	Type L2 LED panellight 10W - Round D/L 4000K recessed				
	(a) Supply and deliver	No	50		
	(b) Install	No	50		
6.3	Type L4 LED 18W TITAN IP65 Bulkhead - External wall lights				
	(a) Supply and deliver	No	25		
	(b) Install	No	25		
6.4	Type L13 - LED downlights 9W Dim				
	(a) Supply and deliver	No	20		
	(b) Install	No	20		
7	Light switches complete with outlet box, cover plate and connection- 1 lever 1 way flush				
	(a) Supply and deliver	No	10		
	(b) Install	No	10		
8	Occupancy Sensors				
	(a) Supply and deliver	No	12		
	(b) Install	No	12		
9	Wiring				
	(a) Supply and install stranded copper conductors				
	2,5 mm²	m	4000		
	(b) Supply and install insulated stranded copper earth wire				
	1.5 mm²	m	2000		
10	Conduit installed in ceiling void, masonry walls, floors, etc complete with all fixing accessories, couplings, bushes, locknuts, end boxes, terminations and male adapters				
	Supply and deliver				
	(a) 20mm Ø PVC	m	2000		
	Install				
	(a) 20mm Ø PVC	m	2000		
11	Photocell in IP65 enclosure				
	(a) Supply and deliver	No	20		
	(b) Install	No	20		
Total caried over to summary page					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022
SCHEDULE L 1: ELECTRICAL

ELECTRICAL SERVICES INSTALLATION: SITE RETICULATION

Item	Description	Unit	Qty Tender	Rate	Total
	Site Reticulation				
1	Supply and install 1000V/400V PVC/SWA/PVC cable				
1.1	50 mm^2 x 4 core Cu cable (Eskom Main Meter box and DB-Distribution)(3 in parallel) via generator C/O panel				
	(a) Supply and deliver	m	200		
	(b) Install	m	200		
1.2	35 mm^2 BCEW				
	(a) Supply and deliver	m	200		
	(b) Install	m	200		
1.3	35 mm^2 x 4 core Cu cable				
	(a) Supply and deliver	m	50		
	(b) Install	m	50		
1.4	25 mm^2 x 4 core - Cu cable (Provision)				
	(a) Supply and deliver	m	200		
	(b) Install	m	200		
1.6	16 mm^2 BCEW				
	(a) Supply and deliver	m	200		
	(b) Install	m	200		
1.7	16 mm^2 x 4 core - Cu cable + 10mm^2 BCEW				
	(a) Supply and deliver	m	200		
	(b) Install	m	200		
1.8	10 mm^2 x 4 core - Cu cable				
	(a) Supply and deliver	m	200		
	(b) Install	m	200		
1.9	10 mm^2 x 3 core - Cu cable				
	(a) Supply and deliver	m	100		
	(b) Install	m	100		
2	**MAIN LV KIOSK**				
	Manufacture and install new factory wired Distribution Kiosk complete as per schematic diagrams and specifications. Kiosks to be plinth mounted, weather proof and lockable. Colour to be ELECTRIC ORANGE				
	(a) Supply and deliver	No	1		
	(b) Install	No	1		
2.1	**KIOSK 1**				
	(a) Supply and deliver	No	1		
	(b) Install	No	1		
2.2	**KIOSK 2**				
	(a) Supply and deliver	No	1		
	(b) Install	No	1		
2.3	**KIOSK 3**				
	(a) Supply and deliver	No	1		
	(b) Install	No	1		
2.4	**KIOSK4**				
	(a) Supply and deliver	No	1		
	(b) Install	No	1		
2.5	**KIOSK5**				
	(a) Supply and deliver	No	1		
	(b) Install	No	1		
3	Trenching for LV cabling on site + PVC sleeves				
3.1	Excavations	m^3	800		
3.2	Backfilling of cable trenches	m^3	1000		
3.3	Preparation of cable trenches	m	1000		
3.4	110mm PVC sleeves	m	500		
Total caried over to summary page					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE L 1: ELECTRICAL

ELECTRICAL SERVICES INSTALLATION: NEW ESKOM SUPPLY

Item	Description	Unit	Qty Tender	Rate	Total
	MV and Link Service				
1	**RE-LOCATE THE EXISTING ESKOM OVERHEAD LINE**	Sum	1	R500,000	R500,000
1.1	Apply With ESKOM to re-locate the existing portion of line that crosses the Taxi Rank to across the street or replace it with Underground Cable				
Total carried forward to summary page					**500,000.00**

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE L 1: ELECTRICAL

ELECTRICAL SERVICES INSTALLATION			
SUMMARY OF SCHEDULE OF QUANTITIES			
BILL			
1	CONTRACT ADMINISTRATION AND GENERAL Administration and General REQUIREMENTS	R	0.00
2	BUILDING INSTALLATIONS	R	0.00
3	SITE ELECTRICAL INSTALLATIONS	R	0.00
4	NEW ESKOM SUPPLY	R	500,000.00
	SUB TOTAL A	R	
	Add contingency (10%)	R	
	SUB TOTAL B	R	
	ENGINEER'S ESTIMATE (EXCL VAT)	**R**	

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE K 1: WASTE TRANSFER

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
K 1.1	**SECTION K 1.1: EARTHWORKS**				
	The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
K 1.1.1	SUPPLEMENTARY PREAMBLES				
	Carting away of excavated material				
	Descriptions of carting away of excavated material shall be deemed to include for bulking and loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site.				
	Subterranean water				
	No information regarding subterranean water is available. The tenderer must acquaint himself of the presence and depth of subterranean water and allow thereof in his rates.				
K 1.1.2	EXCAVATION OTHER THAN BULK				
	Excavation in compacted earth not exceeding 2m deep in:				
K 1.1.2.1	Trenches for strip foundations and ground beams.	m3	6		
	Extra over excavations other than bulk in earth for excavation in:				
K 1.1.2.2	Soft rock.	m3	2		
K 1.1.2.3	Hard rock.	m3	2		
K 1.1.3	CARTING AWAY				
	Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk):				
K 1.1.3.1	Off site to a dumping site to be located by the Contractor.	m3	2		
K 1.1.4	EARTH FILLING, ETC.				
	Filling with material from excavations including hauling, spread, level, water and compact to a density of at least 93% Mod. AASHTO maximum density in 150mm thick layers:				
K 1.1.4.1	Backfilling to trenches, holes, etc.	m3	3		
	Selected material supplied by the Contractor and spread, level, water and compact to a density of at least 95% Mod. AASHTO maximum density in 150mm thick layers:				
K 1.1.4.2	Under floors, paving, etc.	m3	2		
K 1.1.5	TERMITE PROOFING				
	Approved brand of anti-termite soil insecticide applied by a Registered Pest Control Company and guaranteed against termite infestation for ten years:				
Total Carried Forward					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE K 1: WASTE TRANSFER

SECTION C1: EARTHWORKS

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
K 1.1.5.1	Under floors, etc. including forming and poisoning shallow furrows against foundation walls etc., filling in furrows and ramming.	m2	25		
K 1.1.5.2	To bottom and sides of trenches, etc.	m2	20		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE K 1: WASTE TRANSFER

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
K 1.2	**SECTION K 1.2 : CONCRETE, FORMWORK AND REINFORCEMENT**				
	The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
K 1.2.1	SUPPLEMENTARY PREAMBLES				
	Type of cement				
	All cement used in concrete work is to be OPC cement, no cement containing fly ash will be allowed.				
	Formwork				
	Descriptions of formwork shall be deemed to include use and waste only (except where described as left in or permanent), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use.				
	The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support withou damage and shall remain in position until the newly constructed work is able to support itself.				
	Formwork to soffits of solid slabs, etc., shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.				
K 1.2.2	REINFORCED CONCRETE				
	15MPa/19mm Concrete in:				
K 1.2.2.1	50mm Thick blinding under ground beams, etc.	m2	7		
	20MPa/19mm Concrete in:				
K 1.2.2.2	Strip foundations	m3	4		
K 1.2.2.3	Surface beds	m3	2		
K 1.2.3	REINFORCED CONCRETE				
	20MPa/19mm Concrete in:				
K 1.2.3.1	Concrete ground slab	m3	3		
K 1.2.4	CONCRETE SUNDRIES				
	Finishing top surfaces of concrete smooth with a wood float:				
K 1.2.4.1	Surface beds, slabs, etc.	m2	10		
Total Carried Forward					

SCHEDULE K 1: WASTE TRANSFER

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
K 1.2.5	MOVEMENT JOINTS, ETC.				
	Expansion joints with 10mm jointex between vertical concrete and brick surfaces:				
K 1.2.5.1	Joint not exceeding 300mm high.	m	10		
K 1.2.6.2	Joint not exceeding 300mm high circular on plan.	m	10		
	Two layers of 6mm thick smooth tempered hardboard to form slip joints between horizontal concrete and brick surfaces including cement mortar bed:				
K 1.2.5.3	Joint not exceeding 300mm wide.	m	15		
K 1.2.5.4	Joint not exceeding 300mm wide circular on plan.	m	10		
K 1.2.6	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to sides of:				
K 1.2.6.1	Ground beams.	m2	Rate Only		Rate Only
K 1.2.6.2	Ground beams circular on plan.	m2	Rate Only		Rate Only
K 1.2.7	SMOOTH SHUTTERING (DEGREE OF ACCURACY I)				
	Smooth formwork to sides of:				
K 1.2.7.1	Beams and inverted beams.	m2	Rate Only		Rate Only
K 1.2.7.2	Beams and inverted beams circular on plan.	m2	Rate Only		Rate Only
	Smooth formwork to sides and soffits of:				
K 1.2.7.3	Ring beams.	m2	Rate Only		Rate Only
K 1.2.7.4	Ring beams circular on plan exceeding 1m radius.	m2	Rate Only		Rate Only
K 1.2.7.5	Slabs.	m2	Rate Only		Rate Only
	Boxing in or out smooth formwork to form:				
K 1.2.7.6	Opening not exceeding 1m girth through 230mm thick beam.	No	Rate Only		Rate Only
K 1.2.8	REINFORCEMENT				
Total Carried Forward					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE K 1: WASTE TRANSFER

SECTION C2 : CONCRETE, FORMWORK AND REINFORCEMENT

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
	Mild steel reinforcement to structural concrete work:				
K 1.2.8.1	8mm Diameter bars (Strip Footings)	kg	113		
	High tensile steel reinforcement to structural concrete work:				
K 1.2.8.2	12mm Diameter bars (Strip Footing)	kg	420		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE K 1: WASTE TRANSFER

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
K 1.3	**SECTION K 1.3 : MASONRY** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
K 1.3.1	SUPPLEMENTARY PREAMBLES Sizes in descriptions Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick. Wall ties Descriptions of solid walls (except if built in English bond) and cavity walls shall be deemed to include metal wall ties complying with SABS 28 and of the butterfly type, of the required length with each end built at least 75mm deep into brickwork, spaced at not more than 1m centres alternatively to every third course of brickwork. Cavity walls, etc. Descriptions of cavity walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole.				
K 1.3.2	BRICKWORK: FOUNDATIONS AND SUPERSTRUCTURE Brickwork in burnt clay NFP bricks in 3:1 cement mortar:				
K 1.3.2.1	Piers and attached piers.	m3	Rate Only		Rate Only
K 1.3.2.2	Half brick walls.	m2	Rate Only		Rate Only
K 1.3.2.3	Half brick walls in lining to concrete.	m2	Rate Only		Rate Only
K 1.3.2.4	Half brick walls in lining to concrete circular on plan.	m2	Rate Only		Rate Only
K 1.3.2.5	One brick walls.	m2	40		
K 1.3.2.6	One brick walls circular on plan.	m2	Rate Only		Rate Only
K 1.3.1.2.7	One brick parapet walls.	m2	Rate Only		Rate Only
K 1.3.2.8	One brick parapet walls circular on plan.	m2	Rate Only		Rate Only
K 1.3.2.9	One and a half brick walls.	m2	5		
K 1.3.2.10	One and a half brick walls circular on plan.	m2	Rate Only		Rate Only
K 1.3.3	FACE BRICKWORK Allow a Prime Cost Amount of R6 000.00/ 1000 bricks for face brickwork and raked out and pointed with a square pointing tool 10 mm deep:				
K 1.3.3.1	Extra over ordinary brickwork for face brick walls	m2	Rate Only		Rate Only
K 1.3.3.2	Extra over ordinary brickwork for face brick walls circular on plan	m2	Rate Only		Rate Only
Total Carried Forward					

SCHEDULE K 1: WASTE TRANSFER

SECTION C4 : MASONRY

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
Brought Forward					
K 1.3.3.3	Extra over ordinary brickwork for 220mm wide face brick on edge coping	m2	Rate Only		Rate Only
K 1.3.3.4	Extra over ordinary brickwork for 220mm wide face brick on edge coping circular on plan	m2	Rate Only		Rate Only
K 1.3.4	BRICKWORK SUNDRIES				
	Brick reinforcement:				
K 1.3.4.1	900mm long Galvanized hoop iron roof anchors built in vertically	No	Rate Only		Rate Only
K 1.3.4.2	75mm Wide reinforcement built in horizontally.	m	8		
K 1.3.4.3	150mm Wide reinforcement built in horizontally.	m	12		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE K 1: WASTE TRANSFER

SECTION C5 : WATERPROOFING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
K 1.4	**SECTION I 1.4 : WATERPROOFING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
K 1.4.1	SUPPLEMENTARY PREAMBLES Waterproofing Waterproofing of roofs, basements, etc. shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs.				
K 1.4.2	DAMPPROOFING OF WALLS AND FLOORS One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp-proof course:				
K 1.4.2.1	In walls, under cills, etc.	m2	15		
	One layer of 250 micron type C waterproof sheeting sealed at laps with pressure sensitive tape:				
K 1.4.2.2	Under surface beds, ground beams, etc.	m2	12		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE K 1: WASTE TRANSFER

SECTION C14 : PLASTERING

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
K 1.8	**SECTION K 1.8 : PLASTERING** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
K 1.8.1	SCREEDS Screeds on concrete:				
K 1.8.1.1	30mm Thick on floors.	m2	40		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE K 1: WASTE TRANSFER

SECTION C18 : PAINTWORK

Number	Item Description	Unit	Quantity	Rate	Amount (Rand)
K 1.9	**SECTION K 1.9 : PAINTWORK** The Tenderer is referred to the relevant Clauses in the separate document Standard Specifications for Building Work (August 2002 Edition) as issued by the South African National Roads Agency Limited and to the Supplementary Preambles which are incorporated in these Bills of Quantities.				
K 1.9.1	PLASTER Prepare and apply one coat "Dulux" plaster primer, one coat undercoat and two coats "Dulux Super Acrylic Emulsion" paint on:				
K 1.9.1.1	Internal and external plastered walls, columns, recessed bands, etc.	m2	60		
K 1.9.1.2	Internal and external plastered soffits.	m2	10		
Total Carried Forward To Summary					

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SCHEDULE K 1: WASTE TRANSFER

SUMMARY OF SECTIONS

Section	Description		Amount (Rand)
K 1	SECTION J 1.1: EARTHWORKS		
K 1	SECTION J 1.2: CONCRETE, FORMWORK AND REINFORCEMENT		
K 1	SECTION J 1.3 : MASONRY		
K 1	SECTIONJ 1.4 : WATERPROOFING		
K 1	SECTION J 1.8 : PLASTERING		
K 1	SECTION J 1.9 : PAINTWORK		
Total Carried Forward To Summary Of Schedules			

MAKHADO LOCAL MUNICIPALITY
CONSTRUCTION OF DZANANI TAXI RANK
94 OF 2022

SUMMARY OF SCHEDULES

	SCHEDULE	DESCRIPTION	AMOUNT (RAND)
	A	SCHEDULE A: PRELIMINARY AND GENERAL	
	B	SCHEDULE B: CIVIL WORKS AND SPORTS GROUNDS	
	C	SCHEDULE C: TAXI ADMIN BUILDING AND LOADING BAY	
	D	SCHEDULE C: BUILDING WORKS	
	E 1	ABLUTION 1	
	E 2	ABLUTION 2	
	F 1	MARKET STALL TYPE A (FIRST STALL)	
	F 2	ADD MARKET STALL TYPE A (SECOND STALL)	
	F 3	ADD MARKET STALL TYPE A (THIRD STALL)	
	F 4	ADD MARKET STALL TYPE A (FOURTH STALL)	
	G 1	MARKET STALL TYPE B (FIRST STALL)	
	G 2	ADD MARKET STALL TYPE B (SECOND STALL)	
	G 3	ADD MARKET STALL TYPE B (THIRD STALL)	
	H 1	MARKET STALL TYPE C (FIRST STALL)	
	H 2	ADD MARKET STALL TYPE C (SECOND STALL)	
	H 3	ADD MARKET STALL TYPE C (THIRD STALL)	
	H 4	ADD MARKET STALL TYPE C (FOURTH STALL)	
	H 5	ADD MARKET STALL TYPE C (FIFTH STALL)	
	I 1	MARKET STALL TYPE D (FIRST STALL)	
	I 2	ADD MARKET STALL TYPE D (SECOND STALL)	
	I 3	ADD MARKET STALL TYPE D (THIRD STALL)	
	J 1	MARKET STALL TYPE E (FIRST STALL)	
	J 2	ADD MARKET STALL TYPE E (SECOND STALL)	
	L 1	ELECTRICAL	
	K 1	WASTE TRANSFER 1	
	K 2	WASTE TRANSFER 2	
		SUB - TOTAL 1	
		ADD 5% CONTINGENCIES	
		SUB - TOTAL 2	
		ADD 2,5% CONTRACT PRICE ADJUSTMENT	
		SUB - TOTAL 3	
		VAT @ 15% (VALUE ADDED TAX)	
		GRAND-TOTAL	

PROJECT NO: 94 of 2022

CONSTRUCTION OF DZANANI TAXI RANK

CIDB GRADING: 7 CE OR HIGHER

C3 SCOPE OF WORK

PROJECT NO: 94 of 2022

CONSTRUCTION OF DZANANI TAXI RANK

CIDB GRADING: 7 CE OR HIGHER

PART C3: SCOPE OF WORK

TABLE OF CONTENTS

		Page
C3.1:	STANDARD SPECIFICATIONS	C.34
C3.2:	PROJECT SPECIFICATIONS	C.35

PART A: GENERAL

PS-1	Project Description	C.35
PS-2	Description of the Site and Access	C.36
PS-3	Details of the Works	C.36
PS-4	Construction Management Requirements	C.37
PS-5	Extension of time resulting from abnormal rain fall	C.40
PS-6	Contractor's Responsibility	C.41
PS-7	Participating Operation	C.42
PS-8	Project Team	C.42
PS-9	Site Conditions	C.43
PS-10	Working Hours	C.43
PS-11	Health and Safety	C.43
PS-12	Site Disestablishment	C.45
PS-13	Contractor's Personnel	C.45

PART B: AMENDMENTS AND ADDITIONS TO THE STANDARD SPECIFICATIONS

PART C: SANRAL STANDARD SPECIFICATIONS - BUILDING WORKS

C3.1 STANDARD SPECIFICATIONS

C3.1.1 The standard specifications on which this contract is based is SANS 1200 Standardised Specifications for Civil Engineering Construction Works and can be obtained from Standards South Arica (a division of SABS) in Pretoria.

STANDARDISED SPECIFICATIONS APPLICABLE TO THIS CONTRACT

SABS 1200 A	-	1986	GENERAL
SABS 1200 AB	-	1986	ENGINEER'S OFFICE
SABS 1200 C	-	1980 (as amended 1982)	SITE CLEARANCE
SABS 1200 D	-	1988 (as amended 1990)	EARTHWORKS
SABS 1200 DB	-	1989	EARTHWORKS (PIPE TRENCHES)
SABS 1200 DK	-	1996	GABIONS AND PITCHING
SABS 1200 DM	-	1981	EARTHWORKS (ROADS, SUBGRADE)
SABS 1200 G	-	1982	CONCRETE STRUCTURAL
SABS 1200 L	-	1983	MEDIUM-PRESSURE PIPELINES
SABS 1200 LB	-	1983	BEDDING (PIPES)
SABS 1200 LC	-	1981	CABLE DUCTS
SABS 1200 LD	-	1982	SEWERS
SABS 1200 LE	-	1982	STORMWATER DRAINAGE
SABS 1200 LF	-	1983	ERF CONNECTIONS (WATER)
SABS 1200 M	-	1996	ROADS (GENERAL)
SABS 1200 ME	-	1981	SUBBASE
SABS 1200 MF	-	1981	BASE
SABS 1200 MJ	-	1984	SEGMENTED PAVING
SABS 1200 MK	-	1983	KERBING AND CHANNELLING
SABS 1200 MM	-	1984	ANCILLARY ROADWORKS

C3.1.2 The following SANS specifications are also referred to in this document and the Contractor is advised to obtain them from Standards South Africa (a division of SABS) in Pretoria.

SANS 1921-1 (2004) : Construction and Management Requirements for Works Contracts

Part 1: General Engineering and Construction Works and where accommodation of traffic is involved

C3.2: PROJECT SPECIFICATIONS

INTRODUCTION TO PROJECT SPECIFICATIONS

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

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

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

Part C contains the SANRAL standard specifications for building works.

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

The standard specifications which form part of this contract have been written to cover all phases of work normally required for road contracts, and they may therefore cover items not applicable to this particular contract.

PART A: GENERAL

PS-1 PROJECT DESCRIPTION

1.1 Employer's objectives

The employer's objective is to upgrade the Dzanani Taxi Rank.

1.2 Overview and location of the works

The description of the project contained in this section is merely an outline of the contract works and shall not limit the work to be carried out by the Contractor under this contract.

1.3 Extent of the works

The extent of the works can be summarized as follows:

- Establishment on Site
- Accommodation of Traffic
- Works/Site Demarcation and work protection

1.3.1 Taxi Rank

- Clear site in-terms of removal of existing temporary structures, existing paving bricks, kerbing and signage
- Ripping and re-compacting existing road bed layer
- Excavation for the sub-surface 1.5m nominal diameter stormwater pipe
- Bedding, installation, blanket and backfilling of the sub-surface 1.5m nominal stormwater pipe
- Connecting or linking the 1.5m nominal diameter stormwater pipe to the existing stormwater point
- Fill over the backfilled sub-surface 1.5m nominal diameter stormwater pipe to the desired Taxi Rank platform levels
- Stormwater channelling for the new platform
- Layer works for the entire platform which includes the area over ad on-top of the sub-surface 1.5m nominal diameter stormwater pipeline
- Re-setting out of the Taxi Rank plan, positions for the market stalls, covered loading bays and 2 ablution facilities
- Excavation for the loading bay concrete footings
- Excavation for the administration building foundations
- Excavation for the market stalls foundations
- Excavation for the 2 ablutions foundations
- Reinforcement for the Loading Bay footings, administration building foundation, market stalls foundations and 2 ablution blocks foundations
- Concrete works for the Loading Bay footings, administration building foundation, market stalls foundations and 2 ablution blocks foundations
- General building works for the administration building, market stalls and 2 ablution blocks
- Roofing for the administration building, market stalls and 2 ablution blocks
- Structural steel work for the loading including roofing
- Electrical network and wiring for the loading bay, administration building, market stalls and 2 ablutions including outside lighting
- Plumbing for the administration building, market stalls and 2 ablution blocks
- Paving and kerbing of the taxi rank areas and surrounding areas and spaces
- Road marking of the areas and parking
- Signage installation
- Painting of the buildings and structures

1.3.2 Bus Terminal

- Demolition of the existing ablution building and temporary market stalls
- Setting out of the market stalls, administration building and ablution facility
- Excavations for the market stalls, administration building and ablution facility's foundations

- Reinforcement for the market stalls, administration building and ablution facility's foundation
- Concrete works for the market stalls, administration building and ablution facility foundations
- General building works for the market stalls, administration and building and ablution facility
- Electrical network and wiring for the market stalls, administration building and ablution facility
- Plumbing for the market stalls, administration building and ablution facility

1.3.4 General Works

- Connecting to the existing water and sewer mains
- Landscaping of the facility
- Treatment of the old roads (connecting streets)
- De-establishment of the site
- Maintenance of the works

1.4 Drawings

The following drawings, including versions of these drawings and additional drawings which might be issued to the contractor during the course of construction are applicable to this contract and included in Appendix B.

ITEM	DESCRIPTION	DRAWING NUMBER
01	LIST OF DRAWINGS	94 of 2022-NCE001
02	LOCALITY MAP	94 of 2022-NCE002
03	SITE DEVELOPMENT PLAN	94 of 2022-NCE003
04	TAXI RANK ADMIN BUILDING AND LOADING BAY PLAN AND ELEVATIONS LAYOUT	94 of 2022-NCE004
05	TAXI RANK ABLUTIONS PLAN, WASTE TRANSFER AND ELEVATIONS LAYOUT	94 of 2022-NCE005
06	TAXI RANK BUILDING AND ABLUTIONS DOORS AND WINDOW SCHEDULE	94 of 2022-NCE006
07	TAXI RANK ADMIN BUILDING AND LOAD BAY SECTIONS	94 of 2022-NCE007
08	TAXI RANK ADMIN BUILDING, LOADING BAY AND MARKET STALLS ELECTRICAL LAYOUT	94 of 2022-NCE008
09	MARKET STALLS GROUND FLOORS LAYOUT PLAN	94 of 2022-NCE009
10	MARKET STALLS ROOF AND FOUNDATIONS DETAILS LAYOUT	94 of 2022-NCE010
11	MARKET STALLS ELEVATIONS LAYOUT	94 of 2022-NCE011
12	MARKET STALLS ELEVATIONS LAYOUT	94 of 2022-NCE012
13	ELECTRICAL CHART LAYOUT PLAN	94 of 2022-NCE013
14	PLATFORM EARTHWORKS	94 of 2022-NCE014
15	PLATFORM EARTHWORKS SETTING OUT DATA	94 of 2022-NCE015

16	PLATFORM EARTHWORKS LONITUDINAL SECTION	94 of 2022-NCE016
17	SEWER PIPE NETWORK LAYOUT PLAN	94 of 2022-NCE017
18	SEWER PIPE NETWORK SETTING OUT DATA	94 of 2022-NCE018
19	SEWER PIPE NETWORK LONGITUDINAL SECTION	94 of 2022-NCE019
20	1200mm ND SUBSURFACE CONCRETE PIPE LAYOUT	94 of 2022-NCE020
21	STORMWATER CHANNEL HORIZONTAL LAYOUT	94 of 2022-NCE021
22	STORMWATER CHANNEL SETTING OUT DATA	94 of 2022-NCE022
23	STORMWATER CHANNEL GABIONS AND MATTRESSES	94 of 2022-NCE023
24	STORMWATER CHANNEL LONDITUDINAL SECTIONS	94 of 2022-NCE024
25	STORMWATER CHANNEL CROSS SECTION	94 of 2022-NCE025
26	TAXI RANK ADMIN BUILDING AND LOADING BAY LOCATION PLAN	94 of 2022-NCE026
27	TAXI RANK ADMIN AND LOADING BAY RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE027
28	TAXI RANK AND LOADING BAY 3D VIEW AND NOTES	94 of 2022-NCE028
29	TAXI RANK LOADING BAY STEEL ROOF LAYOUT	94 of 2022-NCE029
30	TAXI RANK LOADING BAY 3D VIEWS	94 of 2022-NCE030
31	TAXI RANK ADMIN BUILDING AND LOADING BAY RC COLUMNS	94 of 2022-NCE031
32	TAXI RANK LOADING BAY STEEL ROOF SECTIONS AND DETAILS	94 of 2022-NCE032
33	TAXI RANK ADMIN BUILDING FIRST FLOOR SLAB LAYOUT, DETAILS, SECTIONS AND REINFORCEMENT	94 of 2022-NCE033
34	TAXI RANK ADMIN BUILDING ROOF SLAB LAYOUT, DETAILS, SECTIONS AND REINFORCEMENT	94 of 2022-NCE034
35	TAXI RANK ADMIN BUILDING FIRST FLOOR SLAB TYPICAL DETAILS	94 of 2022-NCE035
36	TAXI RANK ADMIN BUILDING STAIRCASE LAYOUT AND DETAILS	94 of 2022-NCE036
37	ABLUTION 1 LOCATION PLAN	94 of 2022-NCE037
38	ABLUTION 2 LOCATION PLAN	94 of 2022-NCE038
39	ABLUTION 3 LOCATION PLAN	94 of 2022-NCE039
40	ABLUTION 4 LOCATION PLAN	94 of 2022-NCE040
41	ABLUTION 5 LOCATION PLAN	94 of 2022-NCE041
42	ABLUTION 1,2,3,4 AND 5 RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE042
43	MARKET STALL TYPE A1 LOCATION PLAN	94 of 2022-

		NCE043
44	MARKET STALL TYPE A2 LOCATION PLAN	94 of 2022-NCE044
45	MARKET STALL TYPE A3 LOCATION PLAN	94 of 2022-NCE045
46	MARKET STALL TYPE A4 LOCATION PLAN	94 of 2022-NCE046
47	MARKET STALL TYPE A RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE047
48	MARKET STALL TYPE A STEEL ROOF LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE048
49	MARKET STALL TYPE A CONCRETE SLAB LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE049
50	MARKET STALL TYPE B1 LOCATION PLAN	94 of 2022-NCE050
51	MARKET STALL TYPE B2 LOCATION PLAN	94 of 2022-NCE051
52	MARKET STALL TYPE B3 LOCATION PLAN	94 of 2022-NCE052
53	MARKET STALL TYPE B4 LOCATION PLAN	94 of 2022-NCE053
54	MARKET STALL TYPE B RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE054
55	MARKET STALL TYPE B CONCRETE SLAB LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE055
56	MARKET STALL TYPE B STEEL ROOF LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE056
57	MARKET STALL TYPE C1 LOCATION PLAN	94 of 2022-NCE057
58	MARKET STALL TYPE C2 LOCATION PLAN	94 of 2022-NCE058
59	MARKET STALL TYPE C3 LOCATION PLAN	94 of 2022-NCE059
60	MARKET STALL TYPE C RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE060
61	MARKET STALL TYPE C CONCRETE SLAB LAYOUT AND SECTIONS	94 of 2022-NCE061
62	MARKET STALL C STEEL ROOF LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE062
63	MARKET STALL TYPE D1 LOCTION PLAN	94 of 2022-NCE063
64	MARKET STALL TYPE D2 LOCATION PLAN	94 of 2022-NCE064
65	MARKET STALL TYPE D3 LOCTION PLAN	94 of 2022-NCE065
66	MARKET STALL TYPE D RAFT FOUNDATION LAYOUT DETAIL AND SECTIONS	94 of 2022-NCE066
67	MARKET STALL TYPE D STEEL ROOF LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE067
68	MARKET STALL TYPE E1 LOCATION PLAN	94 of 2022-NCE068
69	MARKET STALL TYPE E2 LOCATION PLAN	94 of 2022-NCE069
70	MARKET STALL TYPE E3 LOCATION PLAN	94 of 2022-NCE070

71	MARKET STALL TYPE E RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE071
72	MARKET STALL TYPE E CONCRETE LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE072
73	MARKET STALL TYPE E STEEL ROOF LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE073
74	BUS TERMINAL BUILDING LOCATION PLAN	94 of 2022-NCE074
75	BUS TERMINAL BUILDING RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE075
76	BUS TERMINAL RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	94 of 2022-NCE076
77	BUS TERMINAL FIRST FLOOR SLAB LAYOUT, DETAILS, SECTIONS AND REINFORCEMENT	94 of 2022-NCE077
78	BUS TERMINAL ROOF SLAB LAYOUT, DETAILS, SECTIONS AND REINFORCEMENTS	94 of 2022-NCE078
79	BUS TERMINAL FIRST FLOOR SLAB TYPICAL DETAILS	94 of 2022-NCE079
80	BUS TERMINAL ROOF SLAB TYPICAL DETAILS	94 of 2022-NCE080
81	BUS TERMINAL STAIRCASE LAYOUT AND DETAILS	94 of 2022-NCE081
82	ELECTRICAL LAYOUT AND DETAILS	94 of 2022-NCE082
83	ADMIN BUILDING ELECTRICAL LAYOUT PLAN	94 of 2022-NCE083
84	ADMIN BUILDING AND TAXI RANK LOADING BAY LIGHTS LAYOUT PLAN	94 of 2022-NCE084
85	ABLUTION L BLOCK ELECTRICAL LAYOUT PLAN	94 of 2022-NCE085
86	MARKET STALLS TYPE A,B,C,D AND ELECTRICAL LIGHTS LAYOUT PLAN	94 of 2022-NCE086
87	MARKET STALLS TYPE A,B,C,D AND E GENRAL ELECTRICAL LAYOUT PLAN	94 of 2022-NCE087

PS-2 DESCRIPTION OF THE SITE AND ACCESS

2.1 Location of site

The project site is situated on the Eastern border of the Dzanani Central Business District and adjacent to the Nzhelele Valley Shopping Centre. Access to the site can be gained from the town's main street (Netshituni Drive) in the CBD or directly from the Provincial Road R523 to Sibasa. The centre of the site has the following approximate coordinates:

- Latitude: 22°53'56" South
- Longitude: 30°02'14" East

2.2 Access to site

The site can be accessed directly from the Provincial Road R523 to Sibasa.

PS-3 DETAILS OF THE WORKS

The works are fully described in the contract drawings and bill of quantities.

PS-4 CONSTRUCTION AND MANAGEMENT REQUIREMENTS

4.1 General

The Contractor is referred to SANS 1921: 2004 parts 1, 2 and 3: Construction and Management Requirements for Works Contracts. These specifications shall be applicable to the contract under consideration and the Contractor shall comply with all requirements relevant to the project.

Certain aspects however require further attention as described hereafter.

4.1.7 Drawings *(Read with SANS 1921 – 1: 2004 clauses 4.1.7; 4.1.11 and 4.1.12)*

The reduced drawings which form part of the tender documents shall be used for tendering purposes only.

4.2 Responsibilities for design and construction

Only the Engineer is allowed to perform design functions.

4.3 Planning and Programme *(Read with SANS1921-1:2004 clause 4.3)*

The project programme submitted during tender, as amended and approved by the Engineer shall be the contractual programme.

4.4 Quality Assurance (QA) *(Read with SANS 1921 – 1: 2004 clause 4.4)*

The Contractor will be solely responsible for the production of work that complies with the Specifications to the satisfaction of the Engineer. To this end it will be the full responsibility of the Contractor to institute an appropriate Quality Assurance (QA) system on site. The Engineer will audit the Contractor's quality assurance (QA) system on a regular basis to verify that adequate independent checks and tests are being carried out and to ensure that the Contractor's own control is sufficient to identify any possible quality problems which could cause a delay or failure.

The Contractor shall ensure that efficient supervisory staff, the required transport, instruments, equipment and tools are available to control the quality of his own workmanship in accordance with his QA-system. His attention is drawn to the fact that it is not the duty of the Engineer or the Engineer's representative to act as foreman or surveyor.

4.6 Management and disposal of water *(Read with SANS 1921 - 1 : 2004 clause 4.6)*

The Contractor shall pay special attention to the management and disposal of water and stormwater on the site. It is essential that the works or parts thereof are kept dry and properly drained.

Claims for delay and for repair of damage caused to the works as a result of the Contractor's failure to properly manage rain and surface water, will not be considered.

4.11 Testing *(Read with SANS 1921 – 1 : 2004 clause 4.11)*

Process control

The Contractor shall arrange for all tests required for process control to be done. The cost of process control is deemed to be included in the rates, and no special pay item is provided for such.

Acceptance control

The process control test results submitted by the Contractor for approval of materials and workmanship will be taken into account by the Engineer in his appraisal for acceptance. However, the Engineer shall commission further acceptance control testing by a commercial laboratory of his choice. The cost of such acceptance control testing is carried by the Employer.

4.12 Site Establishment *(Read with SANS 1921 - 1 : 2004 clause 4.14)*

Contractor's camp site and depot

A full-time site camp is allowed.

The Contractor shall make his own arrangements concerning the supply of electrical power and all other services. No direct payment shall be made for the provision of electrical and other services. The cost thereof shall be deemed to be included in the rates and amounts tendered for the various items of work for which these services are required.

The Contractor shall provide security watchmen for the contract as he deems fit at no extra cost for the Employer. The Contractor must ensure that all his employees as well as the employees of his subcontractors are able to identify themselves as members of the construction team.

Accommodation of Employees

The Contractor shall make his own arrangements to house his employees and to transport them to site. No additional payment shall be made for transport of labour to and from site, and the rates shall be deemed to include the cost of transportation.

No informal housing or squatting will be allowed on the site.

The Contractor shall provide the necessary ablution facilities at his camp site and the site of the works for the use of his employees.

4.13 Survey beacons *(Read with SANS 1921 - 1: 2004 clause 4.15)*

The Contractor shall take special precautions to protect all permanent survey beacons or pegs such as bench-marks, stand boundary pegs and trigonometrical beacons, regardless whether such beacons or pegs were placed before or during the execution of the Contract. If any such beacons or pegs have been disturbed by the Contractor or his employees, the Contractor shall have them replaced by a registered land surveyor at his own cost.

4.14 Existing Services *(Read with SANS 1921 - 1: 2004 clause 4.17)*

Existing services known to the Employer are indicated on the drawings. The positions of services are indicative and the exact location thereof shall be confirmed by the Contractor by exposing the services through careful hand excavation. The approval of the Engineer shall be obtained prior to any hand excavation.

4.15 Health and Safety *(Read with SANS 1921 - 1: 2004 clause 4.18)*

4.15.1 General statement

It is a requirement of this contract that the Contractor shall provide a safe and healthy working environment and to direct all his activities in such a manner that his employees and any other persons, who may be directly affected by his activities, are not exposed to hazards to their health and safety. To this end the Contractor shall assume full responsibility to conform to all the provisions of the Occupational Health and Safety Act No 85 and Amendment Act No181 of 1993, and the OHSA 1993 Construction Regulations 2003 issued on 18 July 2003 by the Department of Labour.

For the purpose of this contract the Contractor is required to confirm his status as mandatory and employer in his own right for the execution of the contract by entering into an agreement with the Employer in terms of the Occupational Health and Safety Act in the form as included in section C1.2.4

(a) Employer's Health and Safety Specification

The Employer's Health and Safety Specification is included in Part E of the Project Specifications.

(b) Tenderer's Health and Safety Plan

The Tenderer shall submit before commencement of his works his own documented Health and Safety Plan for the execution of the works under the contract. His Health and Safety Plan must comply with the employer's specification, at least cover the following:

(i) a proper risk assessment of the works, risk items, work methods and procedures in terms of Regulations 7 to 28;

(ii) pro-active identification of potential hazards and unsafe working conditions;

(iii) provision of a safe working environment and equipment;

(iii) statements of methods to ensure the health and safety of subcontractors, employees and visitors to the site, including safety training in hazards and risk areas (*Regulation 5)*;

(iv) monitoring health and safety on the site of works on a regular basis, and keeping of records and registers as provided for in the Construction Regulations;

(v) details of the Construction Supervisor, the Construction Safety Officers and other competent persons he intends to appoint for the construction works in terms of Regulation 6 and other applicable regulations; and

(vi) details of methods to ensure that his Health and Safety Plan is carried out effectively in accordance with the Construction Regulations 2003.

The Contractor's Health and Safety Plan will be subject to approval by the Employer, or amendment if necessary, before commencement of construction work. The Contractor will not be allowed to commence work, or his work will be suspended if he had already commenced work, before he has obtained the Employer's written approval of his Health and Safety Plan.

Time lost due to delayed commencement or suspension of the work as a result of the Contractor's failure to obtain approval for his safety plan, shall not be used as a reason to claim for extension of time or standing time and related costs

Cost of compliance with the OHSA Construction Regulations

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the Act, the Construction Regulations and the Employer's Health and Safety Specification as applicable to this contract.

Should the Contractor fail to comply with the provisions of the Construction Regulations, he will be liable for penalties as provided in the Construction Regulations and in the Employer's Health and Safety Specification.

PS-5 EXTENSION OF TIME DUE TO ABNORMAL RAINFALL

The formula below shall be used to calculate separately the delay for each calendar month or part thereof. It shall be calculated each month during the period referred to in the general conditions of contract as the time for completion of the works (including any extension thereof that may have been granted), or until the issue date of the certificate or practical completion, whichever is the shorter period. The delay calculated for a given month shall be used to determine the interim extension of time granted for that month. At the end of the applicable period referred to above, the aggregate of the monthly delays will be taken into account for the final determination of the total extension of time for the contract:

$$V = (Nw - Nn) + \frac{(Rw - Rn)}{X}$$

If any value of V is negative and its absolute value exceeds Nn, then V shall be equal to minus Nn.

The delay for a part of a month shall be calculated by substituting pro rata values for the variables in the equation.

The symbols shall have the following meanings:

V = Delay due to rain in calendar days in respect of the calendar month under consideration.

Nw = Actual number of days in the calendar month on which a rainfall of Y mm or more per day has been recorded.

Rw = Actual rainfall in mm for the calendar month under consideration.

Nn = Average number of days in the relevant calendar month (as derived from existing rainfall records provided in the project specifications) on which a rainfall of Y mm or more per day has been recorded.

Rn = Average rainfall in mm for the calendar month, as derived from the rainfall records supplied in the project specification.

X = 20, unless otherwise provided in the project specifications.

Y = 10, unless otherwise provided in the project specifications.

The total delay that will be taken into account for the determination of the total extension of time for the contract shall be the algebraic sum of the monthly totals for the period under consideration. But if the grand total is negative, the time for completion shall not be reduced on account of abnormal rainfall. The total extension of time for any calendar month shall not exceed (Nc – Nn) calendar days, where Nc= number of calendar days in the month under consideration.

The factor (Nw – Nn) shall be considered to represent a fair allowance for variations from the average for the number of days during which rainfalls equals or exceeds Y mm per day.

The factor (Rw – Rn) ÷ X shall be considered to represent a fair allowance for variations from the average for the number of days during which rainfall does not equal or exceed Y mm per day, but when wet conditions prevent or disrupt work.

This formula does not take into account any flood damage, which could cause further or concurrent delays and which should be treated separately in so far as extension of time is concerned.

Accurate rain gauging shall be taken at a suitable point on the site daily at 08:00 unless otherwise agreed to by the engineer, and the contractor shall, at his own

expense, take all necessary precautions to ensure that the rain gauges cannot be interfered with by unauthorised persons. Existing rainfall records, from Stellenbosch rainfall station are available from the South African Weather Service.

PS-6 CONTRACTORS RESPONSIBILITY

6.1 The Contractor undertakes to render the Services in a proper and workman like manner during the currency of this Agreement and warrants to the Employer that it has the necessary skill and expertise to do so in a competent, professional and on a cost effective basis.

6.2 Without derogating from the generality of the provisions of clause 2.1, the Contractor shall at its cost, in rendering the Services:

6.2.1 adhere to directions given to it by the Employer's General managers at the Operations in relation to the utilisation of the Machinery for the purpose contemplated in this Agreement;

6.2.2 ensure that the Machinery is maintained in good order and condition during the currency of this Agreement;

6.2.3 be liable for all loss or damage of whatsoever nature caused to the Machinery for whatsoever reason and shall forthwith repair/replace any damaged Machinery so as to not interrupt the rendering of the Services;

6.2.4 comply with all obligations imposed upon it by any law in relation to the manning and operation of the Machinery and in particular those obligations imposed upon it in terms of the provisions of, inter alia, the Site Instructions and Rules, HSEC SOP and the Compensation for Occupational Injuries and Diseases Act, 1993;

6.2.5 ensure that it has at all times the required Machinery available to render the Services;

6.2.6 at all times comply with relevant legislation relating to coal processing plants, environmental issues and health and safety concerns;

6.2.7 at all relevant times have all permits required in terms of any law or regulation for the operation of the Machinery in terms of this Agreement;

6.2.8 be responsible for the prevention of all spillage of oils, fuels, greases and other deleterious matter from the Machinery, whether operated by it or its sub-contractors and in respect of any such spillage or deposition which may occur, the Contractor shall be responsible for and bear the costs of clearing all resultant pollution to the reasonable satisfaction of The Employer and any relevant authority;

6.2.9 ensure that those persons utilised by it in the rendering of the Services (including but not limited to its employees, sub-contractors, agents and the like) are trained, experienced, competent and efficient in their respective trades and occupations;

6.2.10 ensure that all machine operators are in possession of valid operator certificates (if required in terms of any relevant legislation) from the effective date of their appointment and duly maintain such certificates;

6.2.11 furnish the Employer with such reports in relation to the rendering of the Services as and when so required by the Employer or when so required in terms of any relevant legislation;

6.2.12 attend any meetings reasonably called by the Employer from time to time;

6.2.13 not use the land forming part of the Operations for any purpose whatsoever other than for the rendering of the Services and shall place any facilities and the like as may be required for itself and its employees only on those portions of the Operations as may be approved by the Employer;

6.2.14 take all reasonable precautions to prevent the outbreak of fire;

6.2.15 ensure that a pre use or some such similar record book be kept for each piece of the Machinery, which book shall record, but not limited to the following information:

- Operator's name.
- Operator's employee number.
- The date and the time when the shift commenced and ended.
- The opening and closing meter reading for every shift.

6.2.16 each pre use checklist must be signed off by the Contractor's nominated supervisor at the Operations on a daily basis.

PS-7 PARTICIPATING OPERATION

7.1 The service will be provided by the contractor to the following site:

Dzanani Taxi Rank

PS-8 PROJECT TEAM

8.1 The Contractor is responsible to ensure that enough people are employed to execute the Service thoroughly and properly, based on the following project team.

NAME	DESIGNATION FOR THE CONTRACTOR	PROJECT TEAM
Refer to returnable schedules		Contracts Manager
		Site Agent

PS-9 SITE CONDITIONS

9.1 The prevailing climate at the Site is warm and wet summers and cool and dry winters. Fog may occur during the early hours of the morning during winter.

9.2 The Contractor is expected to take climatic conditions into account in his planning.

9.3 A Geotechnical investigation report is included with the tender document.

PS-10 WORKING HOURS

The Contractor shall determine the required working hours and shift structures which will meet the deliverables requirements.

10.1 The limitations on maximum hours of overtime must be adhered to as defined in the Basic Conditions of Employment Act, Act 75 of 1997.

PS-11 HEALTH AND SAFETY

In performing the Works the Contractor shall meet the requirements of the Employer's Health and Safety standards and have due regard for the guidelines set out in the "Contractor's Pack" that needs to be completed before commencement of the Contract. The Contractor acknowledges that it has made adequate provision in its unit rates to accommodate all such requirements and guidelines.

PS-12 SITE DISESTABLISHMENT

15.1 All structures including fencing and like erected by the Contactor as part of its site establishment shall, upon the termination or cancellation of the Agreement, must be removed by Contractor at his own cost

PS-13 CONTRACTOR'S PERSONNEL

13.1 General

The Contractor shall ensure that there are, at any given time, sufficient personnel on site to ensure a safe and efficient working environment.

13.2 The Contractor's Representative

The Contractor shall appoint a competent representative, that shall in turn be appointed by the Employer under the Mine, Health and Safety Act. This person shall report to the Employer and shall be responsible for the entire conduct and execution of the Contractor's Scope of Work.

13.3 Other Senior Personnel

13.3.1 The Contractor shall provide details of all the Senior Personnel nominated for the project together with information on their qualifications and relevant experience. The Employer reserves the right to reject any or all of these persons if their qualifications or experience are, in his sole opinion, inadequate. The Employer reserves the right to have any person removed from site without having to give any reason and without recourse by the Contractor.

13.3.2 The Contractor shall be obliged to ensure that such persons so nominated shall as far as reasonably possible be employed on the project until completion, and, no Senior Personnel shall be transferred off the project without the written consent of the Employer.

13.4 Qualifications:-

The Contractor shall ensure that the following minimum recognized qualifications are applicable for the various positions:

13.4.1 Safety Officer,

Valid First Aid Certificate;

13.4.2 Operators of self-propelled mobile machines

Certificate issued after compliance with requirements of Regulation and approved by the Employer's induction program.

PSA GENERAL

PSA1 Approval of Material (Subclause 3.1)

The Contractor must supply to the Engineer the test results of samples from stockpiles of proposed construction materials on site.

The Contractor shall be responsible for the cost of all failures on test samples and acceptance testing.

PSA2 Accommodation of Traffic (Sub-clause 5.2)

PSA2.1 General

The Contractor shall ensure that all access routes which are affected by the Works and/or Temporary Works are kept in a safe condition for pedestrian and vehicular traffic.

The Contractor shall organise his work so as to reduce the inconvenience to traffic to a minimum, and no public road shall be completely closed without prior approval.

The Contractor shall provide and maintain in proper condition all necessary barricades, lights, warning signals and all direction signs necessary to enable traffic to flow in both directions. He shall provide flagmen at all deviations and/or obstructions.

All signs shall be in both official languages and all traffic signs and control of traffic shall be in accordance with the South African Road Traffic Signs Manual.

The Contractor shall liaise with and co-operate with the relevant Traffic authorities wherever the works affect existing roads. The Contractor shall sign an indemnity clearing the Local Authority, as applicable, from all liabilities in respect of excavations and works on or adjacent to trafficked roads.

PSA2.2 Measurement and payment

PSA2.2.1 Accommodation of traffic Unit : Sum

Payment for this item shall include for all work necessary to comply with this Project Specification not covered by the specific pay items below. Subject to the provisions of 8.2.3 and 8.2.4, payment of incremental amounts (calculated by the division of the tendered sum by the number of months required to complete the site activities for which the relevant sum was tendered) will be authorised in each of the subsequent progress certificates until the sum tendered has been paid.

PSA2.2.2 Working alongside Residential Roads (Trenching falling outside roadway) Unit : m

PSA2.2.3 Working within Residential Roads (Trenching falling within roadway) Unit : m

Payment for the above items shall be deemed to be full compensation for the following:

a) The maintenance of existing roads and any deviations or temporary sections of road during the period of the contract.

b) Supply, erection, moving and all subsequent re-use on site, including maintenance, removal to store and final removal of all barricades, barriers, signs and flashing lamps.

c) Supply, installation, moving and all subsequent re-use on site, including maintenance, removal to store and final removal of all drums and cones.

d) Provision and maintenance of pedestrian and vehicular access across trenches or ditches to dwellings.

PSA3 Approved Laboratories (Subclause 7.2)

The Contractor in conjunction with the Engineer's Representative shall execute day to day testing such as, P.I's, gradings, CBR's, MOD's, densities, air tests gravity sewers, pressure

tests for water mains, etc. Accurate records of all control testing shall be kept by the Contractor and copied to the Engineer on a regular basis. In addition, control testing as well as more sophisticated testing shall be done by a Laboratory chosen by the Engineer.

The Contractor shall ascertain that his site staff are capable of executing his quality control testing as required by the various sections of the Specifications. The Engineer's site staff shall witness and verify the Contractor's testing.

PSA3.1 Payment procedure for acceptance testing

Costs for his quality control testing shall be borne by the Contractor. Cost for control testing by the Engineer's laboratory excluding failures shall ultimately be borne by the Employer.

The procedure for payment of the Engineer's Control Testing will be as follows;

- The Engineer's laboratory will invoice the Contractor with all acceptance testing costs including successful tests.

- The Contractor shall be reimbursed for all successful acceptance tests via the monthly Payment Certificates.

PSA4 Dealing with Water on Works

The site is situated within a predominantly winter rainfall area.

In addition to the requirements of Subclause 5.5 of SABS 1200 A - 1986 General, the Contractor shall design, construct and maintain all drains and other temporary works necessary for the dewatering and flood protection of the permanent works. All methods of dewatering and flood protection shall be to the approval of the Engineer.

Having served their purpose, all temporary works shall be removed, backfilled or levelled such that the operation of the works shall not be affected in any way.

The Contractor shall be responsible for and shall repair at his expense any damage to the foundations, structures or any part of the works caused by floods, water of failure of any part of the dewatering and flood protection works.

The cost of all flood protection and dewatering measures shall be included in the relevant items in Section 1 of the Schedule of Quantities.

PSA5 Method of Measurement (Subclause 8.1.1)

The quantities listed in the Schedule of Quantities do not govern final payment. Payment to the Contractor will be made only for the actual quantities of contract items performed in accordance with the plans and specifications and if upon completion of the construction, these actual quantities show either an increase or decrease from the quantities given in the Schedule of Quantities the rates and prices contained in the Schedule of Quantities will prevail.

PSA6 As-Built Information

As the works are progressing, the Contractor shall mark on his drawings, after checking the information, all as-built details and submit them to the Engineer's Representative for approval on a weekly basis. Payment shall be made under "Contractual Requirements."

The Contractor must make an allowance in this contractual requirement to have all services surveyed and forwarded to the Engineer in an electronic format. A Completion Certificate will only be issued once the Engineer has accepted as-built information.

PSA8 DAYWORKS

This Daywork Schedule will be used at the discretion of the Engineer for valuation of extra work which cannot conveniently be valued at rates submitted in the Schedule of Quantities. The rates entered for labour and materials shall be inclusive of overhead charges and profit, site supervision of staff, insurance, holidays with pay and use and maintenance of small hand tools and non-mechanical plant, travelling allowances, other emoluments and allowances.

PSD EARTHWORKS

PSD1 Classification for Excavation Purposes (Subclause 3.1)

Delete SABS 1200 D Subclause 3.1 and replace as follows:

PSD1.1 Method of classifying (Subclause 3.1.1)

The Contractor may use any method he chooses to excavate any class of material but his chosen method of excavation shall not determine the classification of the excavation. The Engineer or his Representative will decide on the classification of the materials. In the first instance the classification will be based on inspection of the material to be excavated and on the criteria given in PSD 1.2 (a) and (b).

In the application of this classification, no differentiation shall be made between "bulk" or "restricted excavations".

For excavation and compaction purposes, the sandy material shall be classified as sand in terms of PSDB4.

PSD1.2 Classes of excavation (subclause 3.1.2)

All material encountered in any excavations for any purpose including restricted excavation will be classified as follows:

a) Hard rock excavation

Hard rock excavation shall be excavation in material (including under composed boulders exceeding 0,17 cubic metres in individual volume) that cannot be efficiently removed without blasting, wedging and splitting or by pneumatic means.

b) Intermediate Excavation

No payment will be made for Intermediate Excavation. All intermediate material will be considered as Soft Excavation and will be paid for under Soft Excavation.

c) Soft excavation

Soft excavation shall be all material not falling into the category of hard rock.

PSD2 Compaction

All sand fill shall be compacted to 100% Mod AASHTO.

PSD3 Blasting

In addition to the provisions of SABS 1200 Section D: Earthworks Clause 5.1.1.3 the following shall apply:

PSD3.1 Overbreak

The Contractor shall make good at his own expense any additional excavation necessitated by the shattering of rock in excess of the following overbreak allowances:

a) Overbreak in the width: nil

b) Overbreak in the depth: 150 mm below invert level.

PSD3.2 Excavation of rock by blasting

In addition to complying with the provisions of Clause 5.1.1.3 above, the Contractor shall record for the information of the Engineer the spacing and loading of the charge in each blast and monitor the velocities but compliance with this or any other requirement will not relieve the Contractor of any responsibility in terms of the contract. The Contractor shall not carry out blasting within 10 m of any service or within 25 m of any building.

Blasting patterns will be designed by experts to limit the particle velocities to the following:

a) At services: 50 mm/sec peak particle velocity.

b) At any building: 25 mm/sec peak particle velocity.

The velocities shall be monitored at the service and building closest to the blast on each occasion and a copy of the recordings given to the Resident Engineer.

Preblast surveys including photographs shall be taken of buildings within 50 metres of the blast and written confirmation obtained from the owner. All this work shall be undertaken by the Contractor at his own expense.

PSD4 FREEHAUL (SUBCLAUSE 5.2.5.1)

All haulage on the Contact shall be regarded as freehaul.

PSDB EARTHWORKS (PIPE TRENCHES)

PSDB1 Classes of Excavation (Subclause 3.1)

Add:

"Notwithstanding the provision of this Sub-clause the excavation of material will be classified as specified in Clause PSD 1.

Where for reasons of inaccessibility or any other reason that excavation cannot be carried out by mechanical means, and where so directed by the Engineer, the trench shall be excavated by hand."

The final classification of material will be at the discretion of the Engineer or his representative.

PSDB2 Special Water Hazards (Subclause 5.1.2.2)

In addition to the Contractor's responsibilities for dealing with water, as set out in PSA4, the Engineer may order the Contractor to place a crushed stone bedding layer (minimum thickness 150 mm) on the trench bottom.

Should the trench bottom conditions remain unstable due to the nature of the soil and the degree of saturation, the Engineer may order the Contractor to install a filter fabric on the trench bottom prior to the provision of the stone layer. After placing the stone bedding, the filter fabric shall be folded over the stone with a minimum overlap of 300 mm to form an enclosed drain. The specified bedding material shall then be used to bed the pipe.

The Contractor shall only provide and lay the stone bedding layer and filter fabric after receipt of the written order to do so from the Engineer.

PSDB2.1 Measurement and payment

The cost of dealing with water as specified in Subclause PSA4 will be held to have been included in the tendered sums for excavation and under the relevant items in the Preliminary and General section of the Schedule of Quantities.

a) Stone Bedding in water-logged conditions

Where the use of a layer of crushed stone in the trench bottom has been authorised by the Engineer, it will be measured by volume calculated according to the length multiplied by the minimum base width and specified thickness.

The tendered rate shall cover the cost of all additional excavation and preparation of the trench bottom to accommodate the layer of stone, the removal of unsuitable material, the supply and placing of a 150 mm thick layer of stone over at least the specified width and all related activities in order to produce a stable platform.

b) Geotextile filter fabric

Where the Engineer has authorised the use of geotextile filter fabric, this shall be measured by area as:

2 x (specified minimum base width + 300 mm) x nett length.

The tendered rate shall include the cost of supply, placing and losses as a result of overlaps and over excavated trench widths.

PSDB3 Minimum Base Width (Subclause 5.2)

A side allowance of 300 mm on each side will be applicable to pipes of diameter less than 125 mm. Minimum widths for ducting and cables shall be as required on the relevant drawings.

PSDB4 Compaction (Subclause 5.7)

All trenches shall be backfilled and compacted to 100% of Modified AASHTO density in sand and not less than 93% in the case of cohesive materials. There will be no separate payment for compaction in road reserves as specified in SABS 1200 DB item 8.3.3.3.

Sand is defined as material that conforms to the following:

% passing :	4,74 mm sieve	95% min
	0,425 mm sieve	50% min
	0,075 mm sieve	10% max

Plasticity Index : Non Plastic

PSDB5 Shoring

Shoring will be measured and paid for in areas where the sides are unstable and widening of the trench is not possible, impractical or uneconomic. The onus is on the Contractor to request the Engineer to order shoring. The order for shoring shall be given in writing and shall not unreasonably be withheld.

Shoring of unstable trench sides will be measured per linear metre of trench shored whether both sides of the trench are shored or not and irrespective of the depth of the trench.

The rate shall include full compensation for all plant labour and materials required to provide the shoring and shall include for the additional inconvenience of working in a shored trench, and for any damage or replacement of the shoring after blasting, and for widening the trench to accommodate the shoring and walling.

PSDB6 Blasting

The provisions in PSD3 shall apply.

PSDB7 BACKFILL TO PREFABRICATED CULVERTS

The material used shall be selected material of at least subbase quality or such lower quality as may be permitted by the engineer.

Backfilling alongside and over all culverts shall be placed at optimum moisture content and compacted in layers not exceeding 150 mm after compaction to a density of at least the density required for the material in adjoining layers of fill, subgrade and subbase. The density of backfilling excavations made in natural ground shall be at least 90% of modified AASHTO density.

Backfilling shall be carried out simultaneously and equally on both sides of the culvert to prevent unequal lateral forces from occurring. The tendered Rate shall include full

compensation for supplying selected material of subbase quality from approved sources including a free haul of 1 km.

PSDK GABIONS AND PITCHING

PSDK1 Materials (Clause 3.1)

PSDK1.1 Quality (Clause 3.1.1.1)

The stone shall be clean, hard, un-weathered and free from fissures and flaking. It shall have a relative density of 2.65 and should pass the requirements of the standard specification in terms of size, durability and finish.

PSDK1.2 SIZE (Clause 3.1.1.2)

No stone shall be of a size such that it will pass through a ring of diameter 88mm.

No stone shall be of a size:

- exceeding 250mm, and at least 85% of the stones shall be of a size equal to or exceeding 120mm, in the case of gabion boxes, and;
- exceeding 150mm, and at least 85% of the stones shall be of a size equal to or exceeding 100mm, in the case of mattresses.

PSDK1.3 Gabion Cages (Clause 3.1.3)

Unless otherwise shown on the drawings, gabion boxes shall consist of double twisted, hexagonal wire mesh of nominal 80mm mesh, with 4,4mm o/d frame wire and 3,7 mm o/d mesh wire, complete with partitions at 1m centres. All wire to be mild steel to SABS 1580 – 1993, zinc coated by hot dip galvanising to SABS 675 – 1993 and heat bonded with heavy duty PVC coating of nominal 0,5mm wall thickness.

Mattresses shall consist of double twisted, hexagonal wire mesh of nominal 80mm mesh, with 4,0 mm o/d frame and 3,5mm o/d mesh wire, complete with partitions at 1m centres. All wire to be mild steel to SABS 1580 – 1993, zinc coated by hot dip galvanising to SABS 675 – 1993 and heat bonded with heavy duty PVC coating of nominal 0,5mm wall thickness.

PSDK1.4 Geotextile (Clause 3.1.4)

The geotextile liner shall be Bidim A4 or similar approved.

PSDK2 CONSTRUCTION (Clause 5)

PSDK2.1 Rockfilling (Clause 5.2.4)

The mattresses used for channel lining are to be filled by spreading random rock particles (quality and size as specified in PSDK1.1 and PSDK1.2) starting from the bottom of the channel and moving up the slope. The mattress should be slightly overfilled to allow for settlement

PSDM EARTHWORKS (ROADS, SUBGRADE)

PSDM1 Use of Material (Subclause 5.2.2.3)

PSDM1.1 After completion of the bulk earthworks operation, sandy material cut from roads shall be used in the following order:

a) As compacted fill in roads.

b) As backfill to pipe trenches.

c) As fill in low erven indicated by the Engineer.

d) Spread evenly over erven and public places indicated by the Engineer.

e) Spoil onto selected areas indicated by the Engineer.
f) To create embankment as shown on landscape drawing

PSDM1.2 The Contractor shall so organise his work that excavation from the road reserves is placed directly to uncompacted or compacted fill and no additional payment shall be made for stockpiling unless instructed by the Engineer in writing.

PSDM2 BORROW FILL

The material shall not contain any rock fragments with a maximum dimension exceeding 500 mm.

Whenever practical, fill shall be placed in successive layers parallel to the final road surface.

PSG CONCRETE (STRUCTURAL)

PSG1 Concrete Specification

PSG1.1 Mixing water

Only potable water shall be used for mixing water.

PSG1.2 Cement

100% LASROPC shall be used as specified in SABS 471 (1971) as amended. Any variations to these are subject to the Engineers approval.

PSG1.3 Aggregates

The maximum aggregate size shall be 25 mm. Malmesbury shales may be used provided the free sodium alkali content in the concrete mix does not exceed 2,1 kg/m^3.

PSG1.4 Admixtures

Admixtures are permitted subject to the Engineers' approval.

PSG1.5 Batching plant

All concrete shall be weight batched.

PSG1.6 Vibrators

All concrete shall be compacted by vibrators and a spare vibrator in working order shall be available for use at all times.

PSG1.7 Concrete mix design

Watertight concrete

40 MPa concrete with the minimum and maximum cement contents of 325 kg/m^3 and 400 kg/m^3 respectively shall be used. The water cement ratio shall not exceed 0,50 All concrete mix designs shall be approved by the Engineer in advance.

The mix design and casting procedure shall be approved by the Engineer prior to casting.

Cubes shall be taken on all pours in accordance with SABS 1200. Payment shall be included in the rate tendered for the supply of concrete. Where cubes are not taken during a pour no payment shall be made for that pour.

PSL MEDIUM PRESSURE PIPELINES

PSL1 Materials (Clause 3)

(a) Pipes (Subclause 3.1)

Water mains shall be uPVC Class 12 pipes with Z-lock couplings to SABS 966 as indicated. Only full length pipes bearing the SABS mark will be acceptable. Cut pipes shall only be used at pipe junctions to position valves and specials as shown in the drawings. When laying the pipes the markings shall be visible from above.

The cost of cutting and trimming the pipes shall be included in the rates for laying and jointing of pipelines.

(b) Pipe Specials (Subclause 3.3)

Pipe specials shall conform in all respects with the requirements of the latest edition of the relevant Standard Specification listed below:-

SABS 62

SABS 534

SABS 546

SABS 719

(d) Polyethylene Pipes (Subclause 3.7.2)

High density polyethylene (HDPE) pipes to SABS 533 Type IV Class 10 jointed with compression fittings or "Polycop" pipes with copper fittings shall be required as shown on the relevant drawings.

(e) Bolts and Nuts (Clauses 3.8.3 and 3.8.4)

Bolts and nuts shall comply with SABS 135 and be hot dip galvanised or cadmium plated.

PSL2 Corrosive Soil (Subclause 3.9.6)

Cast iron detachable and flanged joints together with their bolts shall be treated as specified in subclause 3.9.6 or other means approved by the Engineer. This treatment shall also apply to bolts and flanges used in the construction of valves and hydrants. No separate payment will be made for the treatment specified.

PSL3 Valves (Subclause 3.10)

(a) Isolation valves

Valves shall conform with all relevant sections of SABS 664 (1974) and SABS 665 (1981) specifications and subsequent amendments.

Valves shall be "Downright" Class 16 cast iron valves with non-rising spindles and closing to the left.

(b) Air Valves

Vent-o-Mat type.

PSL4 Fire Hydrants (Subclause 3.10)

Fire Hydrants shall have a cast iron body and shall be provided with a V-thread gunmetal outlet of 65 mm diameter with cast iron cap with safety chain.

Test Pressure: 2MPa Working Pressure: 1,38MPa.

Fire hydrants are to be bolted on to the flanged tee-end of a cast iron tee-piece with plan ends suitable for coupling to a pressure pipe. The fire hydrant and box are to be positioned in line with the water main uPVC.

PSL5 Surface Boxes (Subclause 3.11.6)

Surface boxes shall be to SABS 558. Cover and frame for valve surface boxes to be blue polymer concrete as manufactured by AV Mouldings for Stellenbosch Municipality. Cover and frame for hydrant boxes to be yellow polymer concrete Type 5 by AV Mouldings.

No separate payment will be made for the marking or painting of cast iron surface boxes.

PSL6 Construction (Clause 5)

PSL6.1 Depths and Cover (Subclause 5.1.4)

Pressure mains shall be laid so that the cover to the top of the pipe barrel from finished surface level is generally, but not less than 800 mm in roads and 600mm elsewhere.

Where the minimum clearance between pipe crossings would be less than 150 mm the main shall be laid beneath the service crossed at an invert level which allows for the minimum clearance. The main shall be laid horizontally at this level for a distance of at least 1,0 m on either side of the centreline of the service crossed and then revert to the minimum cover as specified in subclause 5.1.4.2.

No decrease in cover or clear space between the pipe barrels as specified will be permitted unless otherwise instructed by the Engineer in writing.

PSL6.2 Jointing (Subclause 5.2)

(a) Flexible couplings

All uPVC pipes shall be jointed to each other by means of the "Z-lock" system. All steel pipes, specials and cast-iron fittings shall be jointed to each other or pipes as detailed by means of Viking Johnson couplings or cast-iron short collar joints.

(b) Flange Jointing

With reference to SABS 1123-1977, the specifications for flange drilling shall be Table 16.

PSL6.3 Thrust Blocks (Subclause 5.5)

All bends and tees shall be provided with 20 MPa concrete thrust blocks to prevent movement of the special concerned.

The block shall be cast so that the pipe and the fitting joints are accessible for repair.

Unless otherwise ordered, the minimum bearing area of the thrust block against the face of the trench measured in a vertical plane shall be as detailed on the drawings.

The thrust face of thrust blocks shall be cast against solid, undisturbed material in the trench walls.

PSL7 Standard Hydraulic Pipe Test (Subclause 7.3)

The Contractor shall do the required test in the presence of the Engineer. All test pressures shall be taken as 1500 kPA. The pipelines shall be tested before construction of the basecourse and before the attachment of the saddles.

Test pressures shall be maintained for a minimum of 3 hours with the pump operating and circulating the water in the container. The surface area of the container shall be sufficiently small to measure the maximum allowable leakage accurately.

No payment for pipe laying will be made prior to testing, disinfecting and acceptance of pipelines.

PSL8 Connection to Existing Mains

The Contractor shall liaise with the relevant Local Authority in this respect and give the required notice of the connection date in order that the Local Authority may attend if necessary.

PSL8.1 Measurement and payment

PSL8.1.1 Connection to existing mains Unit : No

The rate shall cover the cost of liaison with Local Authority, excavating to expose the existing main, the removal of thrust block and/or end cap, breaking into existing main if necessary, dealing with water, completing the connection, backfilling, disposal of surplus material and making good to the satisfaction of the Engineer.

Fittings required for the connection will be measured and paid for elsewhere.

PSL9 STERILISATION OF MAINS

The Contractor shall properly disinfect the mains with an approved substance before they are put into service. All dirt shall be removed by flushing prior to disinfecting.

Water samples shall be submitted to the Engineer for bacteriological testing after the reticulation has been disinfected. The lines shall be properly flushed prior to connection into the existing system.

The Contractor shall be responsible for the provision and costs of all water used for flushing.

PSLB BEDDING (PIPES)

PSLB1 Bedding (Subclause 3.3)

PSLB1.1 General

uPVC and HDPE pipes are to be considered as flexible and bedding details suitable for flexible pipes shall be used throughout. (Class C).

Sand, as specified in PSDB4 shall be suitable for use as bedding material.

PSLC CABLE DUCTS

PSLC1 Scope (Clause 1)

Drawing numbered LC-1 is replaced by the standard details in so far as telecommunication ducts are concerned. The Contractor is referred to Standard Drawings and specific conditions relating to Telkom ducts included herewith.

PSLC2 Ducts (Subclause 3.1)

Telkom ducts shall be 110 mm dia green core flow pipes and will be supplied by the contractor. The Contractor shall liaise with Telkom regarding the delivery of pipes.

Electricity ducts shall be 110 mm and 160 mm diameter uPVC Class 4 pipes supplied by the Contractor.

PSLC3 Telephone Cable Ducts (Subclause 3.2.2)

Bedding for telephone ducts crossing roadways shall be stabilised using cement constituting 5% of the mixture by volume.

PSLC4 Trench Widths and Depths (Subclause 5.1.1.2)

Delete paragraph (a) and replace with :

a) 650 mm for telephone services.

Delete paragraphs (b) and (c) and replace with :

b) 800 mm for all electric cables,

Add the following :

Where this specified depth is such that the level of the duct conflicts with other service pipes, the Engineer will modify the duct depth so as to pass over or under the service pipe.

PSLC5 Road Crossings (Subclause 5.8)

Add the following to Subclause 5.8

Ducts together with draw wires shall be laid at right angles across road carriageways unless otherwise indicated on the drawings and shall extend 1,0 m beyond the edge of the road or sidewalk in the case of electrical ducts and as indicated on the drawings in the case of Telkom ducts, or as directed by the Engineer.

PSLC6 Duct Route Markers (Subclause 5.9)

Position to be Marked (Subclause 5.10)

The following to be read in conjunction with Subclauses 5.9 &5.10 :

Notwithstanding the method of marking specified in Subclause 5.9 and the positions to be marked specified in Subclause 5.10, the Contractor shall mark the position and type of all ducts on kerbs by cutting the following symbols 5 mm deep into the concrete surface with an angle grinder.

E for electricity ducts

T for Telkom ducts.

After the symbols have been cut a number of notches shall be cut next to the symbol indicating the number of ducts laid. The symbol and figure shall be painted with an approved red paint.

After the laying of road kerbs and channels the Contractor shall re-excavate the duct trench at the ends of the ducts before marking the position of the duct crossing. The subsequent backfilling of the duct ends shall not be carried out until the Engineer has inspected and approved the position of the markings. The tolerance on marking shall be such that when a line is strung over the centre of the markings the centre of the duct or duct group shall be within 150 mm either side of the line.

PSLC7 Cable Markers (Subclause 8.2.8)

Add the following to the last paragraph of Subclause 8.2.8 :

The tendered rate shall also include for all costs involved in sealing and marking duct ends and the re-excavation and backfilling for marking purposes.

PSLC8 Cement Treated Bedding

The unit of measurement shall be the Cubic metre.

The tendered rate shall cover the provision of 1200 LB 8.2.1 and shall include for the supply and mixing of the cement as specified in PSLC 3.

PSLD SEWERS

PSLD1.1 uPVC Pipe (Subclause3.1.5)

uPVC structured-wall sewers, Class 34 to shall be acceptable for 160 mm dia mains.

Heavy duty uPVC solid wall sewers, Class 34 to SABS 791 shall be used for 110mm dia house connections.

PSLD9 Manholes, Chambers, etc (Subclause 3.5)

PSLD9.1 Precast manholes (subclause 3.5.2 and 3)

Precast concrete manholes shall be acceptable provided that dolomitic aggregate be used and joints between rings be watertight. Chimneys in manholes will not be allowed. Precast bases (six way bases) will not be allowed unless the contractor liase with the Local Authority for acceptance of use.

PSLD9.2 Step irons (subclause 3.5.7)

Step irons shall be manufactured from a polymeric polypropylene with a 12mm dia high tensile strength core.

PSLD9.3 Manhole covers and frames (subclause 3.5.8)

Notwithstanding the requirements of Subclause 3.5.8 all covers shall be Type 2A with circular frame bases in accordance with SABS 558 and shall be embossed with the relevant wording.

PSLD10 Tests (Subclause 7.2)

All acceptance tests shall be carried out in the presence of the Engineer in accordance with the air test. All manholes will be tested separately for water tightness.

PSLD11 Measurement and Payment (Subclause 8.2.3)

PSLD11.1 Manholes

Depth of manholes shall be defined as the distance from the top of the cast iron cover to the lowest pipe invert level of the manhole.

PSLD12 Connection to Existing Sewer (Subclause 8.2.11)

The Contractor shall connect to existing manholes and pipelines at the positions indicated on the drawings.

PSLD12.1 Measurement and payment

PSLD12.1.1 Connection to existing sewers Unit : No

The rate for this item will include for excavation, backfilling, breaking into the manhole, dealing with the existing flow, connecting and modifying the benching, ensuring no foreign matter enters the existing sewer and making good to the Engineer's satisfaction.

PSLD13 Anchor Blocks to sewers (Subclause 8.2.7) Unit : m3

The rate for this item will include for excavation, disposal of surplus, encasing and form work for sewers on a slope steeper than 1 :10.

PSLE STORMWATER DRAINAGE

PSLE1 Concrete Pipes (Subclause 3.1)

Pipes for stormwater drainage shall be reinforced concrete Type SC Class 100D as scheduled, with ogee joints Interlocking joints shall be wrapped with a 500 mm wide geofabric Bidim A2 or approved equivalent strip overlapping at least 300 mm.

PSLE2 PREFABRICATED CHAMBERS AND SHAFTS (SUBCLAUSE 3.4.2)

Brick manholes may be used for depths up to 2.0 m as an alternative to precast concrete manholes.

The maximum length of the shaft shall be 600 mm.

PSLE3 MANHOLE COVERS, GRID INLETS ETC (SUBCLAUSE 3.4.3)

Notwithstanding the requirements of Subclause 3.4.3 and the Specification drawings bound in the document, covers and frames shall be Type 2B in roads and Type 4 in other areas in accordance with SABS 558, unless otherwise specified. Catchpits will have Type 9D covers and frames.

PSLE4 MEASUREMENTS AND PAYMENT (SUBCLAUSE 8.2)

PSLE4.1 Supply and Install Manholes (Subclause 8.2.8)

For measurement and payment purposes the depth of a manhole is defined as the depth from the top of the cover to the pipe invert level to the manhole.

PSMJ SEGMENTED PAVING (SABS 1200 MJ)

PSMJ3 MEASUREMENT AND PAYMENT

PSMJ3.1 Construction of Paving Complete Unit:m^2

Notwithstanding the provisions of SABS 1200 MJ subclause 8.2.2 the rate shall also cover the cutting of units to fit edge restraints and rolling to lock-up condition.

PSMK KERBING AND CHANNELLING

PSMK1 Bedding Material (Subclause 3.9)

All bedding and backing for kerbs shall be 15 MPa/19 mm concrete.

PSMK2 Precast Concrete Kerbing and Channelling (Subclause 5.2)

Provision shall be made for expansion joints of width 10 mm at intervals not exceeding 20 m.

Joints shall be filled with suitable silicone or polysulphide sealant.

Add to Subclause 5.2 the following:

Notwithstanding the fact that vertical curves have not been specified where changes of grade of up to 2% occur, the kerbs and channels shall be laid to levels based on a minimum vertical curve length of 20 m.

No change in grade shall be applied on kerbs in bellmouths unless specific levels are indicated.

PSMM ANCILLARY ROADWORKS

PSMM1 General (Subclause 3.2.1)

Road traffic signs shall be purchased from an approved manufacturer and shall be fabricated in accordance with the South African Road Traffic Signs Manual and as specified below.

PSMM2 Reflective Material (Subclause 3.2.9)

Add to clause 3.2.9 the following:

Non reflective material shall conform to the respective quality requirements, apart from the reflective quality requirements, of CKS 191.

PSMM3 Supports (Subclause 5.2.1.1)

Posts shall be fabricated 75 mm outside dia 3 mm steel tubing to SABS 657.

The posts shall be straight with a smooth finished surface free rust, scale, grease or foreign matter.

Posts shall be suitably drilled to permit the sign plates or frames being firmly fixed to the posts by at least two (2) M12 galvanised steel bolts, complete with fibre washers.

The open ends of all posts shall be closed either by the use of standard fittings or by welding on a mild steel plate.

After the posts have drilled, all welding completed, and all sharp edges rounded off and smoothed down they shall be zinc coated using the 'hot-dip' process in accordance with SABS Specifications 763 'Hot-dip' (Galvanised) Zinc coating".

Should any modifications be made to posts after galvanising, the posts shall be completely regalvanised as described above.

PSMM4 Backing Plates and Boards (Subclause 5.2.1.2)

All Regulatory and Danger Warning sign plates and Information signs having a width of 1,5 metres or less shall be NS 4-H6 or SIC-H4 aluminium alloy plates with a thickness of not less than 2 mm and shall conform to BS 1470. The plates shall be stiffened by means of aluminium reinforcement to BS 1476 HE19WP, rivetted to the back of the sign by means of 5 mm diameter aluminium rivets spaced at 200 mm or less from one another.

PSMM5 Installation of Road Signs (Subclause 5.2.4)

Steelwork which is to be cast or grouted into concrete shall be cleaned of loose rust, scale, oil or any other material which may in the opinion of the Engineer impair the bond between the concrete and the steel.

The posts for road traffic signs shall be placed in holes of not less than nought comma nine metres (0,9 m) in depth and shall be embedded in well compacted Class 10 concrete to the full depth of the hole and a minimum of 400 mm x 400 mm.

The top level of concrete shall be seventy-five millimetres (75 mm) below ground level. Traffic signs shall be securely and firmly fixed to the posts by means of M12 bolts.

Road traffic signs erected in place shall be true to the required dimensions, free from buckles or dents, shall be vertical in the required position and shall have a neat workmanlike appearance.

STANDARD SPECIFICATIONS FOR BUILDING WORK

BUILDING CONSTRUCTION SPECIFICATIONS

Except as hereinafter provided for, the Building Construction specifications to be used on this Contract shall comprise the following:

SECTIONEC	RESTRICTED EARTHWORKS
SECTIONZB	CONCRETOR
SECTIONZC	BRICKLAYER / BLOCKLAYER
SECTIONZD	PLASTERER, PAVIOR AND TILER
SECTIONZE	CARPENTER ANDJOINER
SECTIONZEA	PREFABRICATED TIMBER ROOFTRUSSES
SECTIONZG	ROOF AND WALL CLADDING AND RAINWATER ITEMS
SECTIONZH	PLUMBER AND DRAINLAYER
SECTIONZI	GLAZIER
SECTIONZJ	PAINTER
SECTIONZK	ASPHALTER AND WATERPROOFER
SECTIONZL	IRONMONGER AND METALWORKER
SECTIONZLA	ALUMINIUM WINDOWS, DOORS AND SHOP FRONTS
SECTIONZN	KITCHEN CUPBOARD UNITS AND SINK/CUPBOARD UNITS
SECTIONZS	TERMITEPROOFING
SECTIONZX	DOOR SIGNS AND NUMBERPLATES
SECTIONLA	MINOR FABRICATED STEEL AND OTHER METALWORK

SECTIONEC: RESTRICTEDEARTHWORKS

TABLEOFCONTENTS **PAGE**

EC 1. SCOPE EC3

EC 2. MATERIALS ..... EC 3

EC 2.1 TOPSOIL ..... EC 3

EC 2.2 HARD ..... EC 3

EC 2.3 SOFT ..... EC 3

EC 2.4 SELECTED BACKFILL ..... EC 3

EC 2.5 SELECTED FILL ..... EC 4

EC 3. EQUIPMENT ..... EC 4

EC 4. CONSTRUCTION ..... EC 4

EC 4.1 GENERAL ..... EC 4

EC 4.2 CLEARING OF SITE ..... EC 4

EC 4.3 REMOVAL OF TOPSOIL ..... EC 4

EC 4.4 USE OF EXPLOSIVES ..... EC 4

EC 4.5 EXCAVATION ..... EC 5

EC 4.6 EXCAVATION FOR WORKING SPACE ..... EC 6

EC 4.7 DEWATERING EC6

EC 4.8 TIMBERING AND SHORING ..... EC 6

EC 4.9 SELECTION AND DISPOSAL OF MATERIALS FROM EXCAVATIONS ..... EC 7

EC 4.10 EXCAVATIONS TO BE PASSED EC7

EC 4.11 OVERBREAK ..... EC 7

EC 4.12 BACKFILLING ..... EC 7

EC 4.13 FILL ..... EC 8

EC 4.14MOISTURE CONTROL ..... EC 8

EC 5. TOLERANCES ..... EC 8

EC 6. TESTING EC8

EC 6.1 GENERAL ..... EC 8

EC 6.2 SOIL TESTS ..... EC 9

EC 6.3 TEST FREQUENCIES.....EC 9

EC 7. MEASUREMENT AND PAYMENT ..... EC 9

EC7.1 GENERAL EC9

EC 7.2 EXCAVATION ..... EC 10

EC 7.3 LOAD EXCAVATED MATERIAL AND CART TO SPOIL..... EC 10

EC 7.4 OVERBREAK ..... EC 10

EC 7.5 BACKFILL ..... EC 10

EC 7.6 FILL ..... EC 11

EC 7.7 OVERHAUL..... EC 11

EC1. SCOPE

This section covers generally the excavation and backfilling for pipework, drains, ducts and associated minor structures such as manholes and inlet and outlet structures to culverts.

Included also in this section are restricted excavation for paths or open channels for access or drainage purposes, and the construction of narrow fills of small cross section, all of which normally require the use of either plant of small capacity, such as trench excavators and hand guided compaction equipment.

Insofar as they are included in this Document, Standard Specification Section EE shall cover, respectively, earthworks in bulk, and for major structures.

EC2. MATERIALS

EC2.1 TOPSOIL

Topsoil is the upper layer of the existing soil (prior to the commencement of earthworks) that contains organic material and other substances suitable for supporting plant growth.

EC2.2 HARD

Hard is any material which, in the opinion the Engineer, can be removed only by systematic drilling and blasting, and incidental boulders or detached fragments of solid rock of over 0,2 cubic metres in volume.

If the Contractor considered that any material should be classified as hard, he shall request the Engineer to examine the material before continuing with the excavation, and shall at his own expense provide such assistance, in terms of plant or labour, as the Engineer may require for his examination of the material. Material shall only be classified as hard when the Engineer has given his agreement in writing, and after a full record of the amount of hard material has been agreed upon. No consideration will be given to the re-classification of any material as hard subsequent to its excavation.

EC2.3 SOFT

All other material not classified as hard shall be classified as soft.

The Contractor shall be at liberty to use any means at his disposal, including drilling and blasting, for dislodging material which has not been agreed as hard, but he will only be paid at the rates tendered for soft material.

EC2.4 SELECTED BACKFILL

Unless selected backfill is defined elsewhere in the document, it shall consist of a granular, non-cohesive material that passes a 37,5mm sieve and that is free of organic and other deleterious materials.

EC2.5 SELECTED FILL

Unless otherwise detailed in the Project Specification or on the drawings, selected fill is the top 150mm thick layer of bulk fill that shall have a maximum P.1. of 12, a minimum G.M. of 0,75, and a minimum strength equal to a C. B.R. of 10 at the required compacted density.

EC3. EQUIPMENT

The Contractor shall maintain on the site in good working order adequate equipment for carrying out the required work in a safe and efficient manner in accordance with these Specifications and the conditions of his Contract.

EC4. CONSTRUCTION

EC4.1 GENERAL

The Contractor shall be fully responsible for the execution of the work in accordance with all requirements of the Central and Local Authorities. He shall be fully responsible for the provision, erection, and maintenance of all temporary signs required by and to the satisfaction of the authorities and the Engineer.

The work shall be carried out in a manner which, in the opinion of the Engineer, will cause a minimum of inconvenience to others.

Where the Works are crossed by rights of way, or by any other permanent accesses, the Contractor shall provide and maintain temporary accesses by means of safe and protected paths, roads, bridges, or any other requirements all to the satisfaction of the Engineer.

EC4.2 CLEARING OF SITE

Before commencement of any earthworks, the Contractor shall remove all debris and coarse vegetation over such widths that are adequate to ensure that undesirable material cannot contaminate material that is to be used subsequently, and to allow for access alongside the excavations.

The widths to be cleared shall be to the Engineer's approval. Material cleared shall be burned, carted away, buried or otherwise disposed of to the approval of the Engineer.

EC4.3 REMOVAL OF TOPSOIL

Where required the Contractor shall remove the topsoil over the areas indicated and to the required depths in order to prepare for excavation, filling, or other construction, or to obtain suitable material for supporting vegetation on fill or cut surfaces.

Any material that is suitable and required for use as topsoil shall be kept separate and used as directed immediately in its final position or stockpiled. The remainder of the material removed shall be spread to waster or otherwise disposed of as directed by the Engineer.

EC4.4 USE OF EXPLOSIVES

The Contractor shall be responsible for the acquisition, transport, custody and use of explosives on the Contract and shall comply with the requirements of the Explosives Act of

1956 and Regulations and all amendments thereto and to the requirements of the South African Police.

Copies of all returns, reports and applications to, and licences, permits and authorities issued by such Statutory Bodies shall be furnished to the Engineer by the Contractor. Nothing contained in this Contract nor any approval or instruction by the Engineer shall relieve the Contractor of any of his obligations and responsibilities under any Statutory Acts or Regulations existing or introduced during the period of contract.

The Contractor shall be responsible for the sitting, erection, fencing, and maintenance and licensing of explosives and detonator magazines, required for the satisfactory performance of the Contract. Proposals for the sitting shall in the first instance be submitted to and receive the approval of the Engineer prior to any approach being made to the authorities concerned.

The Contractor shall be responsible for the guarding of magazines in terms of any regulations which may be in force or come into force during the period of contract and shall comply with any instructions given from time to time by any Statutory or Local Authority in this connection.

The Contractor shall accept all risks and liability resulting from any blasting operations which he may conduct on the site. All blasting shall be carried out by a fully qualified surface blaster who shall observe all of the relevant requirements of the current Explosives Act.

If, in the opinion of the Engineer, blasting would be a danger to the public, property or services, or is being carried out in a reckless manner, or justified complaints are received concerning blasting operations, the Engineer may order all blasting operations to cease. The Contractor shall have no claim by reason of such order.

All costs incurred in the acquisition storage, transport and use of explosives shall be deemed to be covered by the rates inserted against the relevant items in the Schedule of Quantities.

EC4.5 EXCAVATION

Excavation shall in general be carried out by the Contractor to suit the programme approved by the Engineer, and in the most efficient manner to ensure the expeditious completion of the Works.

Excavation for pipe trenches shall be undertaken progressively along the route of the pipeline and the haphazard opening of trenches along various sections of the Works will not be permitted.

Where trenches cross roads, however, excavations, pipe laying, and backfilling shall be carried out before the final shaping and compaction of the base course and preferably the sub-base, or such other road layer as may be specified in the Project Specifications or required by the Engineer, even if the pipes in these sections have to be laid ahead of the rest of the work.

The Contractor shall keep the length of open trenches to the minimum practicable. No trench excavation shall be allowed to remain open for more than fourteen days before backfilling is completed. The Contractor may, however, be allowed to undertake advance excavation of hard material.

Excavations shall be done accurately to line and level. Those that are to remain permanently open, and those for drains that are designed to be laid in trench conditions, as specified elsewhere, shall be carried out with the tolerances specified in Clause EC 5. In addition, the bottoms of excavations that are to remain permanently open shall be trimmed to ensure that water can drain freely and without ponding. The bottoms of trenches for drains and ducts shall be trimmed as specified elsewhere in this document.

Unless otherwise specified elsewhere in this document or on the drawings, pipe trench dimensions for payment purposes shall be the following:

- Depth : 100mm lower than the required invert level of the pipe.
- Widths : For pipes with an outside diameter of up to 300mm :600.

For pipes with outside diameters exceeding 300mm and up to 1000mm: 1,9 x outside diameter.

For pipes with outside diameters exceeding 1000mm: outside diameter + 900mm.

Pipe trenches may be enlarged locally at the joints to provide adequate clearance for jointing. No additional payment will be made for the extra excavation required at the joints and the cost will be considered to be included in the schedule of rates for excavation.

Should the Contractor carry any excavation deeper than specified, he shall at his own cost refill the excess excavation with concrete or suitable compacted material as directed by the Engineer.

In areas where a high incidence of solid rock is encountered, trench widths for pipes may, with the permission of the Engineer, be reduced, in which case the reduced width will be used in the calculation of excavation quantities.

EC4.6 EXCAVATION FOR WORKING SPACE

Unless specifically ordered, all excavations for structure, manholes, valve boxes and chambers, etc., shall be measured to the net external dimensions. Should working space be required such as where external formwork is necessary, due to the nature of the excavated material, the Engineer may approve additional excavation for working space.

EC4.7 DEWATERING

Suitable arrangements shall be made for the dewatering and keeping dry of all excavations to the satisfaction of the Engineer and until construction is completed. The Contractor shall be responsible for preventing the ingress of storm water flow into the excavation and for the construction of all necessary drainage channels and sumps, for the supply and running of pumps, and for everything necessary for the exclusion of water from the excavations, whether such water arises from storm water or seepage.

Where the bottoms of excavations are softened through the Contractor's failure to comply with the above, the soft material shall be removed and replaced with Class 10/38 concrete or suitable compacted material to the satisfaction of the Engineer, all at the Contractor's expense.

The Contractor shall take full responsibility for the disposal of water from the excavations.

EC4.8 TIMBERING AND SHORING

The Contractor shall provide all the necessary timbering, strutting and shoring required in order to ensure the safety of the excavations, and shall secure any structures or roads adjacent to the Works. Such precautionary work shall be to the approval of the Engineer. Approval by the Engineer of any such precautionary work shall not indemnify the Contractor against any claims or in any way relieve the Contractor of his responsibility under the Contract with regard to the safety of excavations or adjoining structures.

Timbering and shoring shall be arranged in such a way that obstruction of the work to be carried out will be kept to a minimum.

EC4.9 SELECTION AND DISPOSAL OF MATERIALS FROM EXCAVATIONS

It is essential that all materials obtained from excavations shall be used to the best advantage in the construction of the Works, and the onus shall be on the Contractor to ensure that no material is used incorrectly.

The Contractor shall keep apart excavated materials of different quality that are suitable as backfill at various levels.

Any material that is unsuitable for backfill or is surplus after backfilling has been completed shall be spread to waste within a radius of 20m or loaded and carted to spoil as ordered by the Engineer.

The onus shall be on the Contractor to ensure that no material is wasted or used incorrectly and he shall be expected to replace at his own expense any material that has been misplaced by him.

EC4.10 EXCAVATIONS TO BEPASSED

In no case shall concrete, backfilling or pipe laying be carried out in an excavation before the consent of the Engineer has been obtained.

The Contractor shall advise the Engineer whenever any excavations are ready for inspection, and when it is necessary to cover up the work. In default of such notice, the Engineer shall have the right to instruct that the foundations be uncovered by the Contractor and re-instated without extra charge.

EC4.11 OVERBREAK

In cases where concrete has to be cast against excavated faces in hard material, the over-excavation shall be classified as over-break. Overbreak shall be backfilled with concrete a shown on the drawing or as instructed by the Engineer.

EC4.12 BACKFILLING

No backfilling shall commence before the Works to be covered have been inspected and approved by the Engineer.

All backfilling shall be done in layers not exceeding 150mm and shall be carried out simultaneously and equally on both sides of the pipe or structure to avoid unequal lateral forces.

Materials for backfilling at any level (other than "Selected Backfill" or "Granular Bedding Material") shall be of the same quality and be compacted to the same density as the material at the same level adjacent to the backfill, with a required minimum density of 90% modified AASHTO. Backfill material shall not contain any hard lumps of material exceeding 100mm in greatest dimension, nor shall it contain roots or other objects that may have a deleterious effect on the standard of the backfill.

Should there be insufficient suitable backfill material available from the excavation, the Contractor shall import a suitable material as instructed by the Engineer.

Generally, backfill shall be mounded to a height of 80mm above general ground level to allow for settlement and to prevent scouring.

EC4.13 FILL

Before place any material in a particular fill, all preparatory work such as site clearing, removal of topsoil, where ordered by the Engineer, shall be completed.

Fills shall be constructed in layers approximately parallel to the finished levels and compacted in layers not exceeding 150mm in thickness to the densities specified and shall be finished to conform with the final levels as shown on the drawings or as directed by the Engineer.

Should the Contractor, for any reason, place fill outside the lines specified, he shall at his own expense carry out any cutting, removal, trimming or other operations necessary to restore the finished earthworks to the specified lines and levels. No additional payment will be made for over-filling or for carrying out any remedial measures.

In wet weather conditions the construction operations shall be suspended temporarily if the conditions are such that proper placing and compaction of materials cannot be achieved.

EC4.14 MOISTURE CONTROL

Material shall be compacted at the optimum moisture content for Modified AASHTO. Maximum Dry Density with an allowable tolerance of plus one percent or minus two percent of moisture by mass of dry material. Should the material be too wet, due to rain or any other cause, it shall be allowed to dry out to a moisture content conforming to the above requirement before compaction proceeds.

EC5. TOLERANCES

Where measured trench widths are specified for pipes and drains the depth up to a point 500mm above the drain, may not exceed the width specified by more than 100mm, as increasing the trench width would cause overloading of the pipe or drain.

Levels shall not vary by more than 25 mm from those specified, nor may the actual grade vary from that specified by more than 10% of the specified grade.

The finished outlines of permanent cuts or fills shall nowhere vary by more than 50mm from the lines shown on the drawings.

The compacted thickness of any layer shall nowhere exceed the specified thickness by more than 10%.

EC6. TESTING

EC6.1 GENERAL

The Contractor shall be fully responsible for the quality of all work produced, both in respect of materials used and of workmanship, and shall carry out sufficient control tests as the Engineer considers are necessary to ensure that all work is carried out in accordance with the Specifications.

The Contractor shall provide adequate staff, equipment and facilities for carrying out such tests. Should the Engineer at any time consider that the staff, equipment, or facilities are

inadequate, he may instruct the Contractor to cease further work until such time as any deficiency has been remedied.

All results shall be reported to the Engineer on approved forms within one working day after the minimum period of time required to carry out the relevant tests. Any further work or covering up of work before tests have been carried out, or before their results are available, may only be done with the Engineer's approval and at the Contractor's risk, but all remedial work shall be carried out at the Contractor's expense and to the Engineer's satisfaction.

No separate payment will be made to the Contractor for any test required of him, and all costs shall be deemed to be included in the tendered rates.

Should the Contractor fail to carry out any of the tests required of him, the Engineer may arrange for such tests to be carried out at the Contractor's expense. All costs of such tests shall be deducted from any payment moneys due to the Contractor.

The Engineer will carry out such additional check testing as he considers necessary, but this fact will in no way relieve the Contractor of his obligations as specified herein.

EC6.2 SOIL TESTS

All testing shall be carried out in accordance with the methods specified in the latest revision of the "Standard Methods of Testing Materials", and annexures thereto, as issued by the Department of Transport.

If so specified in the Project Specification, the Contractor shall equip himself to carry out the following tests.

(a) Indicators, consisting of sieve analysis and determination of Atterberg constants.

(b) Modified AASHTO moisture-density tests.

(c) Determination of in-place densities and moisture contents.

EC6.3 TESTFREQUENCIES

The Contractor shall be required to carry out in-place density tests at frequencies ordered by the Engineer.

EC7. MEASUREMENT ANDPAYMENT

EC7.1 GENERAL

Before commencement of construction of any new portion of the Works, the Contractor shall ascertain, together with the Engineer whether sufficient information is available from the drawings or from existing surveys to enable full measurement to be made of that portion of the Works, and shall indicate in writing whether such information is acceptable to him.

Should the available information be insufficient or unacceptable to either the Engineer or the Contractor, further surveys shall be carried out by the Engineer and the Contractor together, to allow for full agreement of all the necessary information to be made in writing before the start of construction. Any assistance required to be provided by the Contractor shall be at his own expense.

Excavation in excess of the specified dimensions or authorised by the Engineer shall not be measured for payment.

EC7.2 EXCAVATION

Depending on the description in the Schedule of Quantities the unit of measurement for excavation shall be the cubic metre (m^3) to the dimensions as specified or lineal meter(m) for different pipe sizes.

Where depth ranges are schedules, each rate shall apply to the full measured depth of trench lying within the relevant depth range. Payment shall distinguish between trench excavation and excavation for minor structures such as manholes, catch pits, etc. Excavation for "hard" material shall be paid extra over that for soft and shall apply irrespective of depth.

The tendered prices shall include for all excavation, for trimming the bottom of the excavation, for disposal of excess or unsuitable material within a radius of 20m from its original position for keeping excavations safe and for any other operations necessary to complete the Works as specified.

The tendered prices for excavation shall also include for site clearances, where this is not measured under a separate payment item.

EC7.3 LOAD EXCAVATED MATERIAL AND CART TOSPOIL

Surplus or unsuitable material from excavation which the Engineer orders to be loaded and carted to spoil shall be measured per cubic metre (m^3). Wherever possible the quantities shall be measured from cross sections taken in place before loading, but if acceptable to the Engineer, the quantities may be calculated from a load count of the haul units, with 70% of the measured volume of the haul units being accepted as the equivalent volume in cut before loading.

The tendered price shall include for loading, hauling within a free-haul distance of one kilometre, dumping, spreading, shaping and trimming of the spoil dumps all to the satisfaction of the Engineer.

EC7.4 OVERBREAK

The unit of measurement shall be the square metre (m^2), the quantity being based on the net surface area of the structure in direct contact with the surfaces of hard material.

Payment shall include for all trimming, cleaning and backfilling, distinction being made between the various classes of concrete required.

EC7.5 BACKFILL

The unit of measurement shall be the cubic metre ($m^{3'}$) of backfill material in place after compaction, the quantity being calculated from the dimensions of backfill as shown on the drawings, or as ordered by the Engineer.

Payment shall distinguish between backfill and selected backfill, furthermore distinction shall be made between backfill material obtained from the excavation and backfill material imported on Instruction from the Engineer. The free-haul distance on imported backfill material shall be one kilometre. Payment shall include for all placing, watering and compaction to the specified density.

EC7.6 FILL

The unit of measurement shall be the cubic metre (m^3) of material in place after compaction, the quantity being calculated from the dimensions of fill as shown on the drawings or ordered by the Engineer.

Payment for fill shall include for all costs of procuring and furnishing within a free-haul distance of one kilometre, placing, watering, compacting, shaping and trimming the material to the specified cross sections. Payment shall distinguish between fill and selected fill.

EC7.7 OVERHAUL

Overhaul shall be measured per cubic metre-kilometre (m^3-km), and shall be computed as the product of the measured volume of material hauled further than the free-haul distance and the additional distance (to the nearest 0,1 km over the free-haul distance) hauled, all with the Engineer's agreement. The haul distance shall be the distance from the centre of volume of

the material in place before excavation to the centre of volume of the material in place after disposal in accordance with the Specifications, the Drawings, or the Engineer's Instructions, and measured along the shortest practicable haul route, as determined by the Engineer. The volume of material measured for overhaul shall be taken from the applicable volume measurements for spoil, backfill or fill as specified in Clauses EC 7.3, EC 7.5 and EC7.6.

The prices tendered for overhaul shall include for all costs involved through the haulage of materials over and above the free-haul distance.

TABLE OF CONTENTS **PAGE**

ZB 1. SCOPE 3

ZB2. MATERIALS 3

ZB2.1 STANDARDS 3
ZB2.2 CEMENT 3
ZB2.3 WATER 3
ZB2.4 AGGREGATES 3
ZB2.5 ADDITIVESORADMIXTURES 4
ZB2.6 REINFORCEMENT 4
ZB2.7 STORAGEOFMATERIALS 4
ZB2.7.1 Cement 4
ZB2.7.2 Aggregates 4
ZB2.7.3 Steel Reinforcement 4
ZB2.7.4 Storage Capacity 5
ZB2.7.5 Deteriorated Material 5

ZB 3. EQUIPMENT 5

ZB3.1 BATCHINGPLANT 5
ZB3.2 MIXERS 5
ZB3.3 HANDLINGEQUIPMENT 5
ZB3.4 VIBRATORS 5

ZB4. CONSTRUCTION 6

ZB4.1 RECORDS 6
ZB4.2 REINFORCEMENT 6
ZB4.2.1 Bending 6
ZB4.2.2 Fixing 6
ZB4.2.3 Cover 6
ZB4.2.4 Splicing 7
ZB4.2.5 Protection of Exposed Bars 7
ZB4.3 SHUTTERING 7
ZB4.3.1 Design 7
ZB4.3.2 Finish 8
ZB4.3.3 Foundation Paper 8
ZB4.3.4 Drip Moulds and Sharp Edges 9

ZB4.3.5 Ties 9

ZB4.3.6 Preparation of Shuttering 9

ZB4.3.7 Re-use of Shuttering 9

ZB4.3.8 Openings 9
ZB4.3.9 Removal of Shuttering 9

ZB4.4 CONCRETEQUALITY 10

ZB4.4.1 Classes of Concrete 10
ZB4.4.2 Mix Design 11
ZB4.4.3 Consistency and Workability 11
ZB4.5 BATCHING AND MIXINGOFMATERIALS 12

ZB4.5.1 Measuring 12
ZB4.5.2 Mixing 12
ZB4.6 PLACING 13

ZB4.6.1 General 13
ZB4.6.2 Concrete with Plums 13
ZB4.6.3 Pumping of Concrete 14
ZB4.6.4 Compaction 14
ZB4.6.5 Joints 14
ZB4.6.6 Curing and Protection 15
ZB4.6.7 Adverse Weather Conditions 16
ZB4.7 CONSTRUCTIONDETAILS 16

ZB4.7.1 Holes, Chases and Fixing Blocks 16
ZB4.7.2 Pipes and Conduits 16
ZB4.7.3 Waterstops 16
ZB4.7.4 Patching 16
ZB4.7.5 Wall Ties (refer BRICKLAYER Specification fortie details) 17

ZB5. TOLERANCES **17**

ZB6. TESTING **18**

ZB6.1 COMPRESSIVE STRENGTH 18
ZB6.2 COMPRESSIVE STRENGTHFAILURE 18

ZB6.3 PROCEDURE IN THE EVENTOFFAILURE 19
ZB6.4 GRADINGANALYSIS 19

ZB6.5 DETERMINATIONOFCONSISTENCY 19

ZB6.6 COSTSOFTESTS 20

ZB 7. MEASUREMENTANDPAYMENT **20**

ZB7.1 CASTIN-SITUCONCRETE 20
ZB7.2 PRECASTCONCRETE 20

ZB7.3 JOINTS 20
ZB7.4 WATERSTOPS 20

ZB7.5 CONCRETESURFACEFINISHES 20

ZB7.6 SHUTTERING 21
ZB7.7 FOUNDATIONPAPER 21

ZB7.8 REINFORCEMENT 21

SECTIONZB: CONCRETOR

ZB1. SCOPE

This section of the Specification covers all aspects of concrete work including various grades of mass and reinforced concrete, pre-cast concrete, formwork and steel reinforcing, as well as the supply of all materials and labour.

ZB2. MATERIALS

ZB2.1 STANDARDS

All materials used in the Works shall comply in all respects with the following standard specifications, the latest issues of which shall be held to apply:

- SABS 82 & BS4466 : Bending dimensions of bars for concrete reinforcement
- SABS471 : Portland Cement and rapid-hardening cement
- SABS626 : Portland blast furnace cement
- SABS831 : Portland cement PC15FA
- SABS878 : Ready-mixed concrete
- SABS920 : Steel bars for concrete reinforcement
- SABS973 : Standard form of specification for concrete work
- SABS1083 : Aggregates from natural sources
- BS915 : High Alimina cement
- CKS158 : Welded wire mesh for concrete reinforcement
- National Building Regulations

ZB2.2 CEMENT

All cement used in the Works shall be of the type specified and approved by the Engineer. Where any particular type is not specified it shall be taken to be ordinary Portland cement or PC15FA. All cements shall comply with the relevant standards above.

ZB2.3 WATER

Water shall be clean and free from injurious amounts of acids, alkalis, sugar and other organic substances. Water suitable for drinking purposes shall be acceptable. If so required by the Engineer, the suitability of water shall be proved by tests carried out by an approved laboratory.

ZB2.4 AGGREGATES

Both the coarse aggregate (stone) and fine aggregate (sand) shall comply with the requirements of SABS 1083. Aggregates shall be obtained from approved sources which shall not be changed without the written consent of the Engineer.

When tested in accordance with the above Specification, the following requirements shall also apply:

(a) Soundness

i) Fine aggregate : maximum loss5%

ii) Coarse aggregate : maximum loss15%

(b) Shrinkage

0,05% maximum

ZB2.5 ADDITIVESORADMIXTURES

The Contractor will be permitted to use such additives or admixtures as may be necessary to achieve the required consistency of the concrete subject to the prior approval of the Engineer.

ZB2.6 REINFORCEMENT

All steel reinforcement shall, at the time of placing of the concrete, be free from loose rust, scale, oil and other coatings which might reduce the bond between the steel and the concrete or initiate corrosion of the reinforcement.

ZB2.7 STORAGE OF MATERIALS

ZB2.7.1 Cement

Cement which is stored on site shall be kept under cover that provides adequate protection against moisture and other factors which may promote deterioration.

When the cement is supplied in 50kg sacks, the sacks shall be closely and neatly stacked to a height not exceeding 12 sacks and arranged so that they can be used in the order in which they were delivered to the site. The sack shall not be stacked directly on concrete floors.

Storage of cement in bulk in silos or similar containers shall be permitted provided that the cement drawn for use is measured by mass and not by volume.

Cement shall not be kept in storage for longer than 6 weeks without the Engineer's permission.

Different types of cement shall be stored separately.

ZB2.7.2 Aggregates

Aggregates of different nominal sizes shall be stored separately and in such a way that segregation is avoided.

Intermixing of different materials and contamination by foreign matter shall be avoided.

ZB2.7.3 Steel Reinforcement

Steel reinforcement shall be stacked off the ground and, in aggressive environments, protection shall be provided in the form of sheds or tarpaulins.

ZB2.7.4 Storage Capacity

The storage capacity and the amount of material stored (whether cement, aggregates steel or water) shall be sufficient to ensure that no interruptions to the progress of the Works are occasioned by lack of materials.

ZB2.7.5 Deteriorated Material

Material that has deteriorated, or that has been contaminated or otherwise damaged, shall not be used in concrete. Such material shall be removed from the site without delay.

ZB3. EQUIPMENT

The Contractor shall provide and maintain in good working order, adequate equipment for carrying out the required work in accordance with this specification in a safe and efficient manner.

ZB3.1 BATCHINGPLANT

Batching or dry constituents of a concrete mix shall be done by mass using suitable batching equipment capable of determining the required mass within an accuracy of 3%. Mixing water may be measured either by mass or by using a flow meter with an accuracy of 3% or better.

ZB3.2 MIXERS

The concrete mixer(s) shall be of adequate capacity to cope with the maximum sizes of casts required. Unless otherwise approved, mixing shall be carried out in a mechanical batch-mixer of approved type and capable of producing a uniform distribution of ingredients throughout the batch. A standby mixer shall be available for immediate use or the mixing plant shall consist of at least two mixing units.

The Engineer shall have the right to stop the use of any mixer, the blades or paddles of which have, in his opinion, been worn, bent or otherwise rendered ineffective by any build-up of hardened concrete until such time as they have been replaced, repaired or properly cleaned.

ZB3.3 HANDLINGEQUIPMENT

The equipment supplied shall be capable of handling the quantities of concrete involved without undue delay. Mixed concrete shall be discharged from the mixer and transported to its final position in such a manner that segregation, loss of ingredients and adulteration are prevented and that the mix is of the required workability at the point and time of placing.

Standby hoists or cranes shall be provided where applicable.

ZB3.4 VIBRATORS

The Contractor shall supply an adequate number of suitable vibrators, including provision for standby units, to ensure that all concrete is adequately vibrated and that the placing of concrete is not delayed due to a short supply of vibrators.

The Engineer shall have the right to refuse permission for the casting of concrete if, in his opinion, vibrators of suitable quality or numbers are not available on site.

ZB4.1 RECORDS

The Contractor shall maintain written records that provide the following information:

(a) Date on which each section was concreted, time taken to place and the position of the section in the Works.

(b) Daily maximum and minimum temperatures and general weather conditions.

(c) Nature of samples and dates on which they were taken, including identifying marks.

(d) Results of tests on samples taken.

ZB4.2 REINFORCEMENT

ZB4.2.1 Bending

Reinforcing bars shall be bent to the dimensions shown on the working drawings and in accordance with SABS 82. No hand straightening of reinforcing will be permitted. Bars requiring straightening shall only be straightened by a machine made for that particular purpose. The straightened bars shall have not kinks or waves.

The bending and re-straightening of bars partially built in will not be permitted. Except as allowed for below, all bars shall be bent cold and bending shall be done slowly, a steady, even pressure being used without jerk or impact.

If approved, hot bending of bars of diameter at least 32mm shall be permitted, provided that the bars do not depend for their strength on cold working. When hot bending is approved, the bars shall be heated slowly to a cherry red heat (not above 843°C) and after bending shall be allowed to cool slowly in air. Quenching with water shall not be permitted.

ZB4.2.2 Fixing

Reinforcement shall be secured against displacement by tying at intersections with 1, 6 or 1,25 mm diameter annealed wire or by the use of suitable clips, or if permitted by the Engineer, by welding. It shall be supported in its correct position by handlers or saddles, and aligned by chairs and spacers of approved design and material. Where such hangers, saddles, chairs or spacers are of steel they will be detailed on the drawings or in bending schedules.

ZB4.2.3 Cover

The minimum cover of concrete over reinforcement shall be as shown on the working drawings. Where this is not indicated, the minimum thickness of the cover, measured from the outside of a bar of diameter 'd' mm shall be not less than the appropriate value, or greater of the appropriate values, as relevant, provided column 2 of Table 4-1.

TABLE 4-1: COVER TO REINFORCEMENT

No.	TYPE OF CONSTRUCTION	Minimum cover (mm)
1.	**General** Over all bars including ties, stirrups and all secondary reinforcement	15 or d
2.	**Ribbed floors and roofs**	15 or d
No.	**TYPE OF CONSTRUCTION**	**Minimum cover (mm)**
	Ribs and slabs	15 or d
3.	**Slabs and walls:**	
	(a) Normal	15 or d
	(b) Exposed to water pressure	25
	(c) Slabs laid on ground; external walls	25
4.	**Main bars in:**	
	(a) Columns	40 or d
	(b) Beams: end cover beyond hooks	25 or 2d

	(c) Beams: at other surfaces	25 or d
	(d) Members not elsewhere specified	25 or 2d
5.	**Surfaces in contact with backfilling:**	
	(a) Bars of dia. up to and including 16mm	40
	(b) Bars of dia. over 16mm	50
6.	Surfaces of footing or other members cast in contact with the ground or on a blinding layer	75

ZB4.2.4 Splicing

Splicing or joining of reinforcing bars shall be made only as and where shown on the working drawings or as otherwise approved.

The length of the overlap in a splice shall be not less than that shown on the working drawings.

ZB4.2.5 Protection of Exposed Bars

If left exposed for future bonding of extensions to the Works, reinforcement shall be protected from corrosion as specified by the Engineer.

ZB4.3 SHUTTERING

ZB4.3.1 Design

Shuttering shall be so designed and constructed that the concrete can be properly placed and compacted and that the required shapes, levels, and dimensions shown on the working drawings are maintained.

The shuttering and joints shall be capable of resisting the dead load, pressure of the wet concrete, wind forces, and all other superimposed loads and forces.

Wedges and clamps shall be used in preference to nails. Special care shall be taken if the concrete is to be compacted by vibration.

Joints in forms shall be tight enough to prevent leakage of cement paste.

The Contractor is required to make his own camber allowances for any deflection of formwork which is likely to arise during construction.

ZB4.3.2 Finish

The quality of the finished surface of the concrete shall be as shown on the working drawings or as otherwise specified, and the type of shuttering used shall be adequate to provide such finishes. Concrete faces shall be sound and solid, free from honeycombing and excrescence.

The finished surfaces of concrete shall, be rough or smooth as called for on the drawings and as described below.

(a) Rough Finish

Rough finishes will normally be called for where they will not be left permanently exposed; the surface texture is unimportant provided that the concrete is sound.

(b) Smooth Finish

Smooth finishes will be called for on exposed concrete faces where a good standard of surface finish is required. The faces shall have a smooth texture such as is left by the use of planed timber, with all board and panel marks lined up in a regular manner.

(c) Open Concrete Surfaces

Horizontal or near horizontal, upward facing concrete surfaces which are not to be measured as formed faces will be described as open surfaces and shall be finished as follows:

- On completion of placing and compaction of concrete, the surface shall be struck off with a template and tamped with a screed board to give a dense concrete skin true to the required lines and levels. Such finishing shall not be considered to be a special finish and the work involved shall be deemed to be included as part of the placing operation.

Special surface treatment, where required, shall be carried out as follows:

i) "Wood float finish" : Floating shall be done only after the concrete has hardened sufficiently and may be done by hand or machine. Care shall be taken that the concrete is worked no more than is necessary to produce a uniform sand paper surface free from screed marks.

ii) "Steel float finish" : Trowelling shall not commence until the moisture film has disappeared and the concrete has hardened sufficiently to prevent excess laitance from being worked to the surface. The surfaces shall be travelled under firm pressure to a glossy texture and left free from trowel marks.

ZB4.3.3 Foundation Paper

Where the Engineer approves of the casting of the foundation against the sides of an excavation in material other than sound rock, he will require the Contractor to fix foundation paper against the sides of the excavation to provide a clean impervious surface against which to cast the concrete. Such foundation paper shall be two-ply brown paper reinforced with a bituminised cotton mesh between the layers of paper. It shall be of sufficient durability to withstand the force of the concrete during placing without tearing.

ZB4.3.4 Drip Moulds and Sharp Edges

Where required, drip moulds shall be provided. Drip moulds shall be formed from 20 mm quadrant or 12 mm half-rounds unless otherwise indicated on the drawings.
All sharp edges inside the forms shall be provided with 25 mm x 25 mm triangular fillets, unless otherwise shown on the drawings or directed by the Engineer.

ZB4.3.5 Ties

Any metal ties and securing devices used to hold the formwork must be a type which can be later withdrawn, and the holes left must be completely filled with mortar; any metal parts left in the concrete must not be closer than 50 mm from any finished face.

ZB4.3.6 Preparation of Shuttering

Surfaces that are to be in contact with fresh (wet) concrete shall be so treated (by coating with a non-staining mineral oil or other approved material or, in the case of timber forms, by thoroughly wetting the surface) as to ensure easy release and non-adhesion to shutters during stripping.

If any substance other than water is used, every precaution shall be taken to avoid contamination of the reinforcement.

ZB4.3.7 Re-use of Shuttering

Before re-use, all shuttering shall be reconditioned, and all shutter surfaces that are to be in contact with the concrete shall be thoroughly cleaned without unduly damaging the surfaces of the shutter.

ZB4.3.8 Openings

Where necessary for the proper placing of the concrete, temporary openings for cleaning, inspection or placing purposes shall be provided.

ZB4.3.9 Removal of Shuttering

Shuttering shall not be removed before the concrete has attained sufficient strength to support its own mass and any loads that may be imposed on it. This condition shall be assumed to require the shuttering to remain in place, after placing of the concrete, for the appropriate minimum period of time given in Table 4-2.

However, where the concrete strength is confirmed by tests on cubes manufactured and tested in accordance with Clause ZB 6.1 shuttering supporting cast in-situ concrete in flexure may be struck when the cube strength is 10 MPa or twice the stress to which it will then be subjected, whichever is the greater, provided that such earlier striking will not result in unacceptable deflections due to shrinkage, creep etc.

Shuttering shall be removed carefully so that shock and damage to the concrete are avoided.

Weather may be regarded as 'normal' when atmospheric temperatures adjacent to the concrete as measured by a maximum and minimum thermometer, do not fall below 15'C, and as 'cold' when temperatures measured similarly, fall below 5'C.

When minimum temperatures are between these values, stripping times should be intermediate between the periods specified.

TABLE 4-2: REMOVAL OF SHUTTERING: MINIMUM TIMES						
Type of structural member of shuttering	**Portland cement and Portland cement 15**		**Rapid hardening Portland cement and rapid hardening Portland cement 15**		**Portland blast furnace cement**	
	Normal Weather	**Cold Weather***	**Normal Weather**	**Cold Weather***	**Normal Weather**	**Cold Weather***
1. Beam sides and unloaded columns	9 hrs	16 hrs	5 hrs	10 hrs	14 hrs	24 hrs
2. Slabs with props left under	4 days	7 days	2 days	4 days	6 days	10 days
3.Beamsoffitswithpropsleft under and ribs of a ribbed floor construction	7 days	12 days	3 days	5 days	10 days	7 days
4. Slab props	10 days	17 days	5 days	9 days	10 days	17 days
5. Beam props	14 days	28 days	7 days	12 days	14 days	28 days
6. Free standing arches and walls	2 days	4 days	1 day	2 days	3 days	5 days

**Shorter periods may be used for section of thickness at least 300mm.*

ZB4.4 CONCRETEQUALITY

ZB4.4.1 Classes of Concrete

The following classes of concrete using Portland cement shall be used, as indicated on the drawings.

STRENGTH CONCRETE			
Class of concrete slab a/b	**Minimum 28 days strength (MPa)**	**Slump limits**	**Max. agg. size (mm)**
30/19	30	25-75	19.0
25/19	25	25-75	19.0
20/19	20	25-75	19.0
15/19	15	25-75	19.0
15/38	15	25-75	37.5
10/19	10	25-75	19.0
10/38	10	25-75	37.5

In the above concrete class notation - class a/b. "a" denotes the minimum 28 day strength and "b" the maximum aggregate size.

PRESCRIBED MIX CONCRETE						
Class of concrete slab a/b	**Estimated 28 days strength (MPa)**	**Slump limits mm**	**Max. agg. size (mm)**	**Concrete Kg**	**Total aggregated m^3**	**Maximum total water (1)**
1:3:6/38	15	25-75	37.5	50	0.30	42
1:4:8/38	8	25-75	37.5	50	0.40	50

In the above class notation, class alb, "a" denotes the nominal mix proportions of cement, sand and stone by volume and "b'" the maximum aggregate size.

ZB4.4.2 Mix Design

Before the start of any concrete work on the site, the Contractor shall supply to the Engineer, for his approval, samples of the constituent materials of the concrete and a statement of the mix proportions which he proposes to use for each class of concrete.

The samples shall be accompanied by evidence that they comply with the requirements of Clause ZB 2. The statement of mix proportions shall be accompanied by a concrete mix design prepared in accordance with the recommendations given in Appendix G (Design of Concrete Mixes) of SABS 973-1970 "Standard Form of Specification for Concrete Work". The value of "F" (Table G2 in Appendix G) to be used shall be1,000.

Where the concrete production facility has a record based on at least 30 consecutive strength tests representing similar materials and conditions to those expected, the strength used as a basis for selecting proportions shall exceed the required minimum 28 days strength by 1,000 x the standard deviation of these results. Where the standard deviation exceeds 4,0 MPa or if a suitable record of strength test performance is not available, proportions shall be selected to produce an average strength at least 8,25 MPa higher than the minimum 28 day strength. The amount by which the average strength must exceed the minimum 28-day strength, may be reduced to an appropriate level below 8,25 MPa after sufficient test data becomes available from the Works to indicate the degree of quality control actually achieved. Any such modification of material proportions must be - approved in writing by the Engineer prior to such modification being implemented on the Works.

Volume batching will normally be used for prescribed mix concrete but small variations in the stated quantities of materials may be necessary to improve workability and shall be allowed for in the rates.

ZB4.4.3 Consistency and Workability

Slump measurement taken in accordance with ZB 6.5 shall comply with the values specified for concrete in the previous sub-clause. Other methods for determining consistency are permissible, if approved.

The concrete shall be of such a workability that it can readily be compacted into the corners of the formwork and around reinforcement without segregation of the materials or excessive 'bleeding' of free water at the surface.

ZB4.5 BATCHING AND MIXING OFMATERIALS

ZB4.5.1 Measuring

(a) Cement

Cement supplied in standard sacks shall be assumed to contain 50 kg. All cement taken from bulk storage containers and from partially used sacks shall be batched by mass, the weighing device having an accuracy within 2 percent of the mass of cement required for the batch.

(b) Water

Mixing water for each batch shall be measured, either by mass or by volume, to an accuracy of within 3 percent.

(c) Aggregates

Batching shall be by mass. Weighing devices shall be maintained in good order and shall have an accuracy of within 3 percent. Each size of aggregate shall be weighed.

(d) Additives

Where additives are used, they shall be measured by a dispenser, approved by the Engineer, which shall deliver accurately in one operation the dose required for one batch of concrete.

Note: *In the case of small and/or unimportant structures volume batching may be used for concrete up to a 28-day cube strength of 20 MPa, provided the written approval of the Engineer is obtained beforehand. In this case the quantity of cement in the mix shall be increased by 25 kg per cubic metre of concrete over and above the quantity which would have been used when batching aggregates by mass.*

ZB4.5.2 Mixing

Note: *The requirements of SABS 878 shall apply in preference to those given in this clause if concrete is delivered to the site 'ready mixed'.*

(a) General

Mixing of materials for concrete shall be conducted by an experienced operator. Unless otherwise approved, mixing shall be carried out in a mechanical batch-mixer of an approved type.

(b) Charging the Mixer

The sequence of charging shall be approved and, unless otherwise instructed, the same sequence shall be maintained.

The volume of the mixed material per batch shall not exceed the manufacturer's rated capacity of the mixer.

(c) Mixing and Discharge

The period of mixing shall be measured from the time when all the materials are in the drum until the commencement of discharge. This period shall be at least 1½ minutes for each batch of 1,5m3 or less, and shall be increased by 20 seconds for each additional cubic metre or fraction thereof. During this period the drum shall be rotated at the speed recommended by the manufacturer of the mixer.

Discharge shall be so carried out that there is no segregation of the materials in the mix. The mixer shall be emptied completely before it is re-charged.

(d) Maintenance and Cleaning of Mixer

If the mixer has stopped running for any period in excess of 30 minutes, it shall be thoroughly cleaned out, particular attention being paid to the removal of any build-up of materials in the drum, in the loader, and around the blades or paddles. Worn or bent blades and paddles shall be replaced.

Before any concrete is mixed, the inner surfaces of the mixer shall be cleaned and all hardened concrete shall be removed.

ZB4.6 PLACING

ZB4.6.1 General

The Contractor shall give the Engineer at least 24 hours notice of his intention to place concrete to enable the Engineer to check the shuttering and reinforcement. No concrete shall be placed without the prior approval of the Engineer. The concrete shall be placed within one hour from the time of discharge from the mixer and re-tempering by the addition of water or other material shall not be allowed. The forms to be filled shall be clean internally. All excavations and other contact surfaces of an absorbent nature shall be left damp, but no free water shall be permitted to remain on these surfaces.

Where concrete has to be placed on a soft foundation, a blinding layer of lean concrete is to be placed beneath the structural concrete, this blinding layer to be placed immediately the excavation has been completed and approved. Payment for the cost of placing the blinding layer, where ordered, will be made under the appropriate items in the Schedule of Quantities.

Wherever possible the concrete shall be deposited vertically into its final position. In all cases segregation or displacement of reinforcement and other embedded items shall be prevented by using proper methods of placing the concrete.

The working of deposited concrete (whether by means of vibrators or otherwise) to cause it to flow laterally shall be prohibited. The concrete shall be brought up in horizontal layers of compacted thickness not exceeding 450mm and 'heaping' shall be avoided.

Where chutes are used to convey the concrete, their slopes shall be such as not to cause segregation and suitable spouts or baffles shall be provided for the discharge of the concrete.

Concrete shall not be allowed to fall freely through a height of more than 1,5 m, and it shall not be placed in water (standing or running) unless so approved.

Concrete shall only be placed during daylight hours unless proper lighting arrangements have been made and lights are in working order by midday. Furthermore workers shall not be allowed to work double shifts and the Contractor shall provide a new and rested shift for night work.

ZB4.6.2 Concrete with Plums

In plain concrete of thickness not less than 300 mm, hard, clean stone "plums" of mass 15 to 55 kg may, if approved, be used to displace concrete up to a maximum of 20 percent of the volume of the concrete. Such "plums" shall have no adhering films or coatings, while no plum shall have a dimension greater than one-third of the smallest dimension of the concrete member or 300 mm whichever is less. Each plum shall be surrounded by at least 75 mm of concrete.

ZB4.6.3 Pumping of Concrete

Pumping of concrete shall be allowed only after approval by the Engineer of the methods proposed by the Contractor. Samples of pumped concrete shall be taken at the discharge end of the pipe.

ZB4.6.4 Compaction

The concrete shall be fully compacted by approved means during and immediately after placing. It shall be thoroughly worked against the shuttering and around reinforcement and other embedded fittings without displacing them.

The concrete shall be free from honey-combing and planes of weakness. Successive layers of the same lift shall be thoroughly blended together.

Compaction shall be carried out by mechanical vibration or (if approved) by spading, rodding, or forking. Over-vibration resulting in segregation, surface laitance, or leakage (or any combination of these) shall not be allowed.

ZB4.6.5 Joints

(a) Construction Joints

Concreting shall be carried out continuously up to the construction joints shown on the working drawings or as approved, except that if, because of an emergency (such as a breakdown of the mixing plant or the occurrence of unsuitable weather) concreting has to be interrupted, a construction joint shall be formed at the place of stoppage in the manner which will least impair the durability, appearance, and proper functioning of the concrete. In general keyways shall be formed in all horizontal and vertical construction joints.

Construction joints that are visible on the surface where smooth face formwork is used, shall be constructed with special care to obtain a perfectly straight line. In order to achieve this, a fillet shall be attached to the shuttering to define the straight line at the junction of the old and the new concrete. In general these straight lines will be either horizontal or vertical except where otherwise directed by the Engineer.

All vertical construction joints shall be formed against adequate shuttering or bulkheads which shall be placed square across the member in which the joint is to be formed.

The Engineer shall approve the method adopted for forming all construction joints, one of the following methods being adopted, as relevant

i) Construction joints when concrete is less than 3 days old

The surface of the concrete shall be brushed with a steel wire brush or sandblasted, swept clean, and thoroughly wetted and horizontal and sloping joints shall be covered with a 10 mm thick layer of mortar composed of cement and sand mixed in the same ratio as the cement and sand in the concrete mixture. This mortar shall be freshly mixed and placed immediately before the placing of the new concrete.

ii) Construction joints when concrete is more than 3 days old

The procedure given in (i) above shall be followed, except that the old surface shall be prepared and kept continuously wet for a minimum of 24 hours before the placing of the mortar and new concrete.

Epoxy type resins may be used for bonding at construction joints provided that full details thereof are submitted to the Engineer for his approval. The surface of the older concrete shall be clean and dry and pre-treated as stipulated by the manufacturer. The bonding agent shall be applied in accordance with the

manufacturers' instructions and the fresh concrete placed within the period recommended by the manufacturer.

iii) Construction joints at tops of columns

The procedure for brushing and cleaning given in (i) above shall be followed before the steel reinforcement of the floor to be cast on the columns is placed in position.

(b) Contraction and expansion joints

In joints ordered to be formed as sealed contraction joints, the face of the joint in the concrete slab or block cast first shall be formed with a smooth face. The concrete of the adjacent slab or block shall be cast directly against this face. A groove shall be formed at the exposed edge of the joint and sealed with an approved compound or insertion seal. Alternatively, the Contractor may, subject to the approval of the Engineer as to details of the method, form sealed contraction joints in slabs by means of accurately formed or sawn dummy joints. The groove of the dummy joint shall have a depth one third of the thickness of the slab.

In joints ordered to be formed as sealed expansion joints, approved compressible sheets shall be supplied and placed to allow freedom for the adjacent concrete slabs or blocks to expand. The exposed edges of the joints shall be sealed with an approved compound.

In joints which are not ordered to be sealed, the face of the concrete of the slab or block first formed shall be painted with two coats of approved bituminous paint before the adjoining slab or block is concreted.

Where water stops are ordered, they shall be continuous strips of rubber, plastic, or other approved material, and fixed across water retaining joints. Special care must be taken to ensure that the concrete is well worked against the embedded parts of the strips and is free from honeycombing. All necessary precautions must be taken to protect waterstops from physical damage and from light and heat. Waterstops shall comply with the requirements of Clause

ZB4.6.6 Curing and Protection

Formwork shall be retained in position for the appropriate period given in ZB 4.3.9, and, as soon as it is practicable in the opinion of the Engineer, all concrete shall be protected from contamination and loss of moisture by one or more of the following methods:

(a) Ponding the exposed surfaces by means of water, except' where atmospheric temperatures are less than5°C.

(b) Covering with sand, sawdust, or mats made of moisture-retaining material, and keeping the covering continuously wet.

(c) Continuous spraying of the exposed surfaces with water.

(d) Covering with a waterproof or plastic sheeting firmly anchored at the edges.

(e) Using an approved curing compound applied in accordance with the manufacturer's instructions.

Whatever method of curing is adopted, its application shall not cause staining, contamination, or marring of the surface of the concrete.

The curing period shall be at least 5 days for concrete made with ordinary Portland cement at least 2 days for that made with rapid-hardening Portland cement, and at least 7 days if Portland blast furnace cement is used. When atmospheric temperatures are below 5°C, these minimum curing periods shall be extended by 72, 36, and 72 hours respectively.

ZB4.6.7 Adverse Weather Conditions

(a) Cold Weather

When the surrounding atmospheric temperature falls below 5°C, effective measures shall be taken to ensure that the temperature of the concrete from the time of placing until it has hardened to the approval of the Engineer, is maintained at 10- 25°C. All surfaces shall be protected from ice or frost damage.

(b) Hot Weather

When the surrounding atmospheric temperature is over 32°C, the temperature of the concrete when deposited shall not be allowed to exceed this figure. Stockpiles of aggregates and all metal contact surfaces shall be shielded from the direct rays of the sun or cooled by spraying with water.

ZB4.7 CONSTRUCTIONDETAILS

ZB4.7.1 Holes, Chases and Fixing Blocks

No holes or chases other than those shown on the working drawings or approved by the Engineer, shall be cut or otherwise formed in the concrete.

No blocks for the attachment of fixtures shall be embedded in the concrete unless approved by the Engineer.

ZB4.7.2 Pipes and Conduits

No pipes or conduits other than those shown on the working drawings shall be embedded in the concrete without approval. The clear space between any such pipes and the clear distance between such a pipe and any reinforcement shall be at least 40mm or the maximum size of the coarse aggregate plus 5mm, whichever is greater. The amount of concrete cover over pipes and fittings shall be at least 25mm.

ZB4.7.3 Waterstops

Rubber or PVC waterstops shall be of material and pattern approved by the Engineer. The waterstops shall be precision moulded or extruded to the required section and shall be free from porosity or other imperfections. Surface defects shall not exceed 1,5mm in depth or 6mm in greatest lateral dimension.

Where joints in waterstops cannot be factory made, site joints shall be made to the manufacturer's instructions. In PVC waterstops, only butt joints, square to the longitudinal axis and heat fused, will be allowed. Where crossings, T- or V-junctions occur, these elements shall be factory made and jointed into the system with standard buttjoints.

Waterstops shall be provided with tags by means of which they can be held securely in position during concreting.

ZB4.7.4 Patching

After removal of the forms, if the concrete shows any serious defect, the Contractor shall, on instructions from the Engineer, remove all defective concrete and replace it (at his own cost) to the satisfaction of the Engineer. No patching shall be carried out by the Contractor without the prior approval of the Engineer.

ZB4.7.5 Wall Ties (refer BRICKLAYER Specification for tie details)

Where brickwork must be built against concrete walls, beams or columns, anchors shall be cast into concrete as follows:

(a) For brick linings : galvanised wire ties shall be cast minimum 75 mm into concrete, at least four per square metre.

(b) For end on junctions of brick walls: galvanised hoop iron ties shall be cast minimum 150 mm into columns every 450 mm of height per half brick skin (staggered in height where more than one half brick skin

ZB5. TOLERANCES

Reinforcement shall be positioned as shown on the working drawings and maintained in those positions within the tolerances given in Table 5-1 as follows:

TABLE 5-1:TOLERANCES		
	Position of reinforcement	**Tolerance (mm)**
1.	Main and distribution bars in slabs: spacing between any two adjacent bars	± 10
2.	Main bars in beams, slabs or ribs, placed at:	
	(a) depths up to and including 300mm	± 5
	(b) depths over 300mm and up to and including 600mm	± 10
	(c) depths over 600mm	± 10
3.	Stirrups, spacing	± 10
4.	Vertical bars in columns	± 5
5.	Bars in walls	± 5
6.	Bars in footings	± 20
7.	Longitude location of bend and ends of bars	± 50

Notwithstanding the above tolerances, the minimum amount of cover on reinforcing bars as specified in Table 4-1 of the Specification must be maintained.

The tolerances applicable to completed concrete work in general and shuttering in particular shall be as per Table 5-2 below:

TABLE 5-2: CONCRETE WORK		
	Position	**Tolerance (mm) ***
1.	Depth of slaps and thickness of walls	± 5
2.	Cross-sectional dimensions of beams, ribs and columns	
	(a) Dimensions up to500mm	± 5
	(b) Larger dimensions for each additional 250mm (or part thereof) add to tolerance	3

TABLE 5-2: CONCRETE WORK		
	Position	**Tolerance (mm) ***
3.	Variation from plumb of columns:	
	(a) Height up to4,5m	± 5
	(b) Greater height: for each additional 3m (or part thereof) add to tolerance	3
4.	Footings: on width and depth	± 25
		- 10

* *These tolerances apply only to structural elements.*

The maximum angular deviation from intended lines shall be 1 in 300 for smooth shuttering and 1 in 100 for rough shuttering. Abrupt irregularities for example, between adjacent panels of formwork shall not in any instance exceed 3mm for smooth shuttering and 5mm for rough shuttering.

ZB6. TESTING

ZB6.1 COMPRESSIVE STRENGTH

During the time in which each class of concrete is being placed, samples of the concrete shall be taken at the rate of at least one sample from each 75 m' or daily whichever is the more frequent. In certain circumstances the Engineer may reduce this requirement at his discretion. A group of at least six 150 mm test cubes shall be made from each sample. Three of these cubes shall be tested at or within 7 days as agreed by the Engineer in order to establish the probable 28 day strength of the remaining three cubes. Each group of test. Cubes shall be deemed to represent the whole of the concrete from which the sample was taken and shall be identifiable with the concrete, Appendix C.

The procedure for sampling, making the test cubes, curing, storing and testing, and the moulds used, shall be in accordance with Chapter 5 : Plain and Reinforced Concrete of the South African Standard Building Regulations, Appendix C.

The Contractor shall provide at least 12 moulds, and if so required by the Engineer, additional moulds, should the rate of concreting warrant them. The Contractor shall provide for transportation of test cubes and cores of concrete or shotcrete to a suitable laboratory approved by the Engineer where they will be crushed.

ZB6.2 COMPRESSIVE STRENGTHFAILURE

Concrete from which test cubes have been prepared shall be considered as having failed to meet the specification if the average compressive strengths (each calculated from the results of tests on at least three cubes) at the age(s) specified in Clause ZB 4.3.1 is less than the appropriate values given in column 2, Table 6-1.

If in calculating an average strength it is found that the difference between the highest and the lowest individual cube strengths exceeds 20% of the average strength of the three cubes, the result shall be discarded.

TABLE 6-1: COMPRESSIVE STRENGTH	
Number of consecutive tests within 28 days on any on class of concrete	**Percentage of specified minimum strength**
1	82
2	88
3	95
4	98
5 or more	100

ZB6.3 PROCEDURE IN THE EVENT OFFAILURE

If, in terms of ZB 6.2, the concrete is considered by the Engineer to have failed to comply with the Specification, the Engineer shall have the right to require that any or all of the following measures shall be taken by, and at the cost of the Contractor:

The materials or proportions of the mixture shall be changed.

The periods of time for removal of formwork given in Clause ZB 4.3.9 shall be extended (provided that the extensions shall not exceed the periods given in ZB 4.3.9 by more than 28 days) until such time as cores, drilled from the portions of the structure containing the concrete which failed and tested in accordance with the methods described in the South African Standard Building Regulations, Chapter 5, show that the strength of the concrete has satisfied the strength requirements.

(If the results of the tests on cores taken in terms of (b) above indicate that, despite the additional periods of time allowed, the concrete does not satisfy the specified requirements, the Engineer will decide whether he requires full scale load tests to be carried out in terms of Regulation 5, Chapter 5, of the South African Standard Building Regulations.

If the load tests are in the opinion of the Engineer, impracticable or if a tested portion of the structure fails to pass the tests, the Contractor shall, on the instructions of the Engineer, replace or strengthen by approved means each portion that failed or that contains concrete that failed, as relevant.

ZB6.4 GRADINGANALYSIS

If so ordered by the Engineer, a grading analysis shall be made for each 40 m' of fine aggregate to be used, and for each 75 m of the coarse aggregate to be used. The analysis shall be made by the method given in SABS 1083.

ZB6.5 DETERMINATION OFCONSISTENCY

When the slump test is used to measure the consistency of the concrete mix, it shall be carried out by the method given in SABS878.

ZB6.6 COSTS OFTESTS

The costs of all tests described in this section of the Specification shall be borne by the Contractor.

ZB7. MEASUREMENT ANDPAYMENT

ZB7.1 CAST IN-SITU CONCRETE

For all grades of concrete, whether reinforced or unreinforced measurements shall be made on a cubic metre (m^3) basis, calculated from the net dimensions shown on the drawings or variations thereof instructed or authorised by the Engineer. In the case of foundations, or other portions of the structure where the depth is not fixed on the drawings, the concrete shall be measured as the product of the net horizontal area of the concrete as shown on the drawings and the height based upon the agreed levels or depths.

In the measurement of concrete no deduction will be made for chamfers of less than 50 mm in width, nosings, bolts, reinforcement and the like.

Concrete used for blinding layers shall be measured per square metre, the minimum thickness being stated.

The rates for concrete shall include for supplying and a storage of all materials, provision of labour and plant, forming construction joints (but not contraction and expansion joints shown on the drawings), galvanised wall ties where necessary, keyways, all incidental work, curing, testing of materials, provision of slump cones, etc.

ZB7.2 PRECASTCONCRETE

The supply of various types and sizes of precast concrete members or elements shall each be measured and paid for separately per number.

The tendered rate for each precast element shall include for the supply of all materials, including formwork and reinforcing, the complete manufacturing, transport and storage.

ZB7.3 JOINTS

Where contraction or expansion joints are scheduled in the Schedule of Quantities, they shall be measured as reflected in the Schedule, and rates tendered shall include for the supply of all materials and for all work and formwork involved in forming and sealing the joints.

ZB7.4 WATERSTOPS

Waterstops shall be measured and paid for per lineal metre for the various types and sizes.

The tendered rates shall include for materials and all labour necessary for fixing and jointing and the additional labour required in compacting around the waterstops.

ZB7.5 CONCRETE SURFACEFINISHES

The rates tendered for floor slab concrete and blinding shall include for screeding of the surface to the required shape and level.

Where steel or wood trowelling is required, it shall be measured and paid per square metre (m^2).

All exposed faces of concrete shall be sound and solid, free from defects. The cost of all remedial work to the requirements of the Engineer is deemed to be included in the concrete rates inserted in the Schedule of Quantities.

No separate measurement will be made for the finishing of surfaces against shuttering other than the measurement made for shuttering as scheduled.

ZB7.6 SHUTTERING

All shuttering for producing rough and smooth surfaces shall be measured on the net area of concrete surface exposed after the removal of the forms.

Payment for shuttering shall be deemed to include full compensation for the supply, erection and subsequent removal, if possible, of all falsework, staging and shuttering and rubbing down concrete after removal where smooth surfaces are required.

Where specified formwork described as to provided smooth finished concrete shall be provided with chamfers on all concrete arises, re-entrant corners and drip moulds. Shuttering for construction joints whether shown on the drawings or not, shall not be separately measured and shall be included in the tendered rates for measured work.

The cost of all remedial work that may be required to bring concrete work to proper line is to be borne by the Contractor.

No payment will be made for shuttering necessitated on account of over-excavation.

ZB7.7 FOUNDATIONPAPER

Foundation paper shall be measured per square metre (m2) of the surface area of the concrete cast against it. Payment shall include for the supply of the material and fixing it into position.

ZB7.8 REINFORCEMENT

Steel reinforcement shall be measured and paid for per kilogram (kg) calculated from the actual length shown on the drawings, including hooks, bends, etc., and the nominal diameter of the bar. The unit of measurement for high tensile mesh reinforcement shall be the square metre of the reference mesh reinforcement in place and the quantity shall be calculated from the net area covered by the mesh excluding laps.

The rates entered into the Schedule shall include for all supply, bending, waste, fixing into position, spacers, and tying wire or other binding devices. Supporting steel shall be measured with reinforcing steel.

SECTIONZC: BRICKLAYER/BLOCKLAYER..... ZC-2 ZC1

SCOPE.....ZC-2

ZC2 MATERIALS.....ZC-2

ZC2.1 Standards ZC-2
ZC2.2 Masonry Units.....ZC-2
ZC2.2.1 General.....ZC-2
ZC2.3 Cement.....ZC-3
ZC2.5 Water.....ZC-3
ZC2.6 Mortar ZC-4
ZC2.7 WallTies.....ZC-4
ZC2.8 Reinforcement ZC-4
ZC2.9 Roof Ties ZC-4
ZC2.10 ConcretetoBrickworkTies.....ZC-4
ZC2.11 Quarry Tiles ZC-4
ZC2.12 Asbestos-cement Cills ZC-4
ZC2.13 Airbricks.....ZC-5
ZC2.14 StorageofMaterials.....ZC-5

ZC3 EQUIPMENT.....ZC-5

ZC4 CONSTRUCTION.....ZC-5

ZC4.1 Brickwork Generally.....ZC-5
ZC4.2 CavityWalls.....ZC-6
ZC4.3 Reinforced Brickwork.....ZC-6
ZC4.4 Face Brickwork ZC-6
ZC4.5 Fairface Brickwork ZC-6
ZC4.6 ConcreteBlockworkGenerally.....ZC-6
ZC4.7 Reinforced Blockwork ZC-7
ZC4.8 PrecastPrestressedConcreteLintols.....ZC-7
ZC4.9 ConcretetoBrickTies.....ZC-7
ZC4.10 Roof Ties ZC-7
ZC4.11 Airbricks.....ZC-7
ZC4.12 QuarryTileCills.....ZC-8
ZC4.13 Asbestos-Cement Cills ZC-8
ZC4.14 Sundries.....ZC-8

ZC5 TOLERANCES ZC-9
ZC5.1 TableofPermissibleDeviations.....ZC-9

ZC6 TESTING.....ZC-10
ZC6.1 Compressive Strength ZC-10
ZC6.2 Costs of Tests.....ZC-10

ZC7 MEASUREMENTANDPAYMENT.....ZC-10

ZC1 SCOPE

This section of the Specification covers all aspects of brickwork and concrete blockwork including building in of various items, reinforcing of brickwork and blockwork, etc., as well as the supply of all materials and labour.

ZC2 MATERIALS

ZC 2.1 Standards

All materials used in the following standard specifications, the latest issues of which shall be held to apply:

SASS28	Metal ties for cavity walls
SABS227	Burnt clay masonry units
SABS471	Portland cement and rapid-hardening Portland cement
SABS1215/1984	Concrete building blocks
SASS626	Portland blast-furnace cement
SASS831	Portland cement 15 and rapid hardening Portland cement15
BS1200	Building sands from natural sources Portland Cement

Concrete Masonry Association The Masonry Manual

ZC 2.2 Masonry Units

ZC2.2.1 General

Bricks shall be free from cracks, chips or other defects and:

At least one end of 20% of the bricks shall have the same general colour and texture as the faces.

Special care shall be exercised in loading, stacking and handling facebricks as no damaged bricks shall be used and bats may only be used where required to obtain bond.

General purpose stock bricks or common bricks shall have minimum average compressive strength of 7MPa unless otherwise specified. Where stock bricks are required for load bearing walls or foundations then compressive strength shall be a MPa.

Facing bricks shall be of the type, origin and colour as specified in the Schedule of Quantities or on the drawings and shall be selected for uniformity of dimension and colour.

Satisfactory proof of load bearing capacity of bricks offered shall be submitted before deliveries are made to the site.

For samples, 6 units of each type of brick shall be submitted to the Engineer for approval. All subsequent deliveries shall be to the standard of the approved samples.

All bricks which, in the opinion of the Engineer, do not comply, with the abovementioned requirements, shall be removed from the site forthwith at the Contractor's cost.

ZC2.2.2 Burnt Clay Brick

Burnt clay bricks shall comply with SABS 227 and:

Engineering bricks shall be of high compressive strength and durability, 49 MPa minimum average strength and selected for their uniformity of dimension and shape. Bricks shall be clay, and pressed or wire cut. Water absorption after a 24 hour test shall not exceed 12% by mass.

Facing bricks shall have a minimum average compressive strength of 28 MPa. Bricks shall be clay, and pressed to wire cut. Water absorption after a 24 hour test shall not excess 12% by mass. Bricks shall have sharp clean and well defined arises.

General purpose stock bricks or common bricks suitable for general building work shall be clay, pressed or wire cut, even in size, smooth in texture and with sharp well defined arises. Water absorption after a 24 hour test shall not exceed 14% by mass.

ZC2.2.3 Concrete or Cement Based Bricks

Cement based bricks shall comply with SABS 987 and attention is specifically drawn to the following:

After strength curing bricks must be left to dry for four to six weeks to minimise subsequent shrinkage.

Bricks must NOT be wetted before laying.

Mortars must have a high water retention.

ZC2.2.4 Precast Concrete Building Blocks

Precast concrete building blocks shall comply with SABS 1215-1984 and publication "The Masonry Manual" (Concrete Masonry Association) in all respects. Samples of each type of block to be used shall be submitted to the Engineer for approval and all subsequent deliveries shall be to the standard of the approved samples.

All building blocks which, in the opinion of the Engineer, do not comply with the abovementioned requirements shall be removed from the site forthwith at the Contractor's cost.

ZC 2.3 Cement

Cement used in masonry shall comply with the requirements of SABS 471, SABS 626 and SABS 831.

ZC 2.4 Fine Aggregate (Sand)

Fine aggregates used in mortar shall be naturally occurring sand or consisting of crushed rock or gravel, or a combination thereof with naturally occurring sand being hard, clean and free from dust, shale, clay, loam roots and other impurities.
Fine mortar aggregates shall comply in all respects with SS 200 and be well graded from 5 mm down in accordance with Table 10 therein or Table 11 where specified for reinforced brickwork.

ZC 2.5 Water

Water shall be clean and free from injurious amounts of acids, alkalis, sugar and other organic substances. Water suitable for drinking purposes shall be acceptable. If so required by the Engineer, the suitability of water shall be proved by tests carried out by an approved laboratory.

ZC 2.6 Mortar

Mortar shall, unless otherwise specified, be class A mortar and shall consist of 1 part Portland cement, one part hydrated lime and to 6 parts of sand by volume for normal brickwork. Mortar for foundations, lintols and for all load bearing walls higher than 3000 mm shall be class S mortar and shall consist of 1 part Portland cement, 1/4 part hydrated lime and four parts sand. The ingredients shall be measured in proper gauge boxes on a timber of steel mixing platform with water added and thoroughly mixed in to obtain a uniform consistency throughout. The mortar shall be mixed in with fresh mortar. Alternatively, mixing may be by means of an approved mechanical batch mixer.

In the case of a cement-milled slag mortar, the sand and slag shall be mixed first and then the cement added.

Cement mortar shall be used within two hours of the first contact of the cement with water. No mortar which is older than two hours or has begun to set shall be used.

ZC 2.7 Wall Ties

Metal wall ties in brickwork and blockwork shall be, galvanised crimped steel, single wire type, 4 mm diameter minimum, complying in all respects with SASS 28.

Ties to cavity walls shall be PWD butterfly type (not modified type).

Stainless steel twist type wall ties shall be used for walls subject to corrosion attach or as directed.

ZC 2.8 Reinforcement

Wall reinforcement shall consist of two 3,15 mm diameter longitudinal wires at appropriate centres for the thickness of the wall and with 2,80 mm diameter cross wires welded to the longitudinal wires at 300mm centres. All wire used shall be of high tensile steel-

ZC 2.9 Roof Ties

Roof ties shall be 1,6 mm galvanised hoop iron, 32 mm wide, ends bent at right angles (50 mm) for building into brick joints and length to suit for 8 building courses into brickwork or casting into concrete slabs or beams and left projecting sufficiently to wrap around and spike to rafters of roof trusses.

ZC 2.10Concrete to Brickwork Ties

End on junctions of brick walling to concrete are to be tied to the concrete by means of 1,,6 x 32 x 500 mm galvanised hoop iron ties.

Brick linings to concrete are to be tied with 4 mm diameter crimped galvanised wire ties to SABS 28.

ZC 2.11Quarry Tiles

Quarry tiles for cills shall be "Coronation" brand or equal approved, hard burnt of colour to match facing bricks, even in shape and size, free from chips, cracks, twists or blemishes and uniform in colour. Sizes shall be as stated in the schedule and on the drawings.

ZC 2.12Asbestos-cement Cills

Asbestos-cement cills, shall, unless otherwise specified be 20 mm pressed asbestos-cement in natural colour and of approved manufactured.

ZC 2.13Airbricks

Airbricks shall be terra-cotta with copper vermin-proofing gauze for coastal conditions. (colour to match facing brick where relevant) and cast plaster for internal use where walls are to be plastered, all of approved manufacture.

ZC 2.14Storage of Materials

Cement and aggregates shall be stored in such a manner as to prevent deterioration or contamination by foreign matter, damp and chemicals spilled on the ground or which may settle out of the atmosphere.

Perishable materials likely to be damaged by exposure shall be stored under cover.

ZC3 EQUIPMENT

The Contractor shall provide and maintain in good working order, adequate equipment for carrying out the required work in accordance with this specification in a safe and efficient manner.

ZC4 CONSTRUCTION

ZC 4.1 Brickwork Generally

All brickwork shall be laid in stretcher bond, plumb and true to line. Mortar beds shall be 10 mm thickness, unless otherwise described, and are not to exceed 12 mm in thickness and no four successive joints shall rise more than 40 mm (for 10 mm joints). Clay bricks are to be well wetted (saturated in hot weather) with water before being laid and the course of bricks laid last shall be well wetted before fresh bricks are bedded upon it. Concrete bricks must NOT be wetted before laying. Bricks shall be well buttered and laid on a full bed of mortar and joints shall be flushed up. Bricks in foundation walling are to be extra hard. Beam filling is to be built to eaves 106 mm thick and the space between beam filling and roof covering shall be filled with a stiff mixture of 1 to 3 cement mortar tightly pressed in. The brickwork shall be carried up in a uniform manner, no one section being raised more than 1 200 mm above another section at one time and no brickwork is to be carried marathon 4 courses above immediately adjoining or intersecting brickwork. Block bonding or toothed and keyed construction will only be allowed in alterations to existing work.

Internal walls shall be carried up two courses above ceiling level and all gable walls shall be carried up against the underside of roofing, cut to rake as required and flushed up with 1 to 3 cement mortar. The joints of all walls to be plastered or tiled shall be raked 12 mm to form key for plaster.

One-brick walls (230 mm) built stretcher bond in two skins shall be tied together with galvanised wall ties staggered not more than 1 m apart horizontally and every fourth course vertically with extra ties at reveals and openings etc. as may be necessary. Brick linings to concrete walls shall similarly be tied together, while galvanised hoop iron ties cast into concrete columns, shall be built into the joints of butting brick walls as specified. Where specifically required e.g. coastal areas, the outer face of the inner skin of all external one-brick walls above damp course level shall be waterproofed before the outer skin is built up. The face to be treated shall be bagged over until all crevices are filled. When thoroughly dry the face shall be twice coated with an approved liquid bituminous compound and worked around wire ties to produce an unbroken waterproof coating.

Where called for on; the drawings, wall and concrete ceiling surfaces shall be bagwashed with a wet sack dipped in liquid cement grout whilst the mortar in the

brickwork joints is still soft until all joints and crevices are eventually tilled. Projections of concrete shall be rubbed off and any defects shall be made good in cement mortar.

ZC 4.2 Cavity Walls

Cavity walls unless otherwise described, shall be built with two 106 mm thicknesses of brickwork in stretcher bond with 50 mm, cavity between and tied together with galvanised wall ties spaced at not more than 1 m centres apart at every third course of brickwork and staggered. The cavities shall be carried up from top of foundation concrete level to wall plate level. Cavities shall be kept free from all rubbish, mortar droppings. Projecting mortar and suitable bricks shall be left out temporarily to affect cleaning. The cavity shall be filled up solid with concrete between foundation and floor dampproof course level and for six courses wall plate level.

At door, window and other openings. the cavities shall be stopped back 106 mm from heads, jambs and sills of openings. Weep holes shall be formed at every fourth stretcher at the base of the cavity.

ZC 4.3 Reinforced Brickwork

Brickwork over door and window openings shall be reinforced with welded wall reinforcement placed in each course of brickwork over openings for a minimum of 4 courses or as shown on the drawings. Reinforced brickwork shall continue at least one and a half bricks on either side of the opening. Where two or more openings are less than 675 mm apart, the reinforced brick lintels shall be continuous over all such openings and their dividing piers, plus 1½, brick bearing at both extreme ends.

Brick lintols in cavity walls which are exposed to the weather shall have a continuous damp- proof course built into the outer skin of the wall immediately above the lintol to cove the top of the lintol, raked up one course and carried through the inner skin.

Where called for on the drawings, brickwork shall be reinforced with wall reinforcement laid in every fourth course of all brick walling or as directed by the Engineer. The reinforcement shall be built in truly central to the wall and all longitudinal laps shall not be less than 450 mm. Reinforcement in half-brick walls shall be built 106 mm into main crosswalls.

ZC 4.4 Face Brickwork

All facings shall be kept clean during the progress of the work and face-brick surfaces with mortar spattering will not be accepted. Unless otherwise specified, the horizontal and vertical joints shall be pointed and finished with a round key joint and both rubbed smooth as the building work proceeds.

The various colours of the face bricks shall be selected and mixed at random to prevent portions of the face work showing a preponderance of one colour. Where sufficient storage is available on site the full quantity of face bricks required for the works (or such quantity as to keep supply well advanced of construction) shall be delivered to site.

ZC 4.5 Fairface Brickwork

Where called for on the drawings and in the Schedule of Quantities, internal walls shall be of smooth stock-bricks, built fair and kept clean during construction and jointed as in Clause ZC4.4

ZC 4.6 Concrete Blockwork Generally

Concrete blockwork construction shall be in accordance with the Portland Cement Institute publication "Concrete Building Construction".

Blocks which shall not be wetted before laying shall be laid in stretcher bond, plumb and true to line. Joints shall not be more than 10 mm thick. The blockwork shall be carried up

in a uniform manner with no one section being raised more than one metre above another section at one time unless otherwise shown on the drawings. Blockwork shall be built hard up against door frames, windows, etc., and shall be built solid with cement mortar between foundation and floor dampproof course level, around door and window frames and under wall plate level. All blockwork shall be kept clean during the progress of the work and the cores kept clear of falling surplus mortar. Intersecting walls, except corners, may be built flush against each other with a 10 mm joint between and tied together with brick reinforcement 500 mm long at 400 mm vertical distance apart.

All walls not to be plastered shall be built fair with smooth blocks, the joints shall be pointed and finished with a round key, and the work shall be kept clean during construction. Joints of all walls to be plastered shall be raked out to form a key.

Wall please carrying roof trusses shall be bolted or tied to solid built eaves blockwork while lintol blocks, reinforced with steel bars and filled with concrete, shall be used over doorways, windows, etc., all according to the manufacturer's instructions.

ZC 4.7 Reinforced Blockwork

Were called for on the drawings blockwork shall be reinforced with wall reinforcement laid in every course of all block walling or as directed by the Engineer.

ZC 4.8 Precast Prestressed Concrete Lintols

Approved precast prestressed concrete lintols of suitable size of the thickness of the wall and the width of the opening shall be used over openings in plastered and bagged walls. Wherever possible the minimum bearing for precast prestressed lintols, at their ends and over intermediate supports, shall be:

(a) for openings not exceeding 600 mm -1Yz brick (115mm)
(b) for openings exceeding 600mm -1 brick (230mm)

Where this requirement necessitates a total lintel length exceeding 6,6 m, a joint may be introduced centrally over an intermediate pier in a position to be approved by the Engineer. Such joints shall be stiffened by the introduction of welded wall reinforcement as specified, in ZC 4.3, and extending a minimum of 300 mm on either side of the joint, i.e. 600 mm minimum total length.

ZC 4.9 Concrete to Brick Ties

At end on junctions of brick walls with concrete columns or walls brickwork is to have galvanised hoop iron ties built into the joints of each ½ brick skin at maximum 8 course height intervals alternately to each skin or at 4 course height intervals if single skin only. Ties are to be cast into concrete at course heights by tacking L-shaped ties to inside face of shutters and bending down ends for building in after shutters stripped or shot fixing to concrete with approved nails and strength of shot to provide adequate fixing.

Galvanised crimped wire ties for fixing of brick linings to concrete are to be cast minimum 75 mm deep into concrete at brick course heights (four per square metre staggered), bent down after shutters stripped and built into brickwork.

ZC 4.10Roof Ties

Build roof ties minimum 8 course into brickwork or bend under reinforcement and cast into concrete beams or slab at truss positions, bend around upper truss members and spike and clench to timber with 63 mm wire nails. (See notes re submission of drawings for fabrication designed roof trusses under Carpenter specification - in order to obtain timeous information on tie position setting out).

ZC 4.11Airbricks

Where airbricks are shown on the drawings, neat openings shall be formed in the brickwork or. blockwork for the building in of vermin-proof terra-cotta airbricks externally. Cast plaster airbricks shall be used internally where walls are to be plastered.

ZC 4.12Quarry Tile Cills

Quarry tiles shall be soaked in water for 24 hours before being laid. Cills shall be laid and pointed in class B (1-1/4-4) cement mortar, set level internally and sloping externally and projecting not more than 25 mm beyond face of wall.

Quarry tiles shall be thoroughly cleaned after laying.

Tiles shall be centered and cut or spaced so that not less than a three quarter wide tile occurs in any cill.

ZC 4.13Asbestos-Cement Cills

These cills shall be neatly cut and fitted between reveals and set to project slightly and bedded and pointed in class B (1-1/4-4) cement mortar. All cills to be fitted with standard minimum 3 x 15 x 100 mm mild steel 4 times bent anchoring brackets self-tap screwed to underside at maximum 400 mm centres (maximum 75 mm from ends) and external cills shall be slightly sloping.

ZC 4.14Sundries

Rough and fair cutting shall be performed as required and the brickwork or blockwork fitted around structural steelwork. Face brickwork shall be carefully cut and fitted when next to other finishings.

Chases shall be lett or formed in brickwork for edges of concrete floors, roofs, staircases, etc. Vertical chases shall be provided in brickwork and blockwork wherever required for pipes, conduits, switch boxes, distribution boards, etc.

Oversailing courses, corbels, etc., shall be built where required.

Ends of cills, thresholds, step joints, etc., shall be built in, cut or pinned in cement mortar where required.

Steel windows to be built into walls shall be set plumb and true with the cill bar resting on wedges to ensure that it is perfectly level. All lugs shall be bolted up tights and built in solid as walling proceeds, the channel frame of the window being caulked; tight with class B (1-1/4-4) cement mortar, pointed up neatly all round and made watertight.

Pressed steel door frames shall be securely strutted when placed in position for building on to prevent distortion of any kind during building in. The frames shall be built solid into the walls and grouted solid at back with 12:3 cement mortar as the work proceeds and properly pointed all round.

Timber door frames and windows to be built into walls shall be primed before building in and set plumb and true. The underside of each vertical to the door frames shall be provided with a 12 mm diameter steel peg projecting 75 mm from the bottom of the frame and these pegs shall be securely grouted into the floor threshold. 2 mm thick hoop iron cramps 40 mm wide, screwed to frames shall be built 450 mm .into walls with ends turned up, four cramps to each jamb. At flush junctions of walls and frames a V-joint shall, be ruled between frame and wall rendering. The junctions between timber frames or windows and face brickwork or unrendered concrete on external faces shall be sealed by pointing around the timber frames with an approved polysulphide based waterproofing compound finished off in a neat and workmanlike manner.

All necessary openings for ends of timber, gratings, cramps, holdfasts, dowels, wood plugs and slips for fixing joiner's work, hoop iron ties, etc. , shall be formed built in with 1:3 cement mortar, and made good with properly performed rough and fair cutting.

Hoop iron roof ties shall generally be built 750mm into walls.

Brickwork and blockwork shall be cut away and made good atter all trades.

ZC5 TOLERANCES

Tolerances for clay brick dimensions, strength, warpage and efflorescence shall be as SASS 227.

Tolerances for concrete block dimensions, strength, warpage and drying shrinkage shall be as SASS 527.

Permissible deviations in the final finished surfaces to the degree of accuracy required will be applied to linear dimensions, position, verticality, level, squareness and bow.

The degree of accuracy may be one of the following:

(a) Degree of accuracy III for use where a high degree of accuracy is unnecessary. e.g. mass storage warehouse walls and floors.

(b) Degree of accuracy II for what is commonly called "goodwork".

(c) Degree of accuracy I where the use of special, as opposed to normal, methods and/or materials is required.

Over a distance of 2400 mm as in the table hereunder.

Abrupt changes in a continuous surface - over a short distance maximum say 300 mm - shall be 40% of that specified under 5.3.3

ZC 5.1 Table of Permissible Deviations

Item	Finish	Permissible deviation for degree of accuracy			Corobrick Brick Classification Guide
		III (mm)	II (mm)	I (mm)	
ZC 5.1.1	Stock brickwork				
	- against earth	20	15	10	NFX
	- to receive plaster	17	10	7	NFP
	- to be bagged	13	8	5	NFP
	- fairface	8	5	3	FBS
ZC 5.1.2	Face brickwork with bricks				
	- generally uniform in shape and size	8	5	3	FBS
	- high degree of uniformity in shape and size	5	3	2	FNX
	Non-uniform in shape	13	8	5	FBA
ZC 5.1.3	Out of alignment with				
	adjoining finishes on	4	3	15	
	projecting items	3.5	2.5	1	
	(windows and door frames)	5	3.5	2	
ZC 5.1.4	Out of verticality of perps				

Item	Finish	Permissible deviation for degree of accuracy			Corobrick Brick Classification Guide
		III (mm)	II (mm)	I (mm)	
	(dependent on bond)	40	15	5	
ZC 5.1.5	Out of alignment	2.5	2	1.5	FBS
	horizontally top edge to	2	1.5	1	FBX
	top edge adjoining bricks	3	2.5	2	FBA
ZC 5.1.6	Out of trueness vertically	2.5	2	1.5	FBS
	(top edge to lower edge	2	1.5	1	FBX
	Of next course)	3	2.5	2	FBA
ZC 5.1.7	Squareness of rooms overall - measured on the				
	Diagonals *	20	10	5	
ZC 5.1.8	Out of square or true of a corner or angle measured				
	300mm from the angle *	7	4	2	

*

A similar degree of accuracy will be required to irregular shaped rooms. The governing factor shall be the general appearance and it may be necessary or acceptable to depart from the above guidelines if required.

ZC6 TESTING

ZC 6.1 Compressive Strength

Determination of the minimum average compressive strength of clay bricks and concrete blocks shall be in accordance with SASS 227 and SASS 527 respectively and at frequencies required by the Engineer.

ZC 6.2 Costs of Tests

The costs of tests described above shall be borne by the Contractor who shall be deemed to have included these costs in the scheduled rates for brickwork or blockwork.

ZC7 MEASUREMENT ANDPAYMENT

The unit of measurement for all brickwork and blockwork shall be the square metre (m') of the specified type and thickness laid. The measurement of the work will be taken net, with door and window openings deducted, but will include for lintels, airbricks, etc.

The rates tendered for ordinary brickwork or blockwork shall be inclusive of supply of bricks or blocks, testing, all plumbing of corners and faces, linings, levelling, ruling of joints, forming reveals and openings, cutting where necessary but not specially scheduled, supply and building in wall plugs, wall ties, etc., hoisting to various levels, soaking all bricks in water before laying, any selecting of face-bricks on site to maintain an even texture when laid and for cleaning down with spirits of salts all facework on completion. Face brickwork and fairface brickwork or blockwork will be paid for extra over and above ordinary brickwork or blockwork.

SECTIONZD: PLASTER,PAVIORANDTILER.....ZD-2

ZD1 SCOPE.....ZD-2

ZD 2 MATERIALS ZD-2

ZD 2.1 Standards ZD-2
ZD 2.2 Cement ZD-2
ZD 2.3 Fine Aggregate (Sand) ZD-2
ZD 2.4 Water ZD-2
ZD 2.5 Glazed Ceramic Tiles ZD-3
ZD 2.6 Quarry Tiles ZD-3
ZD 2.7 Resilient Floor Coverings ZD-3
ZD 2.8 Paving, Slabs and Kerbing ZD-3

ZD 3 EQUIPMENT.....ZD-3

ZD 4 CONSTRUCTION ZD-4

ZD 4.1 Plastering.....ZD-4
ZD 4.2 Floor Screeding ZD-5
ZD 4.3 Granolithic Surfacing ZD-5
ZD 4.4 Tiling ZD-6
ZD 4.5 Paving.....ZD-7

ZD 5 TOLERANCES ZD-7
ZD 5.1 Table of Permissible Deviations ZD-8

ZD 6 TESTING.....ZD-8

ZD 7 MEASUREMENT AND PAYMENT.....ZD-9

ZD1 SCOPE

This section of the Specification covers all aspects of plastering, paving and tiling as well as the supply of all materials and labour.

ZD2 MATERIALS

ZD 2.1 Standards

All materials used in the Works shall comply in all respects with the following standard specifications, the latest issues of which shall be held to apply:

SABS22	:	Glazed ceramic wall tiles and fittings.
SABS471	:	Portland cement and rapid-hardening Portland cement.
SABS523	:	Limes for use inbuilding.
SABS581	:	Semi-flexible vinyl floor tiles.
SABS786	:	Flexible vinyl flooring.
SABS070	:	The laying of thermoplastic and similar types of flooring.
SABS1083	:	Aggregates from natural sources.
SABS1199	:	Building sands from natural sources.

ZD 2.2 Cement

Cement used for plastering and paving shall comply with the requirements of SABS 471.

ZD 2.3 Fine Aggregate (Sand)

Aggregate used in plaster and screed shall be naturally occurring sand or consisting of crushed rock or gravel, or a combination thereof with naturally occurring sand being hard, clean and free from dust, shale, clay, loam, roots and other impurities and shall comply in all respects with BS 1199 for plaster and SABS 1083 for screed.

Fine aggregate for granolithic shall consist of evenly graded particles (granular not flaky), of granite, whinestone or quartzitic stone, all of which will pass a 6 mm test sieve, approximately 40 percent by weight of which will pass a 3 mm sieve, and none of which will pass a 0,15 mm sieve. It is to be free from clay, animal, vegetable or other organic matter and is to comply with such tests as may be required by the Engineer.

Samples of aggregate, proposed to be used, must on no account be used until passed by the Engineer.

ZD 2.4 Water

Water shall be clean and free from injurious amounts of acids, alkalis, sugar and other organic substances. Water suitable for drinking purposes shall be acceptable. [f so required by the Engineer, the suitability of water shall be proved by tests carried out by an approved laboratory.

ZD 2.5 Glazed Ceramic Tiles

Glazed ceramic wall tiles shall be 150 x 150 mm first grade tiles including arris rounded capping and angle tiles of approved manufacture, free from chips, cracks, twists, warping, discoloration or other defects, either white or of specified colour, equal to the sample to be submitted and complying with SABS 22. The tiles shall be delivered to the site in unopened containers as packed by the manufacturer and each tile shall have the following information impressed on the back: The name, trade name or registered trade mark of the manufacturer and the date of manufacture or other suitable batch identification.

ZD 2.6 Quarry Tiles

Quarry tiles for floors shall be "Coronation" brand or equal approved hard burnt dark brown, even in shape and size, free from chips, cracks, twists or blemishes and uniform in colour.

ZD 2.7 Resilient Floor Coverings

All material shall be delivered to site in unopened containers and all from the same lot for colour consistency. Each container shall be marked with the manufacturer's name, trade name or both, the name of the material, the thickness and colour, the quantity in the container and the identification number of the batch or run.

Vinyl asbestos floor tiles shall be of approved manufacture, 250 x 250 x 2 mm thick and be grease, oil and alkali resistant.

Vinyl floor sheeting shall be of approved manufacture 900 mm wide x 2 mm thick with welded joints and be grease, oil and alkali resistant.

Vinyl skirting shall be approved and from the same manufacturer as the tiles and sheeting. It shall be top set cover skirting, 1 DO mm high, with performed internal and external corner pieces as required.

Bitumen impregnated felt floor sheeting with smooth surface shall be Mastipave or equal approved, 900 mm wide x 2 mm thick fixed to the floor with adhesive.

Adhesives shall be as recommended by the manufacturer.

Colours and patterns shall be selected from the manufacturers standard colour samples by the Engineer or be as shown on the drawings.

ZD 2.8 Paving, Slabs and Kerbing

Paving slabs shall be 450 X 450 X 50 mm thick precast non-slip surface concrete slabs and kerbing units shall be 915 X 300 X 75 mm thick precast kerbing, all to the approval of the Engineer.

ZD 2.9 Storage of Materials

Cement and aggregates shall be stored in such a manner as to prevent deterioration or contamination by foreign matter, damp and chemicals spilled on the ground or which may settle out of the atmosphere. Perishable materials likely to be damaged by exposure shall be stored undercover.

ZD3 EQUIPMENT

The Contractor shall provide and maintain in good working order, adequate equipment for carrying out the required work in accordance with the specification in a safe and efficient manner.

ZD4 CONSTRUCTION

ZD 4.1 Plastering

Cement plaster shall, unless otherwise specified, consist of 1 part Portland cement to 5 parts of sand by volume. The ingredients shall be measured in proper gauge boxes on a steel or timber mixing platform with water added and thoroughly mixed in to obtain a uniform consistency throughout. Cement plastering mixes shall be used within two hours of the first contact of the cement with water. All plaster remaining after this period shall be discarded and not retempered.

Between the time of the construction of the brick, concrete or other base and the commencement of the plastering, an adequate interval of time must elapse to ensure that the sub-structure has properly dried out. All surfaces are to be thoroughly brushed down to remove dust and loose particles and cleaned of grease and soot. Brick walls which are to be plastered are to be prepared by having the joints raked out to form a key. Concrete surfaces which are to be plastered are to be prepared by roughening (hacking if necessary), or having a slurry composed of one part by volume of cement to two-and-a-half parts by volume, of coarse sand vigorously thrown on by means of a trowel or other suitable device to form the thinnest possible layer and left an adequate period, but not less than two days, until hard and dry before plaster is applied. Both brickwork and concrete are to be properly wetted with water to adjust the suction before plaster is applied.

Where skin coat type finishing plasters (e.g. "Rhinolite") are to be applied to surfaces care is to be taken to ensure that non-ferrous metal surfaces are to be suitably treated or priced prior to the application of the finishing type plaster.

All one-coat cement plastering shall be executed in a 1:5 cement mortar and wood floated smooth unless steel towelling is particularly specified. All plaster undercoats to receive glazed tiling shall be scored and roughened to provide a key for the tiles. Where fine roughcast finish is called for, this shall be applied to one coat cement plaster with a proper "Tyrolean" spattering device in such a way that even thickness of finish is attained throughout the surface without blank spots and patches. Where two-coat putty or other similar type finishing plaster finish is specified, this shall comprise a 1:5 cement plaster undercoat finished with a skim coat of the finishing plaster properly applied in accordance with the recommendations of the specific manufacturer to obtain a smooth steel towelled finish.

The surfaces of all smooth plastering are to be even and true and free from breaks or tool marks, and in textured plaster, to be regular. All plaster is to be floated smooth unless otherwise particularly specified. All external angles are to be clean and sharp or slightly rounded as directed. All damaged or defective plasterwork is to be made good and the whole left in perfect condition. Should any of the plasterwork show signs of efflorescence, blistering, cracking, crazing, flaking, grinning, peeling, pitting, popping or blowing, or of any other defects during the period of maintenance, such defective work is to be made good and if necessary, the wall in which it occurs, must be entirely stripped and replastered and the whole cost together with the cost of repainting, etc., necessary, shall be borne by the Contractor.

Where required, plaster shall be finished flush with the faces of all switch and plug boxes, the interiors of which shall be kept free from plaster. Plaster surfaces shall be plumb with jambs and reveals formed square. A V-joint shall be made where a junction between concrete and brickwork occurs and at flush junctions of walls and windows and doorframes. V-joints shall be made with an adjustable jointer, the centre blade of which shall be hard on the brickwork to ensure that the plaster is cut through.

No plastering work will be permitted until the electric conduit and boxes and all plumbing pipes chased in walls are completed and the window frames have been packed with mortar.

Conduits, water pipes, etc. are to be firmly fixed into position in chases minimum 6 mm below rough adjoining surfaces and firmly grouted it into position and keyed to take finish.

ZD 4.2 Floor Screeding

Floor screeds shall be composed of 1:3 cement mortar, and shall be measured off and mixed to the method specified for plaster mixes. Preparatory to the application of the screed, the concrete sub-floor shall be well soaked with water and coated with the thinnest practicable layer of (a) in the case of a concrete surface which is rough enough to ensure a good bond -a grout of neat cement well brushed on, and (b) in the case of a concrete surface which is not rough enough to ensure a good bond -with a slurry composed of one part by volume of cement to two-and-a-half parts by volume of coarse sand vigorously thrown on by means of a trowel or other suitable device. The screed shall be laid before the grout or slurry hasset.

The screed shall be well compacted and rammed-in with a wooden punner and finished off level with a wood float or steel trowel as particularly specified, and then left to mature, being protected from injury during this period.

All screeds to receive special floorings shall be laid, surfaced and cleaned off or washed to the satisfaction of the specialist executing such flooring.

ZD 4.3 Granolithic Surfacing

Granolithic is to be in two coats, the undercoat being of a thickness of 9 mm less than the finished thickness, composed of one part by volume of cement to three parts by volume of aggregate, the finishing coat being 9 mm thick, composed of one part by volume of cement to two parts by volume of aggregate.

The water-cement ratio is to be kept as low as possible (not to exceed 0,45) compatible with workability. The finishing coat is to be wood floated and steel trowelled to a smooth finish. Excessive towelling shall be avoided and dusting on of dry cement shall not be allowed.

The granolithic shall be floated on to ordinary concrete within 12 hours of latter being laid, otherwise the concrete surfaces shall be thoroughly hacked, cleaned, watered and afterwards treated with cement slurry which shall be allowed to set, or treated with an approved bonding agent, as may be directed, before the granolithic paving is laid.

The surface of all granolithic paving shall be kept damp for a period of at least 7 days after laying, by thickly covering with wet sand or sawdust, hessian or polythene membrane kept moist by frequent sprinkling with water.

The granolithic paving as described shall be not less than 20 mm thick, finished to fall as shown on drawings and the applied area shall not exceed 9,0 m for anyone placing. Thresholds shall be finished with granolithic 25 mm thick, treads 25 mm thick, and risers 20 mm thick, including rounded nosings and readings. Panels with neat straight surface v-joints and suitable material to break contact between panels formed against each other, shall be laid alternately and staggered and joints to panels shall coincide with any joints in the concrete sub-floor.

Excessive trowelling shall be avoided and dusting on of dry cement shall not be allowed. Any excess of bleed water is to be removed.

For monolithic granolithic where shown on the drawings, the mixture specified above shall be sprinkled dry whilst the concrete floor slab is still wet and soft, at the rate of 10 kg of mixture per m. This mixture shall be tamped in with a wood float and trowelled twice with a steel trowel to a smooth fine finish, and the surface shall be coated after the floor is dry, with a single application of 10% solution of silicate of soda.

Light duty non-slip surfaces to fioors and stair treads for pedestrian traffic shall where called for, be formed using carborundum, "Alundum" or approved equal, with a 1 to 7 IM1 grading, spread at the rate of 1 kg per m of paving. The surfacing shall be tamped in with a wood float and trowelled to a smooth finish before the granolithic has set, but maintaining the non-slipsurface.

Heavy duty non-slip granolithic flooring shall where called for, be formed with "Alundum" topping , or approved equal, placed on the green concrete, mixed in the proportions tabulated below, or as recommended by the manufacturers. The coarse "Alundum" shall be well soaked in water and mixed with the granite chip pings. The heavy duty granolithic shall be finished off with fine "Alundum", with grading 1 to 7 mm, as specified above for light duty non-slip surfaces.

Material Cement	**By Mass**	**By Volume**
Cement	50 kg	1,0m³
Granite sand (grading 0,3 to 3mm)	25 kg	0.5m³
Granite chippings (grading 3 to 10mm)	90 kg	1.6m³
Coarse "Aludum" (grading 7 to 14 mm)	11kg	0.1m³

Coloured granolithic paving shall be a two coat application laid in one operation comprising an un tinted first coat, plus a tinted finishing coat of not less than 5 mm thickness applied immediately to the first coat, giving a combined thickness as specified. The colour pigment complying with BS 1014, shall be thoroughly mixed with the cement in such proportion as will give the finished surface and colour specified. The tinted finishing coat shall be composed of two parts by volume of aggregate to one part of cement with pigment, which shall in no case exceed 10% of the mass of the cement. The granolithic shall be thoroughly compacted and finished with a steel float. Dusting on of colouring pigment shall not be permitted under any circumstances.

Edges next to walls and partitions shall be finished with 20 mm thick projecting skirting 75 mm high, with rounded or splayed top edges and small cove at the junction with the flooring unless otherwise instructed by the Engineer.

Any granolithic paving laid which does not comply with this specification shall be taken up by the Contractor and re-laid at his own expense.

Floors of showers and changing rooms shall be formed with light duty non-slip surfaces and shall be grooved for drainage as shown on the drawings.

ZD 4.4 Tiling

Wall tiles shall be set 3 mm beyond plaster, with straight continuous joints in both directions and set on and including a bed of 1:4 cement mortar and fixed in accordance with SABS 0107. Tiling shall be returned into reveals of openings and on to window sills, and shall be butted at internal angles and external angles shall have ground splayed edges to form mitred external angle, unless otherwise specified.

Where quarry or other ceramic tiles are specified for floors, these shall be bedded in cement mortar laid on the floor screed with continuous joints not exceeding 6 mm, unless otherwise specified.

Two mixes are to be used:

(a) Mix A - 2 parts course river sand, 2 parts pit or building sand to 1 part cement with sufficient moisture added so that when the mixture is compressed by hand it clings together in a ball, but when the ball is punctured by the finger then the mixture with separate or collapse back to its loose state.

(b) Mix B-1: part plaster sand, 1: part pit sand to 1: part cement mixed to a creamy consistency (where very dense fined day tiles are to be used on floors then the measures of sand shall be reduced to 1 instead of 1: as above).

Spread and lay base screed using mix A tamping firmly and screeding to lines, levels and falls as required in the finished floor (minimum 15 mm thick).

Spread mix B as a bedding screed to a minimum thickness of 10 mm and bed tiles directly on some.
Joints to be filled with mix B or as otherwise specified approximately 24 hours after floor laid and pinted with average 1 mm deep polished square recersed joints or as otherwise specified.

Prices for all floor and wall tiling are to include for setting and cutting such that equal margins will be used against vertical edges or ends and whole tiles along cappings or top edges, except that where less than 1/4 tiles would be used then allowance shall be made for additional cutting of adjoining tiles to increase. To minimum 3/8tiles.

Resilient floor coverings shall be laid in accordance with SABS 070 by ski lied workmen. Before laying the covering, the flooring specialist is to approve and accept the sub floor surfaces which shall be perfectly dry, smooth, level, clean and in a proper condition. The adhesive used shall be as supplied or recommended by the manufacturer. Top set cove skirtings shall be installed tight against the backing with the space completely filled, corner fittings shall line up and be flush with adjoining surfaces. When laying is completed, all areas shall be thoroughly cleaned and waxed in accordance with the manufacturer's recommendations.

ZD 4.5 Paving

Paving slabs shall be laid on a 50 m layer of fine sand spread on compacted ground surfaces and shall be laid in neat lines, level or to falls. All joints shall be straight and continuous not exceeding 9 mm and solidly pointed with a 1:5 cement mortar and ruled. The surface of the paved area shall be even and regular and the block shall not project more than 3 m above the edge of any adjacent block at the joint. A bitumastic joint shall be placed every 5 metres of length of paving for expansion purposes.

Precast kerbing shall be used at edges of paving where specified and laid true to line and levels or falls. Joints shall be pointed in 1:5 cement mortar and rates for laying shall include for bedding the kerbs at each joint in a bed of 1:3:6 concrete to facilitate accurate laying. The kerbs shall generally be firmly bedded in the compacted earth on which they arelaid

ZD5 TOLERANCES

Sand for plaster shall generally have a fineness modulus between the limits of 1,1 and 2,1.

Plastering on vertical surfaces shall not generally be less than 9 mm nor more than 12 mm in thickness exclusive of keys, unless otherwise described. Plastering on concrete soffits shall not exceed 9 mm in thickness.

Permissible deviations in the final finished surfaces to the degree of accuracy required will be applied to linear dimensions, position, verticality, level, squareness and bow.

The degree of accuracy may be one of the following:

(a) Degree of accuracy III for use where a high degree of accuracy is unnecessary e.g. mass storage warehouse walls and floors.

(b) Degree of accuracy II for what is commonly called "goodwork".

(c) Degree of accuracy I where the use of special, as opposed to normal, methods and/or materials is required.

Any deviation from flatness or plumpness or trueness of plane surfaces will be measured as the maximum deviation of the surface from a straight line joining two points on the surface in two separate measurements:

Over a distance of 2400 mm as in the table hereunder.

Abrupt changes in a continuous surface over a short distance maximum say 300 mm shall be 40% of that specified under 5.6.

ZD 5.1 Table of Permissible Deviations

Item	Finish	Permissible deviation for degree of accuracy		
		III (mm)	II (mm)	I (mm)
ZD 5.1.1	Sand/cement plaster			
	- Course rough texture	20	15	10
	- Fine rough texture	17	10	7
	- Wood float	13	8	5
	- Steel trowel			
	- matt paint finish	10	6	4
	- gloss paint finish	5	3	-
ZD 5.1.2	Gypsum or similar finishing plaster			
	- Steel trowel			
	- matt paint finish	-	4	2.5
	- gloss paint finish	-	2.5	1.5
ZD 5.1.3	Wall tiling			
	Deviation from pre-determined or average levels in adjoining rooms	5	3	2
ZD 5.1.4	Total plaster surface out of level or true plane of falls	15	8	3
ZD 5.1.5	Total screed surface out of level or true plane of falls	15	10	51
ZD 5.1.6	Sand/cement screed steel trowel			
	- for vinyl type finish	8	5	5
	- for carpet finish	15	8	3
ZD 5.1.7	Granolithic			
	- wood float	15	8	5
	- steel float	8	5	3
ZD 5.1.8	Out of square of corner, a reveal or element (such as a column) 300mm from corner	8	5	3
ZD 5.1.9	Out of alignment with maximum 20mm projecting prefixed items (such as windows and door frames) or exposed corners or edges *	4	2.5	1

* These deviations diversions could increase to double the stated dimensions at 150 mm projection proportional to the width of the projection.

NOTE: The governing factor out of square or true of a corner or angle measured 300 mm from the angle required.

ZD6 TESTING

As the Contractor is fully responsible for ensuring that the quality of all work produced, both in respect of materials used and of workmanship, he shall carry out sufficient control tests as the Engineer considers are necessary to ensure that all work is carried out within the Specifications.

ZD7 MEASUREMENT ANDPAYMENT

The unit of measurement for all plastering, granolithic, floor screeds, wall tiling, paving slabs, floor tiling, etc., shall be the square metre (m^2) of the specified type and thickness laid.

Rates for plastering, floor screeds and granolithic shall include for supply, preparation of surfaces, mixing, placing, levelling, colouring, finishing, jointing, rounding of angles and edges, forming of drips on lintels, curing, etc. No extra will be paid if thicker applications than those thickness specified are required due to the unevenness of the concrete or brick surface under.

Rates for tiling shall include for supply, cleaning of the surfaces on which it is laid, mortar bedding, slushing, adhesives, pointing, cutting, fitting around pipes, waste, etc. and thorough cleaning down on completion.

Rates for paving slabs shall include for supply the 50 mm sand layer under, pointing of joints, forming of expansion joints and cleaning down on completion.

SECTIONZE:CARPENTERANDJOINER.....ZE-2 ZE1

SCOPE.....ZE-2

ZE 2 MATERIALS ZE-2

ZE 2.1 Standards ZE-2
ZE 2.2 General ZE-2
ZE 2.3 Connector Plates for Trusses ZE-3
ZE 2.4 Preservative Treatment ZE-3
ZE 2.5 Priming..... ZE-4
ZE 2.6 Ceiling Materials ZE-4
ZE 2.7 Door stops ZE-4
ZE 2.8 Tempered and Untempered Hardboards ZE-4
ZE 2.9 Fibre Softboard ZE-5

ZE 3 EQUIPMENT..... ZE-5

ZE 4 CONSTRUCTION ZE-5

ZE 4.1 Carpentry (General)..... ZE-5
ZE 4.2 Roofs ZE-5
ZE 4.3 Ceilings ZE-6
ZE 4.4 Skirtings ZE-7
ZE 4.5 Joinery ZE-7
ZE 4.6 Paneling ZE-8
ZE 4.7 Timber Windows ZE-8
ZE 4.8Timber Doors, Door Frames and Fanlights ZE-8
ZE 4.9 Blackboards ZE-10
ZE4.10 Pinboards.....ZE-10

ZE5 TOLERANCES.....ZE-11

ZE 6 TESTING..... ZE-11

ZE 7 MEASUREMENT AND PAYMENT ZE-11

ZE1 SCOPE

This section of the Specification covers all aspects of carpentry and joinery including timber windows, doors and doorframes as well as all aspects of supply and labour.

ZE2 MATERIALS

ZE 2.1 Standards

All materials used in the Works shall comply in all respects with the following standard specifications, the latest issues of which shall be held to apply:

SABS05	:	Preservative treatment of timber.
SABS540	:	Woodfibre building board.
SABS545	:	Wooden flush doors.
SABS563	:	Softwood structural timber.
SABS629	:	Softwood flooring boards.
SABS737	:	Timber to be used in manufacture of furniture.
SABS803	:	Asbestos-cement cellulose sheets.
SABS 876	:	Glued laminated timber structural members.
SABS 1245	:	Stress graded softwood engineering timber.
SABS 082	:	Timber building.
BS1186	:	Quality of timber and workmanship in joinery.
BS2521	:	Lead-based priming paints.
CP112	:	The structural use of timber.

The structural use of timber shall be in accordance with the National Building Regulations, Part L, SABS 082 or BS Code of Practice 112.

ZE 2.2 General

All timber shall be of good quality, properly dried and free of gum and sap, large loose or dead knots, checks, splits, uneven sides and other defects. The timber shall be free of any signs or rot, worm and beetle and shall be well cut and free of warps and other deformations. The timber shall be supplied in full lengths and sizes and shall be kiln dried to a moisture content suitable for the area in which it is to be used as recommended by the National Building Research Institute.

The timber shall be seasoned to a moisture content of or below the maximum values specified for carpentry, and within the limits given in BS 1186 for joinery, which shall be maintained until the building is completed. Manufacturers shall ensure that the moisture contents of the various joinery items delivered to the site are appropriate to the conditions of use.

All timber used for structural purposes shall be merchantable grade and shall comply with the requirements of SASS 563 or SASS 629.

Unless otherwise specified all materials shall at least conform to the appropriate SASS or SS where such standards exist for timber, plywood, blockboards, nails, screws, bolts, adhesives, etc.

Timber for joinery shall be carefully selected and shall be of best quality, free from large or dead knots, shakes, waney edges or other defects.

Hardwoods and softwoods for joinery shall comply with SS 1186 and suitable species shall be used for the various purposes.

Timber skirtings shall be meranti, of standard size and profile, and shall be as indicated on the drawings and finishing schedules

ZE 2.3 Connector Plates for Trusses

The metal connector plates shall be fabricated out of 1,2 mm or 2,0 mm drawn quality galvanised steel.

The steel shall have a minimum yield strength of 228 MPa and a minimum ultimate tensile strength of 330 MPa. The corrosion resisting coating shall be 0.38 kg/m commercial class hot dipped galvanised before stamping.

The connector plates shall be capable of transmitting the forces between the members of a truss without exceeding the design stresses set out in the table below:

Design values per pair of connector plates in SA Pine, minimum density = 360 kg/m

Values at 0°angle between load and plate axis and between load and grain:

1,2mmplate	2,21MPa
2,0mmplate	1,34MPa

Values at 90°angle between load & plate axis & between load & grain:

1,2mmplate	1,17MPa
2,0mmplate	0,90 MPa

The connector plates shall have the following Design Plate Strength for pairs of plates in Newtons per lineal millimetre:

	1,2mm (N/mm)	**2,0 mm (N/mm)**
Tension parallel to plate axis	246	403
Tension perpendicular to plate axis	141	230
Shear parallel to plate axis	109	172
Shear perpendicular to plate axis	105	162

The connector plates shall be shown to be capable of transmitting these forces in structural SA Pine in tests conducted by the Timber Research Institute of the CSIR.

Hurricane clips and U-type hangers shall be as supplied by Timber Engineering Company.

ZE 2.4 Preservative Treatment

Where directed, all timber shall be treated with a Pentachlorophenol-zinc naphthenate solution, complying with the requirements of SABS 565 and no timber infested with bored or other pests shall be allowed on the Site. The preservative treatment shall be applied by the pressure process described in the SABS Code of Practice No. 05 and the minimum penetration for the various timbers required shall be as specified in Table 11 (Item 13) of the same Code of Practice. All joinery work to be treated shall be completely wrot, fabricated, fitted and then dismantled and sent for treatment before final assembly. The preservative treatment shall not impair the final finish. Any untreated surfaces exposed by subsequent cutting or planning shall be properly painted with the same preservative solution specified above.

Where timber is to be treated for fire resistance, the Engineer shall be provided with .details of the proposed material for approval.

ZE 2.5 Priming

Carpentry and joinery which is to be painted shall be coated with a thick mixture of white lead and linseed oil, or other approved primer.

No priming shall be applied to surfaces which are to be glued.

The jointing surfaces of all joints exposed to the weather and build-in portions of frames shall be thickly primed except where adhesives are specified.

Carpentry and joinery which is prepared for painting by the manufacturer shall be knotted and primed before it is dispatched to the site.

Primed surfaces shall be touched up where necessary during the progress of the work or where site adjustments have been made.

"Gypsum" or similar type boarding or surfaces to be skim plaster coated shall be fixed with galvanized clout nails, or where screw fixed shall have the heads of both ferrous and non-ferrous metal screws primed or treated as recommended by the manufacturer of the finishing plaster to prevent deleterious action or pattern staining to the finished product, or alternatively the base material shall be fixed with approved stainless steel fixings.

ZE 2.6 Ceiling Materials

Ceiling boards shall be 4 mm thick pressed asbestos-cement cellulose sheets manufactured in accordance with SASS 803, or 6 mm thick gypsum plasterboard manufactured in accordance with SASS266.

Joint cover strips shall be asbestos-cement cellulose, 5 mm thick x 50 mm wide or 20 mm half-round timber beads or H-profile steel jointing strips as directed.

Timber brandering shall be 38 x 50 mm or 38 x 38 mm as specified.

Where ceilings are described as suspended, they shall be formed of a grid framework formed of exposed galvanised mild steel or aluminium "Ts" suspended from rafters or purlins and be of the two directional type. The panel size, unless otherwise described shall be 600 mm x 1200 mm.

Size and thickness of main and support members shall be such that the finished ceiling shall have a maximum deflection of 1/360 of span.

Asbestos cement Acoustic ceilings shall be asbestos-cement cellulose sheets manufactured in accordance with SABS 803, with a perforation pattern of 5 mm diameter holes at 19 mm spacing at right angles in both directions.

Cornices shall be stock covered gypsum - plaster board, asbestos-cement, pressed hardboard or timber as indicated on the drawings and schedules.

ZE 2.7 Door stops

Rubber door stops, 40 mm diameter shall be screwed to plugs in floors and walls as directed wherever it is required to prevent damage to fittings, wall finishes, door handles, etc.

ZE 2.8 Tempered and Untempered Hardboards

Tempered and untempered hardboard shall comply with the requirements of SABS 540 and shall be a rigid fibre type board of approved manufacture, and of a thickness as indicated on the drawings.

Each individual sheet shall have the following information clearly marked on it or on a label attached to it the manufacturer's name, trade name or registered trade mark, the nominal thickness and type of board, and the mark of the South African Bureau of Standards.

ZE 2.9 Fibre Softboard

Fibre softboard shall comply with the requirements of SABS 540 and shall be a rigid fibre type building board of approved manufacture, and of the thickness specified in the schedules or as shown on the drawings.

Each individual board shall have the following information clearly marked on it or on a label attached to it: the manufacturer's name, trade name or registered trade mark, the nominal thickness and type of board, and the mark of the South African Bureau of Standards

ZE3 EQUIPMENT

The Contractor shall provide and maintain in good working order, adequate equipment for carrying out the required work in accordance with this specification in a safe and efficient manner.

ZE4 CONSTRUCTION

ZE 4.1 Carpentry (General)

Carpentry work shall be carried out in a proper manner and in conformance with the drawings.

The carpenter shall perform all cutting away and making good in attendance upon all other trades.

The carpenter shall be responsible for the closing-in of openings necessary for the protection of the work during progress. He shall also provide and maintain any temporary coverings required for the protection of any finished work that might be damaged if left unprotected during the progress of the work.

Unless otherwise specified, all joints shall be secured with a suitable type and a sufficient number of nails or other approved type of connectors.

Housings, mortice-and-tenon and other joints shall be carefully made in such a way that they do not impair the strength and stiffness of the beams or members.

"Unwrot" timber shall be as sawn and shall be to the dimensions specified.

All exposed woodwork shall be wrote to a smooth surface, free of machine or other tool marks, scratches, etc., unless otherwise specified. The wrote sizes shall be as specified but with a maximum allowance of 3 mm off full sizes.

ZE 4.2 Roofs

ZE4.2.1 General

All roof timbering shall generally be of sawn sections and only wrot in exposed projections. All timber fascias and bargeboards shall have all surfaces wrot.

All wall plates shall be properly creosote impregnated and bolted to concrete or fixed to brickwork with galvanised hoop iron ties.

Where splices are necessary in rafters, ties or ceiling joists, the timbers shall be lapped at least five times the width of the timber and securely spiked. Splices in timbers wider than 115 mmshallbeboltedwithatleastthree9mmboltsandwashersinadditiontospiking.Allmain

intersections shall be bolted with 9 mm diameter bolts. "Gang Nail" type prefabricated roof trusses or equal approved may be used.

Wall plates shall be halved at junctions and angles. Purlins, battens, etc., shall be splay scarved at junctions and in all cases the joints shall be placed over the point of support and well spiked.

All purlins and battens shall be properly cross-nailed to rafters as well as brandering to ceiling joists.

ZE4.2.2 Prefabricated Contractor Designed Roof Trusses

(a) Design

All trusses shall be designed in accordance with the draft SASS Code of Practice for the design of timber structures by a firm approved by the owner's appointed agent. Trusses shall be designed for a live load of 0,50 kN/m and for the - dead loads described in the schedule. Trusses shall be designed to fall within the maximum centres stated in the schedule. Trusses have been measured at approximately those centres and should the designer or contractor consider that maximum benefit could be obtained by a decrease in the centres he will be free to design and supply such increase number of trusses but the number of trusses measured and paid for shall remain as measured. The number of trusses to be paid for shall be changed only if the structure to be roofed has been altered.

(b) Shop Drawings

Two prints of the detailed shop drawings and one copy of the design calculations shall be submitted to the Contractor for approval a minimum of three weeks prior to the commencement of manufacture and/or construction of superstructure above door head height, whichever will be the sooner. One copy of the drawings marked up for correction will be returned to the designer fabricator for correction and a corrected sepia is to be submitted to the contractor prior to commencement of manufacture or construction above door head height.

(c) Fabrication

The trusses shall be constructed with jigs especially designed to provide correct cambers and pitches.

All joints are to be close fitted butt joints and made by precision pressing of the metal connector plates into each side of the joint.

The timber roof trusses shall be fabricated in a properly equipped factory by an approved specialist firm of Truss Fabricators using metal plate connector.

Nailing to 'Hurricane" clips and "U" brackets shall be with 2,8 mm x 40 mm galvanised clout nails.

ZE 4.3 Ceilings

Main brandering 38 mm x 50 mm shall be fixed at 400 mm centres at right angles to tie beams with stout galvanised wire nails driven in on skew alternatively in opposite directions. Where trusses are spaced not more than 900 mm apart, the main brandering may be reduced to 38 mm x 38 mm.

Ceiling boards shall be fixed to brandering with clout headed nails 2 mm diameter x 32 mm long and spaced at 100 mm centres to edges and 150 mm centres to intermediate fixings. Joints in ceilings shall receive stock 50 mm wide asbestos-cement cover strips or 20 mm half round wood cover beads or H-profile steel jointing strips as directed. Cornices shall be securely and neatly fixed. Where directed, a trapdoor 600 mm x 600 mm and fitted with a pair of 75 mm steel butts shall be formed in the ceiling.

For suspended ceilings all ductwork, electrical conduit, etc., above the ceiling shall be completed before fixing the suspended ceiling.

Sheets shall not be screwed, nailed or wedged too tightly. Fixing of nails or screws along the extreme edges shall, be avoided and the fixing points shall be not less than 18 mm from the edge of the sheet.

The suspension system shall support the ceiling assembly as shown on the drawings with a maximum deflection of 1/360 of the span. Wall mouldinqs shall be fastened to the walls at the perimeter of the ceilings.

Where brand name prefabricated type ceiling tiles are specified:

(a) installation shall not be completed (final fixing of tiles) until residual moisture has dissipated and the building is weatherproofed.

(b) tiles from at least four separate containers shall be selected at random during the laying or fixing process.

(c) tiles shall be wedged or fixed in position as recommended by the manufacturers of the specified product.

ZE 4.4 Skirtings

Where indicated on the drawings, standard meranti skirtings shall be fitted with heads of nails punched in, stopped with a matching colour and sanded down.

ZE 4.5 Joinery

All joinery work shall be carried out in a workmanlike manner and in conformance with the drawings.

Joinery work shall consist of the manufacture, delivery to the site and the fixing in the building of all joinery and associated fixtures and fittings described in the specifications and shown on the drawings. It shall also include for the supply and fixing of metal straps, lugs, dowels, etc., the supply and application of priming and preservatives and all ironmongery.

All wrot timber shall be sawn, planed, drilled or otherwise machined or worked to the correct sizes and shapes as shown on the drawings or as specified.

The arrangement, jointing and fixing of all joinery shall be such that shrinkage in any part and in any direction shall not impair the strength and appearance of the finished work, and shall not cause damage to adjoining materials of structures.

All timber that is to be exposed in the finished surfaces of joinery works shall be wrot on the appropriate faces unless otherwise specified, and all machine marks shall be removed by sanding or planning.

The joiner shall perform all necessary morticing, tenoning, grooving, matching, tonguing, housing, rebating, and all other works necessary for correct jointing. He shall also provide all metal plates, screws, nails and other fixings that may be ordered by the Engineer, or that may be necessary for the proper execution of the joinery works specified.

The joiner shall also carry out all works necessary for the proper construction of all framings, linings, etc., and for their support and fixing in the buildings.

Joints shall be constructed exactly as shown on the detailed drawings. Where joints are not specifically indicated they shall be the recognized type of joint for that purpose. The joints shall be made so as to comply with the requirements of BS1186.

Loose joints shall be used where provision must be made for correct positioning, shrinkage, or other movements, and glued joints shall be made where there is no shrinkage or movement in the joints. All glued joints shall be cross tongued or otherwise reinforced. All nails, spikes, sprigs, etc., shall be punched and concealed. Screws shall be countersunk.

All joinery sizes shall be checked with detail drawings and from the building before work is commenced. Jointer's work shall be put in hand as soon as possible but shall not be wedged or glued up until just before being fixed in the building. Joinery on Site shall be carefully stored under cover and protected from rain, wind and sun and should preferably not be introduced into the building until the bricks and plaster have dried out and the windows have been glazed. Joinery built in shall be boarded up and carefully protected to the satisfaction of the Engineer.

The term "arris rounded" means that the corners shall be slightly rounded with sandpaper. Unless otherwise described all wrot timber shall be arris rounded. The term "angle rounded" means that the corners shall be rounded from 3 mm to 9 mm radius and mitred at angles. The term "fully rounded" means that the edge of the material shall be completely rounded to a semi-circular shape and mitred at angles.

All mortice and tenon joints shall be flush pinned. All linings shall be tongued at angles and framed to conceal the tongued angles. All screws for joinery shall be best quality brass screws unless otherwise stated.

All wrot surfaces shall be steel scraped and sandpapered before and, if necessary, after fixing. Flooring boards, skirtings, cornices and rails of all kinds, shall be in long lengths where possible, but where joints are unavoidable, they shall be concealed. All heading joints shall be splayed. Joinery shall be framed and put together in accordance with the best standard practice. Joiner's work shall be manufactured in the climatic area in which it is to be used and shall be purpose made to detail unless otherwise described as stock.

Where plastic laminates are used the reverse side of the boarding shall be coated with one coat pink primer or other approved sealing agent.

Any work with defects such as shrinkage, warping, opening of joints, etc., appearing before the expiration of the maintenance period for this Contract, shall be removed, refitted and redecorated or replaced by new joinery at the Contractor's expense and any other work disturbed in consequence thereof, shall also be made good at the Contractor's expense.

Where shop fabricated joinery is specified to be fixed-in or erected in position after the surrounding or enclosing works of the main building have been completed, it shall be the responsibility of the Contractor to ensure that the necessary fixings are incorporated in the building, alternatively, the Contractor shall construct such groundworks as are required to provide a suitable base and fixing for the joinery.

The Contractor shall secure the fixed-in joinery so that they are plumb and true to the shapes and dimensions as detailed.

ZE 4.6 Paneling

Where paneling is called for, it shall be executed with the type of material as called for in the Schedule of Quantities or on the drawings. Where wood is called for, this shall be selected and used according to colour. Paneling shall be done in such a - manner that nail heads or any other marks may be covered or filled in. Any joints shall be covered with pre-selected timber strips and where hardboard, asbestos-cement or any other material is used, the cover strips shall be as recommended by the manufacturer.

ZE 4.7 Timber Windows

Windows shall be of the types and sizes as indicated on the schedules. All opening sashes shall be hung with 75 mm butt hinges and fitted with furniture as indicated on the schedules.

ZE 4.8 Timber Doors, Door Frames and Fanlights

ZE4.8.1 General

Timber door frames shall be of the types and sizes as indicated on the schedules and shall be rebated for door and angle rounded on exposed salient edge. If the door has a hardwood finish, then the same type of hardwood shall be used for door frame, quadrants and architraves.

Door frames, linings, panel doors, flush doors, sliding doors, etc., shall be supplied and installed, fitted or hung by the joiner and be of the types and sizes as shown on the drawings.

Doors shall be hung in such a manner that they are able to open without binding at any point.

Approved types of joints shall be made at all intersections of timber framed doors and the joints shall be properly doweled and glued.

Doors and frames shall be prepared for oiling, staining, varnishing or painting as specified.

Interior and exterior timber doors and door furniture shall be as shown on the drawings or as indicated in the schedules.

ZE4.8.2 Flush Doors

All flush doors shall comply with the requirements of SABS 545 and this specification.

Flush doors shall be approved before being fixed in the building, shall not be less than 40 mm thick and shall be constructed to comply with the following requirements:

(a) The frame shall be of solid wood not less than 38 mm wide at the sides and 76 mm wide at the top and bottom and each component shall be of one piece or of approved laminated construction.

(b) The hollow core within the frame shall be filled with compressed corrugated cardboard, so manufactured that it shall retain its shape if removed from the frame.

(c) Both sides of the frame shall be continuous, smooth and capable of taking the adhesive required for fixing the veneer or hardboard facing.

(d) Lock rails 750 mm long x 76 mm wide shall be doweled and glued to the middle of the side framing.

(e) The door facing shall consist of either 3 mm thick veneer or hardboard, finished at the sides against the edge cover strips.

(f) The edge cover strips shall be of a timber to match the door facing, and shall not be less than 7,5 mm thick for single doors and hanging stiles of double doors, and 19 mm thick for meeting stiles of double doors. The 19 mm thick strips shall be clearly marked.

(g) The frame, core filling, edge strips and door facings shall be bonded together under hydraulic pressure into one single unit using an approved water resistant adhesive, and the exposed surfaces shall be sanded to a smooth and even surface after removal of the door from the press.

(h) The doors shall be guaranteed against defects for the maintenance period after hanging, and the Contractor shall replace at his own expense, any door found to be defective due to hanging or the fitting of door furniture during the guarantee period.

(i) Door stops shall be fitted as indicated in the schedules.

ZE4.8.3 Framed, Ledged and Braced Batten Doors

Framed, ledged and braced batten doors shall only be for external use unless otherwise specified, and shall not be less than 40 mm thick.

All framed, ledged and braced batten doors shall be approved before being fixed in the building and shall be constructed to comply with the following requirements:

(a) Unless otherwise specified, framed, ledged and braced batten doors shall be constructed with components having the following minimum dimensions, stiles and top rail 40 mm x 114 mm, middle ledge 19 mm x 152 mm, bottom ledge 19 mm x 228 mm and braces 19 mm x 114mm.

(b) The braces shall be splayed at the ends for fitting into notches in the ledges, stiles and top rail.

(c) The stiles and top rail shall be grooved all round on the inner edges for, and filled in with 19 mm thick, tongued and grooved boarding in narrow widths with V-joints on both faces.

(d) The boarding shall be rebated on the outer edges and fitted into grooves in the stiles and top rail, and fixed with countersunk screws from the back of the door at each intersection with the middle ledge, bottom ledge and the braces.

(e) The inner edges of the stiles, top rail and abutting edges of the boarding shall be chamfered on the outer face to form a V-joint.

(f) Where a door is specified with a flush panel on the inner face, the inner edges of the stiles, top rail and middle and bottom ledges shall be rebated for, and filled in flush with a 6 mm thick three-ply plywood panel let into these rebates and secured with panel pins.

(g) Hardwood weather bars as detailed on the drawings shall be fitted to the external face of the doors.

(h) Door stops and approved retaining devices shall be fitted as indicated in the schedules.

ZE4.8.4 Fanlights

Except where otherwise specified, fanlights shall be formed with 40 mm x 65 mm stiles and top rails, and 40 mm x 76 mm bottom rails properly joined together.

The inner edges of the frame shall be open rebated for the glass, fitted with 13 mm x 19 mm quadrant glazing beads mitred at the corners and fixed with panel pins.

ZE 4.9 Blackboards

Blackboards shall be formed with a meranti wood frame and chalk rail with the corners mitred, properly jointed, doweled and glued, all as detailed and dimensioned on the drawings.

6 mm thick untempered hardboard shall be fitted to the rear of the frame with countersunk screws. The hardboard shall not extend beyond the edges of the frame, and shall be painted with two coats of green school-boardpaint.

Blackboards shall be rigid and shall have a flat, smooth and plane surface and shall be fitted in an approved manner in positions as indicated in the schedules or as shown on the drawings.

ZE 4.10 Pinboards

Pin boards shall be formed with a meranti wood frame with a rebate on the inside to receive the pinning surface corners shall be mitred, properly jointed, doweled and glued, all as detailed and dimensioned on the drawings.

Pinboards shall be rigid and shall have a flat, smooth and plane surface and shall be fitted in an approved manner in positions as indicated in the schedules or as shown on the drawings.

ZE5 TOLERANCES

Wrot sizes of timber shall be as specified but with a maximum allowance of 3 mm off full sizes.

No allowance will be made on the thickness of doors, fanlights, flooring and sashes which shall be to the full size specified or on other items where finished sizes are specified.

All doors shall be hung with a maximum clearance of 1,5 mm at the top and sides and 3 mm at the bottom.

ZE6 TESTING

As the Contractor is fully responsible for ensuring that the quality of all work produced, both in respect of materials used and of workmanship, he shall carry out sufficient control tests as the Engineer considers are necessary to ensure that all work is carried out within the Specifications.

ZE7 MEASUREMENT ANDPAYMENT

Measurement and payment of roof timbering, flooring, joinery, timber doors, doorframes, windows, ceiling brandering, ceilings, cornices, insulation to ceilings, skirtings and door stops shall be according to the units and rates determined from the Schedule of Quantities and the rates quoted will be deemed to cover the item of work finished complete in every respect.

Pricing of all roof and floor timbers shall include for all preservative treatment, lapping, scarfing, splay cutting, halving, etc., as well as jointing and fixing materials.

Rates for all joinery items shall include for all aspects of fabrication, preservative treatment, mitres, stopped and fair ends, morticing, tenoning, housing, trenailing, flush pinning, wedging, keying, clamping, glueing, etc., as well as for fixing complete with all necessary nails, spikes, screws, plugs or "Rawlplugs" or hardened steel nails, etc., and for making good plaster, tiles, facings or other finish.

Rates for doors shall include for all fixing, hanging, oiling of hinges and accessories and easing required for proper operation.

The following schedules of prices include for the supply of all timber of the required grade and type including all cutting and waste, cutting to exist length and end angles necessary to manufacture the respective truss types, the supply of all connector plates, prefabrication of the trusses in a jig, checking the completed truss for quality, loading up, transporting to the site of the works and-

(a) Unloading and storing under cover and protected from the weather or,

(b) Hoisting up and erecting the trusses at the required truss centre. Truly plumb and square on top of wall plates, all in accordance with site instructions for erection, bracing, and holding down and connection supplied by the truss fabricator.

(c) Such site supervision as deemed necessary by the - fabricator of the trusses to ensure that all the erection details have been complied with to his satisfaction.

Rates for all roof sheeting, ceiling boarding, etc. shall include for all straight cutting and waste.

SECTIONZEA: PREFABRICATEDTIMBERROOFTRUSSES.....ZEA-2

ZEA1 SCOPE.....ZEA-2

ZEA2 MATERIALS.....ZEA-2

ZEA2.1 Standards.....ZEA-2
ZEA2.2 General.....ZEA-2
ZEA2.3 ConnectorPlatesforTrusses.....ZEA-2
ZEA2.4 Preservative Treatment ZEA-3

ZEA3 DESIGN AND FABRICATION.....ZEA-3
ZEA3.1 Design.....ZEA-3
ZEA3.2 Shop Drawings.....ZEA-3
ZEA3.3 Fabrication.....ZEA-3

ZEA4 ERECTION.....ZEA-4

ZEA5 PRICING.....ZEA-4

ZEA 1 SCOPE

This Specification covers all aspects of the design, fabrication and erection of monoplaner prefabricated metal connectored timber roof trusses.

ZEA 2 MATERIALS

ZEA2.1 Standards

All materials used in the Works shall comply in all respects with the following standard specifications, the latest issues of which shall be held to apply:

SABS05	:	Preservative treatment of timber.
SABS563	:	Softwood structural timber.
SABS1245	:	Stress graded softwood engineering 1timber.

The structural design of timber shall be in accordance with the National Building Regulations, Part Land SABS 0163.

ZEA2.2 General

All timber shall be of good quality, properly dried and free of gum and sap, large loose or dead knots, checks, splits, uneven sides and other defects. The timber shall be free of any signs or rot, worm and beetle and shall be well cut and free of warps and other deformations. The timber shall be supplied in full lengths and sizes and shall be kiln dried to a moisture content suitable for the area in which it is to be used as recommended by the National Building Research Institute.

All timber used for structural purposes shall be stress graded and shall comply with the requirements of SASS 563.

ZEA2.3 Connector Plates for Trusses

The metal connector plates shall be fabricated out of 1,2 mm or 2,0 mm drawn quality galvanised steel.

The steel shall have a minimum yield strength of 228 MPa and a minimum ultimate tensile strength of 330 MPa. The corrosion resisting coating shall be 0.65 kg/m commercial class hot dipped galvanised before stamping.

The connector plates shall be capable of transmitting the forces between the members of a truss without exceeding the design stresses set out in the table below:

Design values per pair of connector plates in SA Pine, minimum density = 360 kg/m

Values at 0°angle between load and plate axis and between load and grain:

1,2mmplate	2,21MPa
2,0mmplate	2,30MPa

Values at 90°angle between load and plate axis and between load and grain:

1,2mmplate	1,17MPa
2,0mmplate	0,90 MPa

The connector plates shall have the following Design Plate Strength for pairs of plates in Newtons per lineal millimetre:

	1,2mm (N/mm)	2,0 mm (N/mm)
Tension parallel to plate axis	246	403
Tension perpendicular to plate axis	141	230
Shear parallel to plate axis	109	172
Shear perpendicular to plate axis	105	162

The connector plates shall be shown to be capable of transmitting these forces in structural SA Pine in tests conducted by the Timber Research Institute of theCSIR.

Hurricane clips and U-type hangers shall be as supplied by Timber Engineering Company (Pty) Ltd. (TECO)

ZEA2.4 Preservative Treatment

Where directed, all timber shall be treated with a Pentachlorophenol-zinc naphthenate solution, complying with the requirements of SABS 565 and no timber infested with bored or other pests shall be allowed on the Site. The preservative treatment shall be applied by the pressure process described in the SABS Code of Practice No. 05 and the minimum penetration for the various timbers required shall be as specified in Table 11 (Item 13) of the same Code of Practice. All joinery work to be treated shall be completely wrot, fabricated, fitted and then dismantled and sent for treatment before final assembly. The preservative treatment shall not impair the final finish. Any untreated surfaces exposed by subsequent cutting or planning shall be properly painted with the same preservative solution specified above.

Where timber is to be treated for fire resistance, the Engineer shall be provided with .details of the proposed material for approval.

ZEA 3 DESIGN AND FABRICATION

ZEA3.1 Design

All trusses shall be designed by a registered professional engineer in accordance with SABS Code of Practice 0163 Part 1 by a firm approved by the Architect. Trusses shall be designed for a live load of 0,50 kN/m while dead loads, slope and pitch of trusses, spans and other special considerations are to be determined from the tender drawings.

ZEA3.2 Shop Drawings

Two prints of the detailed shop drawings and one copy of the design calculations shall be submitted to the Architect for approval a minimum of two weeks prior to the commencement of manufacture of trusses. One copy of the drawings marked up for correction will be returned to the designer/fabricator for correction and a corrected sepia is to be submitted to the Architect prior to commencement of manufacture of trusses.

ZEA3.3 Fabrication

The trusses shall be constructed with jigs especially designed to provide correct cambers and pitches.
All joints are to be close fitted butt joints and made by precision pressing of the metal connector plates into each side of the joint.
The timber roof trusses shall be fabricated in a properly equipped factory by an approved specialist firm of Truss Fabricators using metal plate connectors.
Nailing to "Hurricane" clips, cleats and "U" brackets shall be with 2,8 mm x 40 mm galvanised clout nails.

ZEA 4 ERECTION

The erection and bracing of pre-fabricated timber roof trusses shall be carried out in accordance with the manual titled "The Erection and Bracing of Timber Roof Trusses" as produced by the Truss Plate Association of Southern Africa and the National Timber Research Institute of the CSIR. The quality of the timber used for bracing must be at least Grade M4 or better. The provision of suitable holding down arrangements of trusses to walls is essential and is to be provided and built into walls by the main contractor. The designer of the trusses shall confirm in writing to the Architect that the trusses have been erected and braced to his satisfaction.

ZEA 5 PRICING

The price tendered by the fabricator of the prefabricated timber roof trusses shall include for:

(a) All design and drawings costs

(b) The supply of all timber of the required grade and type including all cutting and waste, cutting to exact length and end angles necessary to manufacture the respective truss types, the supply of all connector plates, prefabrication of the trusses in a jig, checking the completed trusses for quality, loading up, transporting to the site of the works and unloading.

(c) Unloading and storing under cover and protecting from the weather.

(d) Hoisting up and erecting the trusses at the required truss centres, truly plumb and square on top of the wall plates, all in accordance with the working drawings including all bracing, holding down and metal connections supplied by the truss fabricator.

(e) Site supervision to ensure that all erection details have been complied with satisfactorily

SECTIONZG: ROOF AND WALL CLADDING AND RAINWATER ITEMS.....ZG-2

ZG1 SCOPE.....ZG-2

ZG2 MATERIALS.....ZG-2

ZG2.1 Standards.....ZG-2
ZG2.2 Galvanised Steel Items.....ZG-2
ZG2.3 Asbestos-Cement Items.....ZG-3
ZG2.4 TranslucentSheeting.....ZG-3
ZG2.5 Aluminium Flashings.....ZG-3
ZG2.6 Concrete Roofing Tiles.....ZG-3

ZG3 EQUIPMENT.....ZG-3

ZG4 INSTALLATION.....ZG-4

ZG4.1 General.....ZG-4
ZG4.2 Roofing and Cladding.....ZG-4
ZG4.3 GuttersandRainwaterDownpipes.....ZG-5
ZG4.4 HailGuards.....ZG-5
ZG4.5 Bird Proofing.....ZG-5
ZG4.6 Roof Ventilators.....ZG-5
ZG4.7 Internal Wall Panelling.....ZG-5
ZG4.8 TranslucentSheeting.....ZG-5

ZG5 TOLERANCES.....ZG-6

ZG6 TESTING.....ZG-6

ZG7 MEASUREMENTANDPAYMENT.....ZG-6

ZG1 SCOPE

This section of the Specification covers all aspects of roof and wall cladding and rainwater items such as gutters and down pipes as well as the supply of materials and labour.

The Contractor must submit sheeting layout drawings and material take-off lists in duplicate to the Engineer for approval at least 3 weeks before commencement of ordering of material.

The Engineer will return one copy of the Contractor's drawings and material lists within 2 weeks of receipt. These will be corrected where necessary and stamped "Approved in Principle".

ZG2 MATERIALS

ZG 2.1Standards

All materials used in the Works shall comply in all respects with the following standard specifications, the latest issues of which shall be held to apply:

SABS542	:	Concrete roofing tiles.
SABS685	:	Asbestos-cement sheets (Corrugated and flat).
SABS934	:	Hot dip (galvanised) zinc coatings on steel and strip.

ZG 2.2 Galvanised Steel Items

ZG2.2.1 Roofing and Cladding

The I.B.R. roof sheeting and wall cladding shall have five box rib flutes 37 mm deep, spaced at 171,5 mm centres providing a nett laid cover width of 686 mm and shall be manufactured from plain or embossed galvanised steel sheet in 0,6 mm, 0,8 mm or 1,0 mm thickness with Z275, Z450 or Z600 spelter. Where possible, the sheets shall be a single length, from eaves to eaves for roofs and from floor to roof or as otherwise indicated for walls. However, if these lengths are greater than standard sheet lengths, the number of laps shall be kept to a minimum and shall conform to the manufacturer's recommendations for the roof slopes indicated.

The roofing and cladding shall be complete with all necessary matching flashings, ridging, hip and corner coverings, ridge and eaves closers, etc., with material thickness and spellers as above except that all flashings to be 0,8 mm thick.

ZG2.2.2 Gutters and Rainwater Downpipes

Sizes and shapes of the gutters and down pipes with galvanised mild steel brackets and clips shall be as shown on the drawings and shall be galvanised sheet steel 0,8 mm thick.

ZG2.2.3 Hail Guards

Hail guards shall be 2 mm diameter crimped galvanised steel wire woven into a mesh with 12 mm x 12 mm openings.

ZG2.2.4 Bird Proofing

Bird proofing shall be of 2 mm diameter crimped galvanised steel wire woven into a mesh with 12 mm x 12 mm openings.

ZG2.2.5 Roof Ventilators

Roof ventilators shall be an approved type of galvanised sheet steel ventilator, complete with the necessary framework, flashings, etc. Where the buildings have ceilings, the ventilators shall be fitted with extension shafts from the roof to the ceiling with a suitable and aesthetically acceptable grill at the ceiling.

ZG2.2.6 Internal Wall Paneling

Internal wall panelling shall be standard "Robertson Horizontal Q Panel" or equal approved manufactured from 1,2 mm thick galvanised sheet steel. The paneling shall consist of 54 mm deep x 320 mm wide interlocking units except for closure units where specials may have to be manufactured.

ZG 2.3 Asbestos-Cement Items

ZG2.3.1 Roofing and Cladding

Asbestos-cement sheeting for roofs and wall cladding shall be of the corrugated type or as otherwise required, of best quality and to the approval of the Engineer. Where possible, the sheets shall be a single length, from eaves to eaves for roofs and from floor to roof or as otherwise indicated for walls. However, if these lengths are greater than standard sheet lengths, the number of laps shall be kept to a minimum and shall conform to the manufacturer's recommendations for the roof slopes indicated.

The roofing and cladding shall be complete with all the necessary flashings, ridging, ridge finals, hip and corner coverings, ridge and eaves closers, fascia, barge boards, etc., and these shall be of the sizes and shapes necessary to suit the sheeting.

ZG2.3.2 Gutters and Rainwater Downpipes

Sizes and shapes of the gutters and down pipes with aluminium brackets and clips and other accessories shall be as shown on the drawings.

ZG2.3.3 Bird Proofing

Sizes, shapes, and types of bird proofing shall be as indicated on the drawings.

ZG2.3.4 Roof Ventilators

Roof ventilators shall be of a type approved by the Engineer and shall be complete with all the necessary accessories. Where the buildings have ceilings, the ventilators shall be fitted with extension shafts from the roof to the ceiling with a suitable and aesthetically acceptable grill at the ceiling.

ZG 2.4 Translucent Sheeting

It shall be manufactured from 2,4 kg/m2 (heavyweight) "Paxit" (Paxit Pipekor Everite) fibre glass to SABS 1150 -1984, "Opalescent 65" coated both sides with surface tissue.

ZG 2.5 Aluminium Flashings

Where aluminium flashings are called for, these shall be 1 mm thick.

ZG 2.6 Concrete Roofing Tiles

Concrete roofing tiles shall comply with the requirements of SABS 542.

ZG3 EQUIPMENT

The Contractor shall provide and maintain in good working order, adequate equipment for carrying out the required work in accordance with this specification in a safe and efficient manner.

ZG4 INSTALLATION

ZG 4.1General

The erection of roof sheeting, concrete roof tiles, cladding, accessories and translucent sheeting shall be in accordance with the manufacturer's recommendations.

All laps in roof sheeting, wall cladding, translucent sheeting, and accessories shall be sealed with an approved sealant to the manufacturer's specification which shall be approved by the Engineer prior to use.

All swarf, grindings, and surplus fasteners shall be removed from the roof sheeting, cladding, translucent sheeting and accessories after completion.

All holes for fasteners in roof sheeting, wall cladding, translucent sheeting, accessories, purlins and sheeting rails shall be drilled. (Asbestos cement cladding only)

All roofing and wall cladding fixed to buildings shall be waterproof.

Joints in brickwork shall be raked out for flashings and pointed with cement mortar after fixing of flashings.

ZG 4.2 Roofing and Cladding

ZG4.2.1 Galvanised Steel

Roofing, cladding and accessories shall be fixed to steel purloins and sheeting raiis with hexagon headed No.14 carbon steel top speed fasteners each complete with a 20 mm x 7 mm galvanised bonded washer. Longer drive screws generally 90 mm are to be used with timber purloins.

The sides of the galvanised sheets shall be lapped over for a minimum of one flute or according to the manufacturer's recommendations and shall be sealed and stitched with 25 mm long hexagon headed No.14 carbon steel top speed fasteners, each complete with a 20 mm x 7 mm galvanised bonded washer.

End laps shall only occur at purlins and girts and each sheet shall extend beyond the purlin by 150 mm (min) and the girt by 75 mm (min) to give laps of 225 mm and 150 mm (min) respectively.

Roof sheeting shall be laid with the narrow flutes, uppermost whereas the broad flutes shall be fixed externally for the wall cladding.

All Internal wall paneling shall be welded or screwed to the steel columns of the building framework.

ZG4.2.2 Asbestos-Cement

The sheets shall be laid with the smooth side upward for roofing and outwards for cladding and shall be sawn to the correct mitre before fixing. The sheets shall be laid with a minimum end lap of 150 mm and a side lap of 45mm.

Where roof slopes are less than 20' or where specially directed end laps shall be increased and side laps shall be bedded in an approved bitumen mastic.

When laying sheets, consideration shall be given to correct direction of lapping away from the direction of prevailing winds.

Sheets shall be secured to steel members with hookbolts and to timber members with drivescrews. The hookbolts and drive screws shall be 8 mm diameter mild steel sherardized and dipped in epoxy tar compound of an approved make and supplied with one nut each where applicable, one conical washer and one bitumastic felt or approved plastic washer, the latter to be placed in contact with the sheet in each case. The hookbolts shall be of the correct length and shall not project more than the length of three thread pitches beyond the nut in the tightened position.

Sheets shall be fixed through the crown of the second corrugation from the side lap and for intermediate rows, one hookbolt or drivescrew per sheet per purloin. Eaves shall be fixed by two hookbolts or drivescrews per sheet.

ZG 4.3 Gutters and Rainwater Downpipes

ZG4.3.1 Galvanised Steel

Gutters shall be manufactured with beaded edges and shall be lapped for a minimum of 75 mm at each joint. All joints shall be pop-rivetted and sealed with silicone sealant.

Gutters shall be fixed on suitable galvanised mild steel brackets and shall fall to the outlets as shown on the drawings. The brackets shall be accurately bent to shape with the outer edge clipped over the beaded edge of the gutter and fixed to the roofing in an approved manner.

The seams of the down pipes shall be folded and all slip joints shall be pop rivetted.

The downpipes shall be fixed 25 mm clear of the finished wall face or structure by suitable galvanised mild steel brackets which shall be fixed to the walls.

ZG4.3.2 Asbestos-Cement

Gutters and downpipes shall be erected to the manufacturer's instructions and recommendations.

ZG 4.4 Hail Guards

Where called for, hail guards shall be fitted over the full length of the gutters and shall be supported on suitable stools at approximately 500 mm centres.

ZG 4.5 Bird Proofing

Bird proofing shall be fixed at the eaves of buildings and where otherwise required in an approved manner as shown on the drawings.

ZG 4.6 Roof Ventilators

Roof ventilators shall be mounted on the roofs of buildings where shown on the drawings in an approved manner.

ZG 4.7 Internal Wall Panelling

All units of internal wall paneling shall be welded or screwed to the steel columns of the building framework.

ZG 4.8 Translucent Sheeting

Translucent roofing and cladding sheets shall be fixed in position in accordance with the manufacturer's recommendations.

ZG5 TOLERANCES

The structural properties of the galvanised steel roof cladding must be such that the load given below can be supported by the roof cladding over the given spans within the defined limited deflection:

Maximum superimposed distributed load: 1,5 kPa"

Maximum deflection: 1/200th of span

Maximum required spans:

- Single span 1,85m
- Double span 2,15m
- Cantilever 0,45m

The structural properties of the galvanised steel wall cladding must be such that the load given below can be supported by the wall cladding over the given spans within the defined limited deflection:

Maximum super imposed distributed load: 0,75 kPa

Maximum deflection: 1/120th of span

Maximum required spans:

- Single span 2,85m
- Double span 3,15m
- Cantilever 1,15m

ZG6 TESTING

As the Contractor is fully responsible for ensuring that the quality of all work produced, both in respect of materials used and of workmanship, he shall carry out sufficient control tests as the Engineer considers are necessary to ensure that all work is carried out within the specifications.

ZG7 MEASUREMENT AND PAYMENT

Measurement and payment for all items under this section shall be according to the units and rates determined from the Schedule of Quantities and the rates quoted will be deemed to cover the items of work finished complete in every respect.

SECTIONZH: ROOF AND WALL CLADDING AND RAIN WATER ITEMS.....ZH-2

ZH1 SCOPE.....ZH-2

ZH 2 MATERIALS ZH-2

ZH 2.1 Standards ZH-2
ZH 2.2 General ZH-3
ZH 2.3 Electric Hot Water Geysers ZH-3
ZH 2.4 Wash hand Basins for Offices and Houses ZH-3
ZH 2.5 Wash-hand Basins and Wash Troughs for Workshops and Ablutions..... ZH-3
ZH 2.6 Fittings to Wash-hand Basins..... ZH-3
ZH 2.7 Baths..... ZH-4
ZH 2.8 Stainless Steel Sinks and Drainers ZH-4
ZH 2.9 Shower Fittings ZH-4
ZH 2.10 Sanitary Fittings ZH-4
ZH 2.11 Stainless Steel Urinals..... ZH-5
ZH 2.12 Mild Steel Pipes and Fittings ZH-5
ZH 2.13 Cast Iron Pipes and Fittings ZH-5
ZH 2.14 Vitrified Clay Pipes and Fittings..... ZH-5
ZH 2.15 Concrete Pipes ZH-6
ZH 2.16 PVC Pipes and Fittings..... ZH-6
ZH 2.17 Copper Tubes ZH-6
ZH 2.18 Pitch Fibre Pipes and Fittings..... ZH-6
ZH 2.19 Water Taps and Valves ZH-6
ZH 2.20 Traps..... ZH-6
ZH 2.21 Cast Iron Surface Boxes..... ZH-6

ZH 3 EQUIPMENT..... ZH-6

ZH 4 INSTALLATION..... ZH-7

ZH 4.1 General ZH-7
ZH 4.2 Mild Steel Piping ZH-7
ZH 4.3 Cast Iron Piping ZH-8
ZH 4.4 PVC Pressure Piping ZH-8
ZH 4.5 Fixing of Pipes ZH-8
ZH 4.6 Insulation of Pipes ZH-8
ZH 4.7 Gate Valves ZH-8
ZH 4.8 Trenching..... ZH-9
ZH 4.9 Drain Laying..... ZH-9
ZH 4.10 Back-filling ZH-10
ZH 4.11 Ventilation Pipes ZH-10
ZH 4.12 Construction of Manholes ZH-10

ZH 5 TOLERANCES ZH-10

ZH 6 TESTING..... ZH-10

ZH 6.1 Underground Drains ZH-10
ZH 6.2 Plumbing..... ZH-10
ZH6.3 Costs of Tests 11

ZH 7 MEASUREMENT AND PAYMENT ZH-11

ZH1 SCOPE

This section of the Specification covers the installation of the potable water system, soil waste and vent systems and plumbing fixtures as well as the supply of all materials and labour.

ZH2 MATERIALS

ZH 2.1 Standards

All materials used in the Works shall comply in all respects with the following standard specifications, the latest issues of which shall be held to apply:

SABS62	:	Steel pipes and pipe fittings up to 150 mm nominal bore suitable for screwing to ISO R7 pipe threads
SABS151	:	Fixed electric storage water heaters
SABS226	:	Water taps
SABS242	:	Stainless steel sinks with draining boards for domestic use
SABS460	:	Copper and copper alloy tubing
SABS497	:	Glazed ceramic sanitary-ware
SABS509	:	Malleable cast iron pipefittings
SABS558	:	Cast iron surface boxes and manhole and inspection covers and frames
SABS559	:	Vitrified clay sewer pipes and fittings
SABS677	:	Concrete non-pressure pipes
SABS746	:	Cast iron pipes and pipe fittings for use above ground in drainage installations
SABS776	:	Copper alloy gate valves
SABS906	:	Stainless steel wash hand basins and wash troughs
SABS907	:	Stainless steel sinks for institutional use
SABS921	:	Pitch impregnated fibre sewer pipes and couplings SABS924 : Stainless steel stall urinals
SABS966	:	Components of unplasticized PVC pressure pipe systems.
SABS967	:	Un plasticized PVC pipes and pipe fittings for use above ground in drainage installations
SABS974	:	Rubber joint rings(non-cellular)
SABS058	:	Sewer and drain jointing
SABS074	:	Identification of pipeline contents

SABS 0140	:	Identification colour marking Part
BS1115	:	Cast iron gratings for gullies and stormwater drains
BS1211	:	Centrifugally cast (spun) iron pressure pipes for water, gas, and sewage

ZH 2.2 General

All materials, fixtures and equipment shall be of the best quality and of approved manufacture, new, undamaged in any way and shall bear the manufacturer's name and grading.

ZH 2.3 Electric Hot Water Geysers

Electric hot water geysers shall be of an approved type and manufacture, and of the type and capacity specified on the drawings and shall comply with the requirements of SABS 151 and be marked accordingly.

Geysers shall be a high pressure type (300 kPa), with a dry element, complete with an approved type of automatic pressure control and vacuum safety valve.

ZH 2.4 Wash hand Basins for Offices and Houses

Unless otherwise specified, wash-hand basins shall be one of the following types:

(a) Cast iron wash-hand basins shall be of an approved manufacture of minimum overall dimensions 550 mm x 400 mm, with a mass of not less than 20 kg constructed from clean cast iron to an approved shape and finished on the inner face, rim, edges, etc., with white porcelain enamel, which shall be free from all blemishes and be of even thickness over the whole surface, and the outside shall be painted

(b) Vitreous china wash-hand basins shall be of minimum overall dimensions 550 mm x 400 mm, with a mass of not less than 14,5 kg, constructed from vitreous china finished with a vitreous lead less glaze thoroughly fused and united to the body, all complying with the requirements of SABS497.

ZH 2.5 Wash-hand Basins and Wash Troughs for Workshops and Ablutions

Unless otherwise specified, stainless steel wash-hand basins shall be of approved manufacture of type 3041,2 mm thick stainless steel with splash backs of approved height and shall otherwise comply with SABS 906 and SABS 242.

Basins shall be of minimum overall dimensions 520 mm x 400 mm, and shall be fixed in position on approved 25 mm diameter stainless steel pipe stands fixed to walls and floors in an approved manner.

Stainless steel wash troughs shall be of approved manufacture of type 304 1,2 mm thick stainless steel and shall otherwise comply with SABS 906 and to be of one piece pressed construction.

ZH 2.6 Fittings to Wash-hand Basins

Wash-hand basins shall be fitted with a 32 mm diameter, threaded, brass waste union, a chromium-plated brass flange and grating, a black vulcanite plug on a chromium-plated chain "Flexi" Butyl rubber trap or approved equal, and one pair of 15 mm diameter "Easy Clean" heavy pattern chromium-plated screw down pillar taps marked with red and green identification spots are separately measured. Where only cold water is supplied, the basin shall be fitted with one pillar tap with a green identification spot (separately measured) and the second tap hole in the basin shall be plugged with a cemented-in fireclay or china plug.

ZH 2.7 Baths

Unless otherwise specified, baths shall be first grade, of cast iron with rectangular top, porcelain enamelled inside and painted outside. Baths shall be fitted with 38 mm diameter waste connection, overflow, plug, and chain. Two 15 mm "Easy Clean" heavy pattern chromium-plated bib taps marked with red and green identification spots and a "Flexi" Butyl rubber or equal approved trap are separately measured.

ZH 2.8 Stainless Steel Sinks and Drainers

Stainless steel sinks and drainers shall be manufactured from Type 304 stainless steel, and shall comply with the requirements of SABS 242 for domestic uses, or with SABS 907 for other uses.

All units shall be treated on the underside with a vermin-proof sound deadening material that shall be sprayed on at the factory. All units shall be clearly embossed or stamped, either on the unit itself, or on an attached plate, showing the name, trade name or registered trade mark of the manufacturer and the grade of material used. Each sink for institutional use shall be complete with a 150 mm splash back, a slot overflow, a 40 mm diameter threaded brass waste union, a chromium-plated brass flange and grating, a black vulcanite plug on a chromium-plated chain, and a "Flexi" Butyl rubber trap or approved equal. Where specified, the drainers shall be complete with a tiling key along the back edge and along one or both ends.

ZH 2.9 Shower Fittings

Unless otherwise specified, each shower cubicle shall be fitted complete with the following fittings which shall be of approved manufacture and pattern:

(a) One pair of built-in type 15 mm diameter heavy pattern chromium-plated shower valves fitted with red and green identification spots. (measured separately)

(b) One "Castle Brass No. AP2-6" vandal proof chromium-plated cast brass shower rose, or approved equal or a 50 mm diameter chromium plated shower rose for screwing to 13 mm pipe as called for on the drawings. (measured separately)

(c) One cast brass heavy pattern shower trap with hinged chromium-plated grating. (measured separately)

(d) One "Vaal No. 6031" soap holder, or approved equal, 150 mm x 150 mm semi-recessed, tongue lipped, white earthenware, built into one wall. (measured separately)

(e) (One full-length heavy-duty plastic shower curtain, complete with chromium-plated rail and fittings, and with heavy-duty plastic curtain rings. The colour of the curtain shall be approved by the Engineer.

ZH 2.10Sanitary Fittings

Low level W.C. suites shall consist of "Vaal Protea" or approved equal, white vitreous china closets with "S" or "P" traps and seat lugs, matching flat bottom flushing cisterns with left-hand or right-hand outlets, with or without vents, complete with brackets, ball valves, flush pipes connected to flushing rims of pans with rubber cone joints; solid, heavy duty double flap, plastic toilet seats with hinges and buffers; and with brass gate valves for isolation or maintenance (valves separately measured).

Toilet paper holders shall be "Vaal No. 6030" or approved equal, 150 mm x 150 mm semi-recessed, white earthenware, complete with wood or plastic spring loaded rollers, fitted next to all W.C. pans or an approved stout chromium plated toilet paper holder plugged to the wall as called for in the Schedule of Quantities.

ZH 2.11Stainless Steel Urinals

Stainless steel urinals shall be "Citimetal" Model CS102 or approved equal, manufactured from Grade 304 stainless steel, and comply in all respects with the material requirements and constructional details laid down in SASS924.

The urinal shall be of one piece construction approximately 1,2 m high, with a tillng key at the top, complete with an automatic built-in flush system, having a curved back, end panels, channel, and tread plate, and with the channel outlet fitted with a chromium-plated brass grating and frame with a threaded tail for jointing to the outlet pipe.

All urinals shall be clearly embossed or stamped, either on the unit itself, or on an attached plate, showing the manufacturer's name, trade name or registered trademark and the grade of material used.

ZH 2.12Mild Steel Pipes and Fittings

Galvanized mild steel piping for water supply and waste drainage shall be solid drawn seamless mild steel pipes, galvanized inside and out, complying with the requirements of SABS 62 medium class

All threads shall be tapered. Parallel threads will not be acceptable.

Flexible joints for galvanized mild steel pipes shall be "Viking-Johnson Junior Couplings" or approved equal.

Fittings for water piping shall be best quality malleable iron pipe fittings of approved manufacture, complying with the requirements of SASS 509.

Fittings for waste piping shall be best quality cast brass of approved manufacture. The fittings shall be of full bore, smooth and clean inside and outside and with sharply cut threads. Cleaning eye fittings shall be fitted with brass spanner headed caps, threaded and screwed into position. Unless otherwise specified cleaning eyes shall be used at all changes in direction of waste pipes.

ZH 2.13Cast Iron Pipes and Fittings

Cast iron pipes and fittings for waste pipes underground and vent pipes above ground shall be heavy duty and comply with the requirements of SS 1211, be of approved manufacture, be approved before being installed and shall be badged with the manufacturer's name and trade name.

Cast iron pipes and fittings shall be coated internally and externally with an approved bituminous preservative.

Cast iron pipes and fittings shall be dark grey in colour when fracture tested and be such that they may be easily drilled, tapped and filed.

"Timesaver" couplings or approved equal shall be used for plain ended pipes and fittings.

ZH 2.14Vitrified Clay Pipes and Fittings

Vitrified clay, spigot and socket pipes and fittings for soil pipes underground shall comply with the requirements of SASS 559. Plain ended pipes with specified or other approved jointing systems may be used.

The pipes and fittings shall be of the diameter specified.

Each length of pipe and each fitting shall be legibly marked with the manufacturer's name, trade mark or trade name, and the SASS mark,

Rubber sealing rings complying with SASS 974 shall be used at joints of socketed vitrified clay pipes and fittings, except for oily sewers where the sealing rings shall be neoprene complying with SASS 974 Class S.

ZH 2.15Concrete Pipes

Unless otherwise specified, concrete pipes shall comply with the requirements of SASS 677 for Class "C", Type "SC" spigot and socket pipes. These concrete pipes shall be used below slabs, loading platforms, etc., to convey rainwater discharged from downpipes.

ZH 2.16PVC Pipes and Fittings

Rigid PVC pressure pipes and fittings for cold water supply and soil and vent pipes and fittings shall comply with the requirements of SASS 966 and SASS 967 respectively.

ZH 2.17Copper Tubes

Copper tubes shall be of the best quality, of approved manufacture and shall comply with SASS 460 when fixed in buildings. Copper tubing shall only be used at connections to fixtures and the length of tubing used shall be kept to a minimum.

ZH 2.18Pitch Fibre Pipes and Fittings

Pitch impregnated fibre sewer pipes and fittings shall comply with the requirements of SASS 921.

ZH 2.19Water Taps and Valves

All water taps and gate valves shall be of the best quality and manufacture, complying with the requirements of SABS 226 and SABS 776 respectively.

Taps for internal use shall be heavy pattern chromium plated smooth faced easy-clean type, with hot and cold badges where applicable. Taps for external use shall be heavy pattern polished brass hose type.

Gate valves shall be "Prestex" cast brass full way gate valves or approved equal.

15 mm diameter brass "L. K. connector type angle valve", or approved equal, shall be used below wash-hand basins, etc., where called for on drawings.

ZH 2.20Traps

Brass traps shall be solid cast brass traps with even and clean bores, fitted where specified with a screwed inspection opening cast into the body with a spanner headed cap screwed in. Butyl rubber traps shall be "Flexi" or equal approved and fitted where specified.

Traps for waste drainage outside buildings shall be 1 00 mm diameter vitrified clay or pitch fibre gulley traps or 100 mm diameter vitrified clay or pitch fiber universal traps with hopper heads with one, two or three vertical or side inlets, encased in Class 15/19 concrete. Each trap shall be fitted with a cast iron hinged grating and frame, with brass locking fittings, set on cement mortar.

ZH 2.21Cast Iron Surface Boxes

All surface boxes for valves, inspection eyes, etc., shall be of the sizes and weights specified or shown on the drawings, complying with the requirements of SABS 558 and coated with an approved preservative solution before leaving the manufacturer's works.

ZH3 EQUIPMENT

The Contractor shall provide and maintain in good working order, adequate equipment for carrying out the required work in accordance with this Specification in a safe and efficient manner.

ZH4 INSTALLATION

ZH 4.1 General

All drainage work, sanitary work and plumbing work shall be executed in accordance with the regulations and by-laws of the Local Authorities and to the satisfaction of the Engineer. Only licensed drain layers are to be employed in a skilled capacity for pipe laying.

Plumbing shall be installed in conformance with building and structure conditions. Wherever possible, all pipes shall be positioned before the walls, etc. are built, in order that the pipes may be built into the walls, floors, etc. However, where this is not feasible, the walls shall be chased using carborundum or diamond tipped cutting tools to cut the sides, followed by a sharp chisel to finish the chase. Pipes fixed in chases shall be firmly fastened in position with saddles fixed at minimum 1000 mm centres and a maximum of 150 mm from wall entry or exit points. Depths of pipes below brick or concrete surfaces to receive plaster shall be a minimum of 3 mm to any portion of the pipe or fillings failing which the chases shall be covered by a layer of expanded metal latching minimum 0,8 kg/m 100 mm wider than the chase prior to plastering. Exposed piping shall be parallel with, or at right angles to walls or structures. Provision shall be made for expansion and contraction without undue stress in the piping systems.

Plumbing shall be carried out in strict accordance with the drawings. No deviations from the drawings may be made without written approval from the Engineer

Water and sewer pipelines shall be a minimum of 300 mm apart, horizontally and vertically.

All WC pans and wash basin pedestals shall be fixed with stout brass cup headed screws to lead plugs embedded in the floor and flush with granolithic or floor tiles. All cisterns, wash basins, and urinals shall be fixed flush to, tiled, plastered, bagged or smooth brick walls with bolts cast in.

Hot and cold water connections as well as all necessary traps and waste pipes, are to be made to wash basins, sinks, showers, cisterns, etc.

Electric geysers shall be mounted as shown on the drawings and all hot water piping shall be laid inside buildings. Approved pressure control valves shall be fitted to the cold water supply to the geysers.

All holes or chases in walls, ceilings, etc. , as well as making good to all finishes, shall be included For under the respective plumbing and drainage items.

ZH 4.2 Mild Steel Piping

Teflon tape, or approved equal, shall be applied to make threads of screwed joints in the direction of the threads and wound from the barrel of the pipe to the open end.

The interior of all threaded pipes shall be reamed to remove burrs and all scale shall be removed from the inside of the pipes.

Welding shall not be permitted on galvanized mild steel piping.

Unions or flanges shall be provided at connections to each piece of equipment and elsewhere as required for system maintenance. When connecting dissimilar metals, insulating couplings shall be used.

If a reduction in the size of a pipe takes place at an angle, the bend or elbow shall be of the size of the inlet or larger pipe.

ZH 4.3 Cast Iron Piping

Pipes shall be accurately laid and jointed in accordance with SABS 058.

Spigot and socket joints shall be caulked with hemp rope to half the depth of the socket and completely filled with molten lead in one pour. Other approved caulking compounds may be used if approved by the Engineer.

ZH 4.4 PVC Pressure Piping

PVC pressure pipe systems shall be laid and jointed in strict accordance with the manufacturer's instructions and recommendations.

ZH 4.5 Fixing of Pipes

Mild steel pipes less than 50 mm in diameter shall be fixed to walls with galvanized malleable iron "School Board" pattern brackets. Pipes over 50 mm in diameter shall be fixed with galvanized hinged holderbats, fastened with brass pins or bolts. The brackets or holderbats shall be built into the wall with cement mortar. Pipes fixed to timbers shall be secured with strong galvanized iron pipe clips screwed to the woodwork. Pipes laid in clay or in earth with a high acidic level shall be wrapped in "Denso" or other approved wrapping tape.

Cast iron pipes shall be fixed to walls or structures with cast iron hinged holderbats fastened with brass pins, or bolts, fixed into walls with cement mortar, or secured with bolts to wood framing.

Pipe supports shall be spaced at the following minimum distances:

	Horizontal Pipes	Vertical Pipes
For cast iron	1,830m	1,830m
For mild steel		
Up to 20 mm diameter	1,200m	1,830m
From 25 mm diameter up to 40 mm diameter	1,830m	2,450m
From 50 mm diameter up to 100 mm diameter	2,450m	3,050m

Pipes shall be inclined, so that no air can lodge therein and shall generally fall towards the main pipe to ensure complete emptying.

ZH 4.6 Insulation of Pipes

Insulation of pipes shall be executed where specified with sectional pipe lagging, comprising a compressed resin bonded glass or mineral wool casing covered with hessian or canvas. The running joints shall be secured with clipped-on, galvanized hoop iron bands. Insulation of bends, tees, etc., on pipelines to be lagged, shall be executed with a bandage strip of resin bonded glass or mineral wool wrapped securely around the fitting and covered with an asbestos compound cement.

Where required, exposed hot water pipes shall be insulated to prevent injury.

ZH 4.7 Gate Valves

Gate valves shall be fitted to service pipes at points of entry to each separate building, or at each separate connection to a building.

Gate valves shall be fitted on branch lines longer than - 3 meters, servicing one or more fixtures.

Gate valves shall be fitted to isolate individual fixtures.

Unless otherwise specified, gate valves shall be the same diameter as the pipe.

ZH 4.8 Trenching

The sides of trenches for drainage pipes shall be excavated as nearly vertical as possible. Trenches shall not be excavated wider than required to allow adequate working space for laying and jointing the pipes. The bottoms of the trenches shall be evenly graded and firm to the proper inclinations. Should the proper depth of trench excavations be exceeded by carelessness or in error, the Contractor shall, at his own expense, cause such excessive depth to be filled up to the proper level and compacted. Uneven bottoming in rock cutting shall be filled with weak concrete.

All planking, strutting and shoring which may be necessary for maintaining sides of excavation, shall be carried out. Any parts of trenches that fall in through insufficient support will be required to be cut out, if necessary, to a square section filled with compacted backfilling and the extra excavation and backfilling thereby required shall be filled in at the Contractor's expense.

Trenches shall be kept clear of water during the progress of the work by pumping or other adequate means, where necessary. All drainage sumps shall be sunk clear of the work outside the excavations. The entire expense of replacing or repairing to the satisfaction of the Engineer, any work destroyed or damaged, by rain or flood, shall be borne by the Contractor.

Water pipes laid in ground shall have a clear cover of not less than 500 mm and shall be excavated and backfilled in the same manner as for drainage pipes.

ZH 4.9 Drain Laying

Drains shall be accurately laid to the lines and gradients shown on the drawings or as directed, with pipes of the diameter as shown. Barrels of vitrified clay pipes shall be rest on solid ground or alternatively, the pipes may be bedded in concrete which is to be haunched up on both sides of pipes once the joints have been made, tested and approved. In all cases the barrels of vitrified clay pipes shall rest on the ground or be bedded in concrete for at least two-thirds the length of the barrels. All vertical bends, gullies, and traps are to be bedded on and encased in concrete. The laying of PVC and pitch-fiber drains shall be in strict accordance with the manufacturer's instructions.

Vitrified clay pipes shall be jointed with a gasket and 2:1 cement mortar as laid down in SABS 58. Cast iron pipes shall be jointed by caulking with sufficient turns of white hempen yarn to leave unfilled 45 mm depth of socket in the case of 100 mm diameter pipes, and 50 mm depth of socket in the case of 150 mm diameter pipes. These spaces are then to be filled with molten lead and well caulked. PVC and pitch fibre pipes shall be jointed strictly in accordance with the manufacturer's instructions.

Drains shall be provided with all necessary easy bends, junctions, taper pipes, etc., as required. Pipes shall be built into walls of manholes, etc, in 2: 1 cement mortar. Open ends of drains shall be plugged to prevent the entry of soil or mud during wet weather. The drains shall be suitably protected against damage until they have been tested, approved, and covered in. Should they be damaged in anyway, the Contractor shall make good the damage at his own expense.

Where vitrified clay pipes are to be within or connected to a structure, box or manhole, the pipe to be built in shall be a quarter standard length, or shorter if a closure piece is required. To this pipe a half standard length shall be connected followed by standard full length pipes.

Where marked "I.E." on the drawing and at every junction and bend and after all ramps and rodding eyes, inspection (access) eyes shall be provided with stoppers sealed in bitumen.

ZH 4.10Back-filling

After drains have been laid and the initial air test successfully carried out, all hand holes shall first be carefully and solidly filled up under and around sockets. The space around and at sides of pipes and above same shall then be filled carefully with clean, soft, loose, soil, well-watered, until a depth of 300 mm has been reached, after which the filling shall be carefully rammed with a wooden hammer.

The filling of the remaining depths of the trenches shall be carried out in 230 mm layers solidly rammed with iron hammers, weighing not less than 5 kg each until the level of the ground is reached. If required, the Contractor is to have the trench soaked with water whilst the filling is being effected. Top soil, or surfacing material, shall be replaced at the top layer of the filling. No pot clay will be permitted to be used for filling. All surplus material shall be carted away (1 km free haul) or spread on site as directed by the Engineer.

ZH 4.11Ventilation Pipes

Where shown on the drawings or as required, cast iron or PVC ventilation pipes shall be fixed to walls with hinged holder bats built into walls and carried up not less than one meter above roofs. Ventilation pipes shall be connected below to the drains and roofs shall be cut as required and properly flashed at these intersections.

ZH 4.12Construction of Manholes

Manholes shall be constructed in brickwork using NFX type solid clay bricks as detailed on the drawings and fitted with cast iron covers and frames complying with SASS 558 and coated with an approved preservative solution before leaving the manufacturer's works.

ZH5 TOLERANCES

Manufacturing tolerances shall be as laid down in the various standard specifications listed in Clause ZH 2.1.

ZH6 TESTING

ZH 6.1 Underground Drains

Upon completion of each drainage connection, it will be inspected by the Engineer and checked for grade, alignment, cleanliness, and appearance of the inner surface. If found to be satisfactory, an air test shall then be applied. The air test will consist of two tests, one before and one after the trenches have been filled in with fine material to a depth of 300 mm over pipe.

Air tests shall be made with an approved air-testing machine and the portion of the drainage connection to be tested shall be closed with expanding plugs or bladders. An air pressure of not less than 40 millimetres head of water shall be applied and the float will be required to stand for one minute. Should any portion of the work fail to pass the test specified, the fault or faults shall be made good by the Contractor at his own expense and the work shall again be tested. No patching up of pipes, joints or connections will be allowed and all defective pipes must be carefully cut out and made good in a proper manner to the entire satisfaction of the Engineer.

After final backfilling, the drain shall be tested by• passing a smooth rubber ball of diameter 12 mm less than the diameter of the pipe, through the pipe to ensure that no obstruction exists. All appliances, labour and materials necessary for testing, shall be provided by the Contractor at his own expense.

Domestic hot and cold water systems shall be flushed out, tested at 700 kPa for one hour and left at supply main pressure for the balance of the construction period.

All outlets of soil, waste and vent pipes shall be plugged and the systems filled with water and individual sections tested with not less than 3 meter water head for one hour with no drop in the water level being permitted.

Plumbing fixtures shall be filled with water and checked for leaks or retarded flow.

All gate valves, taps and similar equipment shall be adjusted to provide for the proper operation of the various systems.

Any leaks and faults found above shall be repaired or replaced and re-tested where applicable.

ZH 6.3 Costs of Tests

The costs of tests described above shall be borne by the Contractor who shall be deemed to have included these costs in the scheduled rates for plumbing and drain laying.

ZH7 MEASUREMENT ANDPAYMENT

Measurement and payment of plumbing and drain laying items shall be according to the units and rates determined from the Schedule of Quantities and the rates quoted will be deemed to cover the item of work finished complete in every respect.

SECTIONZI: GLAZIER.....ZI-2

ZI1 SCOPE.....ZI-2

ZI2 MATERIALS.....ZI-2

ZI2.1 Standards.....ZI-2
ZI2.2 Glass ZI-2
ZI2.3 Mirrors ZI-2
ZI2.4 Putty ZI-3

ZI3 EQUIPMENT.....ZI-3

ZI4 GLAZING AND FIXING.....ZI-3

ZI5 TESTING.....ZI-4

ZI6 MEASUREMENT AND PAYMENT ZI-4

ZI1 SCOPE

This section of the Specification covers the supply and fixing of glazing.

ZI2 MATERIALS

ZI2.1 Standards

All materials used in the Works shall comply in all respects with the following standard specifications, the latest issues of which shall be held to apply:

SABS680 : Glazing putty for wood and steel sashes.

BS Code of : Glazing and fixing of glass for buildings. Practice152

ZI2.2 Glass

All glass shall be of such quality that surface deterioration will not develop after glazing.

All glass shall be free of bubbles, waviness, scratches, stains and other imperfections.

Unless otherwise specified, sheet glass for glazing shall be fiat drawn clear glass of ordinary glazing quality and of the thickness specified in the following table for the various sizes of glass panes:

Surface Area of Glass Pane	Thickness of Glass
Not exceeding 0,5m²	3mm
Exceeding 0,5m² and not exceeding 1,5m²	4mm

Polished plate glass for glazing shall be transparent polished plate glass of "GG" quality and, unless otherwise specified, shall be 6 mm thick.

Obscure glass for glazing shall be 3 and 4 mm thick "Pacific" or other approved pattern.

Wired transparent glass for glazing shall be 6 mm thick polished "Georgian" or other approved wired glass.

Wired obscure glass for glazing shall be 6 mm thick rough cast "Georgian" or other approved wired glass.

Glass louvre blades shall be 6 mm thick drawn sheet with the exposed edges rounded and smoothed.

ZI2.3 Mirrors

Mirrors shall be or the outside dimensions as shown on the drawings and 6 mm thick high Quality polished plate glass with multiple coated copper backing giving a bright silver reflective surface. The edges shall be rounded and polished.

Alternatively mirrors shall be of 1,2 mm bright polished stainless steel of Grade 18/8 with rounded and smoothed edges.

ZI2.4 Putty

The putty shall be delivered to site in sealed containers badged with the SASS mark and the following information clearly legible on the container:

(a) The manufacturer's name or brand name of the product or both.

(b) The words "Wood-sash glazing putty Type I" or "Steel-sash glazing putty TypeII".

(c) The batch number and the date of manufacture.

Type I putty as specified shall only be used for glazing in wood sashes and Type II for steel sashes.

Where putty is used for glazing in unpainted hardwoods, it shall be tinted to match the colour of the wood.

Putty shall not be too hard or soft or caked when used and shall dry evenly without crazing .; or cracking.

Defective putty shall be cut out and replaced by the Contractor at his own expense, including replacing broken glass and paintwork

ZI3 EQUIPMENT

The Contractor shall provide and maintain in good working order, adequate equipment for carrying out the required work in accordance with this specification in a safe and efficient manner.

ZI4 GLAZING ANDFIXING

Industrial type windows shall be glazed from the inside and all other windows from the outside.

Glass shall be cut in panes to suit all glazed openings required, with sufficient clearance all round to prevent cracking by expansion, contraction or vibration. All panes of figured or textured glass shall be uniform in appearance with the pattern parallel to the edges and wire woven glass shall be so cut that the wires are parallel to the edges.

Glass rebates other than in unpainted wood, shall be primed before glazing.

Glass panes exceeding 0,5 m in area, fixed in wood frames without glazing beads, shall be secured in position with glazing sprigs and putty.

Glass panes exceeding 0,5 m in area, fixed in steel frames without glazing beads, shall be secured in position with glazing pegs or clips inserted in holes in the steel frames and putty.

In all cases the glass shall be well bedded and back puttied.

All putty shall be carefully trimmed, cleaned off and be neatly finished off to within 3 mm of the sight lines. The putty shall be straight with smooth surfaces and sharp mitres.

No soft or oily putty shall be covered with paint until it is rectified. All putty shall have formed a surface crust and have a smooth finish before any paint is applied. A paint primer shall be applied as soon as the putty has sufficiently dried out to reduce shrinkage cracks forming.

Glass panes fixed with glazing beads in unpainted hardwood doors or sashes shall be bedded on strips of wash leather, neoprene, felt, velvet or rubber, turned over on both faces of the glass in the rebates, to form a soft packing between the glass and the woodwork.

The edges of all plate glass shall be "blacked" and 6 mm thick float or plate glass shall be glazed in PVC glazing channels.

The whole of the glazing shall be cleaned before the premises are handed over for occupation. Should any glass be cracked or broken prior to handing over the building, the same shall be replaced by the Contractor at his own expense.

Mirrors shall be fixed to walls with four C.P. mirror screws and rubber washers behind, screwed to plugs in the wall.

ZI5 TESTING

As the Contractor is fully responsible for ensuring that the quality of all work produced, both in respect of materials used and of workmanship, he shall carry out sufficient control tests as the Engineer considers are necessary to ensure that all work is carried out within the Specifications.

ZI6 MEASUREMENT ANDPAYMENT

The unit of measurement for all glazing work shall be the square metre (m^2) of the specified glass installed and the rate shall include for all supply, cutting, fitting, putty application, priming and cleaning.

SECTIONZJ: PAINTER.....ZJ-2

ZJ1 SCOPE.....ZJ-2

ZJ2 MATERIALS.....ZJ-2

ZJ2.1 Standards.....ZJ-2
ZJ2.2 General.....ZJ-3

ZJ3 EQUIPMENT.....ZJ-3

ZJ4 APPLICATION.....ZJ-3

ZJ4.1 General.....ZJ-3
ZJ4.2 Inspection.....ZJ-4
ZJ4.3 Preparatory Work.....ZJ-4
ZJ4.4 Workmanship and Finishes.....ZJ-5
ZJ4.5 PaintingofPlaster,ConcreteorBrickSurfaces.....ZJ-6
ZJ4.6 PaintingofWoodwork.....ZJ-7
ZJ4.7 PaintingofMetalSurfaces.....ZJ-7
ZJ4.8 PaintingofAsbestos-CementItems.....ZJ-8
ZJ4.9 Painting of Hardboard.....ZJ-8

ZJ5 TOLERANCES.....ZJ-9

ZJ6 TESTING.....ZJ-9

ZJ7 MEASUREMENT AND PAYMENT ZJ-9

ZJ1 SCOPE

This section of the Specification covers all aspects of surface preparation and painting of interior and exterior surfaces such as timber, metal, plaster, concrete and structural steel work as well as the supply of all materials and labour.

ZJ2 MATERIALS

ZJ 2.1 Standards

All materials used in the Works shall comply in all respects with the following standard specifications, the latest issues of which shall be held to apply:

Surface Preparation

SIS055900	:	Pictorial Surface Preparation Standards for Painting Steel Surfaces.

Primers

SABS312	:	Red lead based primers for structural steel -Type II, Grade II
SABS678	:	Primers for wood for interior and exteriors
SABS679	:	Zinc chromate primers for steel
SABS723	:	Wash primer (metal etch primer)
SABS912	:	Calcium plumbate primer

Undercoat

SABS681	:	Undercoats for

paints Finishes

SABS515	:	Decorative paint for interior use
SABS630	:	Decorative high gloss enamel paints for interior and exterior use -Grade I
SABS631	:	Decorative oil gloss paint for interior and exterior use
SABS633	:	Emulsion paints for interior decorative purposes
SABS634	:	Emulsion paints for exterior use
SABS682	:	Finishing paint, aluminium type
SABS683	:	Roof paints -Type B
SABS684	:	Structural steel paint -Type B
SABS801	:	Epoxy-tar paint
SABS887	:	Varnish for interior use

ZJ 2.2 General

Samples and/or laboratory reports of the materials shall be submitted to the Engineer if and when required.

The Contractor shall provide the following information and details of the paints and decorative materials he proposes to use:

(a) The name of the manufacturer and tradename.

(b) Brand, type or grade of paint.

(c) Manufacturer's data sheets, colour references, instructions for use including surface preparation, sealers, primers, undercoats and finishing coats, all of which shall be considered as being part of these specifications if approved by the Engineer.

(d) Safeguards to protect the applied paint from damage until the work is accepted by the Engineer.

(e) Period of guarantee and details of maintenance, if any, to uphold the guarantee.

(f) Shelf or pot life of materials if applicable.

Where proprietary brands are used, the manufacturer's priming and all subsequent coats of paint suitable for that particular brand shall be employed in accordance with the manufacturer's instructions.

No other materials of a similar character and quality, or another manufacturer may be used instead of those approved, unless permission to do so has been obtained in writing from the Engineer.

All materials shall be brought on to the site in containers sealed by the manufacturer. No paint shall be mixed with another paint of a different quality, type, brand, or colour, or be thinned or adulterated in any way but shall be used as supplied by the manufacturer. Where mixing or thinning is required, it shall be carried out in accordance with the manufacturer's recommendations.

All varnishes and wood sealers shall be approved brands and shall be applied strictly in accordance with the manufacturer's recommendations.

Limewash is to be of 10 parts of fresh unslaked lime; one-and-a-half parts of coarse salt and one part of tallow or boiled linseed oil, all measured by weight. The lime is to be slaked and the salt and tallow or oil are to be well mixed with it whilst it is slaking. After slaking is complete, further water may be added to bring the limewash to the necessary brushing consistency.

Cement based paint shall be self coloured and waterproof and shall be approved by the Engineer

ZJ3 EQUIPMENT

The Contractor shall provide and maintain in good working order, adequate equipment for carrying out the required work in accordance with this specification in a safe and efficient manner.

ZJ4 APPLICATION

ZJ 4.1 General

Factory finished products shall not be painted unless otherwise specified.

No paint shall be applied over any surface containing traces of dust, grit, grease, oil, etc., loose rust or mill-scale or corrosion products of – any kind.

All surfaces to which paint is applied shall be free from moisture, Unless otherwise specified, paint shall be applied over dry paint surfaces.

Where surfaces are to be welded, no paint shall be applied within 75 mm of the weld position unless otherwise specified.

Steel embedded in concrete shall not be oiled or painted except to 50 mm below the final level of the concrete.

The paint manufacturer's instructions shall be strictly adhered to.

Each priming coat and each undercoat of painting shall be inspected and approved by the Engineer before any subsequent undercoat or finishing coat is applied.

Each coat of paint shall be a distinctive colour. All colour schemes will be provided by the Engineer and samples of the final colours required shall be submitted to the Engineer for approval and the work shall then be finished to the colour or colours as approved and may include different colours and adjoining surfaces, and the Contractor must allow in his prices For painting of walls, etc., in different colours. Where different colours of paint finishes meet at external or internal angles, projecting rails, V-grooves, frames, steel windows, etc., no item for "cutting in" will be measured.

All metal fittings and fastenings shall be removed before the preparatory processes are commenced. On completion the metal fittings and fastenings shall be cleaned and rectified in position.

ZJ 4.2 Inspection

All surfaces to be treated shall be carefully inspected by the Contractor, who shall satisfy himself that the surfaces are in a perfect state to receive the paint or corrosion protection specified. No claim will be entertained arising from defective work as a result of a paint failure due to not strictly insisting on receiving from other trades, surfaces in a proper condition, fit to receive the type of paint specified.

ZJ 4.3 Preparatory Work

Where necessary, surfaces shall be thoroughly washed to remove all traces of soluble salts, grease, and corrosive air-borne contaminants prior to painting, dried and painted immediately thereafter.

Welds and adjacent parent metal shall be deslagged, inspected and approved and all spatters shall be removed prior to painting.

The weld area shall be abrasive blasted and/or ground and all contaminants such as flux shall be removed prior to painting.

Steel surfaces which are to rest on concrete or other floors shall receive the full paint system prior to erection.

Damaged paint areas of steel surfaces shall be cleaned, rust spots removed and spot priming carried out such that the patch painting extends 20 mm beyond the damaged areas.

Where the shop coat to steel surfaces is allowed to age for a few months before painting, light sanding or rubbing with steel wool or scrubbing with clean water using a bristle brush, shall be carried out.

All metal surfaces being painted shall be cleaned of all rust, scale and dirt by scraping or by means of steel wire brushes; also all oil and grease shall be removed and a perfectly clean surface obtained. If necessary, the surface shall be degreased immediately before applying the priming coat, with a suitable alkaline detergent solution and then thoroughly rinsed and allowed to dry; any salt deposits on the metal surfaces as may occur in industrial and marine atmospheres shall be similarly removed before priming.

New galvanised metal surfaces of all non-ferrous metals, which are to be painted, shall be cleaned down as above and given one coat of primer.

After cleaning off rust on metal work, those portions so affected shall be treated with an approved rust inhibitor.

Before painter's work internally is commenced all floors shall be swept clean and dirt and rubbish removed, and the rooms left practically free from dust, dust-free conditions being maintained during the progress of the work.

All plastered wall, ceiling and similar surfaces shall be perfectly dry and in a fit state to receive the finishing, before the work is put in hand.

All surfaces shall be properly prepared before painting, staining, etc. Each coat of paint excepting the last shall be rubbed down with a fine glass paper before the next coat is applied.

All surfaces not being painted such as face brickwork, window sills, floors, and stained woodwork, shall be covered up and protected against paint spots before any painting is commenced.

All plastered wall, ceiling and such like surfaces being painted shall be filled where necessary with suitable stopping or patching plaster, and the whole rubbed down ready to receive the finishing.

Boarded ceilings and cornices being painted shall be filled where necessary with suitable stopping.

Woodwork being painted shall be well sandpapered down, knots treated with knotting, and all surfaces primed, stopped with hard stopping and rubbed down to an even surface ready to receive the paint.

Woodwork being varnished, sealed or stained shall have all plaster stains, pencil marks and other surface discolouration and blemishes carefully removed, and stopped with tinted stopping and well rubbed down.

Nail holes, etc., shall be cleaned out and stopped with an approved filler or stopping after the priming coat of paint.

Backs of timber door frames and similar frames and surfaces of other new or re-fixed joinery in contact with brickwork, etc., and built in as the work proceeds, shall be primed before building in whether the articles are to be painted or not, to prevent moisture seeping into the wood from the mortar bedding.

Tongued, grooved and rebated edges of boards in batten doors and other such like inaccessible parts of joinery shall, before the joinery is assembled, be primed, or where the joinery is to receive a finish other than paint, be given one coat of such other finishing material.

Priming to external structural timbers shall be applied before the timbers are fixed in position, and shall include all wrot surfaces such as backs of fascia and barge boards.

ZJ 4.4 Workmanship and Finishes

Paint may be applied by spray, brush or roller depending on the materials used, the surface to be painted, and the manufacturer's instructions. In cases where spraying is permitted, all

surrounding surfaces shall be properly masked and an approved water trap and air regulating valve shall be furnished and installed on all equipment used in spray painting.

Every coat of paint, irrespective of method of application, shall be adequately and permanently keyed or bonded to the base material or previously applied coat, and shall be evenly distributed, continuous, free from sags, runs, brush marks, pin holes, or other imperfections, and shall dry to a smooth film.

The Contractor shall protect all parts of the structure or fittings against disfigurement by spatters, splashes, and smirches of paint or of paint materials. The Contractor shall be responsible for any damage, paint or dirt caused by his operations to vehicles, persons or property, and he will be required to provide protective measures to prevent such damage and make good where required at his own expense.

Any paint stains which may result in an unsightly appearance shall be removed or obliterated by the Contractor at his expense.

If passing traffic creates sufficient dust to harm or spoil the appearance of painted surfaces, the Contractor shall sprinkle the adjacent roads and shoulders with water at his expense, for a sufficient distance on each side of the location where painting is being done, to keep dust away from freshly painted surfaces. The Contractor shall also furnish and post at his own expense "DRIVE SLOWLY" signs and take other necessary precautions to prevent dust and dirt from adhering onto freshly painted surfaces.

Tinting of undercoats shall be done to distinguish the number of coats applied, or when a light colour has to be applied to a dark surface.

Where white or off-white colours are being used, an additional finishing coat shall be required. The final coat or finishing coat of paint shall be applied after all other work in the building is completed, unless otherwise specified.

The painter shall keep some of the final paint in reserve, in the event of having to make good any patching which may be required as a result of damage or unforeseen circumstances.

Upon completion, the Contractor shall clean all glass, remove all paint spots from walls, floors and fittings and leave the premises clean and fit for occupation.

All inflammable materials, comprising of solvents, thinners, wiping cloths, etc., shall be placed in tightly closed containers and properly disposed of.

ZJ 4.5 Painting of Plaster, Concrete or Brick Surfaces

ZJ4.5.1 Surface Preparation

Surfaces for painting shall be prepared by means of sandpapering, scraping or wire brushing to remove loose material, dust, laitance, scum or other deleterious materials or high spots. Defects shall be cut out where necessary, and made good with an approved non-shrink filler. Cracks shall be cut out, suitably keyed, and given a coat of approved bonding agent of paint before the filler is applied. All patches shall be rubbed down to an even surface. Surfaces shall be washed and allowed to dry.

All exposed metal, nails, screws, etc., shall be prepared by removing all rust, then painted with zinc chromate primer, followed by a universal undercoat.
All surfaces shall be thoroughly dry before painting.

ZJ4.5.2 Paint Application

For emulsion painted surfaces (PVA or acrylic), the paint shall be applied in two finishing coats on one full filler coat at the correct consistency and shall not be watered down atall.

Eggshell-finish (alkyd oil based), gloss oil paint or enamel gloss paint shall be applied as follows: One full coat of alkali resistant sealer followed by one coat of universal undercoat. Two finishing coats of semi-gloss eggshell, or gloss oil paint or enamel gloss paint shall then be applied. The finishing coat for shower walls shall be one coat of epoxy paint except where otherwise called for.

ZJ 4.6 Painting of Woodwork

ZJ4.6.1 Surface Preparation

The moisture content of the timber shall not be more than 20% at the time of applying the first coat.

All cracks, shakes or scars shall be filled flush before painting.

The surfaces shall be cleaned, sandpapered and rubbed down to a smooth, even face before painting. Each successive coat of paint shall be rubbed down to a smooth surface before the next coat is applied.

ZJ4.6.2 Primer Application

One coat of wood primer shall be applied.

After the open grain timber and plyboard have been prepared and primed, the grain shall be stopped and filled with synthetic filler and rubbed down with water paper

All new woodwork shall be properly primed on all surfaces and edges, before being fixed in position. All woodwork not previously painted, shall be given a prime coat, well brushed in.

ZJ4.6.3 Paint Application

One coat of universal undercoat shall be applied. Two finishing coats of gloss oil paint or enamel gloss paint or semi-gloss eggshell (alkyd oil based) paint shall then be applied.

ZJ4.6.4 Varnish Application

After surface preparation has been carried out, interior woodwork (e.g. doors, etc.) shall be treated with three coats of approved mat varnish, sanding between coats.

ZJ4.6.5 Wood sealing

After surface preparation has been carried out, woodwork shall be treated with three coats of approved wood sealer, sanding between coats.

ZJ4.6.6 Creosoting

All externally exposed roof timbers shall be treated with two coats of approved creosote wood preservative, before roof cladding is fixed into position. The same treatment is to be applied to roof timbers before being built into walls.

ZJ 4.7 Painting of Metal Surfaces

ZJ4.7.1 Surface Preparation

The preparation of metal surfaces shall comply with the Swedish Standard SIS 05 59 00, Pictorial Surface Preparation Standards for Painting Steel Surfaces and shall receive the greatest care to ensure rust free conditions prior to the application of paint and corrosion protection systems.

All surfaces shall be prepared by removing loose paint, rust, plaster, scale, dust, dirt, greases, etc., and by repairing or patching the defective surfaces before painting or repainting.

Damaged shop primed surfaces shall be thoroughly cleaned of rust and patched with a prime coat.

ZJ4.7.2 Paint Application

(a) Iron and Steelwork

All iron and steel work shall be properly primed with a red lead based primer where steel work is likely to be exposed to the elements for longer than 30 days or coastal conditions. Zinc chromate primer may be used elsewhere where over painting will be completed within 30 days after priming. Metal etch wash primers may be used under dry conditions where over painting will completed within 24 hours after priming. After priming, one coat of universal undercoat shall be applied. If necessary, the undercoat shall be tinted to a shade just lighter than the desired finish, using approved liquid stainers. The two finishing coats shall be gloss or matt of alkyd resin based synthetic enamel or oil based enamel paint.

(b) Galvanised Iron and Steel

All traces of protective coating shall be removed with galvanised iron cleaner. One coat of calcium based etch primer shall be applied. One coat of tinted universal undercoat and two finishing coats of alkyd resin based synthetic enamel gloss paint shall be applied.

(c) Non-ferrous Metals

Surfaces of aluminium, copper, etc., shall be prepared and cleaned, and one coat of self-etch zinc chromate wash primer shall be applied. One coat of universal tinted undercoat and two finishing coat of enamel gloss paint shall then be applied.

ZJ 4.8 Painting of Asbestos-Cement Items

ZJ4.8.1 Surface Preparation

Surfaces to be painted shall be exposed to the air while drying out after having been thoroughly scrubbed and shall be thoroughly dry before painting.

Treatment of the surface with hydrochloric acid or zinc sulphate shall not be permitted.

ZJ4.8.2 Primer Application

One coat of alkali resistant primer shall be applied.

ZJ4.8.3 Paint Application

Two finishing coats of PVA or acrylic paint shall be applied or two coats high gloss enamel on one undercoat.

ZJ 4.9 Painting of Hardboard

ZJ4.9.1 Surface Preparation

All surfaces shall be clean and dry before painting.

ZJ4.9.2 Primer Application

One coat of hardboard primer shall be applied.

ZJ4.9.3 Paint Application

One coat of universal undercoat shall be applied followed by one or two coats of enamel gloss paint.

Two coats of green school-board paint shall be applied to blackboards.

ZJ5 TOLERANCES

The total dry film thickness shall in no place be less than 0,10 mm when applied by either brush, roller or spray-gun.

ZJ6 TESTING

As the Contractor is fully responsible for the quality of all work produced, both in respect of materials used and workmanship, he shall carry out sufficient control tests as the Engineer considers are necessary to ensure that all work is carried out within the specifications.

ZJ7 MEASUREMENT ANDPAYMENT

Painting of structural steelwork will be measured per metric ton (t) of steelwork painted. No deduction will be made for surfaces required to be left unpainted. The rates entered by the Contractor in the Schedule of Quantities for cleaning and painting of structural steelwork will be deemed to be fully compensation for all material and labour in the preparation of surfaces, priming (excluding shop preparation and priming), painting, repair of damaged areas and final repainting after erection, complete.

SECTIONZK: ASPHALTERANDWATERPROOFER.....ZK-2

ZK1 SCOPE.....ZK-2

ZK2 MATERIALS.....ZK-2

ZK2.1 Standards.....ZK-2
ZK2.2 Joint Filler ZK-2
ZK2.3 Joint Sealer.....ZK-2
ZK2.4 Polythene Sheeting ZK-2

ZK3 EQUIPMENT.....ZK-2

ZK4 CONSTRUCTION.....ZK-3

ZK4.1 ConcreteSurfaces.....ZK-3
ZK4.2 Damp Proofing to Walls.....ZK-5
ZK4.3 Expansion Joints ZK-5

ZK5 TESTING..... ZK-6

ZK6 MEASUREMENTANDPAYMENT.....ZK-6

ZK1 SCOPE

This section of the Specification covers the supply and application of damp-proof courses, waterproofing of basements, vaults, stanchion bases, parapet walls and roofs. It also covers joint fillers and sealers.

ZK2 MATERIALS

ZK 2.1 Standards

All materials used in the Works shall comply in all respects with the following standard specifications, the latest issues of which shall be held to apply:

SABS92	:	Bituminous roofing felt
SABS248	:	Bituminous dampproof courses
SABS297	:	Mastic asphalt for roofing
SABS298	:	Mastic asphalt for dampproof courses and tanking
SABS317	:	Industrial bitumens
SABS952	:	Polythene sheet

ZK 2.2 Joint Filler

Joint filler shall be "Expandite Flexcell" expansion joint filler or approved equal impregnated fibre board.

The positions and dimensions of the joint filler shall be as detailed on the drawings.

ZK 2.3 Joint Sealer

Joint sealer shall be "Thiofiex 600" or an approved equal polysulphide sealer.

The positions and dimensions of the joint sealer shall be as detailed on the drawings.

ZK 2.4 Polythene Sheeting

Polythene sheeting shall be to the thickness as indicated on the drawings and of manufacturer's approved by the Engineer.

ZK3 EQUIPMENT

The Contractor shall provide and maintain in good working order, adequate equipment for carrying out the required work in accordance with this specification in a safe and efficient manner.

ZK4 CONSTRUCTION

ZK 4.1 Concrete Surfaces

ZK4.1.1 Preparatory Work

All surfaces which are to be damp-proofed or waterproofed shall be dry and cleaned of all loose, flaky material, dust, shutter release oil or other substances which may affect the bonding of damp-proofing materials to the surface.

Laying operations shall not be undertaken on surfaces which are not thoroughly dry or during rainy, damp, frosty or other inclement weather, or where such weather can reasonably be expected within the following 24 hours.

ZK4.1.2 Laps in Materials

To ensure that each successive application bonds soundly with previous work, damp-proof material shall be laid with not less than 75 mm laps in vertical work and 150 mm laps in horizontal work.

Laps shall be provided at all internal angles or corners.

Laps are the distances by which abutting edges in successive layers of damp-proofing materials are staggered.

ZK4.1.3 Mastic Asphalt

Mastic asphalt shall be applied hot and in the following thicknesses:

(a) Not less than 30 mm thick, applied in three layers on horizontal surfaces for tanking, basements, vaults and stanchions bases below ground level.
(b) Not less than 20 mm thick, applied in two layers on horizontal surfaces on tops of walls and concrete beds above ground level.
(c) Not less than 20 mm thick on vertical surfaces for basements, vaults and stanchion bases below ground level.
(d) Not less than 13 mm thick on vertical surfaces. of walls above ground level.
(e) Surfaces that are to be treated with mastic asphalt shall have the individual layers applied in their entirety before additional layers are applied.

Warm, clean and properly made joints shall be made between horizontal and vertical asphalt, with two-coat angle fillets at all internal angles or corners.

ZK4.1.4 Protection from Water Pressure

Damp proofing shall be protected from water pressure by maintaining the external water table at 0,3m below the level of the base concrete during the progress of the work.

The application of materials to wet surfaces shall be avoided.

Dewatering shall be maintained until the damp-proofing work is complete and temporary sumps have been filled and sealed.

ZK4.1.5 Tanking to Basements

A horizontal damp-proof course shall be laid over the whole area of the basement floor on a concrete bed prepared as indicated on the drawings, in three layers laid with 150 mm laps and carried through walls to connect with the vertical damp-proof course.

The faces of basement walls shall be covered with a vertical damp-proof course applied in three layers with 75 mm laps.

Vertical damp-proofing shall be carried up to a minimum height of 150 mm above ground level, or over the tops of vaults, under paving where these occur, and connected to the horizontal damp-proof course in walls to form a complete tank to the basement.

ZK4.1.6 Tanking to Stanchion Bases

Three layers of horizontal damp proofing shall be laid on the prepared surface forming the base to pits for stanchion bases.

Two layers of vertical damp proofing shall be fixed to the inner faces of the pit.

The provisions specified in ZK 4.1.5 above, Tanking to Basements, shall also apply to tanking to stanchion bases.

Damp proofing shall be continuous at joints, crosswalls, etc.

ZK4.1.7 Asphalt Roof Waterproofing

The concrete roof shall be primed with a suitable bonding primer before the asphalt waterproofing is laid.

20 mm of asphalt waterproofing shall then be laid in two layers in bays.

The edges of the second layer shall not coincide with the edges of the first layer.

The edge of unfinished or existing work shall be cleaned and warmed before fresh material is laid against it.

Asphalt fillets and skirtings shall be provided at vertical surfaces and joints in brickwork shall be raked out and enlarged for the turn-in of the asphalt where required and pointed with cement mortar.

Where applicable, the asphalt shall be turned down over the edges of the roof.

Care shall be exercised to maintain the specified asphalt thickness throughout.

The completed asphalt shall be painted with two coats of bitumen-based aluminium paint.

A minimum slope of 1 % shall be maintained on all roofs.

ZK4.1.8 Bitumen Rubber Latex Roof Waterproofing

The surface of the concrete roof slab shall be thoroughly cleaned to remove all dirt, dust, scale or grease.

The concrete roof slab shall be primed with an approved diluted rubber bitumen primer at the rate of 0,3 litre/m, or at the manufacturer's recommended rate.

After the primer is dry, the first coat of bitumen rubber latex emulsion shall be applied with not less than 10 percent rubber, at the rate of 1,5 litre/m, or at the manufacturer's recommended rate. While the emulsion is still tacky, a layer of fibreglass ("L" staple 0,5 mm thick) shall be bedded onto this emulsion and all air pockets shall be removed.

When the first coat is almost dry, a second coat of the emulsion shall be applied at the rate of 1,2 litre/m, or at the manufacturer's recommended rate. While this emulsion is still tacky, a second layer of fibreglass ("L" staple 0,5 mm thick) shall be bedded onto the emulsion making sure that all air pockets are excluded.

When the second coat is almost dry, a third coat of the emulsion shall be applied at the rate of 1,2 litre/m, or at the manufacturer's recommended rate.

While this final coat is still tacky, it shall be blinded with a single sized fine aggregate (washed stone chips) passing a 5 mm sieve but retained on a 3 mm sieve, at the rate of 0,003 m/m (5 kg/m) or at the manufacturer's recommended rate.

When this final coat has dried, the roof shall be lightly brushed to remove any loose chips and then one coat of bitumen based aluminium paint shall be applied at a rate of 0,4 litre/m.

All timber battens, fillets, corrosion resistant sheet metal for welted aprons, drips or flashing shall be provided and fixed with corrosion resistant nails, bolts, etc.

ZK4.1.9 Polyethylene Sheeting under Concrete Surface Beds

Where shown on the drawings, the finished soil surface shall be covered with an approved polyethylene sheeting 0,25 mm thick, or as otherwise specified.

The sheeting shall be laid flat and smooth and shall be free from folds or rips.

Joints in the sheeting shall be heat-welded together or joined together with an approved adhesive to form watertight seams.

Care shall be taken when placing concrete or bricks not to displace or damage the sheeting in any way.

If the sheeting is damaged, the damaged area shall be patched and joined so as to be watertight.

ZK4.1.10 Polyethylene Sheeting under Concrete Rooftiles

For concrete tiled roofs of pitch less than 30< to the horizontal, an approved polyethylene sheeting 0,25 mm thick or as otherwise specified, shall be installed over common rafters and under battens to receive tiles all in accordance with the recommendations of the manufacturer.

ZK4.1.11 Protection from Traffic

Where regular maintenance crews or other foot traffic on roofs must be provided for, the waterproofing shall be protected by means of 20 mm thick tiles or slates set in mastic, with joints solidly filled with a 1:3 cement: sand mortar or mastic.

Expansion joints shall be provided in walk ways to form bays not exceeding 8 m.

ZK 4.2 Damp Proofing to Walls

Black embossed polythene material to SABS 952, Type B with a minimum thickness of 375 micron must be used for all damp-proofing. It shall be laid without longitudinal joints on the full thickness of all foundation walls as well as under upper floor external walls. At ends, angles and intermediate junctions, the material is to be lapped 300 mm. Damp-proofing is also to be placed one course below external windowsills and bent up with an easy bend and tucked under window frames. For cavity wall construction, damp-proofing shall in addition be used at side reveals and lintels of all external doors and widows.

Where the ground level is above the internal floor level, or where necessitated by differences in ground levels, two layers of vertical damp-proofing shall be fixed to the outer faces of external wells. The vertical damp-proofing shall be connected to the horizontal damp proofing with 75 mm laps.

ZK 4.3 Expansion Joints

Where a concrete roof has expansion joints, a raised kerb shall be provided with an approved metal hood covering or a metal roll flashing of corrosion resistant material, with suitable welted

joints, drips and saddle pieces all neatly soldered where required. Suitable fixing clips, nails, bonding material, membrane, etc. shall be used at the expansion joints.

Where expansion joints have to be constructed elsewhere in concrete and brickwork, these shall be formed with joint filler. Raking out, cleaning, priming, and sealing of these joints shall be done in strict accordance with the manufacturer's instructions.

ZK5 TESTING

As the Contractor is fully responsible for the quality of all work produced, both in respect of materials used and of workmanship, he shall carry out sufficient control tests as the Engineer considers are necessary to ensure that all work is carried out within the Specifications.

ZK6 MEASUREMENT ANDPAYMENT

Measurement and payment for all items under this section shall be according to the units and rates determined from the Schedule of Quantities and the rates will be deemed to cover the items of work finished complete in every respect.

SECTIONZL: IRONMONGERANDMETALWORKER.....ZL-2 ZL1

SCOPE.....ZL-2

ZL2 MATERIALS.....ZL-2

ZL2.1 Standards.....ZL-2
ZL2.2 General ZL-2
ZL2.3 PressedSteelDoorFrames.....ZL-2
ZL2.4 ElectricalSwitchroomVentilators.....ZL-3
ZL2.5 ElectricalSwitchroomDoors.....ZL-4
ZL2.6 VerticallyOpeningSteelSlidingDoors.....ZL-4
ZL2.7 HorizontallyOpeningSteelSlidingDoors.....ZL-5
ZL2.8 SteelWindowFrames.....ZL-5
ZL2.9 Combination Units Comprising Steel Framed Doors, Windows, Sidelights and Fanlights.....ZL-6
ZL2.10 DoorLocks.....ZL-7
ZL2.11 Padlocks.....ZL-7
ZL2.12 Barrel Bolts.....ZL-7
ZL2.13 Pad Bolts.....ZL-7
ZL2.14 Hasps and Staples.....ZL-7
ZL2.15 Indicating Bolts.....ZL-8
ZL2.16 DoorHinges.....ZL-8
ZL2.17 Overhead Door Closers.....ZL-8
ZL2.18 HatandCoatHooks.....ZL-8
ZL2.19 Towel Rails.....ZL-8
ZL2.20 Miscellaneous Fittings.....ZL-8

ZL3 EQUIPMENT.....ZL-9

ZL4 INSTALLATION.....ZL-9

ZL5 TOLERANCES ZL-9

ZL6 TESTING..... ZL-9

ZL7 MEASUREMENTANDPAYMENT.....ZL-11

ZL1 SCOPE

This section of the Specification covers the supply and building in of materials described under iron monger, founder, and smith and Includes:

(a) Pressed steel doorframes
(b) Steel doors and frames
(c) Standard industrial and residential and special steel windows including fasteners and fittings
(d) Locks and hardware
(e) Miscellaneous fittings.

ZL2 MATERIALS

ZL 2.1 Standards

All materials used in the Works shall comply in all respects with the following standard specifications, the latest issues of which shall be held to apply:

SABS4	:	Door locks
SABS727	:	Steel windows and steel doors
SABS064	:	Preparation of steel surfaces for painting
CKS79	:	Pressed steel doorframes

ZL 2.2 General

All ironmongery shall be of the best quality and as detailed on the drawings or described in the Schedule of Quantities and shall be fixed complete with matching screws of similar metal.

All steel and iron work shall be delivered clean and free from rust, pitting or other defects. Shop primers shall be applied before delivery and shall consist of two coats of primers or other approved anti-rust paint on all surfaces and care shall be taken that defects are eliminated before priming.

Where galvanised steel doors, door frames and windows are called for, these shall be of a quality suitable for hot-dip galvanising. They shall be free from defects that preclude compliance of a zinc coating and from scale, paint or other coatings that are not removable by alkali cleaning or acid pickling. The thickness of zinc coatings shall be 45 microns minimum or the equivalent mass per unit area of 315 grams/m.

After approval of a product, the Contractor shall restrict himself to the use of that product for the duration of the Contract unless otherwise approved by the Engineer.

ZL 2.3 Pressed Steel Door Frames

Pressed steel door frames shall comply with CKS 79 and shall be manufactured from 1,6 mm thick mild steel sheet, pressed to the required shapes, properly mitred, welded, reinforced at angles, with all welding neatly cleaned off on all faces.

Frames for swing doors shall have the jamb curved in the centre to suit the rounded edge of the door. The head of the frame shall be plain.

Frames shall be of the widths required to suit the thickness of the walls into which they are built.

Frames shall be fitted with suitable tie bars and braces at the bottom, and lugs shall be provided for building in three (3) to each jamb or frames without fanlights and four (4) to each jamb of frames with fanlights.

Where fanlights are shown over doors on the drawings, the frames shall be fitted with pressed metal transoms, properly fitted and welded to the frames. The transoms shall be rebated as necessary for the door and fanlight.

Rebates in frames and transoms for doors and fanlights shall be of the width required to suit the thickness of the doors and fanlights.

Frames for all doors, except swing doors, shall be fitted with rebates in both jambs and head and a pair of 100 mm steel butt hinges welded to frame.

Transoms to bottom hung fanlights shall each be fitted with a pair of 75 mm steel butt hinges welded to frame.

Heads of frames or transoms over swing doors shall be prepared to receive the tops of spring hinges and shall be drilled and tapped for the fixing screws.

Heads of frames or transoms over double doors shall be drilled where required to form keeps for bolts and shall be fitted with one (1) rubber buffer for each leaf of the door.

Frames shall be drilled and tapped where required for screws, fixing fanlight openers, spring-catch keepers, etc.

Where fixed fanlights occur, the frames shall be drilled and tapped in the rebates for the screws securing the fanlights.

Frames for single doors shall be fitted in one (1) joint with approved chromium plated, or other specified, adjustable striking plate keeper, boxed in at the back of the frame with a welded on sheet metal box. The frames shall be fitted with a minimum of two (2) rubber buffers.

Door frames as specified, shall be ordered prepared for the specific type of hinge, lock keep, etc., to be used, and frames shall be cut out or recessed at these points, with back plates welded on, drilled and tapped to fix the specified fitting.

All frames shall be supplied complete with adjustable striking plates and rubber buffers in rebates.

ZL 2.4 Electrical Switch room Ventilators

Ventilators shall be standard factory steel units, standard type ALU (900 x 745 mm) or BLU (1590 x 745 mm) as indicated on the drawings.

The frames shall comply in all respects with the requirements for pressed steel door frames.

The frames shall be built into walls, with two suitable lugs on either side.

The frames shall be fitted with mild steel blades of approved manufacture and pattern welded to the pressed steel frame.

An approved non-corrosive insect-proof screen shall be fitted in an approved manner to the frame of each ventilator.

ZL 2.5 Electrical Switch room Doors

Electrical switch room doors shall be framed, ledged and braced batten hardwood doors.

Each electrical switch room door shall be fitted with a five pin cylinder rim night latch of approved manufacture.

Where electrical switch room doors consist of two (2) leaves, one (1) leaf shall be fitted with an approved five pin cylinder night latch and the other leaf shall be fitted with barrel bolts top and bottom, and a striker plate shall be fitted to its reveal.

Each electrical switch room door shall be fitted with 100 mm "Boustred B657" chromium plated brass flush handle, or approved equal, on the outside of the door.

ZL 2.6 Vertically Opening Steel Sliding Doors

Vertically opening steel sliding industrial doors shall be "Henderson Slide-over" doors or approved, equal.

The component parts of the doors shall be dimensioned according to the manufacturer's recommendations for the weights and sizes of the doors shown on the drawings and shall be as detailed below.

Door sections shall be cold-rolled 0,63 mm thick galvanised steel sheet, ribbed and grooved for maximum strength.

Intermediate stiles shall be ribbed for reinforcing and formed from 1,6 mm thick galvanised steel.

End stiles shall be of channel section, formed from 1,6 mm thick galvanised steel. Double end stiles shall be used for wide and/or heavy doors.

Hinges and roller holders shall be of galvanised steel. Hinges shall be located between every door section on the intermediate stiles. Adjustable roller holders shall be assembled with hinges on the end stiles.

Vertical and horizontal side tracks shall be cold-rolled from galvanised steel, welded to galvanised steel reinforcing angles and jamb-mounting angles.

Headplates shall be paint-finished steel plates welded to the horizontal tracks. The headplate assembly shall incorporate a grease-packed bearing for the location of the cross shaft.

Cross shafts shall be 25 mm diameter bright steel bars.

Bracing shall be required for certain wide and/or heavy doors and shall consist of a deep-rolled galvanised steel brace, spanning the door sections and bolted internally to the stiles.

Roller wheels shall be of hardened steel, mounted on grease-packed ball bearings, and their diameter shall match the size of tracks used. The spindles shall be fully floating in their holders and the lengths of the spindles shall depend on whether single or double end stiles are specified.

Counterbalance torsion springs shall be helically wound from high tensile steel wire and be purpose made for each individually weighed door. The springs shall be mounted on cast iron end and winding plugs.

Cable drums shall be helically grooved die-cast aluminium drums, keyed to the cross shaft and locked with set screws. The drums shall be selected to match the vertical lift and travel of the door.

Cables shall be preformed galvanised wire of a diameter which will give a minimum safety factor of eight (8) to one (1) for all door weights.

Doors shall be supplied complete with lifting handles, step-plates, pull-down chains, or chain hoists, bumper springs, and spring door-holders to secure the top section against the head jamb.

Each, door shall be fitted with two padbolts, one on either side securing into the vertical side tracks, and one padlock per padbolt.

All bolts, nuts and screws shall be of galvanised steel.

The weatherstrip fitted to the bottom of the doors shall be vinyl or other approved material which is unaffected by oil or grease. The weatherstrip shall be a one piece moulding held in place by a retaining strip.

Where indicated on the drawings, vision panels shall be watertight, 600 mm x 180 mm nominal size, 5 mm thick glass fitted in neoprene seals.

ZL 2.7 Horizontally Opening Steel Sliding Doors

Horizontal sliding steel doors shall be constructed similar to "Robertson Q-Doors".

The doors shall be constructed from "Robertson galvanised steel pressed Q-panel sections" or approved equal, bolted together and bolted to 70 x 70 x 6 mm structural steel angles at the top and bottom of each door.

"Helm" sliding door gear or approved equal, shall be fitted to the top and bottom of the doors. The sizes and series types shall be as indicated on the drawings, and the bottom guide rail shall be flush with the floor.

ZL 2.8 Steel Window Frames

All steel window frames shall comply with SABS 727 and shall be of the type and sizes shown on the drawings.

Standard and purpose-made residential type steel window frames shall be constructed from rolled mild steel residential sections, 25 mm wide by 3 mm, welded at angles and properly jointed at intersections.

Standard and purpose-made industrial type steel window frames shall be constructed from rolled mild steel industrial sections 35 mm wide by 3 mm thick, with opening sections constructed from standard residential sections 25 mm wide by 3 mm thick, welded at angles and properly jointed at intersections.

Window frames shall be formed perfectly flat, truly square, properly jointed at ail angles and the opening portion must fit properly on all faces and open and close freely.

Glazing bars shall be continuous with jointed intersections, the ends being neatly scribed and fitted to the frames and with the shouldered ends passed through the frame and securely welded in position.

Frames shall be fitted with standard fixing lugs, unless otherwise shown on the drawings.

Opening sections shall open as indicated on the drawings and shall be fitted with steel butts with brass pins. Pivoting sections shall be fitted with bronze ring centres. All inaccessible windows shall be fitted with projecting butts to facilitate cleaning of the windows from the inside.

Side hung or top hung opening sections shall be fitted with brass handles and friction stays. Bottom hung sections shall be fitted with friction pivots and spring catches.

Weather bar drips shall be attached to the fixed frames, for the complete width of the window at the head of outward opening sections, or at cills of inward opening sections and attached to the opening frame.

Composite windows may either be delivered completely assembled with mullions and transoms or as separate units for assembly on site, but "one piece" construction shall be preferred.

Where windows are to be fitted with burglar bars, these burglar bars shall be of standard pattern bars, welded at all intersections, flattened and drilled at the ends and screwed to the window frames. Only opening sections are to be fitted with burglar bars.

Permanent louvered window ventilators shall be standard factory units with mild steel blades of approved manufacture and pattern welded to residential type window frames and with a fine gauge expanded metal screen welded to the frame to prevent the entry of insects.

ZL 2.9 Combination Units Comprising Steel Framed Doors, Windows, Sidelights and Fanlights

Combination units shall comply with SASS 727 and shall be of approved manufacture and design. They shall be constructed from rolled mild steel sections, properly mitred and welded at angles with the welding cleaned off smooth on all faces.

Door frames shall be constructed from universal sections 30 mm wide by 4 mm thick.
Frames for windows, sidelights and fanlights shall be constructed from standard residential section 25 mm wide by 3 mm thick.

All opening sections shall fit perfectly on all faces and shall open and close freely without binding at any point.

Side hung sections shall open to at least ninety (90) degrees and top hung sections to at least eighty (80) degrees Bottom hung sections shall open to at least thirty (30) degrees and shall be fitted with concealed opening stays.

Side hung sections in windows not readily accessible for cleaning, shall be hung on cleaning hinges.

Suitable weather bars shall be provided where necessary to render the doors and windows perfectly watertight.

All handles, stays, catches and other fittings shall be best quality die-cast brass unless otherwise specified. The fittings shall be approved before being fixed in position and shall be secured with set screws.

The frames shall be provided with fixing lugs on each jamb, one near the top, one near the bottom and not more than 750 mm apart in between. Where the frames are to be fixed in timber frames or to plugs in concrete columns, etc., the steel frames shall be drilled and countersunk for fixing screws at similar spacing.

Windows exceeding 1,0 metre wide, but not exceeding 2,0 metres wide, shall be provided with a fixing lug or a countersunk hole in the centre of the top and bottom of the frame. Windows exceeding 2,0 metres but not exceeding 3,0 metres in width shall be provided with two (2) lugs or countersunk holes at the top and bottom of the frame. For every additional 1,0 metre in width of the window, either an additional fixing lug or a countersunk hole shall be provided in the top and bottom of the frame.

Standard and purpose-made windows shall be of "one piece" construction wherever possible.

Where two (2) or more windows are to be coupled together, the coupling shall be effected with standard coupling mullions and transoms as necessary.

Coupling mullions shall project not less than 50 mm at tops and bottoms or as shown on the drawings for building into lintels and sills.

Before leaving the works of, the manufacturer, the units shall be cleaned by acid pickling, rinsing, and drying in accordance with the requirements of SABS 064. They shall then be

primed with a red oxide primer using the double-dip process, with the article being suspended from the diagonally opposite corner for the second dip.

- The overall sizes of the units shall be as shown on the drawings.

ZL 2.10 Door Locks

All door locks shall comply with the requirements of SABS 4 and shall be of approved manufacture and pattern.

All locks shall be supplied with two (2) keys.

Each key shall be distinctly numbered with consecutive numbers and each key shall be stamped with the same number as that of the lock which it controls.

No two (2) locks in anyone building shall have the same key.

Unless otherwise specified, all internal doors shall be fitted with two (2) lever mortise locks which shall' not be master-keyed.

Unless otherwise specified, external doors to changing and mess facilities shall be fitted with two (2) lever mortise locks which shall not be master-keyed.

Unless otherwise specified, external doors to workshops and buildings shall be fitted with four (4) lever heavy-duty mortise locks that shall be master-keyed.

External doors to electrical switch rooms shall be fitted with a five-pin cylinder rim night latch.

All night latches on electrical switch room doors, or where specified, shall be supplied with "all to pass keys" stamped with a number. All keys and night latches shall be stamped No.1.

Each building shall have different lock numbers and master keys from the other buildings except for those buildings that house only electrical equipment. These shall be fitted with night latches having the same "all to pass keys" as the electrical switch room doors and all keys and night latches shall be stampedNo.1.

A schedule of the suiting and master keying of the locks shall be prepared and supplied to the Engineer.

Door handles shall be cast zinc or anodised aluminium of approved manufacture and pattern "as called for in the Schedule of Quantities.

ZL 2.11 Padlocks

Padlocks shall be solid cast brass cylinder padlocks of approved manufacture and pattern.
No two (2) padlocks on one (1) building shall have the same key.

ZL 2.12 Barrel Bolts

Barrel bolts shall be of solid chromium plated brass of approved manufacture and pattern.
The sizes and positions of the barrel bolts shall be as shown on the drawings or as indicated in theschedules.

ZL 2.13 Pad Bolts

Pad bolts shall be of galvanised mild steel of approved manufacture and pattern.
The sizes and positions of the pad bolts shall be as shown on the drawings or as indicated in the schedules.

ZL 2.14 Hasps and Staples

Hasps and staples shall be of galvanised mild steel or brass of approved manufacture and safety pattern.

The sizes and positions of the hasps and staples shall be as shown on the drawings or as indicated in the schedules.

ZL 2.15 Indicating Bolts

Indicating bolts shall be of chromium plated brass of approved manufacture and pattern.

The engaged/vacant mechanisms shall only display coloured indicators.

ZL 2.16 Door Hinges

Door hinges in wooden frames shall be "Boustred No. 398" (PWD 34) or approved equal. The hinges shall be solid drawn brass butt hinges, 100 x 75 x 3 mm, fitted with double steel washers between the leaves on a 6 mm diameter steel pin. Each leaf of the hinge shall have four 6 mm diameter countersunk holes.

Where fitted to wood, the hinges shall be attached using suitable brass countersunk wood screws.

Where fitted to steel, the hinges shall be attached using suitable brass countersunk bolts.

ZL 2.17 Overhead Door Closers

Door closers shall be of approved manufacture and pattern.

The finish of the door closers shall be a gold bronze.

Light duty door closers shall be fitted to internal doors.

Heavy-duty door closers shall be fitted to external doors.

The position and type of door closer, whether single control, dual control or delayed action. shall be as shown on the drawings or as indicated in the Schedules.

ZL 2.18 Hat and Coat Hooks

Hat and coat hooks shall be "Boustred No. B 810" or approved equal.

The hooks shall be solid cast chromium plated brass, fitted with a rubber buffer.

ZL 2.19 Towel Rails

Towel rails shall be of approved manufacture and pattern, 20 mm diameter x 610 mm long, of chromium plated brass complete with suitable chromium plated brass brackets.

ZL 2.20 Miscellaneous Fittings

All fittings such as retaining devices, etc. shall be of solid cast brass, plated as required, and of the pattern indicated on the drawings or in the schedules. Where no specific pattern is indicated, the fitting shall be not less in quality than that described as PWD pattern. All fittings shall be secured by screws or set screws of the same material and finish as the fitting.

No fitting requiring fixing to plastered walls or masonry shall be fixed directly to the wall surface, but to hardwood blocks of suitable size, plugged and screwed to the plaster or masonry. Such hardwood blocks shall be fixed to plastered walls or masonry with patent plastic or fibre plugs fitted into drilled holes.

Panic bolts shall be polished brass of approved manufacture.

Doorstops shall be provided at every door and shall be 40 mm diameter rubber stops fixed with brass screws, in patent plastic or fibre plugs fitted into holes drilled in the floor or wall.

All nails, spikes, screws, etc., required for the proper completion of the Contract shall be supplied by the Contractor, and shall be the best of their respective kinds.

ZL3 EQUIPMENT

Contractor shall provide and maintain in good working order, adequate equipment for carrying out the required work in accordance with this specification in a safe and efficient manner.

ZL4 INSTALLATION

All working parts of items installed shall be eased, oiled, adjusted and left in perfect working order on completion.

All exterior doors shall be fitted with door stops and retaining devices where required.

Doorframes shall be protected during transit and erection from twitching and damage.

All built-in door and window frames shall be set straight, plumb, and level, and shall operate to the satisfaction of the Engineer after fixing is complete.

Fittings shall be either removed, or wrapped and protected from damage until all rough trades have been completed.

Each vertically opening sliding door shall be installed in an approved manner complete with all necessary structural steelwork, hangers, supports, etc. to suspend the door tracks from the roof structure.

All horizontally opening sliding doors shall be installed complete with padlocks, handles, barrel bolts, pad bolts, and stops, etc.

All locks shall be properly installed and after completion striker plates shall be adjusted and the locks serviced.

Barrel bolts, pad bolts, hasps and staples, indicating bolts and door closers shall be firmly fixed in position in an approved manner where shown on the drawings or as indicated in the schedules.

Coat hooks shall be fitted behind doors or as otherwise required, using suitable brass wood screws in positions as indicated in the finishing schedule.

Towel rails shall be fitted adjacent to wash-hand basins and sinks in an approved manner and in positions as shown on the drawings or as indicated in the schedules.

ZL5 TOLERANCES

Manufacturing tolerances shall be as laid down in the various standard specifications listed in Clause ZL 2.1.

ZL6 TESTING

As the Contractor is fully responsible for the quality of all work produced, both in respect of materials used and of workmanship, he shall carry out sufficient control tests as the Engineer considers are necessary to ensure that all work is carried out within the Specifications

ZL7 MEASUREMENT ANDPAYMENT

Unless otherwise stated in the Schedule of Quantities, the unit of measurement for all items of this section shall be the number of specified items installed. The rates shall include for supply and installation as well as shop priming, galvanizing and servicing where specified.

SECTIONZLA: ALUMINIUMWINDOWS,DOORSANDSHOPFRONTS.....ZLA-2

ZLA1 SCOPE.....ZLA-2

ZLA2 MATERIALS.....ZLA-2

ZLA2.1 Standards.....ZLA-2
ZLA2.2 Aluminium.....ZLA-2
ZLA2.3 Finish.....ZLA-2

ZLA3 SUB-FRAMES.....ZLA-3

ZLA4 MAINFRAMES.....ZLA-3

ZLA4.1 Colour Matching ZLA-3
ZLA4.2 Framing, Joints, etc. ZLA-3
ZLA4.3 Design.....ZLA-3
ZLA4.4 Fixing of Frames ZLA-4
ZLA4.5 Protection.....ZLA-4

ZLA5 TOLERANCES.....ZLA-4

ZLA6 MEASUREMENTANDPAYMENT.....ZLA-4

ZLA 1 SCOPE

This section of the specification covers the manufacture, supply and installation of aluminium framed windows, doors and shop fronts.

All material and workmanship shall unless otherwise described conform with the information contained in the publication "Association of Architectural Aluminium Manufacturers of South Africa - Selection Guides dated April 1986".

ZLA 2 MATERIALS

ZLA2.1 Standards

All materials used in the Works shall comply in all respects with the following standard specifications, the latest issues of which shall be held to apply:

SABS1202 : Modular dimensional specification for aluminium windows and sliding doors (domestic range)

SABS999 : Anodic coatings on aluminium

SABS989/992 : Aluminium and aluminium alloys

ZLA2.2 Aluminium

Aluminium alloy shall be Huletts architectural AA 6063 (50S) or other approved for extrusions and AA 1100 (2S) or other approved, for sheet LM 5 (A 1 Mg5) for castings and AA 5005 for forgings. It is imperative that all material for the contract shall be of the same type from the same manufacturer.

ZLA2.3 Finish

Unless otherwise specified to be natural mill finish Where anodised finish is specified than the exposed surfaces shall be chemically etched and sulphuric acid anodised to give an anodic film thickness as follows:

10 microns for interior applications

20 microns for exterior applications

25 microns for exterior applications in heavy industrial areas or coastal areas

The above thickness may not anywhere be less than 2 microns less than the specified thickness.

Where colour anodising is specified then the finish shall be obtained by the "ANOLOK" process carried out by a licensed anodiser (Hulett's Aluminium). Unless otherwise specified the colour is to be "545 DarkBronze".

The anodiser is to submit, via the supplier or manufacturer two samples of the chosen colour, namely a light and a dark, which shall be approved by the Architect prior to the work commencing. All colour anodised aluminium subsequently supplied for the works shall remain within the range of the accepted colour samples.

ZLA 3 SUB-FRAMES

Where sub-frames are specified, prices for units are to allow for the manufacture and delivery to site of an approved sub-frame. And suitably temporarily cross-braced to prevent distortion. The sub-frames are to be free from warp or twist and true in plane to a tolerance of ± 3 mm and rectangular to suit the tolerances as specified for the finished units.

The sub-frames shall be fitted with building in lugs as specified under main frames.

Where sub-frames are to be exposed then they shall be anodised to match the main units.

ZLA 4 MAIN FRAMES

ZLA4.1 Colour Matching

The manufacturer shall select from the material supplied for the project so as to ensure minimum colour variation in anyone or any adjacent units.

ZLA4.2 Framing, Joints ,etc.

All external corners of units shall be mitred and internal junctions shall be scribed and fitted. Welded joints shall only be permitted in sub-frames except where an approved flash-butt welding process is used.

Where welded joints are employed the welding is to be completed prior to any surface treatment being executed and is to be done in such a manner as not to alter the material characteristics or the face to form the final exposed surfaces. Finished surfaces are to be true and identical to adjacent "unaffected" surfaces.

Where non-welded joints are used the method of fixing is to be invisible from the finished faces and all joints are to be suitably reinforced to ensure that no movement takes place in the joint prior to final fixing inposition.

The gap between any two mitred or butted joints shall not exceed 0,05 mm. Sample of jointing methods are to be submitted for approval.

ZLA4.3 Design

Glazed window frames shall be capable of withstanding an outward pressure of 1 200 Pa and an inward pressure of 950 Pa. The glazing system to be used shall be by glazing bead or approved neoprene gasket.

The design shall be such that a double seal is created between opening and fixed sections and shall provide for adequate drainage of water penetrating the outer seal or arising from condensation. Provision shall also be made for the accommodation of a dampcourse at cills andreveals.

Hinges, furniture, latches, stays, etc. shall be of solid construction, anodised to match the window frame material and shall be screw fixed or bolted with stainless steel screws or bolts and shall not be pop-riveted.

Two copies of all working drawings are to be submitted for approval at least two weeks prior to commencement of manufacture.

Bearings and bushes shall be used and these shall be nylon or of an approved non-ferrous metal. Hinge pins shall be of an approved non-ferrous metal. Latch handles stays and the like shall be free from play and shall preferably be capable of adjustment subsequent to fixing. Samples of all fittings are to be submitted for approval.

ZLA4.4 Fixing of Frames

ZLA4.4.1 Frames or Sub-frames to be Built-in

Fixing lugs shall be such as to allow for building a minimum of 300 mm into brickwork or fixing to concrete in an approved manner. Fixing lugs shall be of a material resistant to corrosion by contact with water, mortar, etc. and shall be separated from the aluminium frame in an approved manner if not electrolitically compatible with aluminium.

ZLA4.4.2 Fixing of Frames to Sub-frames Grounds or Pre-fixed Fixing Lugs and Fixing of LugstoFrames

Frames shall be countersunk screwed to fixing members or lugs with pre-finished screws or bolts coloured to match main frames at maximum 450 mm centres along the full length of the frame and at no greater distance than 150 mm from the corners. The screws or bolts' shall be manufactured from materials electrolitically compatible with aluminium. Screws or bolts on which the exposed finish has been damaged shall be replaced.

ZLA4.5 Protection

Where frames are to be built in then all manufactured frames are to be protected prior to delivery by means of an approved heavy-duty low adhesive type of tape. This tape shall not be removed until the building is ready for final cleaning prior to completion inspection. The tape shall be removed by the manufacturer who shall be fully responsible for all damage caused in the process of removal.

Where frames are fixed to sub-frames previously built in then the frames shall be fixed into position after the completion of all wet trades and other adjoining work. Tape protection will not be required but the frames are to be protected after installation in order to prevent any damage.

No scratched or damaged surface will be accepted and "touching up" with matching paint will only be permitted where permission is obtained in writing from the Architect.

ZLA 5 TOLERANCES

Units shall be constructed to an overall horizontal or vertical tolerance of 3 mm out of true and a maximum of 5 mm out of square measured on the diagonal. Edges and lines running within 50 mm of each other shall be parallel to a tolerance of ± 1 mm over 600 mm.

Composite windows shall be linked so as to provide a double weather seal created by the coupling member and the coupled units and joints shall be sealed with an approved non- hardening mastic sealant complying with SABS.

ZLA 6 MEASUREMENT AND PAYMENT

The unit of measurement of the units shall be by

number. Rates shall include for glazing as

specified.

Rates shall include for all fittings, anodising, protection, etc.

Rates shall include for the removal of factory applied protection by the manufacturer.

Rates are to include for the complete servicing and adjustment of windows prior to

hand-over. Rates are to allow for the submission and approval of shop drawings.

SECTIONZN: KITCHENCUPBOARDUNITSANDSINK/CUPBOARDUNITS.....ZN-2 ZN1

SCOPE.....ZN-2

ZN2 MATERIALS.....ZN-2

ZN3 EQUIPMENT.....ZN-2

ZN4 INSTALLATION.....ZN-2

ZN5 MEASUREMENTANDPAYMENT.....ZN-2

ZN1 SCOPE

This section of the Specification covers the supply and fixing of kitchen cupboard units and sink/cupboard units.

ZN2 MATERIALS

All units shall be of the sizes, types and manufacture as indicated on the drawings and/or Schedule of Quantities or as detailed.

The units shall be manufactured from either mild steel or timber as indicated and finished with a high gloss enamel paint.

Worktops to cupboard units shall be Grade 18/8 stainless steel or panelyte as indicated on the drawings and/or Schedule of Quantities.

Tops of sink/cupboard units shall be Grade 18/8 stainless steel.

ZN3 EQUIPMENT

The Contractor shall provide adequate equipment to manufacture and/or install the units to the satisfaction of the Engineer.

ZN4 INSTALLATION

The units shall be fixed to both floors and walls in an approved manner in the positions as indicated on the drawings

ZN5 MEASUREMENT ANDPAYMENT

The unit of measurement shall be the number of type and size of units installed and the rates shall include for all aspects of supply and installation complete.

SECTIONZS: TERMITE PROOFING ZS-2

ZS1 SCOPE.....ZS-2

ZS2 MATERIALS.....ZS-2

ZS3 EQUIPMENT.....ZS-2

ZS4 APPLICATION.....ZS-2

ZS5 SUPERVISION ZS-2

ZS6 MEASUREMENTANDPAYMENT.....ZS-2

ZS1 SCOPE

This section of the Specification covers the supply and application of termite proofing using a soil poisoner.

ZS2 MATERIALS

The poison shall comply with the requirements of CKS 376 "Insecticidal emulsifiable concentrate containing aldrin (soil insecticide for the protection of buildings)".

Only soil poisoner brought on to the site as a "ready for use" solution in sealed drums prepared by the manufacturer shall be used.

The Contractor shall not be permitted to prepare his own solutions.

The poison shall be stored in a safe place behind lock and key.

ZS3 EQUIPMENT

The Contractor shall provide and maintain in good working order, adequate equipment for carrying out the required work in a safe and efficient manner.

ZS4 APPLICATION

Termite proofing shall be carried out strictly in accordance with the manufacturer's recommendations.

The poison shall be handled and applied with the utmost care and workmen shall wear suitable protective clothing.

All grass and other cellulose material shall be removed from the area which is to receive termite proofing.

After the poison has been applied, the surface of the poisoned layer of material shall not be disturbed or damaged. If the poisoned layer is damaged in any way, the damaged area shall be restored and re-treated by the Contractor at his own expense.

ZS5 SUPERVISION

Termite proofing shall be carried out under the supervision of the Engineer.

ZS6 MEASUREMENT ANDPAYMENT

The unit of measurement for termite proofing shall, unless otherwise stated in the Schedule of Quantities, be the square metre (m^2) of the treated area and the rate shall include for all aspects of supply and labour complete in every respect.

SECTIONZX: DOORSIGNSANDNUMBERPLATES.....ZX-2 ZX1

SCOPE.....ZX-2

ZX2 MATERIALS.....ZX-2

ZX3 INSTALLATION.....ZX-2

ZX4 MEASUREMENTANDPAYMENT.....ZX-2

ZX1 SCOPE

This section of the Specification covers the supply and installation of door signs and number plates to doors or door frames.

ZX2 MATERIALS

Door signs and number plates shall be of an approved type and manufacture and shall either be:

(a) Pressed or engraved rigid plastic, or

(b) Hard matt polyvinyl chloride film transfers on rigid bases.

Character and symbols shall be a different colour from the background of the door signs and number plates.

Standard symbols shall be used.

Door signs and number plates on external doors shall be of a permanent type, weather-resistant and colour fast.

Materials, sizes and colours of signs, number plates, character and symbols shall be submitted to the Engineer for approval.

ZX3 INSTALLATION

Signs and number plates shall be attached to doors or door frames in an approved manner and in approved positions.

All doors shall be numbered. Numbers and number sequence shall be as instructed by the Engineer.

Door signs shall be installed on doors to toilets, ablutions, kitchens, mess rooms, locker rooms, or where instructed by the Engineer.

ZX4 MEASUREMENT ANDPAYMENT

The unit of measurement for Door Signs and Number Plates shall unless otherwise stated in the Schedule of Quantities, be the number and the rate shall include for all aspects of supply and labour complete in every respect.

SECTION LA: MINOR FABRICATED STEEL AND OTHER METALWORK

TABLEOFCONTENTS PAGE

LA 1. SCOPE .....LA 2

LA 2. MATERIALS.....LA 2

LA2.1 STANDARDS ..... LA 2

LA2.2 MILD STEEL..... LA 2

LA2.3 COLDROLLEDSTEEL.....

.....LA2

LA2.4 STAINLESS STEEL LA2

LA2.5 ALUMINIUM LA2

LA2.6 BOLTSANDNUTS.....LA2

LA2.7 WELDINGELECTRODES.....LA3

LA2.8 GENERAL..... LA3

LA 3. EQUIPMENT LA3

LA 4. CONSTRUCTION .....LA 3

LA4.1 WORKINGDRAWINGS.....LA3

LA4.2 FABRICATION.....LA3

LA4.3 WELDING.....LA4

LA4.4 OPENGRIDFLOORING.....LA4

LA4.5 HANDRAILINGS ..... LA 4

LA4.6 HANDLINGANDSITESTORAGE.....LA5

LA4.7 ERECTIONOFSTEELWORK.....LA5

LA4.8 GROUTING..... LA5

LA 5. TOLERANCES .....LA 5

LA 6. TESTING .....LA 5

LA 7. MEASUREMENT AND PAYMENTS.....LA 5

SECTION

NLA: MINOR FABRICATED STEEL AND OTHER METALWORK

LA1. SCOPE

LA2. MATERIALS

LA2.1 STANDARDS

LA2.2 MILDSTEEL

LA2.3 COLD ROLLED STEEL

All cold rolled sections shall be cold rolled from mild steel strip, to the shapes and dimensions specified and shall be used in accordance with British Standard PD 4064 - "The use of Cold Formed Steel Sections in Building" - (Addendum 1 to BS449).

LA2.4 STAINLESSSTEEL

Fabricated items of stainless steel shall generally be made from material complying with the American Iron and Steel Institute Standard types 304 or 316. If the grade is not stipulated it shall be assumed to be type304.

Stainless steel for castings shall comply with the standards CF-8 and CF-8M of the Alloy Casting Institute, the cast counterparts of AISI types 403 and 316 respectively.

LA2.5 ALUMINIUM

Fabricated aluminium items

shall be made from material complying with the requirements of BS 1476 and 1477 unless otherwise required.

LA2.6 BOLTS ANDNUTS

All bolts and nuts shall be of such length as to project 6 to 12 mm beyond the nut when tightened up. The bearing surfaces of the nuts shall, in every case, be at right angles to the axis of the holes through the nuts. Where heads of nuts are seated on bevelled surfaces of beams or channel flanges, bevelled washers shall be inserted. The heads and bodies of the bolts shall be forged from one piece of metal.

Black bolts shall be cleanly finished and the threads shall comply with the tolerances given for "Black Bolts" in Table 3 of BS 4190: 1976. The dimensions of black bolts shall comply with those given in Table 10 of BS 4190.

High strength friction grip bolts shall comply with BS 4395: Part 1 and shall be used in accordance with BS 4604: Part 1.

All bolts having counter-sunk heads shall have strong feathers forged on the neck and head to prevent turning, and the bolt holes shall be cut to receive same.

All nuts for ordinary black bolts shall be furnished with circular washers of sufficient thickness, the outside diameter to be at least twice the nominal diameter of the bolt, unless otherwise indicated on the drawing.

LA2.7 WELDINGELECTRODES

Electrodes for welding purposes must satisfy the conditions as stipulated in SABS 455. Electrodes damaged either due to chipping of the flux or contamination with moisture must not be used. All welds are to be properly cleaned after welding.

Electrodes for use in welding stainless steel shall be of the same basic analysis as the parent metal in order to obtain optimum corrosion resistance.

LA2.8 GENERAL

All materials shall be straight and free from wind and twist. Cold straightening that will not damage the material will be permitted.

LA3. EQUIPMENT

The Contractor shall be responsible for providing, to the satisfaction of the Engineer, all such equipment as may be required for the proper execution of the work described in this specification.

LA4. CONSTRUCTION

LA4.1 WORKINGDRAWINGS

The Engineer will prepare all design and general arrangement drawings and these shall form the basis for all of the necessary shop drawings and erection drawings which must be made by the Contractor for the fabrication and erection of all steel and other work.

LA4.2 FABRICATION

Unless otherwise stated, all materials and workmanship shall comply with BS 153: Part 1 and BS 449: Part 2 but where the two specifications are in conflict, BS 153 shall take precedence.

Temporary attachments may only be welded on with the approval of the Engineer and shall eventually be removed to leave a smooth surface, primed and made good to the satisfaction of the Engineer.

All bolt holes must be accurate to size and location, the centres of holes shall not be placed closer to the edge of the plate than 1% diameter, with and extra allowance of 6 mm for sheared edges. Bolt hole diameters shall generally exceed the diameter of the bolt for

it was made by 2 mm. Where possible, the adjoining parts forming a connection shall be drilled or reamed together. After assembly of the parts, the holes shall be true throughout the thickness of all parts and perpendicular to the axis of the member.

Bolted joints and connections shall be made strictly in accordance with the drawings as regards the diameter, size, and type of bolt to be used. All mild steel surfaces in contract with one another shall receive one coat of red lead paint to SABS type II Grade I before bolting together.

All flame cutting of sections in long lengths as well as welding of built up sections shall be carefully done in a manner and sequence in accordance with acknowledged good practice to avoid distortion.

LA4.3 WELDING

Welding procedure shall be such that distortion is reduced to a minimum and local distortion is rendered negligible in the final structure. Welding to be according to the American Welding Society "Code of Welding in Building Construction "AWS B1.0-69. Butt welds in flange plates and/or web plates shall wherever possible be completed before the flanges and webs are welded together.

Unless indicated on the drawings that a particular weld surface is to be ground, such weld surface is to be convex and of uniform contour and must blend reasonably well into the parent metal. Any spatter must be removed.

Pre-heating shall be carried out for repair work, where welding has been interrupted, where the temperature of the metal is below 10" or where instructed by the Engineer.

Special care shall be taken when welding stainless steels to take into account the higher coefficient of thermal expansion and lower thermal conductivity of chromium nickel steels. Tack welding will generally be necessary beforehand.

LA4.4 OPEN GRIDFLOORING

Open grid flooring shall generally be of the type with square or rectangular openings and all flooring panels shall be completely framed by a fiat peripheral bar of the same depth as the span bars and welded to all span and transverse bars. Where fusion welded grid flooring is specified these shall be of the Irving Grating type as manufactured by Andrew Mentis, or other approved similar. Open grid stair treads for stairs shall be of the type manufactured by Andrew Mentis or Angus McLeod, or similar approved to the dimensions specified, and shall be provided with approved side plates and non-skid nosing strips.

Stair treads shall be bolted to stair stringers. Normal flooring for walkways shall be fixed to structural steel angle stringers using patent clips, to the satisfaction of the Engineer.

Open grid flooring shall generally be cleaned and double dipped in an approved bituminous paint. If required, gratings shall be galvanised to SASS 763.

LA4.5 HAND-RAILINGS

All handrails and standards shall be "Monoweld" tubular or equal approved by the Engineer. Standards shall be straight and mounted plumb, and all straight sections of hand railing shall be mounted in straight lines without kinks or irregularities. Prefabricated radius bends shall be supplied where necessary. All connections between handrails and between handrails and standards shall be welded all round and filled or ground to a smooth finish. Handrail standards and railings shall be cleaned and galvanised to SASS 763 or shop primed as required.

LA4.6 HANDLING AND SITESTORAGE

All items shall be carefully handled and protected against mechanical damage and corrosion during transit and storage on site. The Contractor will be held responsible for all damage arising from neglect of the above precautions, and shall make good at his own expense.

Items delivered to Site shall be stacked off the ground, by means of timber bearers, and stacked in such a manner that it is self-draining or, alternatively, protected by means of tarpaulins.

LA4.7 ERECTION OF STEELWORK

The correction of mistakes on Site by burning may only be undertaken with the special approval of the Engineer, and to his satisfaction.

LA4.8 GROUTING

LA5. TOLERANCES

LA6. TESTING

LA7. MEASUREMENT AND PAYMENTS

PROJECT NO: 94 of 2022

CONSTRUCTION OF DZANANI TAXI RANK

CIDB GRADING: 7 CE OR HIGHER

C4 SITE INFORMATION

All equipment and materials shall be designed and manufactured to operate under the following conditions:

Altitude above sea level	-	817m
Summer Conditions		
Average Temperature	-	28°C
Maximum Temperature	-	29°C
Minimum Temperature	-	18.2°C
Relative Humidity	-	65% - 77%
Wind - Predominantly North Westerly average	-	2.08 m/s
Winter Conditions		
Average Temperature	-	10.1°C
Maximum Temperature	-	24.9°C
Minimum Temperature	-	10.1°C
Relative Humidity	-	54% - 66%

1. CONSTRUCTION OF DZANANI TAXI RANK

Project	Co-ordinates	
CONSTRUCTION OF DZANANI TAXI RANK	22°53′56" S	30°02′14" E

NEMORANGO CONSULTING ENGINEERS
CIVIL ENGINEERS,HYDROGEOLOGISTS
& PROJECT MANAGERS
(015) 295 2023 FAX : (015) 295 2024
10A HANS VAN RENSBURG
POLOKWANE
0699
e-mail : takalani@nemorango.co.za

CONSTRUCTION OF DZANANI TAXI RANK

Tender Drawings

October 2022

ISSUED TO:

CIVIC CENTRE CORNER KROGH & ERASMUS STREET
MAKHADO
0920
TEL: 015 519 3000

			CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS, CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS, (015) 295 2023 FAX : (015) 295 2024, 10A HANS VAN RENSBURG POLOKWANE 0699, e-mail : takalani@nemorango.co.za	DESIGNER: NAME E.MUDAU, SIGNATURE; ENGINEER: NAME T.RAPHULANI, SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY, CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920, TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	DRAWING No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: COVER PAGE	N.T.S	NEM/09-2022	NCE 000
DATE	AMENDMENTS								

ITEM	DESCRIPTION	DRAWING NUMBER	COMMENT
01	LIST OF DRAWINGS	47/2018-NCE001	ATTACHED
02	LOCALITY MAP	47/2018-NCE002	ATTACHED
03	SITE DEVELOPMENT PLAN	47/2018-NCE003	ATTACHED
04	TAXI RANK ADMIN BUILDING AND LOADING BAY PLAN AND ELEVATIONS LAYOUT	47/2018-NCE004	ATTACHED
05	TAXI RANK ABLUTIONS PLAN, WASTE TRANSFER AND ELEVATIONS LAYOUT	47/2018-NCE005	ATTACHED
06	TAXI RANK ADMIN BUILDING AND ABLUTIONS DOORS AND WINDOWS SCHEDULE	47/2018-NCE006	ATTACHED
07	TAXI RANK ADMIN BUILDING AND LOAD BAY SECTIONS	47/2018-NCE007	ATTACHED
08	TAXI RANK ADMIN BUILDING AND LOADING BAY AND MARKET STALLS ELECTRICAL LAYOUT	47/2018-NCE008	ATTACHED
09	MARKET STALLS GROUND FLOORS LAYOUT PLAN	47/2018-NCE009	ATTACHED
10	MARKET STALLS ROOF AND FOUNDATION DETAILS LAYOUT	47/2018-NCE010	ATTACHED
11	MARKET STALLS ELEVATIONS LAYOUT	47/2018-NCE011	ATTACHED
12	MARKET STALLS ELEVATIONS LAYOUT	47/2018-NCE012	ATTACHED
13	ELECTRICAL CHART LAYOUT PLAN	47/2018-NCE013	ATTACHED
14	PLATFORM EARTHWORKS	47/2018-NCE014	ATTACHED
15	PLATFORM EARTHWORKS SETTING OUT DATA	47/2018-NCE015	ATTACHED
16	PLATFORM EARTHWORKS LONGITUDINAL SECTION	47/2018-NCE016	ATTACHED
17	SEWER PIPE NETWORK LAYOUT PLAN	47/2018-NCE017	ATTACHED
18	SEWER PIPE NETWORK SETTING OUT DATA	47/2018-NCE018	ATTACHED
19	SEWER PIPE NETWORK LONGITUDINAL SECTION	47/2018-NCE019	ATTACHED
20	1200mm ND SUBSURFACE CONCRETE PIPE LAYOUT	47/2018-NCE020	ATTACHED
21	STORMWATER CHANNEL HORIZONTAL LAYOUT	47/2018-NCE021	ATTACHED
22	STORMWATER CHANNEL SETTING OUT DATA	47/2018-NCE022	ATTACHED
23	STORMWATER CHANNEL GABIONS AND MATTRESSES	47/2018-NCE023	ATTACHED
24	STORMWATER CHANNEL LONGITUDINAL SECTION	47/2018-NCE024	ATTACHED
25	STORMWATER CHANNEL CROSS SECTION	47/2018-NCE025	ATTACHED
26	TAXI RANK ADMIN BUILDING AND LOADING BAY LOCATION PLAN	47/2018-NCE026	ATTACHED
27	TAXI RANK ADMIN BUILDING AND LOADING BAY RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	47/2018-NCE027	ATTACHED
28	TAXI RANK ADMIN BUILDING AND LOADING BAY 3D VIEW AND NOTES	47/2018-NCE028	ATTACHED
29	TAXI RANK LOADING BAY STEEL ROOF LAYOUT	47/2018-NCE029	ATTACHED
30	TAXI RANK LOADING BAY 3D VIEWS	47/2018-NCE030	ATTACHED
31	TAXI RANK ADMIN BUILDING AND LOADING BAY RC COLUMNS	47/2018-NCE031	ATTACHED
32	TAXI RANK LOADING BAY STEEL ROOF SECTIONS AND DETAILS	47/2018-NCE032	ATTACHED
33	TAXI RANK ADMIN BUILDING FIRST FLOOR SLAB LAYOUT, DETAILS, SECTIONS AND REINFORCEMENT	47/2018-NCE033	ATTACHED
34	TAXI RANK ADMIN BUILDING ROOF SLAB LAYOUT, DETAILS, SECTIONS AND REINFORCEMENT	47/2018-NCE034	ATTACHED
35	TAXI RANK ADMIN BUILDING FIRST FLOOR SLAB TYPICAL DETAILS	47/2018-NCE035	ATTACHED
36	TAXI RANK ADMIN BUILDING STAIRCASE LAYOUT AND DETAILS	47/2018-NCE036	ATTACHED
37	ABLUTION 1 LOCATION PLAN	47/2018-NCE037	ATTACHED
38	ABLUTION 2 LOCATION PLAN	47/2018-NCE038	ATTACHED
39	ABLUTION 3 LOCATION PLAN	47/2018-NCE039	ATTACHED
40	ABLUTION 4 LOCATION PLAN	47/2018-NCE040	ATTACHED
41	ABLUTION 5 LOCATION PLAN	47/2018-NCE041	ATTACHED
42	ABLUTION 1,2,3,4 AND 5 RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	47/2018-NCE042	ATTACHED
43	MARKET STALL TYPE A1 LOCATION PLAN	47/2018-NCE043	ATTACHED
44	MARKET STALL TYPE A2 LOCATION PLAN	47/2018-NCE044	ATTACHED
45	MARKET STALL TYPE A3 LOCATION PLAN	47/2018-NCE045	ATTACHED
46	MARKET STALL TYPE A4 LOCATION PLAN	47/2018-NCE046	ATTACHED
47	MARKET STALL TYPE A RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	47/2018-NCE047	ATTACHED
48	MARKET STALL TYPE A STEEL ROOF LAYOUT DETAILS AND SECTIONS	47/2018-NCE048	ATTACHED
49	MARKET STALL TYPE A CONCRETE SLAB LAYOUT DETAILS AND SECTIONS	47/2018-NCE049	ATTACHED
50	MARKET STALL TYPE B1 LOCATION PLAN	47/2018-NCE050	ATTACHED
51	MARKET STALL TYPE B2 LOCATION PLAN	47/2018-NCE051	ATTACHED
52	MARKET STALL TYPE B3 LOCATION PLAN	47/2018-NCE052	ATTACHED
53	MARKET STALL TYPE B4 LOCATION PLAN	47/2018-NCE053	ATTACHED
54	MARKET STALL TYPE B RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	47/2018-NCE054	ATTACHED
55	MARKET STALL TYPE B CONCRETE SLAB LAYOUT DETAILS AND SECTIONS	47/2018-NCE055	ATTACHED
56	MARKET STALL TYPE B STEEL ROOF LAYOUT DETAILS AND SECTIONS	47/2018-NCE056	ATTACHED
57	MARKET STALL TYPE C1 LOCATION PLAN	47/2018-NCE057	ATTACHED
58	MARKET STALL TYPE C2 LOCATION PLAN	47/2018-NCE058	ATTACHED
59	MARKET STALL TYPE C3 LOCATION PLAN	47/2018-NCE059	ATTACHED
60	MARKET STALL TYPE C RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	47/2018-NCE060	ATTACHED
61	MARKET STALL TYPE C CONCRETE SLAB LAYOUT DETAILS AND SECTIONS	47/2018-NCE061	ATTACHED
62	MARKET STALL TYPE C STEEL ROOF LAYOUT DETAILS AND SECTIONS	47/2018-NCE062	ATTACHED
63	MARKET STALL TYPE D1 LOCATION PLAN	47/2018-NCE063	ATTACHED
64	MARKET STALL TYPE D2 LOCATION PLAN	47/2018-NCE064	ATTACHED
65	MARKET STALL TYPE D3 LOCATION PLAN	47/2018-NCE065	ATTACHED
66	MARKET STALL TYPE D RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	47/2018-NCE066	ATTACHED
67	MARKET STALL TYPE D STEEL ROOF LAYOUT DETAILS AND SECTIONS	47/2018-NCE067	ATTACHED
68	MARKET STALL TYPE E1 LOCATION PLAN	47/2018-NCE068	ATTACHED
69	MARKET STALL TYPE E2 LOCATION PLAN	47/2018-NCE069	ATTACHED
70	MARKET STALL TYPE E3 LOCATION PLAN	47/2018-NCE070	ATTACHED
71	MARKET STALL TYPE E RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	47/2018-NCE071	ATTACHED
72	MARKET STALL TYPE E CONCRETE SLAB LAYOUT DETAILS AND SECTIONS	47/2018-NCE072	ATTACHED
73	MARKET STALL TYPE E STEEL ROOF LAYOUT DETAILS AND SECTIONS	47/2018-NCE073	ATTACHED
74	BUS TERMINAL BUILDING LOCATION PLAN	47/2018-NCE074	ATTACHED
75	BUS TERMINAL ADMIN BUILDING RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	47/2018-NCE075	ATTACHED
76	BUS TERMINAL RAFT FOUNDATION LAYOUT AND SECTIONS	47/2018-NCE076	ATTACHED
77	BUS TERMINAL FIRST SLAB LAYOUT, DETAILS, SECTIONS AND REINFORCEMENT	47/2018-NCE077	ATTACHED
78	BUS TERMINAL ROOF SLAB LAYOUT, DETAILS, SECTIONS AND REINFORCEMENT	47/2018-NCE078	ATTACHED
79	BUS TERMINAL FIRST FLOOR SLAB TYPICAL DETAILS	47/2018-NCE079	ATTACHED
80	BUS TERMINAL ROOF SLAB TYPICAL DETAILS	47/2018-NCE080	ATTACHED
81	BUS TERMINAL STAIRCASE LAYOUT AND DETAILS	47/2018-NCE081	ATTACHED
82	ELECTRICAL LAYOUT PLAN	47/2018-NCE082	ATTACHED
83	ADMIN BUILDING ELECTRICAL LAYOUT PLAN	47/2018-NCE083	ATTACHED
84	ADMIN BUILDING AND TAXI RANK LOADING BAY LIGHTS LAYOUT PLAN	47/2018-NCE084	ATTACHED
85	ABLUTION L BLOCK ELECTRICAL LAYOUT PLAN	47/2018-NCE085	ATTACHED
86	MARKET STALLS TYPE A,B,C,D AND E ELECTRICAL LIGHTS LAYOUT PLAN	47/2018-NCE086	ATTACHED
87	MARKET STALLS TYPE A,B,C,D AND E GENERAL ELECTRICAL LAYOUT PLAN	47/2018-NCE087	ATTACHED

OCTOBER 2022	FOR TENDER	
DATE	AMENDMENTS	

CONSULTING FIRM:
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DESIGNER:
NAME SH NTULI
SIGNATURE

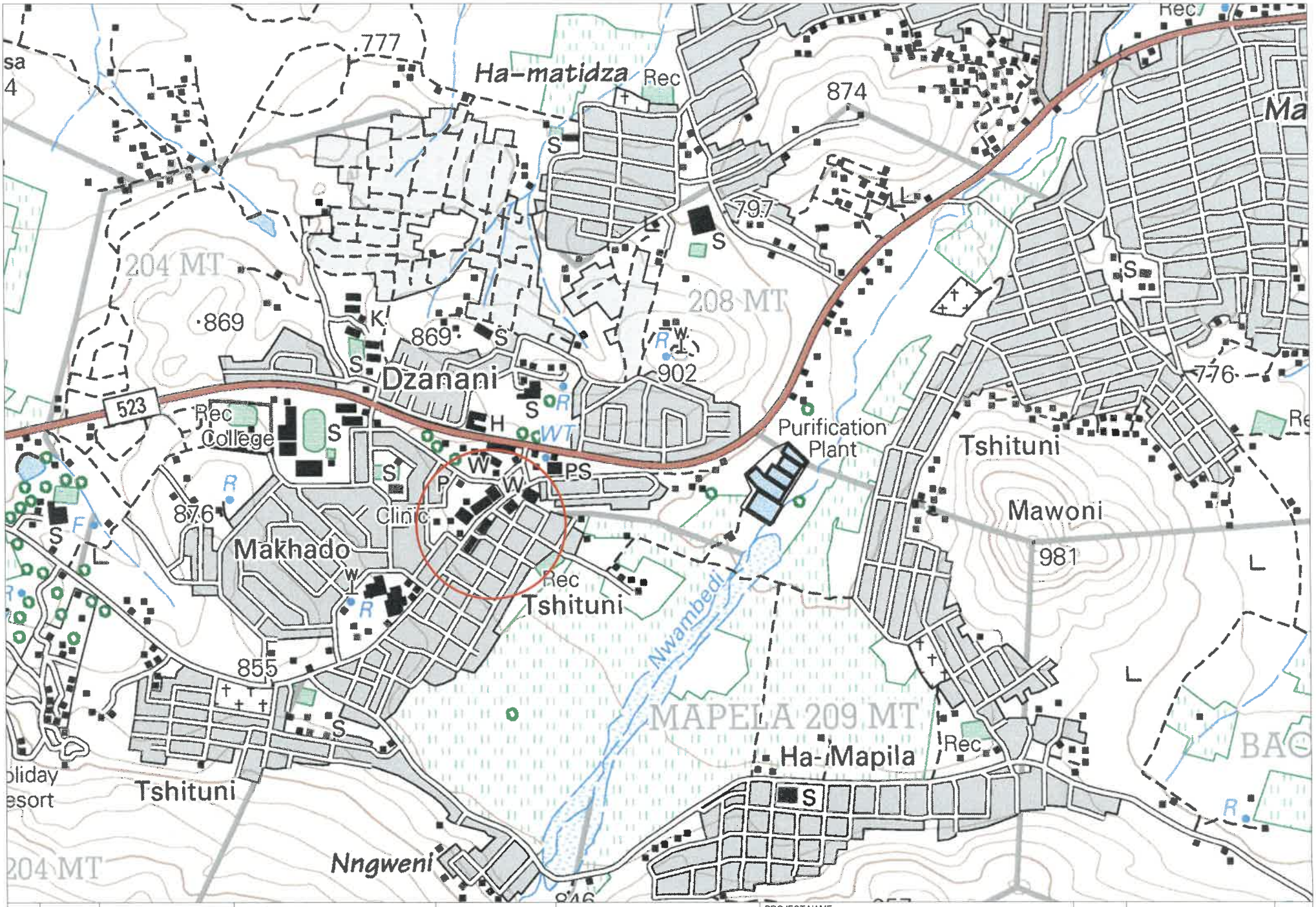
ENGINEER:
NAME T RAMALALANI
SIGNATURE

EMPLOYER:
MAKHADO LOCAL MUNICIPALITY
CIVIC CENTRE CORNER KROGH & ERASMUS STREET
MAKHADO
0920
TEL: 015 519 3000

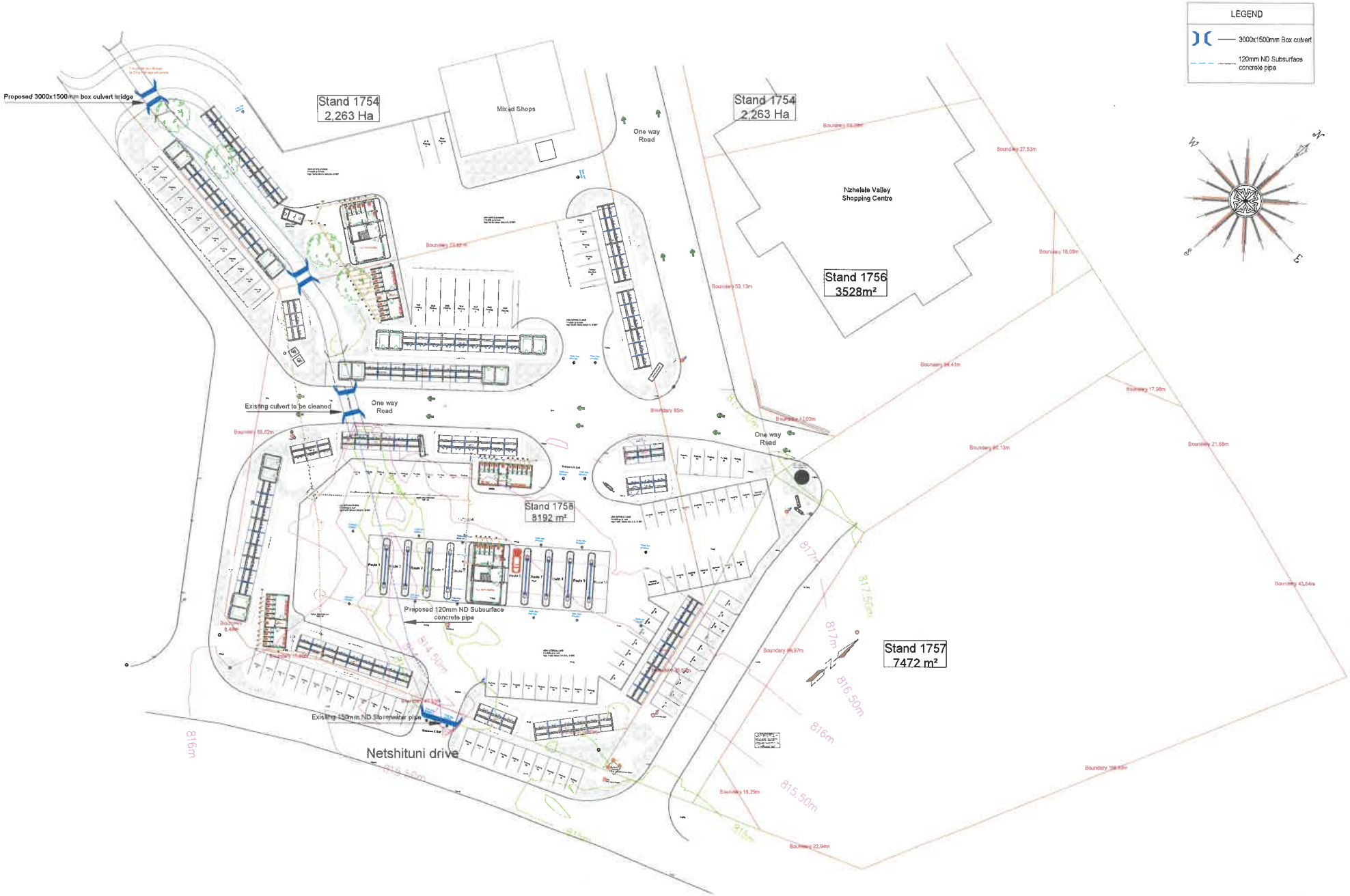
PROJECT NAME:
CONSTRUCTION OF DZANANI TAXI RANK

DRAWING NAME:
LIST OF DRAWINGS

SCALE	PROJECT No	Rev No
	94 OF 2022	0
1.1	NEM/09-2022	NCE 001



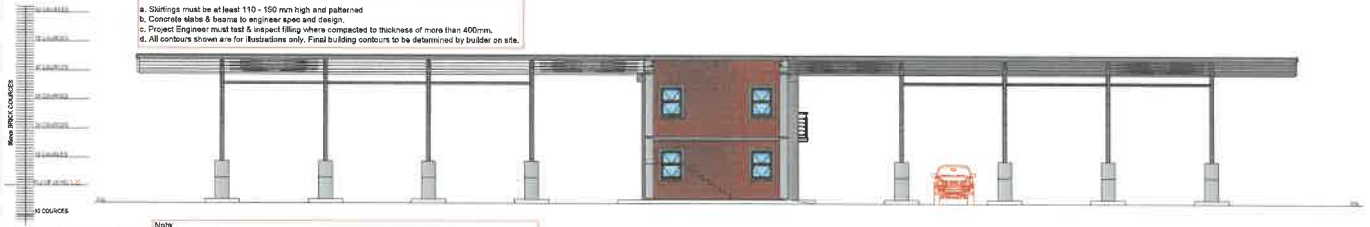
OCTOBER 2022 DATE	FOR TENDER AMENDMENTS	CONSULTING FIRM: MEMORANGO ENGINEERS CIVIL ENGINEERS I HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 104 HANS VAN RENSBURG POLOKWANE 0699 e-mail : tekalezi@memorango.co.za	DESIGNER: NAME E.MUDAU SIGNATURE ENGINEER: NAME T.RAPHALALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROCH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK DRAWING NAME: LOCALITY MAP	SCALE 1.1	PROJECT No 94 OF 2022 NEM/09-2022	Rev No 0 NCE 002



		CONSULTING FIRM: NEMORANGO CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 · FAX: (015) 295 2024, 19A HANS VAN RENSBURG, POLOKWANE, 0699, e-mail : takalani@nemorango.co.za	DESIGNER: NAME F CORDEWENER, SIGNATURE; ENGINEER: NAME T RAPHALAL MM, SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY, CIVIC CENTRE CORNER KROGH & ERASMUS STREET, MAKHADO, 0920, TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: SITE DEVELOPMENT PLAN	1.1	NEM/09-2022	NCE 003
DATE	AMENDMENTS							

Note:
1. Approved NPF brickwork in 5:1 Portland cement
2. Foundation Brick force every 2nd course
3. Wall Brick force every 3th course
4. Brick force above windowsill every 2nd course

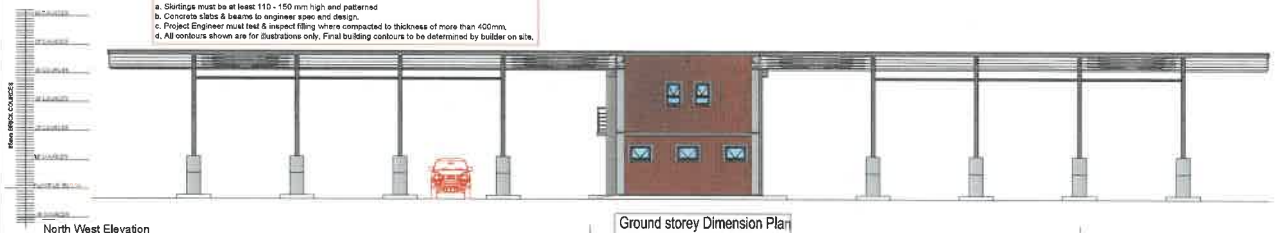
a. Skirtings must be at least 110 - 150 mm high and patterned
b. Concrete slabs & beams to engineer spec and design.
c. Project Engineer must test & inspect filling where compacted to thickness of more than 400mm.
d. All contours shown are for illustrations only. Final building contours to be determined by builder on site.



South East Elevation

Note:
1. Approved NPF brickwork in 5:1 Portland cement
2. Foundation Brick force every 2nd course
3. Wall Brick force every 3th course
4. Brick force above windowsill every 2nd course

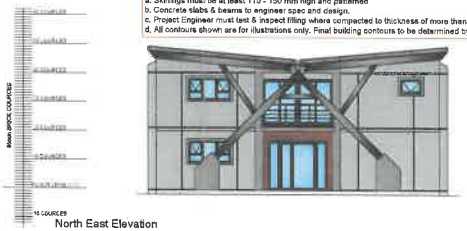
a. Skirtings must be at least 110 - 150 mm high and patterned
b. Concrete slabs & beams to engineer spec and design.
c. Project Engineer must test & inspect filling where compacted to thickness of more than 400mm.
d. All contours shown are for illustrations only. Final building contours to be determined by builder on site.



North West Elevation

Note:
1. Approved NPF brickwork in 5:1 Portland cement
2. Foundation Brick force every 2nd course
3. Wall Brick force every 3th course
4. Brick force above windowsill every 2nd course

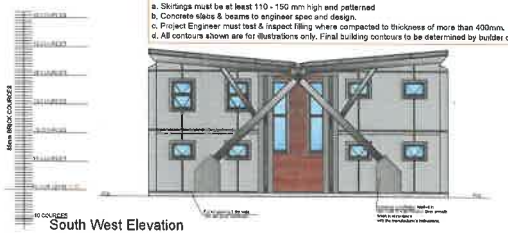
a. Skirtings must be at least 110 - 150 mm high and patterned
b. Concrete slabs & beams to engineer spec and design.
c. Project Engineer must test & inspect filling where compacted to thickness of more than 400mm.
d. All contours shown are for illustrations only. Final building contours to be determined by builder on site.



North East Elevation
Scale 1:100

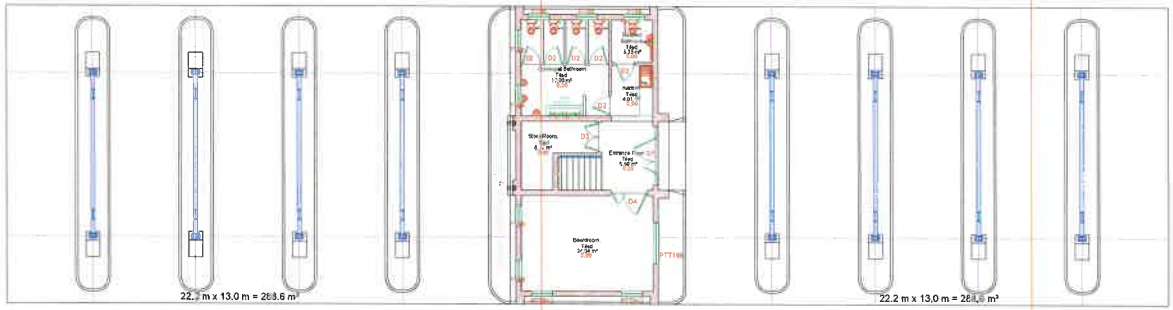
Note:
1. Approved NPF brickwork in 5:1 Portland cement
2. Foundation Brick force every 2nd course
3. Wall Brick force every 3th course
4. Brick force above windowsill every 2nd course

a. Skirtings must be at least 110 - 150 mm high and patterned
b. Concrete slabs & beams to engineer spec and design.
c. Project Engineer must test & inspect filling where compacted to thickness of more than 400mm.
d. All contours shown are for illustrations only. Final building contours to be determined by builder on site.



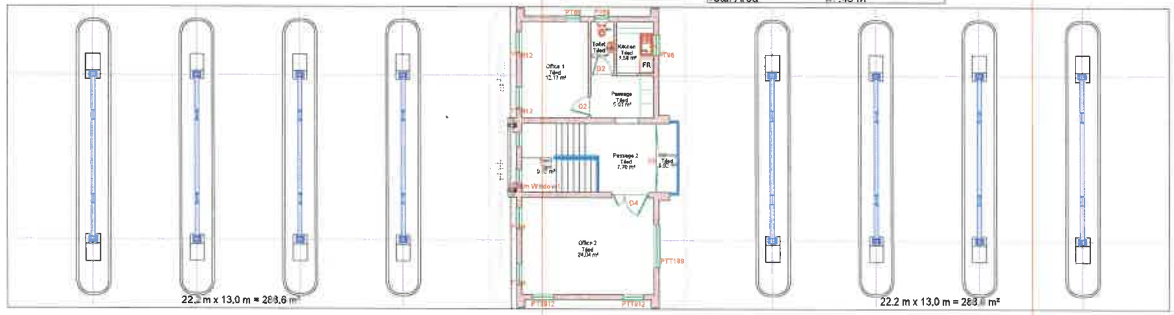
South West Elevation

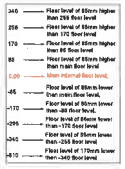
Ground storey Dimension Plan
Office & loading area
Scale 1:100



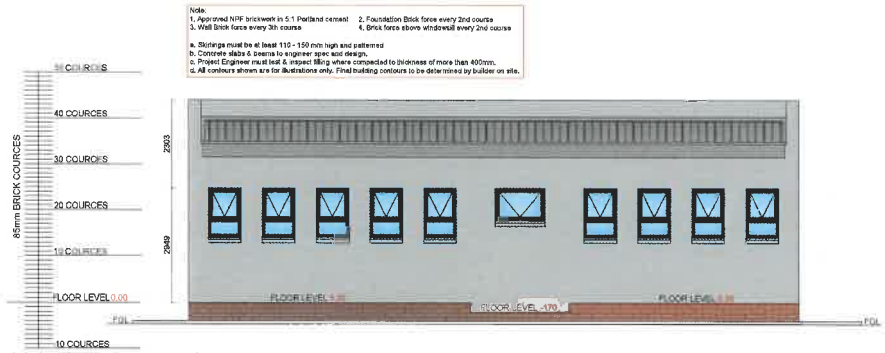
First Storey Internal Area's	
Office 1	12.17 m²
Toilet	2.24 m²
Kitchen	3.58 m²
Passage	6.01 m²
Office 2	24.04 m²
Stairs	6.75 m²
Passage 2	7.70 m²
Balcony	3.02 m²
Total Area	67.49 m²

First storey Dimension Plan
Office & loading area
Scale 1:100

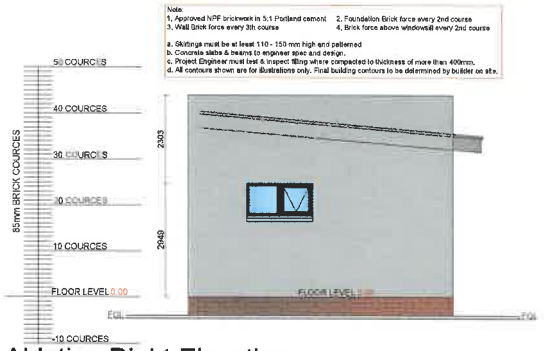




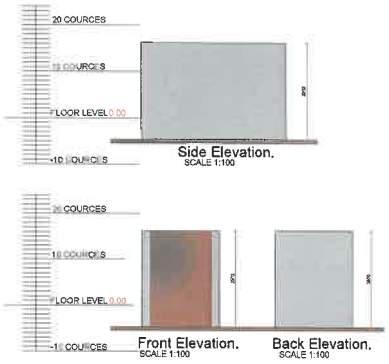
			CONSULTING FIRM: SEMORANGO CREATIVE ENGINEERING CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX.: (015) 295 2024 18A HANS VAN RENSBURG POLOKWANE 0699 e-mail: lelaleni@semorango.co.za	DESIGNER: NAME F CORDEWENER SIGNATURE ENGINEER: NAME T RAPHALALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROCH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
						DRAWING NAME: TAXI RANK ADMIN BUILDING AND LOADING BAY PLAN AND ELEVATIONS LAYOUT	1.1	NEM/09-2022	NCE 004
OCTOBER 2022	FOR TENDER								
DATE	AMENDMENTS								



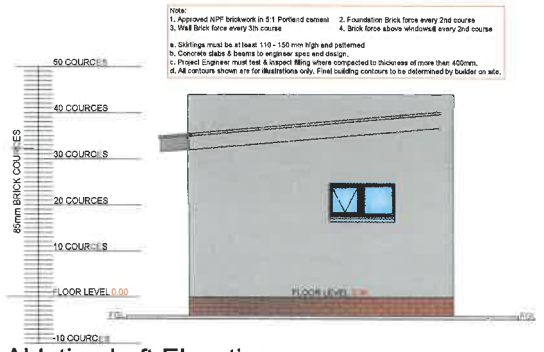
Ablution Back Elevation.
SCALE 1:100



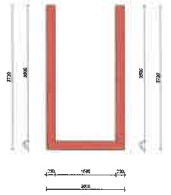
Ablution Right Elevation.
SCALE 1:100



Information Plan
Ablution Facility
Scale 1:100

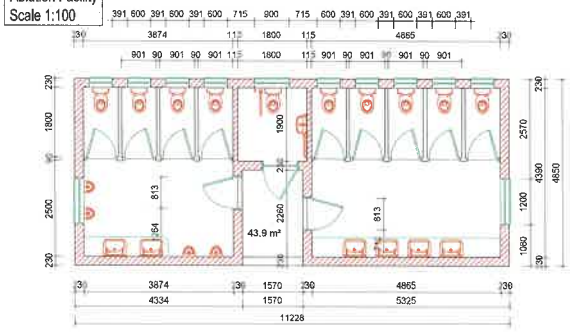


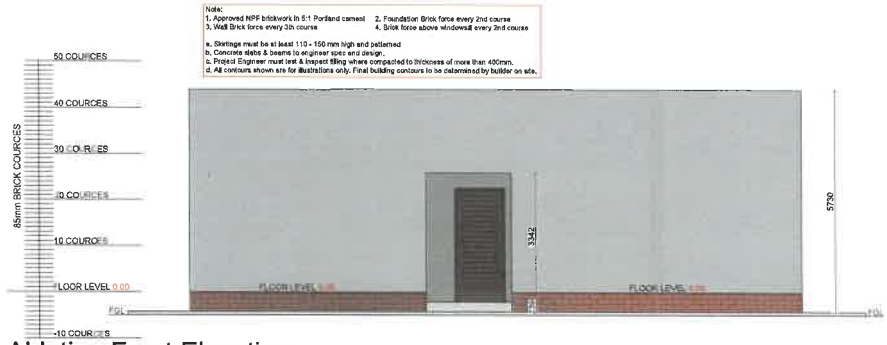
Ablution Left Elevation.
SCALE 1:100



Waste transfer
Ground floor plan

Dimension Plan
Ablution Facility
Scale 1:100





Ablution Front Elevation.
SCALE 1:100

		CONSULTING FIRM: NEMORANGO ENGINEERING SERVICES (PTY) LTD CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 email : talalnc@nemorango.co.za	DESIGNER: NAME F CORDEWENER SIGNATURE ENGINEER: NAME T RAPHALALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CNC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022 DATE	FOR TENDER AMENDMENTS				DRAWING NAME: TAXI RANK ABLUTIONS PLAN, WASTE TRANSFER AND ELEVATIONS LAYOUT	1.1	NEM/09-2022	NCE 005

WINDOW SCHEDULE Ground Storey & DVolume			
WINDOW & NO.	QUANTITY : 9 PT68	QUANTITY : 2 PT126	QUANTITY : 1 PT96
ROOM/LOCATION	Ablution	Ablution	Ablution
DESCRIPTION	Aluminium top hung grey powder coated window frames, size 600 x 900mm high code PT99 with clip-on glazing beads & neoprene seals - plugged to brickwork or concrete.	Aluminium top hung grey powder coated window frames, size 1800 x 900mm high code PTT186 with clip-on glazing beads & neoprene seals - plugged to brickwork or concrete.	Aluminium top hung grey powder coated window frames, size 600 x 600mm high code PT96 with clip-on glazing beads & neoprene seals - plugged to brickwork or concrete.
GEAR	Standard as per manufacturer.	Standard as per manufacturer.	Standard as per manufacturer.
FINISH	Dark Grey Powder coated	Dark Grey Powder coated	Dark Grey Powder coated
GLASS	4mm Single glazed Obscured Glass Single glazed 4mm Low - E glass Color: natural Aqua marine Single tinted 6mm Color: natural Aqua marine	4mm Single glazed Obscured Glass Single glazed 4mm Low - E glass Color: natural Aqua marine Single tinted 6mm Color: natural Aqua marine	4mm Single glazed Obscured Glass Single glazed 4mm Low - E glass Color: natural Aqua marine Single tinted 6mm Color: natural Aqua marine

WINDOW SCHEDULE Ground Storey & DVolume					
WINDOW & NO.	QUANTITY : 2 PT66	QUANTITY : 10 PT96	QUANTITY : 6 PTT912	QUANTITY : 2 PTT189	QUANTITY : 1 Custom Window 1
ROOM/LOCATION	Toilet & Office 1	Toilets, Boardroom, Office 2 & Kitchen.	Office 162, Boardroom.	Office 2, Boardroom.	Stairs.
DESCRIPTION	Aluminium top hung grey powder coated window frames, size 600 x 900mm high code PT99 with clip-on glazing beads & neoprene seals - plugged to brickwork or concrete.	Aluminium top hung grey powder coated window frames, size 900 x 1500mm high code PT96 with clip-on glazing beads & neoprene seals - plugged to brickwork or concrete.	Aluminium top hung grey powder coated window frames, size 1800 x 1200mm high code PTT912 with clip-on glazing beads & neoprene seals - plugged to brickwork or concrete.	Aluminium top hung grey powder coated window frames, size 1800 x 900mm high code PTT189 with clip-on glazing beads & neoprene seals - plugged to brickwork or concrete.	Dark grey powder coated Aluminium window frames, with solid glass finish. Window sized as described above, with neoprene seals and plugged to brickwork or concrete.
GEAR	Standard as per manufacturer.	Standard as per manufacturer.	Standard as per manufacturer.	Standard as per manufacturer.	Standard as per manufacturer.
FINISH	Dark Grey Powder coated	Dark Grey Powder coated	Dark Grey Powder coated	Dark Grey Powder coated	Dark Grey Powder coated
GLASS	4mm Single glazed Obscured Glass Single glazed 4mm Low - E glass Color: natural Aqua marine Single tinted 6mm Color: natural Aqua marine	4mm Single glazed Obscured Glass Single glazed 4mm Low - E glass Color: natural Aqua marine Single tinted 6mm Color: natural Aqua marine	4mm Single glazed Obscured Glass Single glazed 4mm Low - E glass Color: natural Aqua marine Single tinted 6mm Color: natural Aqua marine	4mm Single glazed Obscured Glass Single glazed 4mm Low - E glass Color: natural Aqua marine Single tinted 6mm Color: natural Aqua marine	4mm Single glazed Obscured Glass Single glazed 4mm Low - E glass Color: natural Aqua marine Single tinted 6mm Color: natural Aqua marine

First Floor Level

Ground Floor Level

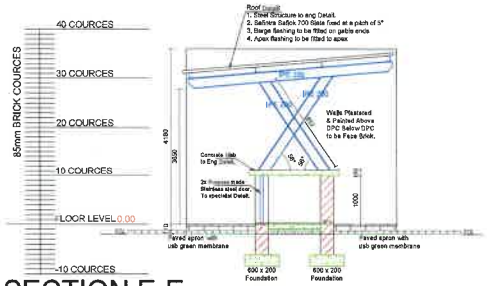
DOOR SCHEDULE						
DOOR & NO.	D1 QUANTITY : 1	D2 QUANTITY : 8	D3 QUANTITY : 1	D4 QUANTITY : 2	D5 QUANTITY : 1	D6 QUANTITY : 12
DESCRIPTION	Aluminium frame glazed Dark grey powder coated aluminium Front door sign as described with neoprene seals and plugged to brickwork or concrete.	Horizontal pannel Antique Oak Stained Solid Wood Door. Opening 813 x 2032 high	Horizontal pannel Antique Oak Stained Solid Wood Door. Opening 813 x 2032 high	Aluminium frame glazed Dark grey powder coated aluminium door doors as described with neoprene seals and plugged to brickwork or concrete.	Aluminium frame glazed Dark grey powder coated aluminium Sliding door doors as described with neoprene seals and plugged to brickwork or concrete.	Horizontal pannel Antique Oak Stained Semi Solid wood Door Opening 813 x 2073 high
FINISH	Aluminium Protect inside or door openings to prevent air infiltration as set out in SANS 613 Provide all weather swing doors fitted with a draught protection device as specified in SANS 204. 4.4.1.3	Antique Oak Stained	Antique Oak Stained	Aluminium Protect inside or door openings to prevent air infiltration as set out in SANS 613 Provide all weather swing doors fitted with a draught protection device as specified in SANS 204. 4.4.1.3	Aluminium Protect inside or door openings to prevent air infiltration as set out in SANS 613 Provide all weather swing doors fitted with a draught protection device as specified in SANS 204. 4.4.1.3	Antique Oak Stained
GLASS	Single glazed 4mm Low - E glass Color: natural Aqua marine	N/A	N/A	Single glazed 4mm Low - E glass Color: natural Aqua marine	Single glazed 4mm Low - E glass Color: natural Aqua marine	N/A
DOOR GEAR & IRONMONGERY	STANDARD Gear included Dorma Lock cylinder 72mm centres Dorma Spar 610 - 4 off doors	STANDARD Gear included Yale Lock cylinder 72mm centres	STANDARD Gear included	STANDARD Gear included	STANDARD Gear included	Yale Lock cylinder 72mm centres

Sanitary & General Fixtures & details:

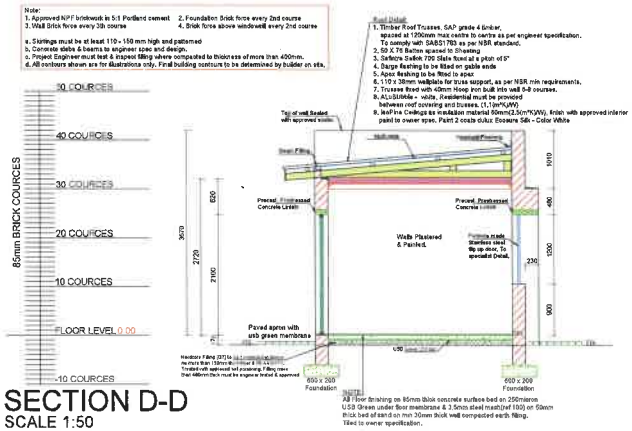
PRODUCT			PRODUCT	
	All Bathrooms In all buildings	All Male Bathrooms		All Bathrooms In all buildings
TYPE & NO.	QUANTITY : 1	QUANTITY : 3	TYPE & NO.	QUANTITY : 4
FITTINGS & Info	CSM Sanitanware White Maxima wall hung pedestal basin set (code: ...WAH367) size 520 x 435 x 250mm with one extra taphole, donut 10 Pedestal included Wht 1940 (L) x 175(W) x 640(H)	Zenex Collins Description: Tec entry urinal with integral spreader and fixings Code: WJA-1650-000 Dimensions: 190 (L) x 315(W) x 660 (H)	FITTINGS & Info	
TAPS & MISCELLANEOUS	1 x Cobra Chromium Code: 215-15 Pillar tap with PCI & waste indicator. Heavy pattern 15mm and 20mm. Light pattern 15mm and 20mm. SANS Type 2 (SM 5412) JASWIC Listed. C-line 32mm chrome plated deep seal S-trap with outlet for 50mm PVC (Code: 345/50)		TAPS & MISCELLANEOUS	

PRODUCT		PRODUCT	
		Disabled Toilet	Disabled Toilet
TYPE & NO.	QUANTITY : 2	TYPE & NO.	QUANTITY : 1 QUANTITY : 1
FITTINGS & Info	Roca Dama 611 polished stainless Wall mixer sink, swivel spout 150 x 150mm walls with to 475 x 425 x 230mm deep bowl, fitted with lever top waste assembly 90mm waste fitting (Code: 5098611) and PVC trap	FITTINGS & Info	Vidaron chairs "Pluties Paraplegic" 90 degree cubic pan c/w Code P520 seat matching toilet vidaron (code 710516) complete with lid formerly sit, and double decker drop head seat and purpose made C-P top flush lever
TAPS & MISCELLANEOUS	Heavy pattern 15mm, Light pattern, 15mm, P/= M10 x R x 400mm long flexible tubes. Chrome Plated. JASWIC Listed.	TAPS & MISCELLANEOUS	1 Wall mounted Pan connector Cobra Ref. 2230764 Angle regulating valve Fembert, Chart. 5020 Code 4355567 white stainless outlet (S) replaced Dorma TAK/R-999-150F new colour grab rail. Cobra Wallwash 32mm chrome plated deep seal bottle trap with outlet for 50mm P.V.C (Code 345/50).

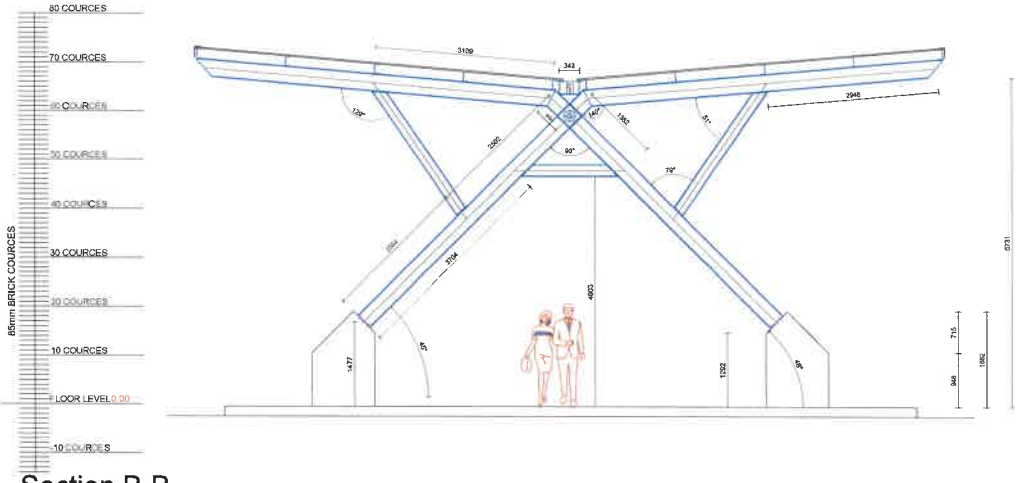
		CONSULTING FIRM:	DESIGNER:	EMPLOYER:	PROJECT NAME:	SCALE	PROJECT No / Rev No
OCTOBER 2022	FOR TENDER	MPORANGO GROUP (Pty) Ltd CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 104 HANS VAN RENSBURG POLOKWANE 0699 e-mail : lekalenj@mensrange.co.za	NAME F CORDEWENER SIGNATURE ENGINEER: NAME T RAPHALALANI SIGNATURE	MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL 015 519 3000	CONSTRUCTION OF DZANANI TAXI RANK DRAWING NAME: TAXI RANK ADMIN BUILDING AND ABLUTIONS DOORS AND WINDOW SCHEDULE	1.1	94 OF 2022 NEM/09-2022	0 NCE 006
DATE	AMENDMENTS						



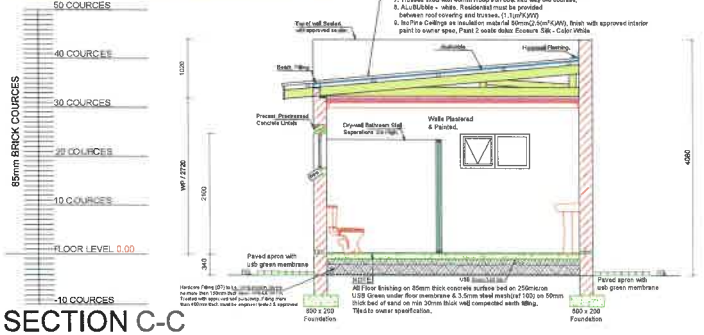
SECTION E-E
SCALE 1:50



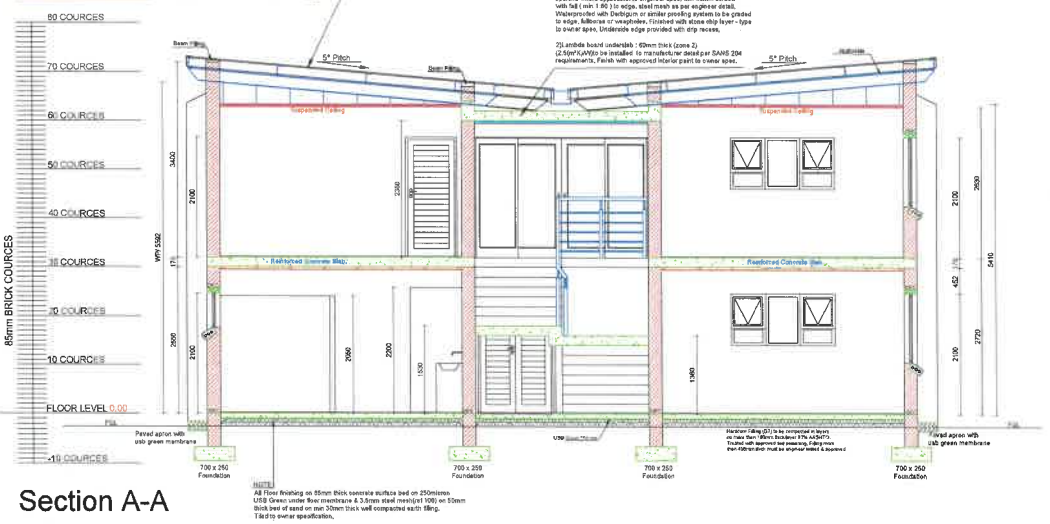
SECTION D-D
SCALE 1:50



Section B-B
Scale 1:50



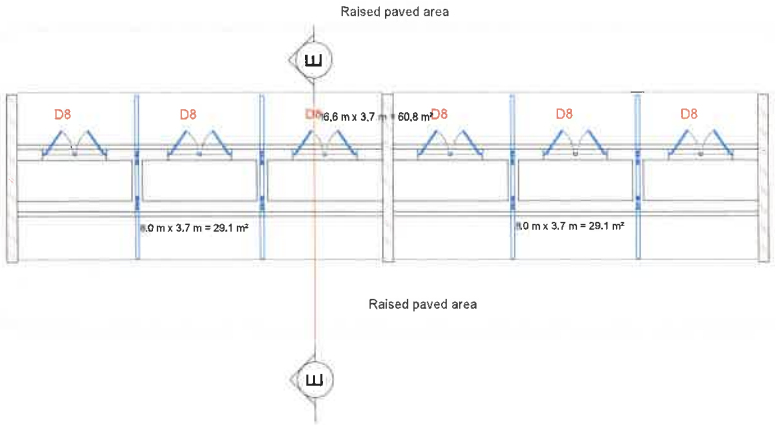
SECTION C-C
SCALE 1:50



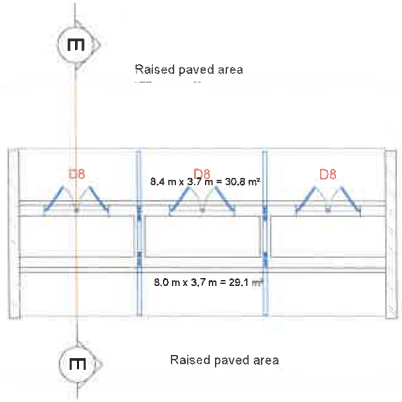
Section A-A
Scale 1:50

			CONSULTING FIRM: MKHORLANGO CREATIVE SOLUTIONS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 104 HANS VAN RENSBURG POLOKWANE 0699 e-mail : bfokelni@mkhorlango.co.za	DESIGNER: NAME F CORDWENER SIGNATURE ENGINEER: NAME T RAPHALALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0929 TEL 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK DRAWING NAME: TAXI RANK ADMIN BUILDING AND LOADING BAY SECTIONS	SCALE 1.1	PROJECT No 94 OF 2022 NEM/09-2022	Rev No 0 NCE 007
OCTOBER 2022	FOR TENDER							
DATE	AMENDMENTS							

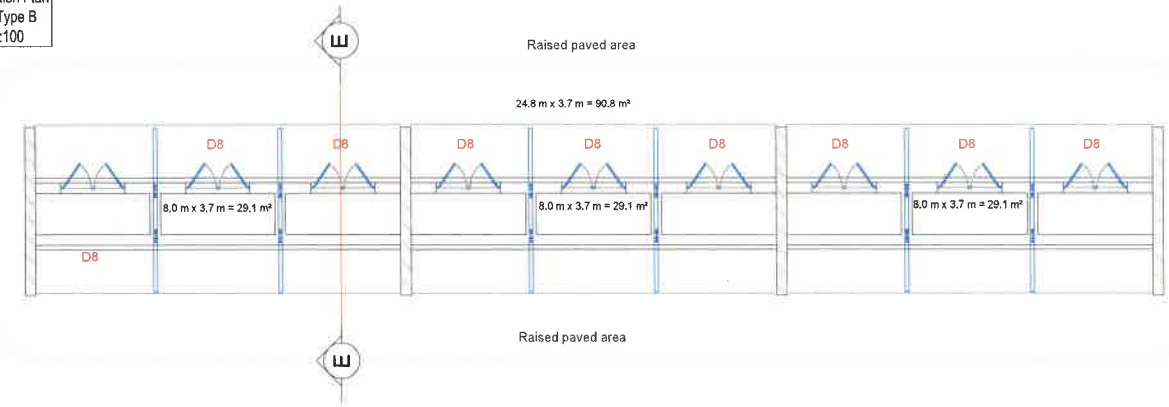
Information Plan
Shops Type C
Scale 1:100



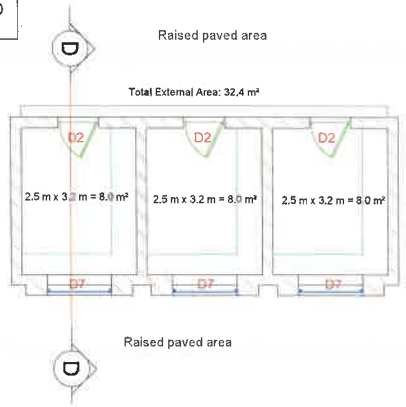
Info Plan
Shops Type E
Scale 1:100



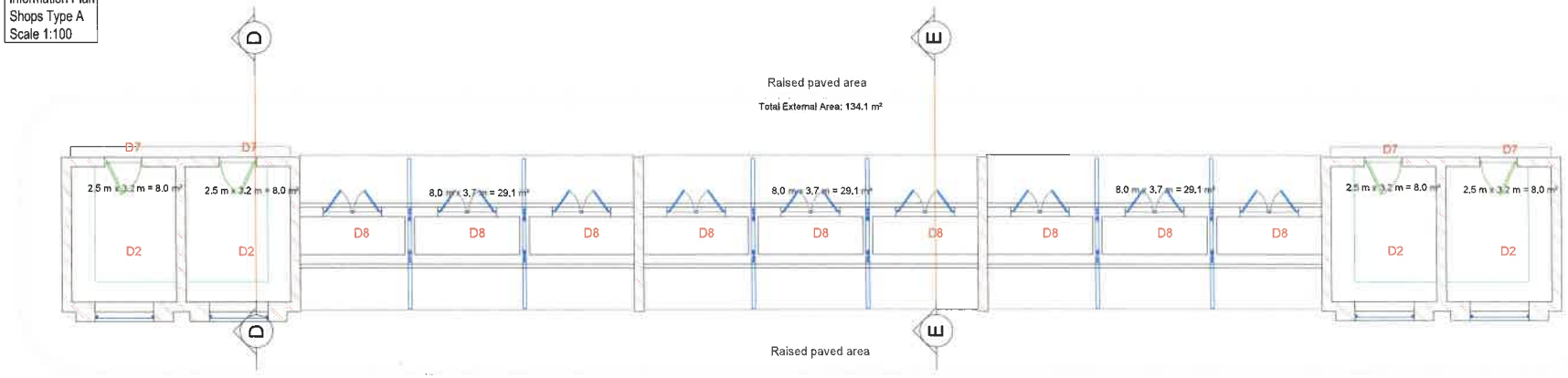
Information Plan
Shops Type B
Scale 1:100



INfo Plan
Shops Type D
Scale 1:100

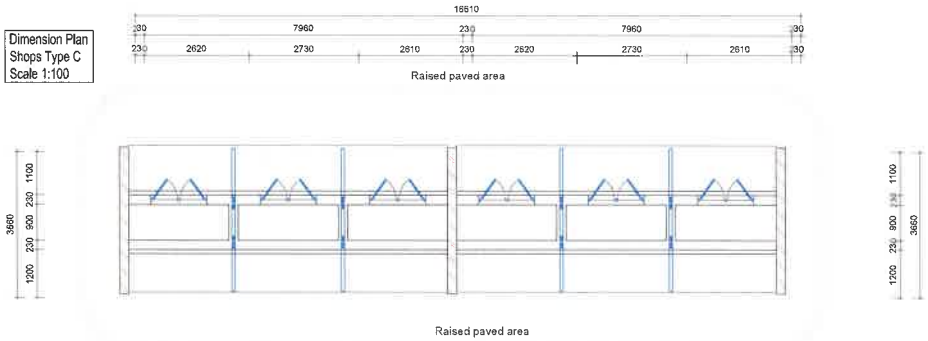


Information Plan
Shops Type A
Scale 1:100

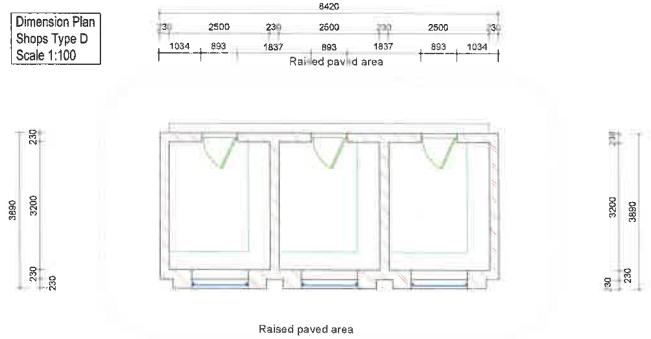


		CONSULTING FIRM: ENGORANGO CIVIL ENGINEERS HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 19A HANS VAN RENSBURG POLOKWANE 0699 e-mail: tsolaki@engorango.co.za	DESIGNER: NAME F CORDEWENER SIGNATURE ENGINEER: NAME T RAPHAL ALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK DRAWING NAME: MARKET STALLS GROUND FLOOR PLANS LAYOUT	SCALE 1.1	PROJECT No 94 OF 2022 NEM/09-2022	Rev No 0 NCE 008
OCTOBER 2022	FOR TENDER						
DATE	AMENDMENTS						

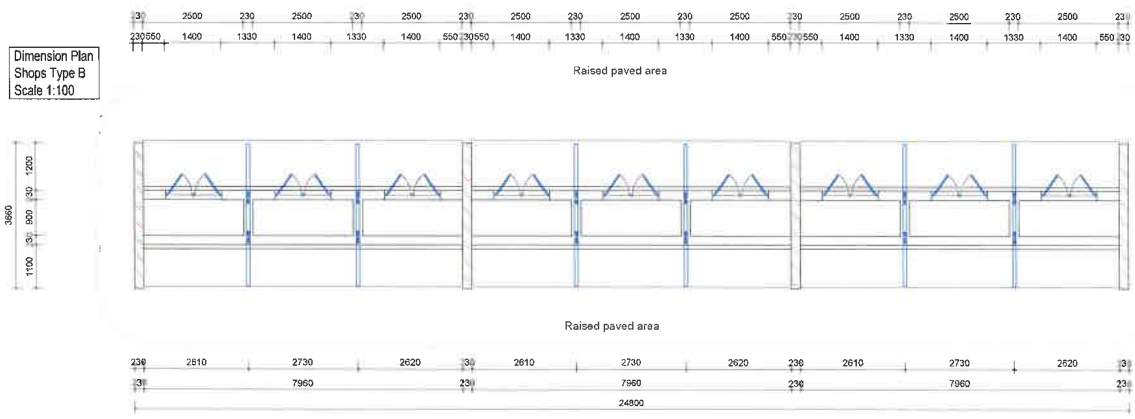
Dimension Plan
Shops Type C
Scale 1:100



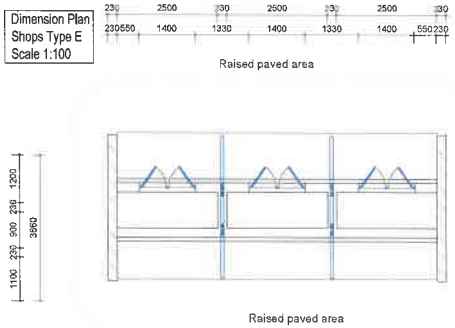
Dimension Plan
Shops Type D
Scale 1:100



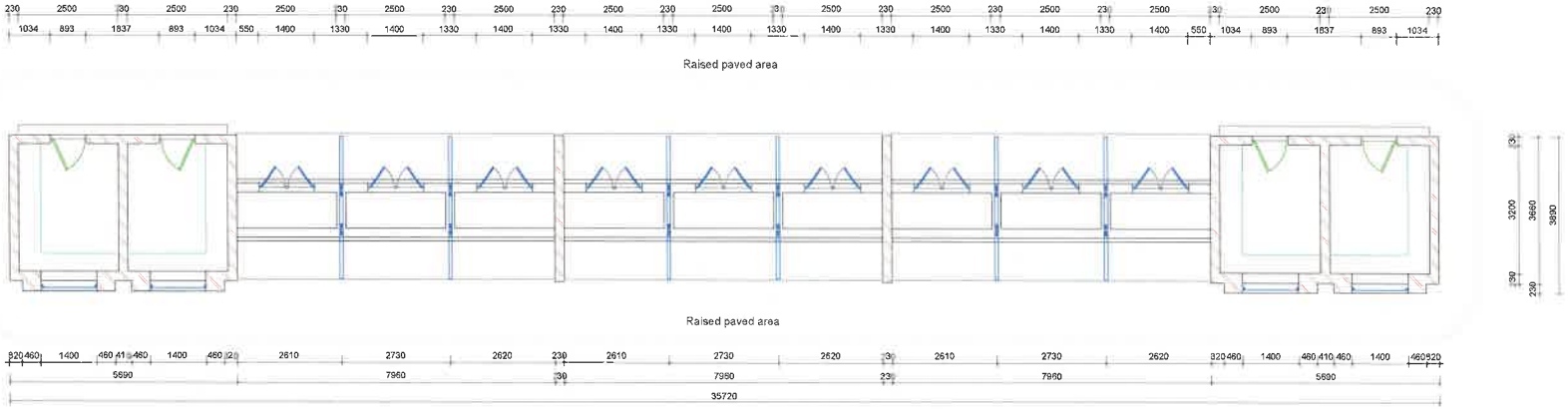
Dimension Plan
Shops Type B
Scale 1:100



Dimension Plan
Shops Type E
Scale 1:100



Dimension Plan
Shops Type A
Scale 1:100



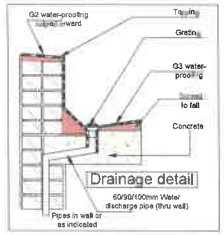
		CONSULTING FIRM: NEMORANGO ENGINEERING (PROPRIETARY) LIMITED CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS P (015) 295 2023 FAX: (015) 295 2024 19A HANS VAN RENSBURG POLOKWANE 0699 e-mail: takalani@nemorango.co.za	DESIGNER: NAME F CORDEWENER SIGNATURE ENGINEER: NAME T RAPHALALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK DRAWING NAME: MARKET STALLS GROUND FLOORS LAYOUT PLAN	SCALE 1:1	PROJECT No 94 OF 2022 NEM/09-2022	Rev No 0 NCE 009
OCTOBER 2022	FOR TENDER						
DATE	AMENDMENTS						

Roof Plan Shops Type A Scale 1:100

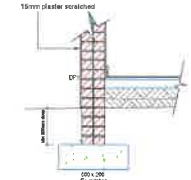
Roof Detail:
1. Timber Roof Trusses, SAP grade 4 timber, spaced at 1200mm max centre to centre as per engineer specification. To comply with SABS1783 as per NBR standard.
2. 50 X 76 Batten spaced to Sheeting
3. Safintra Saflok 700 Slate fixed at a pitch of 5°
4. Barge flashing to be fitted on gable ends
5. Apex flashing to be fitted to apex
6. 110 x 38mm wallplate for truss support, as per NBR min requirements.
7. Trusses fixed with 40mm Hoop iron built into wall 6-8 courses.
8. ALuGUbble - white, Residential must be provided between roof covering and trusses. (1.1(m²K)/W)
9. IsoPine Ceilings as insulation material 60mm(2.5(m²K)/W), finish with approved interior paint to owner spec. Paint 2 coats dulux Ecosure Silk - Color White

Roof Detail:
1. Steel Structure to eng Detail.
2. Safintra Saflok 700 Slate fixed at a pitch of 5°
3. Barge flashing to be fitted on gable ends
4. Apex flashing to be fitted to apex

Roof Detail
1. Timber Roof Trusses, SAP grade 4 timber, spaced at 1200mm max centre to centre as per engineer specification. To comply with SABS1783 as per NBR standard.
2. 50 X 76 Batten spaced to Sheeting
3. Safintra Saflok 700 Slate fixed at a pitch of 5°
4. Barge flashing to be fitted on gable ends
5. Apex flashing to be fitted to apex
6. 110 x 38mm wallplate for truss support, as per NBR min requirements.
7. Trusses fixed with 40mm Hoop iron built into wall 6-8 courses.
8. ALuGUbble - white, Residential must be provided between roof covering and trusses. (1.1(m²K)/W)
9. IsoPine Ceilings as insulation material 60mm(2.5(m²K)/W), finish with approved interior paint to owner spec. Paint 2 coats dulux Ecosure Silk - Color White

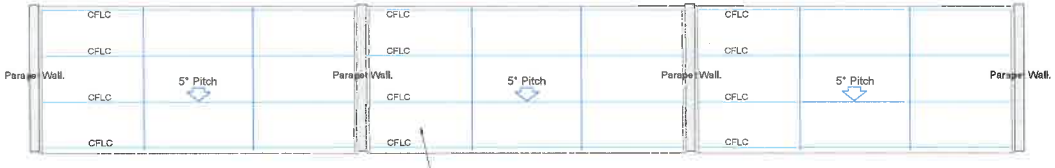


Foundation & Wall spec Scaled to fit



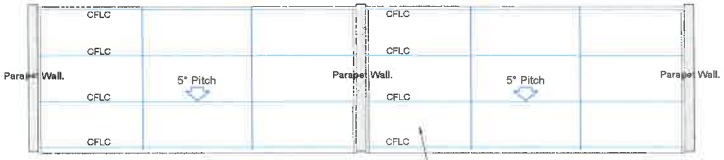
General Note:
100mm concrete surface bed
250 micron green polyethylene dampproof course (SABS 952 type C) on Eng fill, min 07 m layers of 150mm thick, @ 93% mod asstho Density @ OMC.
50mm X 510mm Thick Isoboard Thermal insulation as per Sans 204 2011
230mm brick wall tied together with metal ties (SABS 28), ties should be evenly spaced at not more than 1m apart in every third course and staggered.
Founding at greater depth on approved soil horizon
750X200mm concrete strip foundation re- enforced if required to engineer specifications.

Roof Plan Shops Type B Scale 1:100



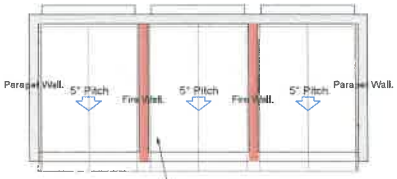
Roof Detail:
1. Steel Structure to eng Detail.
2. Safintra Saflok 700 Slate fixed at a pitch of 5°
3. Barge flashing to be fitted on gable ends
4. Apex flashing to be fitted to apex

Roof Plan Shops Type C Scale 1:100



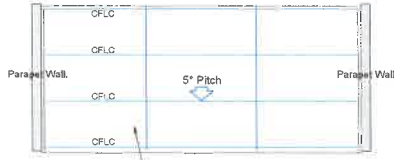
Roof Detail:
1. Steel Structure to eng Detail.
2. Safintra Saflok 700 Slate fixed at a pitch of 5°
3. Barge flashing to be fitted on gable ends
4. Apex flashing to be fitted to apex

Roof Plan Shops Type D Scale 1:100



Roof Detail:
1. Timber Roof Trusses, SAP grade 4 timber, spaced at 1200mm max centre to centre as per engineer specification. To comply with SABS1783 as per NBR standard.
2. 50 X 76 Batten spaced to Sheeting
3. Safintra Saflok 700 Slate fixed at a pitch of 5°
4. Barge flashing to be fitted on gable ends
5. Apex flashing to be fitted to apex
6. 110 x 38mm wallplate for truss support, as per NBR min requirements.
7. Trusses fixed with 40mm Hoop iron built into wall 6-8 courses.
8. ALuGUbble - white, Residential must be provided between roof covering and trusses. (1.1(m²K)/W)
9. IsoPine Ceilings as insulation material 60mm(2.5(m²K)/W), finish with approved interior paint to owner spec. Paint 2 coats dulux Ecosure Silk - Color White

Roof Plan Shops Type E Scale 1:100



Roof Detail:
1. Steel Structure to eng Detail.
2. Safintra Saflok 700 Slate fixed at a pitch of 5°
3. Barge flashing to be fitted on gable ends
4. Apex flashing to be fitted to apex

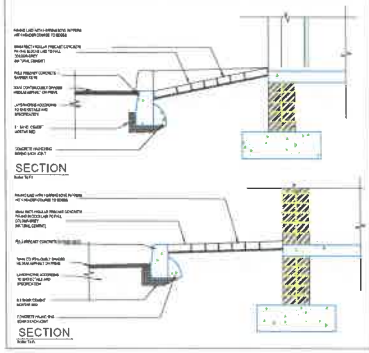
Disabeled Facilities Notes:

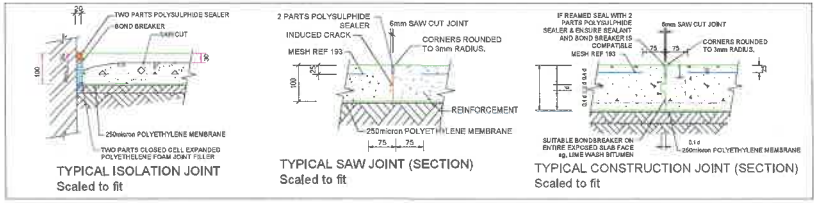
1. Doors to disabled toilets must have a min opening width of 900mm.
2. Doors should open outward unless a 1.2m dia. area is provided that is clear of all fittings, fixtures and the line of door swing.
3. The minimum finished wall-to-wall dimensions of the compartment shall be not less than 1.8 m × 1.8 m. (3.24m²)
4. The top surface of the seat of the toilet shall be not less than 480 mm and not more than 500 mm above the floor level.
5. A 150 mm lever extension to the flush handle should be fitted to both cistern-type and flush-valve-type toilets, and such extension should be located away from the side wall
5. Water supply to a washbasin shall be by way of a single lever mixer unit with a lever handle at least 100 mm long within reach of any person sitting on the toilet.
6. Grab rails suitable for use by persons with disabilities shall be provided at the side and back of the toilet. The tube of any grab rail shall have an outside diameter between 32 mm and 38 mm. The back and side grab rail may be an integral unit.
7. The maximum temperature of water discharging from any hot water outlet in any building, should not exceed 45 °C, for disabled people facilities.

Ramp:

Any ramp provided in terms of SANS 10400 shall
a) have a gradient, measured along the centre line, that is not steeper than 1:12 ;
b) have a clear, trafficable surface not less than 1 100 m wide;
c) have a surface in accordance with Section 4.5 (stable firm & slip resistant under all conditions);
d) have a landing at the top and bottom of each ramp of not less than 1,2 m in length (clear of any door swing) and of width not less than that of the ramp;
e) comply with the requirements between landings as given in table 2 and figure 11 of SANS 10400 part S;
f) have a handrail on both sides of the ramp or, where the width is greater than 2,4 m, a central handrail in accordance with the requirements of 4.10 of SANS 10400 part S where the gradient is steeper than 1:15;
g) where ramps in the same direction are used for a vertical rise of more than 600 mm, be staggered by the width of the ramp, in order to prevent a long straight line of ramps (see also 4.8.2(d)).

KERB DETAILS

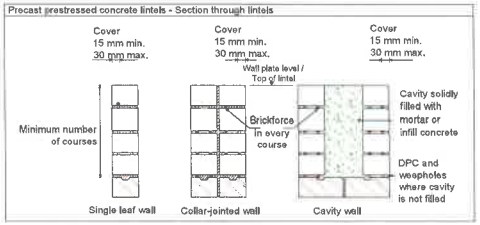




TYPICAL ISOLATION JOINT
Scaled to fit

TYPICAL SAW JOINT (SECTION)
Scaled to fit

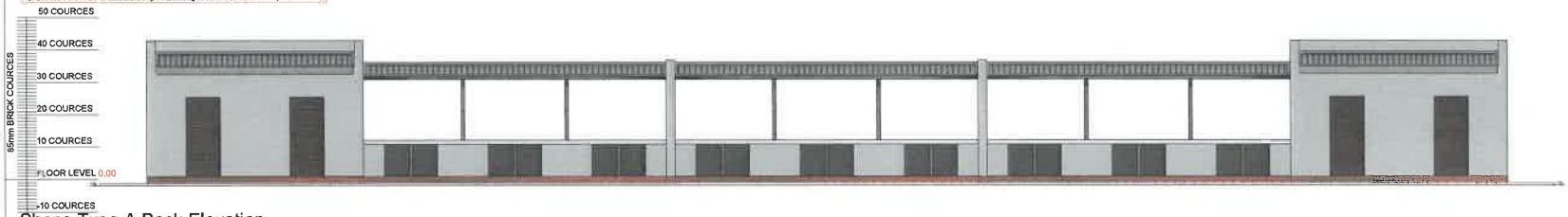
TYPICAL CONSTRUCTION JOINT (SECTION)
Scaled to fit



		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS TEL: (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail: takalani@nemorange.co.za	DESIGNER: NAME F CORDEWENER SIGNATURE ENGINEER: NAME T RAPHALALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALLS ROOF AND FOUNDATION DETAILS LAYOUT	1.1	NEM/09-2022	NCE 010
DATE	AMENDMENTS							

Note:
1. Approved NPF brickwork in 5:1 Portland cement
2. Foundation Brick force every 2nd course
3. Wall Brick force every 3th course
4. Brick force above windowsill every 2nd course

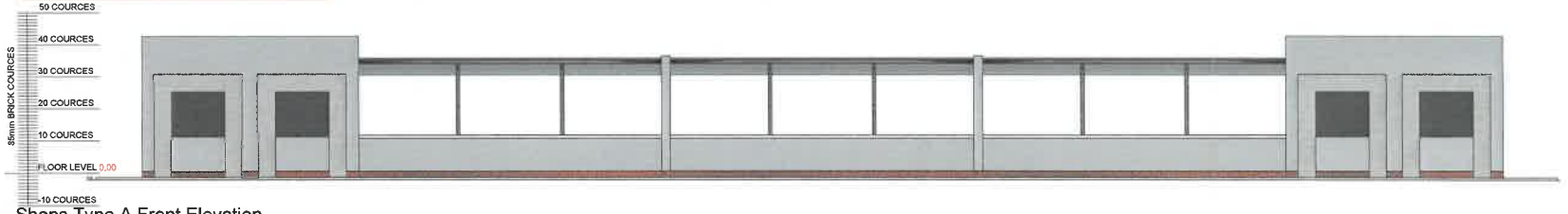
a. Skirtings must be at least 110 - 150 mm high and patterned
b. Concrete slabs & beams to engineer spec and design.
c. Project Engineer must test & inspect filling where compacted to thickness of more than 400mm.
d. All contours shown are for illustrations only. Final building contours to be determined by builder on site.



Shops Type A Back Elevation
SCALE 1:100

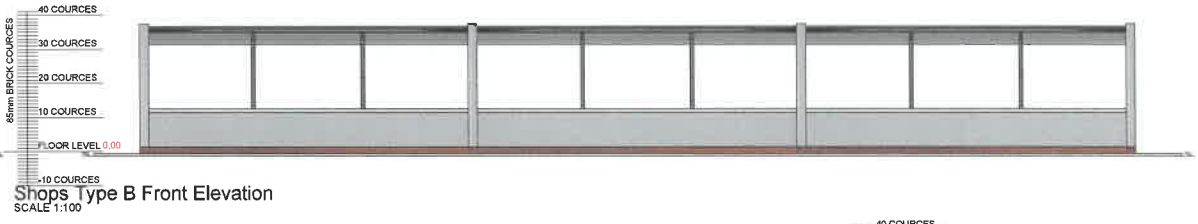
Shops Type A Right Elevation
SCALE 1:100

Shops Type A Left Elevation
SCALE 1:100



Shops Type A Front Elevation
SCALE 1:100

Shops Type B Left Elevation
SCALE 1:100

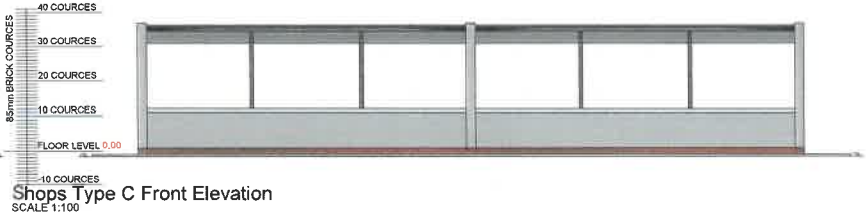


Shops Type B Front Elevation
SCALE 1:100

Shops Type B Back Elevation
SCALE 1:100

Shops Type B Right Elevation
SCALE 1:100

Shops Type C Left Elevation
SCALE 1:100



Shops Type C Front Elevation
SCALE 1:100

Shops Type C Right Elevation
SCALE 1:100

OCTOBER 2022	FOR TENDER	
DATE	AMENDMENTS	

CONSULTING FIRM:
MAMORANGO CONSULTING (PTY) LTD
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e-mail : tsikalani@mamorango.co.za

DESIGNER:
NAME F CORDEWENER
SIGNATURE

ENGINEER:
NAME T RAPHALALANI
SIGNATURE

EMPLOYER:
MAKHADO LOCAL MUNICIPALITY
CIVIC CENTRE CORNER KROGH & ERASMUS STREET
MAKHADO
0920
TEL: 015 519 3000

PROJECT NAME:
CONSTRUCTION OF DZANANI TAXI RANK

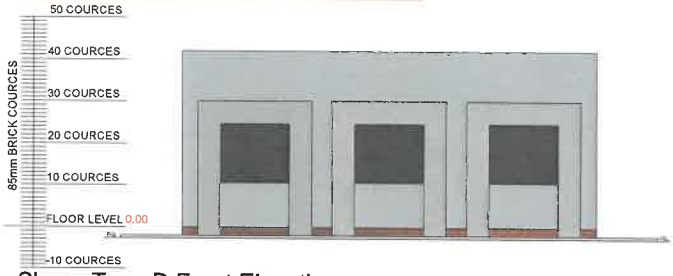
DRAWING NAME:
MARKET STALLS ELEVATIONS LAYOUT

SCALE	PROJECT No	Rev No
	94 OF 2022	0
1.1	NEM/09-2022	NCE 011

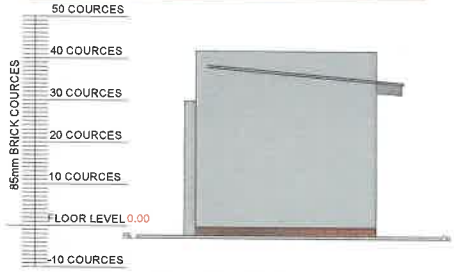
Note:
1. Approved NPF brickwork in 5:1 Portland cement
2. Foundation Brick force every 2nd course
3. Wall Brick force every 3th course
4. Brick force above windowsill every 2nd course

a. Skirtings must be at least 110 - 150 mm high and patterned
b. Concrete slabs & beams to engineer spec and design.
c. Project Engineer must test & inspect filling where compacted to thickness of more than 400mm.
d. All contours shown are for illustrations only. Final building contours to be determined by builder on site.

Shops Type D Left Elevation
SCALE 1:100



Shops Type D Front Elevation
SCALE 1:100

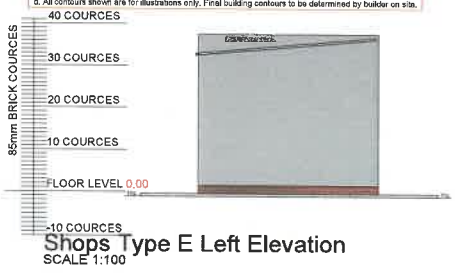


Shops Type D Right Elevation
SCALE 1:100

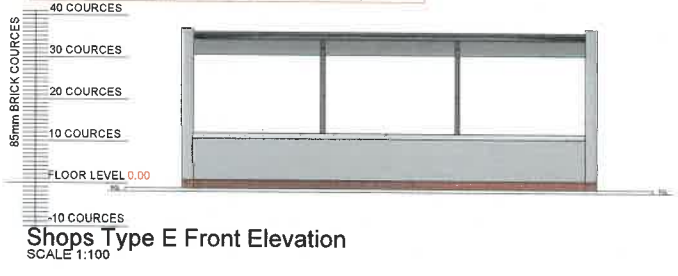
Shops Type D Back Elevation
SCALE 1:100

Shops Type E Right Elevation
SCALE 1:100

Shops Type E Back Elevation
SCALE 1:100



Shops Type E Left Elevation
SCALE 1:100



Shops Type E Front Elevation
SCALE 1:100

		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tshilani@nemorango.co.za	DESIGNER: NAME F CORDEWENER SIGNATURE ENGINEER: NAME T RAPHALALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022 DATE	FOR TENDER AMENDMENTS				DRAWING NAME: MARKET STALLS ELEVATIONS LAYOUT	1.1	NEM/09-2022	NCE 012

ELECTRICAL CHART (Read together with Roof plan for Solar, geysers & aircons)

Symbol	Item Description	Bulb/Sub Quantity	Item Quantity	Bulb/Item Descriptions	Lm/bulb
1 Ph DB	SINGLE PHASE DISTRIBUTION BOARD GROUND	1	1		
3 Ph DB	3 PHASE DISTRIBUTION BOARD GROUND	1	0		
DBF	DISTRIBUTION BOARD FIRST/SECOND/...	1	0		
SDB	SUB - DISTRIBUTION BOARD (each liveable floor/workspace/area/swimming pool)	1	0		
15A AC/3	15A DOUBLE PLUG SOCKET @ 3m HIGH	1	3		
15A AC/1	15A DOUBLE PLUG SOCKET @ 1m HIGH	1	5		
15A AC/3	15 AMP PLUG SOCKET 100mm above floor (used in a rail included)	1	0		
15A AC/3	15A DOUBLE PLUG SOCKET max 300mm high (unless if used in a rail)	1	8		
15A AC/3	15A DOUBLE (2 POINT) PLUG SOCKET max 300mm high (unless if used in a rail)	1	4		
15A AC/3	15A WATERTIGHT PLUG SOCKET	1	0		
	3 PHASE PLUG max 1.3m high (clearly marked)	1	0		
	2 POINT RAZOR PLUG @ 1m high (with safety cover)	1	0		
	FOR LIVE IN NUMBER PLUG (For garage door or carport/s)	1	0		
	15A PLUG FLUSH DOUBLE PLUG SOCKET Flush with floor	1	0		
	TELEVISION SOCKET	1	0		
	TELEPHONE & ADSL SOCKET	1	3		
15L LPG	Bosch / or similar 14L LPG gas geyser Code: WR14B33 Sunrise Tru-Flo/Axial - for / neither area	0	0		
6L WE	Nine Electric under-counter geyser 6L direct heating Pronto Classique 160/10/ATN/2KED	1	0		
50L	Y wood 50L Dual Elements 50L Dia ser wall mounted & concealed ersde pantry, scullery and covered with thermal blanket	1	0		
100L	100L High Pressure Non-pressurised ELECTRIC GEYSER (SOLAR ASSISTED - PUMP READY) - wall mounted & concealed in cupb - no element Protected Steel geyser	1	0		
150L EL	Perpetual Solar 150lt electric water heater, geyser on roof Steel with a thermal blanket.	1	1		
200L EL	Perpetual 200L electric water heater on roof/ship - geyser concealed with Composite cladding & covered with a thermal blanket, (to be connected to heatpump or solar panels)	1	0		
250L EL	Kwikot 250lt Electrical water heater on roof on approved drip tray/ covered with a thermal blanket To be connected to heatpump	1	0		
300L EL	Steel 316 Stainless Steel Solar Water Roof mounted - geyser on roof/deck with thermal blanket & concealed - Code SOL-300/FD	1	0		
HP2.5kW (200L)	HEAT PUMP energy saving up to 3 people	1	0		
HP4.5kW (300L)	HEAT PUMP energy saving - 4 - 5 PPl inc people, 4.5-6kw 300 L Fitted to wall. Concealed in Composite cladding	1	0		
	16 tube solar manifold for 150L geyser Perpetual Solar - to be connected to prescribed geyser system with 12V solar pump where applicable. geyser on roof integrated with tubes	0	0		
	25 tube solar manifold for 200L geyser Perpetual Solar - to be connected to prescribed geyser system with 12V solar pump where applicable. geyser on roof integrated with tubes	0	0		
	18 tube solar manifold for 170L geyser Perpetual Solar - to be connected to prescribed geyser system with 12V solar pump where applicable.	25	1		
	Solar collectors - Solarfocus SF170 41 x 36 370 thick Kits: 12SHSF00U Inverter 3kW 5kW single phase	1	0		
	Solar collectors - JA Solar or similar model 320W PV collectors 9 x 320W Dim (1675x1957)=54	1	0	10kW	
	10kVA 5kW rating or 10kVA inverter to be connected to Batteries AC supply, generator and solar panels. Offgrid with Mainsfeed & Gen backup	1	0	6kW	
	2kVA Freedom Lite "PnP battery to provide 4-hours night time backup	1	0		
	1M STEITER AIRCON SPLIT UNIT Compressor concealed on roof/ wall with steel framed composite decking stands	1	3	Avg. 3.5kW	
50 10amp 50	ISOLATOR (STD PL & GEYSERS & AIRCONS) Heatpumps 30amp breakers	1	4		
	LIGHT & DIMMER SWITCH	1	3		
	DOUBLE LIGHT & DIMMER SWITCH	1	2		
	TRIPPLE LIGHT SWITCH	1	0		
	4 POINT LIGHT SWITCH	1	1		
Intercom	Multi/telkom intercom system DOOR/BELL/BUZZER to connect to each liveable office	1	0		
	ELECTRIC EXTRACT AIR FAN FOR TOILET "WALL HOUSE FAN" (Automatic time-out switch after 15minutes Fitted with smoke damper)	1	0	60W	

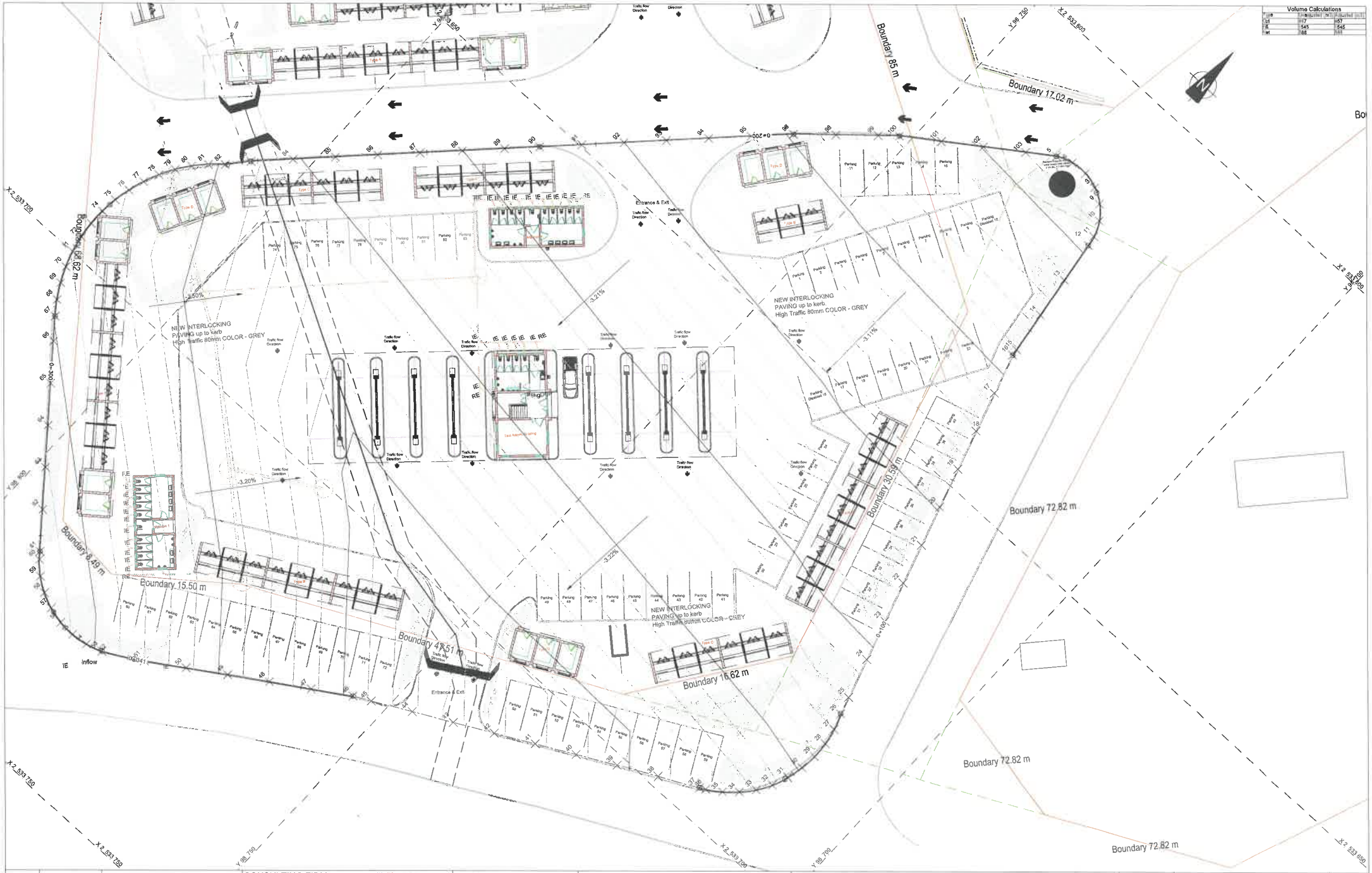
Note: Supply separate Conduits from Telkom connection point to each connection to data line.
Supply connection points for telkom & internet sockets
Supply 1 x Elster meter (SMART METER single phase)
Supply 80mm conduit in Wall's for solar cable next to DB.
Connect generator to solar supply & Eskom input for back-up power supply where applicable
Supply min 40mm conduit close to doors of office for intercom systems, & Prepaid metering
TO be connected to main system by front entrance

Note:
All Outside lighting must be prefered Eyelid type.
RED SPOTLIGHTS
1 Exterior 15A Waterlight Plug Sockets to be placed as specified.
Occupancy: Q1

Symbol	Item Description	Bulb/Sub Quantity	Item Quantity	Bulb/Item Descriptions	Lm/bulb
	CEILING MOUNTED LIGHTS Night Light Fittings	1	21	11.5 LED 2700 WARM 2700 LED	4620Lm/bulb
	WALL MOUNTED DOWNLIGHT Night Light Fittings	1 2 1	0 0 0	DA-FLW-S11-SWB DA-FLW-AP-36 DA-FLW-P05	1650Lm/bulb 1650Lm/bulb 1650Lm/bulb
	PENDANT LIGHTS INTERIOR Night Light fittings	1 10	0 0	TaffLCH-12.5ALWH DA-FLDH-11.5TP/B	1400Lm/bulb 1400Lm/bulb
	WALL MOUNT LIGHTS INTERIOR Night Light fittings	1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0 0 0 0 0 0 0	DA-FLW-S11-SWB TaffLCH-1053 TaffLCH-1053 TaffLCH-2603BL TaffLCH-2604WB TaffLCH-2604WB TaffLCH-2606WB DA-FLLT-TT3-SW TaffLCH-1510-BB TaffLCH-1510 TaffLCH-1511 TaffLCH-1513-SWH	1650Lm/bulb 1650Lm/bulb 1650Lm/bulb 1650Lm/bulb 1650Lm/bulb 1650Lm/bulb 1650Lm/bulb 1650Lm/bulb 1650Lm/bulb 1650Lm/bulb 1650Lm/bulb 1650Lm/bulb 1650Lm/bulb 1650Lm/bulb
	SINGLE FLUORESCENT COMPACT TABLE LIGHT 300mm	2	0	4W Eurolux Compact Fluorescent Tube Light Code G24d - 2.5mm	280Lm/bulb
	SINGLE FLUORESCENT LIGHT 1200mm	1	0	18W Philips Master LED Tube Light 1200mm	2140Lm/bulb
	DOUBLE FLUORESCENT LIGHT	2	0	36W Philips Master LED Tube Light 1200mm	3100Lm/bulb
	ADJUSTABLE SPOTLIGHTS 3/4 vertical TRACK 3-4 Night light fittings	3 4	0 0	7W LED DA-FLLM-P15	630Lm/bulb 630Lm/bulb
	ADJUSTABLE SPOTLIGHTS ON TRACK 3-4 Night light fittings	1	0	Eurolux GU10 LED 7W (dimmable) GU10/7W	630Lm/bulb
	ADJUSTABLE 2 SPOTLIGHTS	2	0	Eurolux GU10 LED 7W (dimmable) GU10/7W	630Lm/bulb
	ADJUSTABLE 3 SPOTLIGHTS	3	0	Eurolux GU10 LED 7W (dimmable) GU10/7W	630Lm/bulb
	ADJUSTABLE PORTRAIT SPOTLIGHTS Night light fittings	2	0	4JMB1040	170Lm/bulb
	CHANDELIER LARGE 4-6 Bulbs	8	0	Eurolux LED Coral Candle 4W E14 G40/D	mWbulb
	PENDANT CHANDELIER SMALL	6	0	Eurolux LED Candle 4W E14 G40/2	195Lm/bulb
	LEROUX TRIPPLE TUBE LIGHT Eurolux PP1/2 (Fluorescent)	0	0	Eurolux TF Fluorescent Tube 2 x 14W G5/cm Cool White G13/3	1140Lm/bulb
	INDUSTRIAL LIGHT - ALTERNATIVE (Ex Dia wide TRANSLIGHT) 150/70	0	0	150W LED Alt lamps	7500Lm/bulb
	LANTERN PENDANT OUTDOOR LIGHT EXTERIOR Recommend Eurolux P54	2	0	Eurolux LED A60 10W/E27 G60	450Lm/bulb
	Industrial Light - Hi Bay LED HBN 100W 3 Meadow 42 LEDs 12000 Lum. Light (120W) INCALCULATED ON SITE PLAN	1	0	120 Watt LED Lighting SA	12000Lm/light
	FLUORESCENCE PROTECTED/EX-WATERTIGHT DOWNLIGHT INCALCULATED ON SITE PLAN	0	0	Eurolux LED Candle 4W/E27 G60/2	mWbulb
	WATERPROOF WALL LIGHT FITTING (Night Light fittings into spotlights) shining up & down	1	5	NUO-TRI-DRE2/18L 14W (not dimmable)	1400Lm/bulb
	FLOOD LIGHT	1	0	150W Philips Eco Classic 30 Reflector IP65	lm
	WATERPROOF POLE LIGHT FITTING Night Light Fittings	1	0	LED-STK2H 9W LED/Cool (White) G9/e1	570Lm/bulb
	WALL INCASED DOWNLIGHT EYELET TYPE SEARCHLIGHT Eurolux V044	1	0	Eurolux G4 3W 12V Warm White	50Lm/bulb
	WALL BACKED WATERTIGHT EXTERIOR LIGHT EYELET TYPE / LIGHT TO THREE Domes Eurolux - Black, recessed light inside BR2	1	0	Eurolux LED Dolfin4 4W/E27	485Lm/bulb
	WATERPROOF EXTERNAL FLOODLIGHT LED 10W / 20LM/Lamp	1	0	10W Aluminaga Die LED Floodlight	lm
	FLOODLIGHT WITH MOTION SENSOR & CAMERA Night-time daylight lights on a 5mm lamp) Eurolux 937 Night Watcher	1	0	11W Halide Super Power LED light	2090Lm/bulb
	CEILING MOUNTED FAN & LIGHT Eurolux 937 da Vortitown 4 Blade fan Silver Chrome 2 x E14 bulbs required.	2	0	Eurolux LED Dolfin4 4W/E14 x 3 GU5/ Standard - 50W fan	mWbulb
	CEILING MOUNTED FAN WITH FAN SWITCH 2 - 4 blade Eurolux Fan (no lights) F40 Black	1	0	60W	lm
	DOWNLIGHTERS GU10	1	0	Eurolux GU10 LED 3W (not dimmable) G/66/CW	240Lm/bulb
	DOWNLIGHTERS GU10 DIMMABLE	1	0	Eurolux GU10 LED 7W (dimmable) GU10/7W	630Lm/bulb
	WATERTIGHT DOWNLIGHTER GU10	1	2	Eurolux GU10 LED 7W (dimmable) GU10/7W	630Lm/bulb
	LED Strip Lights Color: Cool white Max 12m run lets in 24h cycle	2		Eurolux LED Strip IP30 4.8W/m 12V DC G/66/CW	300Lm/m
	CLUSTER LED LIGHTS	9	9	Eurolux GU10 LED 4W (not dimmable) G/66/CW	310Lm/bulb

NOTE: ONLY WHERE SPECIFIED AND APPLICABLE

			CONSULTING FIRM:	DESIGNER:	EMPLOYER:	PROJECT NAME:	SCALE
			NEMORANGO ENGINEERING (Pty) Ltd CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : fakatavi@nemorango.co.za	NAME F CORDEWENER SIGNATURE ENGINEER: NAME T.RAPHALALANI SIGNATURE	MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL 015 519 3000	CONSTRUCTION OF DZANANI TAXI RANK DRAWING NAME: ELECTRICAL CHART LAYOUT PLAN	1.1
OCTOBER 2022	FOR TENDER						
DATE	AMENDMENTS					PROJECT No 94 OF 2022 NEM/09-2022	Rev No 0 NCE 013



		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : takalani@nemorango.co.za	DESIGNER: NAME: SH NTULI SIGNATURE: ENGINEER: NAME: TRAPNALALANI SIGNATURE:	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: PLATFORM EARTHWORKS	1.1	NEM/09-2022	NCE 014
DATE	AMENDMENTS							

SETTING OUT POINTS
Lo. xx (WGS 84)

POINT	Y	X	Z
5	98 736.046	2 533 612.741	817.669
6	98 734.179	2 533 612.043	817.693
7	98 732.190	2 533 611.930	817.700
8	98 730.256	2 533 612.411	817.689
9	98 728.552	2 533 613.443	817.661
10	98 727.230	2 533 614.933	817.619
11	98 726.408	2 533 616.749	817.567
12	98 726.183	2 533 617.980	817.531
13	98 725.471	2 533 622.929	817.385
14	98 724.760	2 533 627.878	817.239
15	98 724.048	2 533 632.827	817.093
16	98 723.938	2 533 633.591	817.071
17	98 722.480	2 533 638.374	816.931
18	98 721.023	2 533 643.157	816.792
19	98 719.565	2 533 647.940	816.652
20	98 718.107	2 533 652.722	816.513
21	98 716.649	2 533 657.505	816.373
22	98 715.192	2 533 662.288	816.234
23	98 713.734	2 533 667.071	816.094
24	98 712.276	2 533 671.854	815.955
25	98 710.819	2 533 676.636	815.815
26	98 710.177	2 533 678.743	815.754
27	98 709.512	2 533 680.627	815.699
28	98 709.130	2 533 682.589	815.642
29	98 709.037	2 533 684.585	815.582
30	98 709.237	2 533 686.573	815.518
31	98 709.725	2 533 688.511	815.447
32	98 710.489	2 533 690.357	815.376
33	98 711.515	2 533 692.072	815.308
34	98 712.780	2 533 693.618	815.268

SETTING OUT POINTS
Lo. xx (WGS 84)

POINT	Y	X	Z
35	98 714.257	2 533 694.984	815.225
36	98 715.915	2 533 696.080	815.185
37	98 716.579	2 533 696.436	815.170
38	98 720.984	2 533 698.783	815.071
39	98 725.409	2 533 701.130	814.971
40	98 729.824	2 533 703.477	814.872
41	98 734.239	2 533 705.824	814.773
42	98 738.654	2 533 708.171	814.674
43	98 743.069	2 533 710.517	814.575
44	98 747.484	2 533 712.864	814.721
45	98 751.899	2 533 715.211	814.886
46	98 753.903	2 533 716.276	814.961
47	98 758.091	2 533 719.007	815.128
48	98 762.280	2 533 721.738	815.296
49	98 766.469	2 533 724.468	815.464
50	98 770.657	2 533 727.199	815.631
51	98 774.846	2 533 729.929	815.799
52	98 779.313	2 533 732.544	815.971
53	98 779.313	2 533 732.544	815.971
54	98 781.216	2 533 733.150	816.033
55	98 783.197	2 533 733.408	816.090
56	98 785.192	2 533 733.304	816.138
57	98 787.136	2 533 732.848	816.164
58	98 788.968	2 533 732.051	816.182
59	98 790.628	2 533 730.941	816.193
60	98 792.063	2 533 729.551	816.183
61	98 792.860	2 533 728.794	816.176
62	98 795.791	2 533 724.898	816.143
63	98 798.822	2 533 720.998	816.111
64	98 802.053	2 533 717.099	816.078

SETTING OUT POINTS
Lo. xx (WGS 84)

POINT	Y	X	Z
65	98 805.184	2 533 713.201	816.045
66	98 808.315	2 533 709.302	816.012
67	98 810.166	2 533 706.997	815.993
68	98 811.343	2 533 705.381	815.977
69	98 812.346	2 533 703.652	815.954
70	98 813.163	2 533 701.826	815.926
71	98 813.787	2 533 699.928	815.892
72	98 814.210	2 533 697.974	815.852
73	98 814.427	2 533 695.987	815.807
74	98 814.437	2 533 693.988	815.758
75	98 814.239	2 533 691.999	815.723
76	98 813.836	2 533 690.041	815.697
77	98 813.231	2 533 688.135	815.668
78	98 812.431	2 533 686.303	815.635
79	98 811.446	2 533 684.564	815.600
80	98 810.285	2 533 682.937	815.563
81	98 808.961	2 533 681.439	815.524
82	98 807.488	2 533 680.086	815.484
83	98 805.496	2 533 677.755	815.425
84	98 801.997	2 533 674.182	815.475
85	98 798.499	2 533 670.609	815.606
86	98 795.001	2 533 667.037	815.736
87	98 791.503	2 533 663.464	815.867
88	98 788.005	2 533 659.891	815.998
89	98 784.507	2 533 656.318	816.129
90	98 781.598	2 533 653.347	816.237
91	98 778.101	2 533 649.774	816.368
92	98 774.604	2 533 646.201	816.499
93	98 771.106	2 533 642.628	816.629
94	98 767.609	2 533 639.054	816.760

SETTING OUT POINTS
Lo. xx (WGS 84)

POINT	Y	X	Z
95	98 764.111	2 533 635.481	816.891
96	98 760.614	2 533 631.908	817.021
97	98 760.601	2 533 631.894	817.022
98	98 756.870	2 533 628.565	817.146
99	98 753.139	2 533 625.236	817.266
100	98 751.262	2 533 623.561	817.319
101	98 747.187	2 533 620.663	817.413
102	98 743.112	2 533 617.766	817.506
103	98 739.037	2 533 614.868	817.600

Volume Calculations

Type	Required (m3)	Available (m3)
Cut	757	537
Fill	545	545
Net	168	118

OCTOBER 2022	FOR TENDER	
DATE	AMENDMENTS	

CONSULTING FIRM:
NEMORANGO CONSULTING ENGINEERS
CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS
(015) 295 2023 # FAX : (015) 295 2024
19A HANS VAN RENSBURG POLOKWANE 0699
e-mail : tshilan[redacted]go.co.za

DESIGNER:
NAME: SH NTULI
SIGNATURE:

ENGINEER:
NAME: T RAPHALALANI
SIGNATURE:

EMPLOYER:
MAKHADO LOCAL MUNICIPALITY
CIVIC CENTRE CORNER KROGH & ERASMUS STREET
MAKHADO
0920
TEL: 015 519 3000

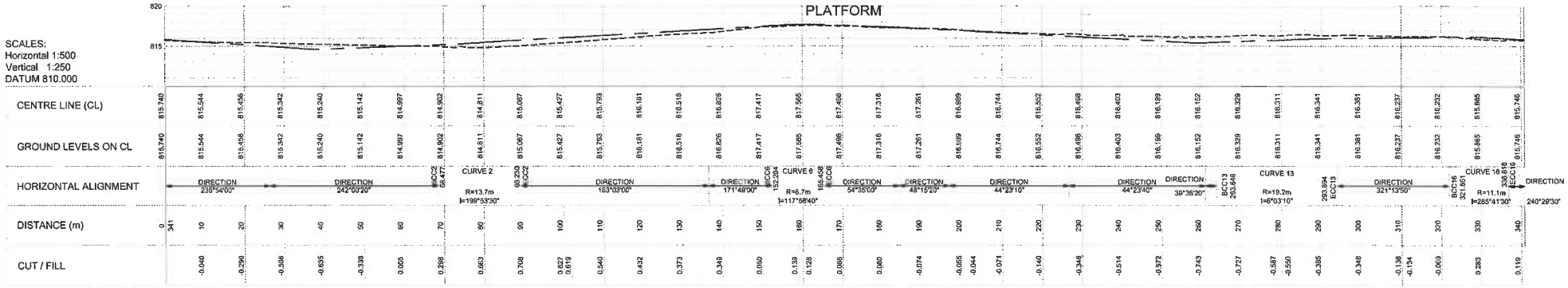
PROJECT NAME:
CONSTRUCTION OF DZANANI TAXI RANK

DRAWING NAME:
PLATFORM EARTHWORKS
SETTING OUT DATA

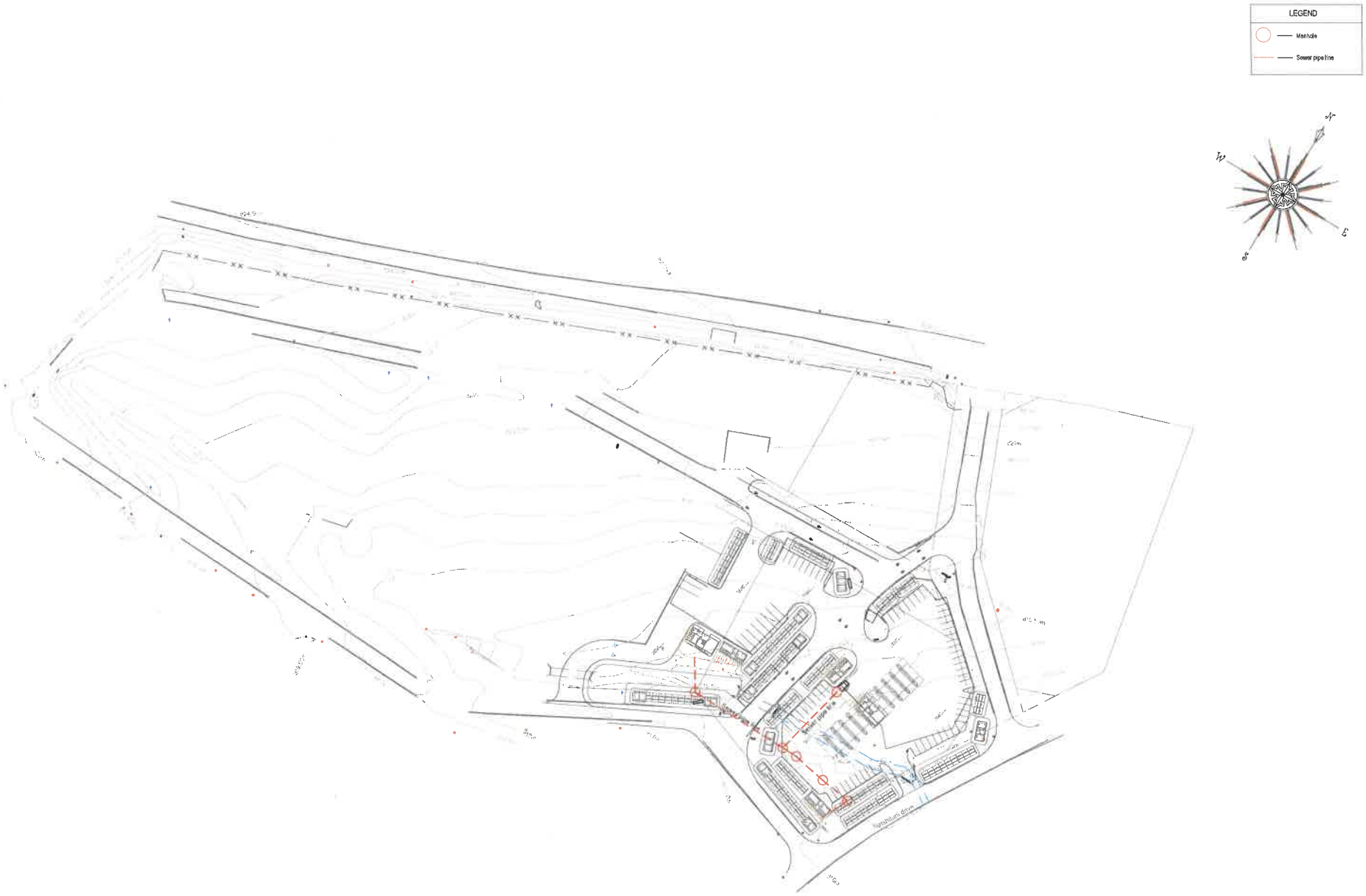
SCALE
1:200

PROJECT No
94 OF 2022
NEM/09-2022

Rev No
0
NCE 015



		CONSULTING FIRM: ENGELANGO CIVIL ENGINEERS HYDROGEOLOGISTS & PROJECT MANAGERS [B](015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : takalani@mmorango.co.za	DESIGNER: NAME: SH NTULI SIGNATURE: ENGINEER: NAME: T RAPHALALANI SIGNATURE:	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: PLATFORM EARTHWORKS LONGITUDINAL SECTION	1.1	NEM/09-2022	NCE 016
DATE	AMENDMENTS							



		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2923 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : lakalmn@nemorango.co.za	DESIGNER: NAME SH NTULI SIGNATURE ENGINEER: NAME T RAPHAL ALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: SEWER PIPE NETWORK LAYOUT PLAN	1.1	NEM/09-2022	NCE 017
DATE	AMENDMENTS							

COORDINATE LIST

Lo 29

sewer network		
MH No.	YLo	XLo
Constant:	90000.000	2000000.000
21	8836.116	533669.549
22	8799.471	533693.171
23	8793.801	533696.826
24	8782.769	533706.484
25	8772.467	533715.503
36	8742.601	533703.099
37	8773.000	533700.682
48	8738.618	533616.566
49	8756.226	533650.669
410	8776.623	533669.673

PIPE DATA LIST

MH – MH	Distance	Diam.
sewer network	(m)	(mm)
21 – 22	43.599	
22 – 23	6.746	
23 – 24	14.662	
24 – 25	13.693	
36 – 37	30.495	
37 – 24	11.362	
48 – 49	38.380	
49 – 410	27.878	
410 – 22	32.775	

			CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : takalani@nemorango.co.za	DESIGNER: NAME: SH NTULI SIGNATURE: ENGINEER: NAME: T RAPHALALANI SIGNATURE:	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: SEWER PIPE NETWORK SETTING OUT DATA	1.1	NEM/09-2022	NCE 018
DATE	AMENDMENTS								

EGL

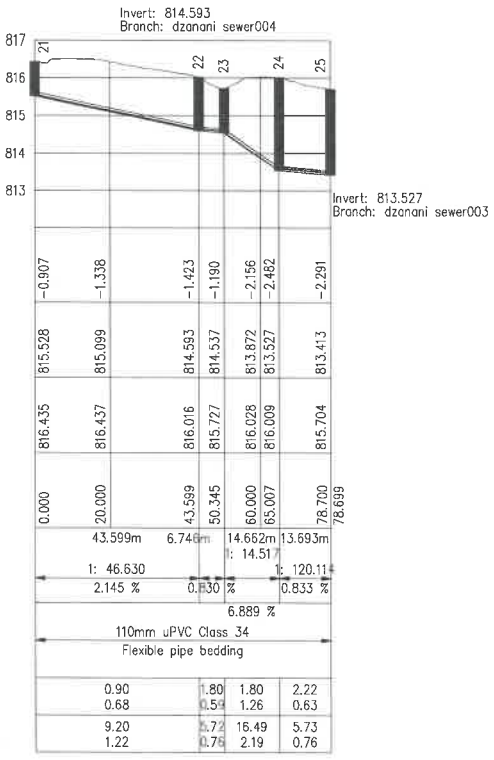
HGL

PIPE

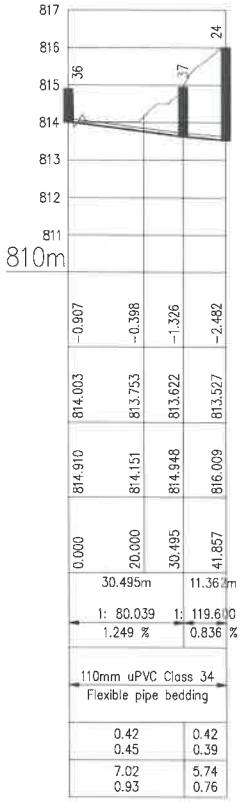
NGL

SCALES:
Horizontal 1:1000
Vertical 1:100

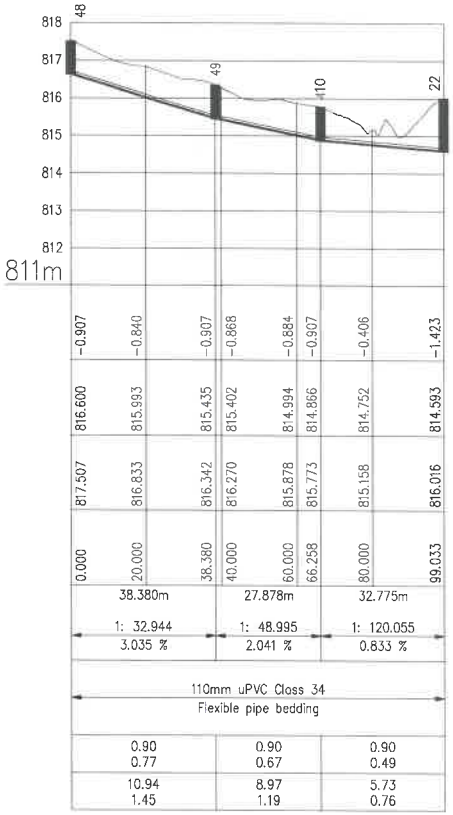
Datum : 812m



21 – 25
Branch: dzanani sewer002

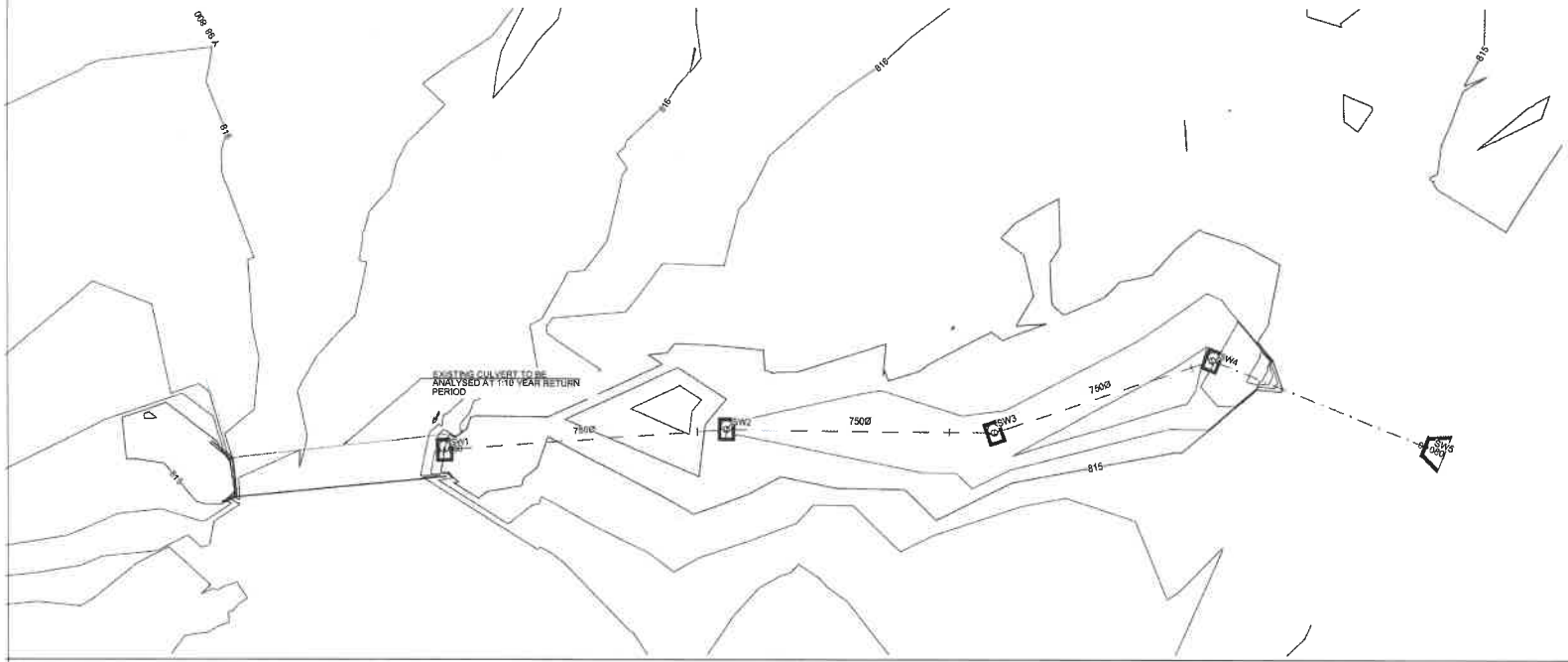


36 – 24
Branch: dzanani sewer003

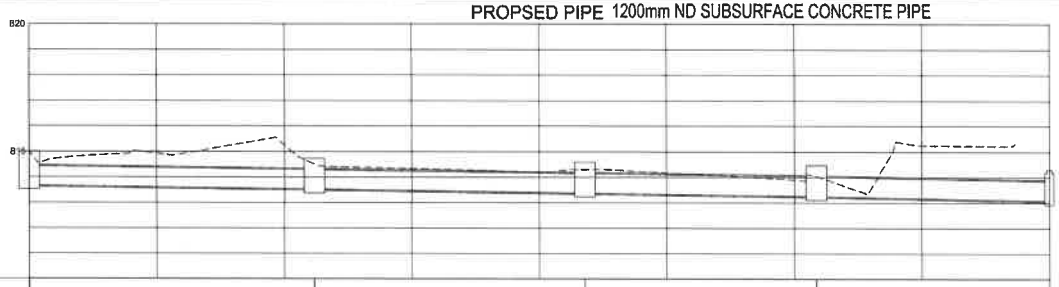


48 – 22
Branch: dzanani sewer004

		CONSULTING FIRM: NEMORANGO CONSULTING (PTY) LTD CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail: lskabini@nemorango.co.za	DESIGNER: NAME: SH NTULI SIGNATURE: ENGINEER: NAME: T RAPHALALANI SIGNATURE:	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: SEWER PIPE NETWORK LONGITUDINAL SECTION	1.1	NEM/09-2022	NCE 019
DATE	AMENDMENTS							



PROPSED PIPE 1200mm ND SUBSURFACE CONCRETE PIPE



SCALES:
Horizontal 1:200
Vertical 1:100
DATUM 810.000

NODE & LINK		SW1	Ø1200	SW2	Ø1200	SW3	Ø1200	SW4	Ø1200	SW5
DISTANCE (m)		0.000		22.345		43.589		61.716		80.000
GROUND LEVEL		815.000		814.500		814.283		814.042		
DEPTH TO INVERT		1.330		0.980 0.919		0.904		0.764 0.763		
PIPE INVERT LEVEL		813.670		813.521 813.581		813.379 813.379		813.258 813.279		813.079
SLOPE / LENGTH			0.67% 1:150 22.35m		0.67% 1:150 21.24m		0.67% 1:150 18.13m		0.98% 1:102 18.29m	
HYDRAULICS	DESIGN Q(l/s) V(m/s)		0.67 2.0		0.67 2.0		0.67 2.0		0.67 2.0	
	MAX. (0.67Q) Q(l/s) V(m/s)		0.80 2.1		0.80 2.1		0.80 2.1		0.80 2.1	

			CONSULTING FIRM:	DESIGNER:	EMPLOYER:	PROJECT NAME:	SCALE
			MEMORANGO CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2020 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : lekaleni@memorango.co.za	NAME S MZWEKOLO SIGNATURE ENGINEER: NAME T RAPHAL KLANI SIGNATURE	MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	CONSTRUCTION OF DZANANI TAXI RANK	PROJECT No 94 OF 2022
OCTOBER 2022	FOR TENDER					DRAWING NAME: 1200mm ND SUBSURFACE CONCRETE PIPE LAYOUT	1.1
DATE	AMENDMENTS						NEM/09-2022

Rev No 0

NCE 020

		CONSULTING FIRM: NEMORANGO CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS. (015) 295 2023 FAX - (015) 295 2024, 10A HANS VAN RENSBURG POLOKWANE 0699, e-mail : takalani@nemorango.co.za	DESIGNER: NAME SH NTULI, SIGNATURE; ENGINEER: NAME TRAPHALALANI, SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY, CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920, TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: STORMWATER CHANNEL HORIZONTAL LAYOUT	1.1	NEM/09-2022	NCE 021
DATE	AMENDMENTS							

SETTING OUT DATA-CHANNEL

NAME	CH	Y	X	DETAILS
START	0.000	99 103.847	2 533 533.852	L 172.897m
BCC2 PI2 ECC2	277.010 282.696	98 865.941 98 863.096 98 860.265	2 533 659.622 2 533 659.620 2 533 659.906	R 56.120m DA 5°48'20" TL 2.846m AL 5.686m
BCC3 PI3 ECC3	304.705 310.648	98 838.368 98 835.389 98 832.634	2 533 662.121 2 533 662.422 2 533 663.594	R 19.729m DA 17°15'30" TL 2.994m AL 5.943m

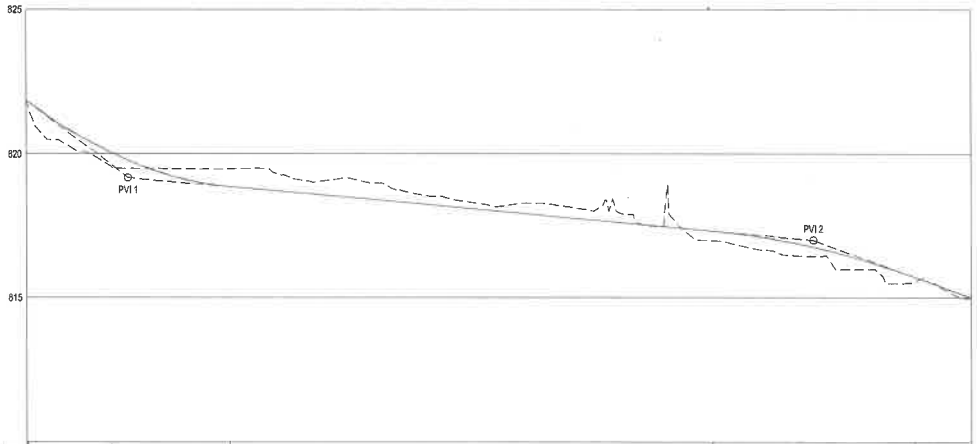
		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : hhelani@nemorango.co.za	DESIGNER: NAME SH NTULI SIGNATURE ENGINEER: NAME T RAPHALALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROON & ERASMUS STREET MAKHADO 0920 TEL 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: STORMWATER CHANNEL SETTING OUT DATA	1.1	NEM/09-2022	NCE 022
DATE	AMENDMENTS							

COORDINATE LIST

Lo 29

Dzanani Network 1		
	YLo	XLo
	90000.000	2000000.000
	8802.391	533677.931
	8774.263	533694.677
	8754.714	533698.326
	8744.715	533706.948

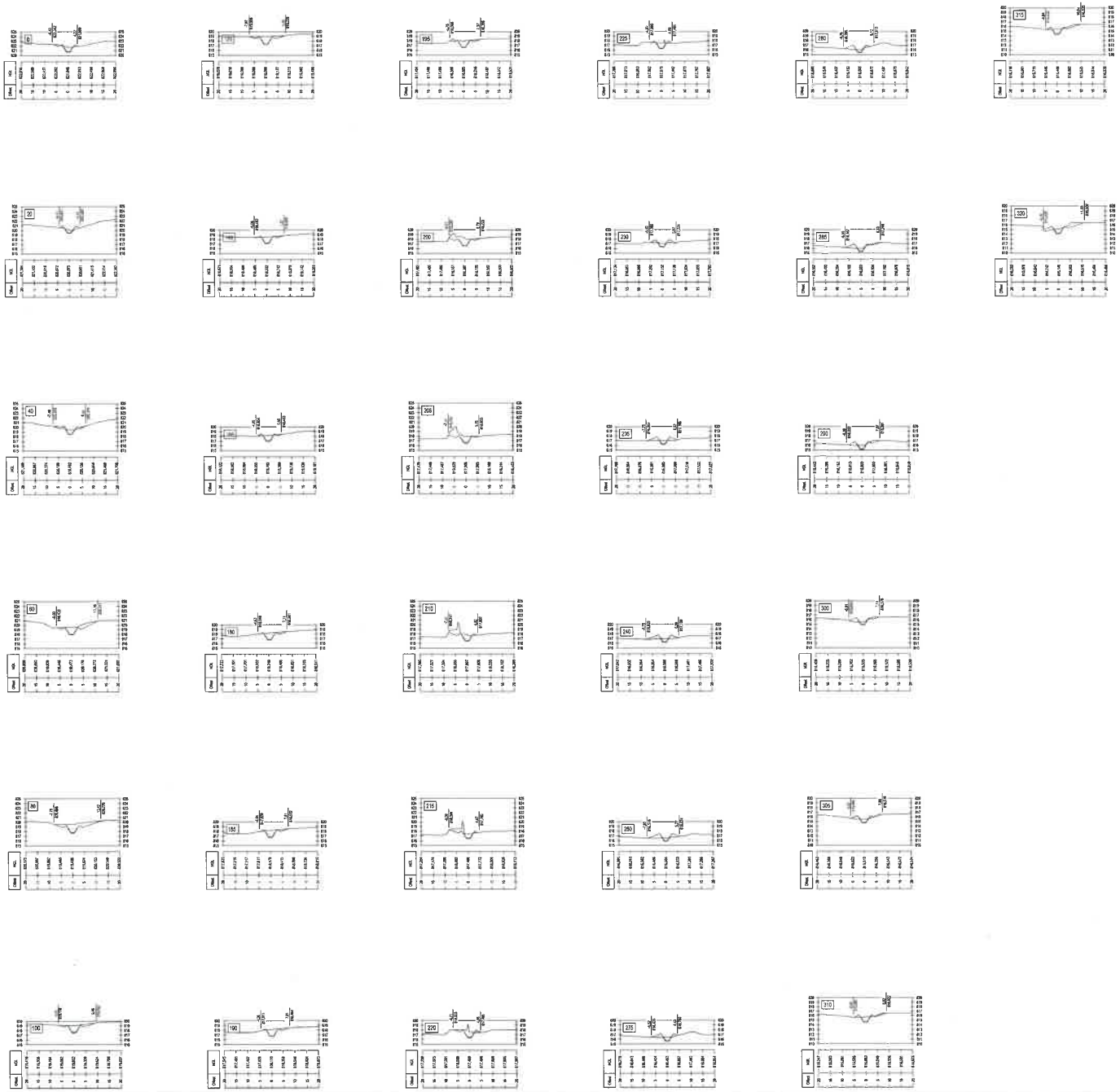
			CONSULTING FIRM:	DESIGNER:	EMPLOYER:	PROJECT NAME:	SCALE	PROJECT No / Rev No
			MZHORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 3023 FAX - (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : takalani@mzhorango.co.za	NAME SH NTULI SIGNATURE ENGINEER: NAME T RAPHAL KLAAS SIGNATURE	MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL 015 519 3000	CONSTRUCTION OF DZANANI TAXI RANK		94 OF 2022 / 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: STORMWATER CHANNEL GABIONS AND MATTRESSES	1.1	NEM/09-2022 / NCE 023
DATE	AMENDMENTS							



SCALES:
Horizontal 1:1000
Vertical 1:100

DATUM 810.000

| | | |



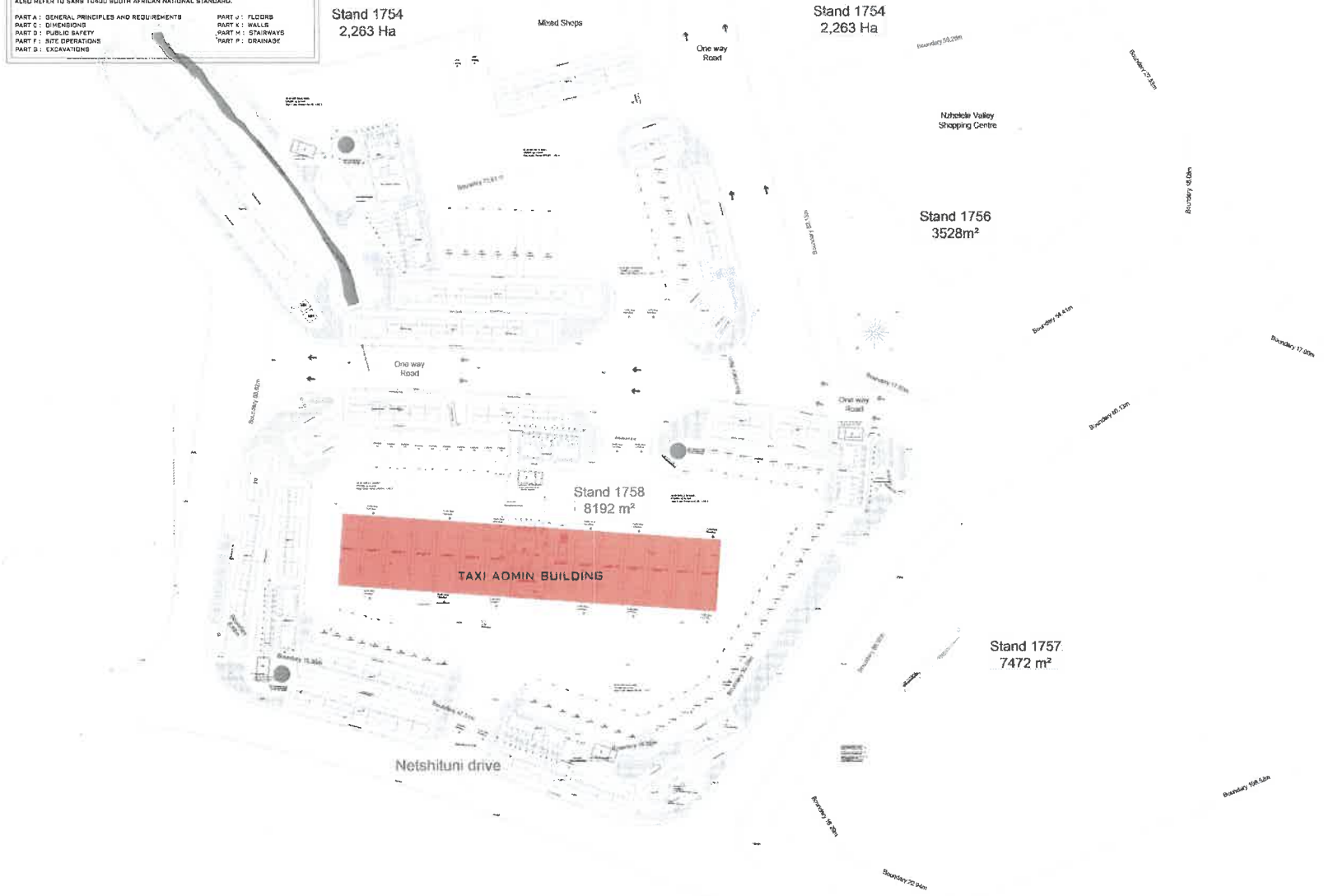
		CONSULTING FIRM: NEMORANGO CIVIL ENGINEERS HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 104 HANS VAN RENSBURG POLOKWANE 0699 e-mail : tshilaini@nemorango.co.za	DESIGNER: NAME SH NTULI SIGNATURE ENGINEER: NAME TRAPHALALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK DRAWING NAME: STORMWATER CHANNEL CROSS SECTION	SCALE 1.1	PROJECT No 94 OF 2022 NEM/09-2022	Rev No 0 NCE 025
OCTOBER 2022	FOR TENDER							
DATE	AMENDMENTS							

NOTE:

PLEASE BE ADVISED! ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECTS DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY
BESTCIV ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

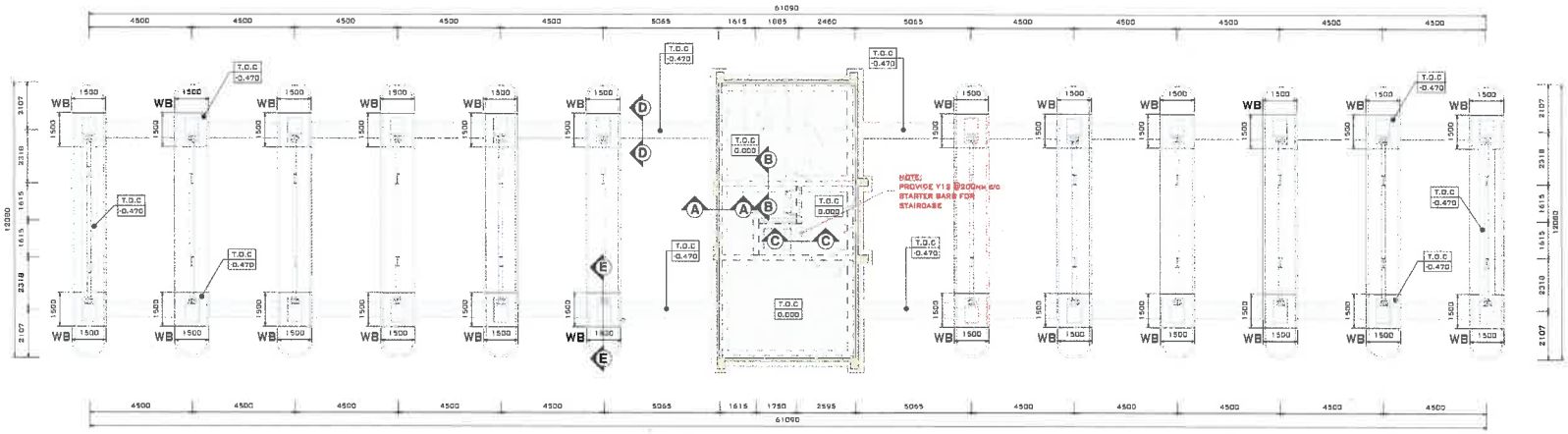
ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD.

PART A : GENERAL PRINCIPLES AND REQUIREMENTS
PART C : DIMENSIONS
PART D : PUBLIC SAFETY
PART F : SITE OPERATIONS
PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

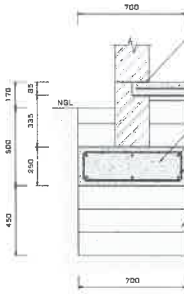


PLAN LAYOUT : LOCATION PLAN
1 : 350

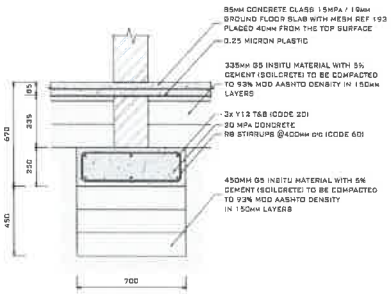
		CONSULTING FIRM: NETHORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : takalani@nethorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H F.OUME SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: TAXI RANK ADMIN BUILDING AND LOADING BAY LOCATION PLAN	1.1	NEM/09-2022	NCE 026
DATE	AMENDMENTS							



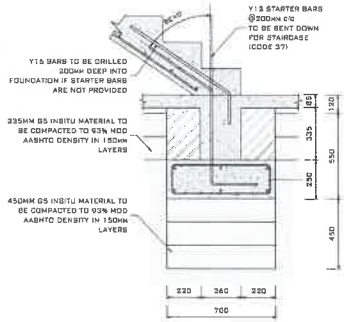
PLAN LAYOUT : GROUNDFLOOR



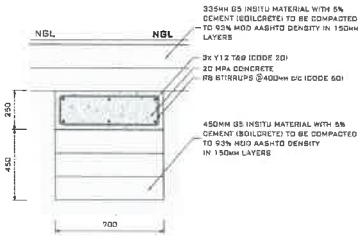
SECTION A-A (WA)



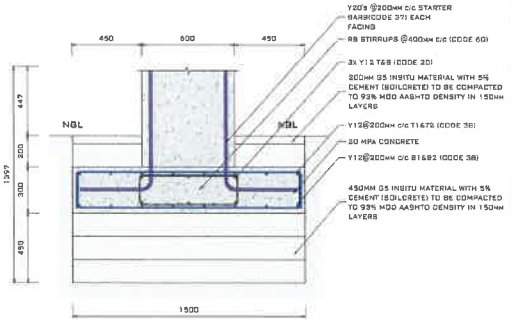
SECTION B-B (WA)



SECTION C-C (WA)



SECTION D-D (WA)



PADFOOTING WITH R.C CULUMN (WB)
SECTION E-E (WB)

CONCRETE

BEAM SCHEDULE - STRIP FOOTINGS

TYPE	TOTAL LENGTH	TOTAL VOLUME
700x250mm R.C. STRIP FOOTING	185.85 m	24.92 M³
	185.85 m	24.92 M³

FLOOR SCHEDULE (AREA & VOLUME) - STRIPFOOTING

TYPE COMMENTS	TYPE	DESCRIPTION	HEIGHT	TOTAL AREA	TOTAL VOLUME
STRIP FOOTING	85MM THK. SURFACE BED	Mesh Ref 193	5.4	72.00 M²	5.12 M³
			5.4	72.00 M²	5.12 M³

COLUMN SCHEDULE (CONCRETE)

TYPE	QTY.	TOTAL LENGTH
600x1085mm R.C. COLUMN	24	11.28 m
		11.28 m

FOUNDATION SCHEDULE (TYPE & VOLUME)

MARK	TYPE	TOTAL VOLUME
Pad Footings		
WB	1500x1500x300mm - R.C. FOOTING	16.20 M³
		16.20 M³
		16.20 M³

REBAR

REINFORCING SCHEDULE - STRIP FOOTINGS (STIRRUPS)

BEAM TYPE	REBAR NO.	TYPE	SHAPE CODE	QTY.	A	B	BAR LENGTH	REBAR WEIGHT PER METER	TOTAL WEIGHT
STRIP FOOTING 700x250	Q3	R8	60	481	192	642	1.38 M	0.395 KG/M	261.81 KG
									261.81 KG

REINFORCING SCHEDULE - STRIP FOOTINGS (STRAIGHT LENGTHS)

BEAM TYPE	TYPE	SHAPE CODE	NO. OFF 6M REBAR LENGTHS	TOTAL WEIGHT
STRIP FOOTING 700x250	Y12 (B7)	20	223.32	1189.85 KG
			223.32	1189.85 KG

REINFORCING SCHEDULE - PAD FOOTING

REBAR NO.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	TOTAL WEIGHT
PAD FOOTINGS							
Q1	864	Y12	20	1900 MM	250 MM	1450 MM	1457.74 KG
	864						1457.74 KG

REINFORCING SCHEDULE - STARTER BARS

REBAR NO.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	TOTAL WEIGHT
STARTER BARS							
Q1	480	Y20	37	1550 MM	1200 MM	500 MM	1956.24 KG
	480						1956.24 KG

REINFORCING SCHEDULE - STAIRCASE

REBAR NO.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	TOTAL WEIGHT
STAIRCASE							
Q1	6	Y12	37	1875 MM	1200 MM	500 MM	8.92 KG
	6						8.92 KG

PLEASE NOTE:
ALL FOUNDATIONS TO BE (WA)
UNLESS SHOWN OTHERWISE

OCTOBER 2022	FOR TENDER	
DATE	AMENDMENTS	

CONSULTING FIRM:
NEMOKANGO CONSULTING ENGINEERS
CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS
(015) 295 2023 FAX : (015) 295 2024
16A HANS VAN RENSBURG
POLOKWANE
0699
e-mail : tshilani@nemorango.co.za

DESIGNER:
NAME: H SWANEPOEL
SIGNATURE:

ENGINEER:
NAME: H POURIE
SIGNATURE:

EMPLOYER:
MAKHADO LOCAL MUNICIPALITY
CIVIC CENTRE CORNER KROGH & ERASMUS STREET
MAKHADO
0920
TEL: 015 519 3000

PROJECT NAME:
CONSTRUCTION OF DZANANI TAXI RANK

SCALE: 1.1

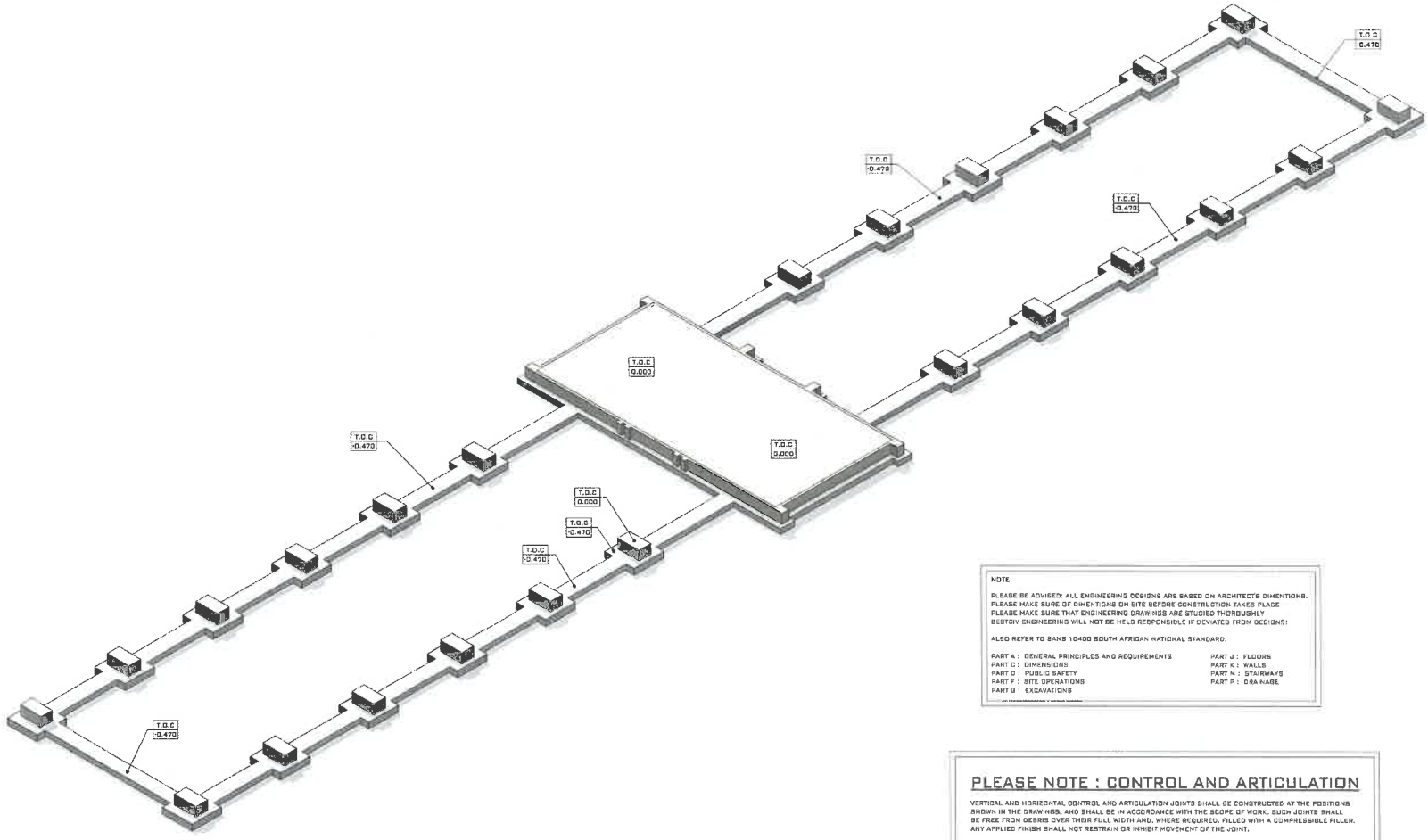
PROJECT No: 94 OF 2022

Rev No: 0

DRAWING NAME:
TAXI RANK ADMIN BUILDING AND LOADING BAY RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS

NEM/09-2022

NCE 027



3D VIEW : LEVELS (T.O.C)

NOTE:

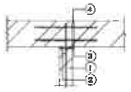
PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECTS DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY
BESTOV ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD.

PART A : GENERAL PRINCIPLES AND REQUIREMENTS
PART C : DIMENSIONS
PART D : PUBLIC SAFETY
PART F : SITE OPERATIONS
PART J : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

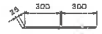
PLEASE NOTE : CONTROL AND ARTICULATION

VERTICAL AND HORIZONTAL CONTROL AND ARTICULATION JOINTS SHALL BE CONSTRUCTED AT THE POSITIONS SHOWN IN THE DRAWINGS, AND SHALL BE IN ACCORDANCE WITH THE SCOPE OF WORK. SUCH JOINTS SHALL BE FREE FROM DEBRIS OVER THEIR FULL WIDTH AND, WHERE REQUIRED, FILLED WITH A COMPRESSIBLE FILLER. ANY APPLIED FINISH SHALL NOT RESTRAIN OR INHIBIT MOVEMENT OF THE JOINT.



STRAIGHT AND INTERSECTION JOINT

1) 1.2MM THICK GALVANISED HOOP IRON CONCERTINA TIES EVERY 5 LAYERS
2) POLYCORD STRIPS Ø15MM FOR 10MM JOINTS FROM SONDOR (EITHER SIDE OF WALL)
3) UV RESISTANT POLYURETHANE SEALANT PCPU FROM DEN BRAVEN 10MM x 10MM PAINTED WITH ELASTIC PAINT (EITHER SIDE OF WALL)
4) NOTES : JOINTS TO BE CLEANED FROM MORTAR



TYPICAL DETAIL FOR CONCERTINA TIES

PLEASE NOTE:

ALL STRAIGHT LENGTH REBAR IN BEAMS (CODE 20) SHOULD BE SPLICED BY - 50 * DIAMETER.

TYPE	WIDTH	DEPTH
WA	700	250
WB	1500x1500	300

FOUNDATION : LEGEND

NOTES:

1. ASSUMED BEARING CAPACITY = 100kPa.
2. UNLESS SPECIFICALLY INDICATED OTHERWISE ALL WALLS AND COLUMNS ARE PLACED CENTRALLY ON FOUNDATIONS.
3. ALL CONCRETE TO BE VIBRATED.
4. UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL DIMENSIONS ARE REFERENCED FROM GRIDLINES & TO CENTRELINES OF WALLS ABOVE SURFACE BED LEVEL.
5. LEVELS (TOC) REFER TO TOP OF CONCRETE.

		CONSULTING FIRM: NEMOHANGO CIVILAN ENGINEERS (PTY) LTD CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS Tel (015) 295 2023 FAX (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tshilan@nemohango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H F JURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: TAXI RANK ADMIN BUILDING AND LOADING BAY 3D VIEW AND NOTES	1.1	NEM/09-2022	NCE 028
DATE	AMENDMENTS							

NOTE:

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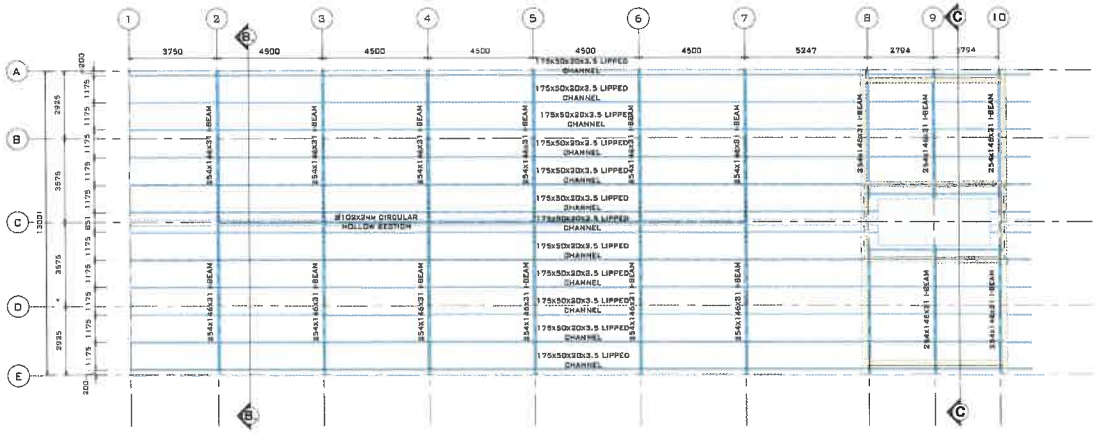
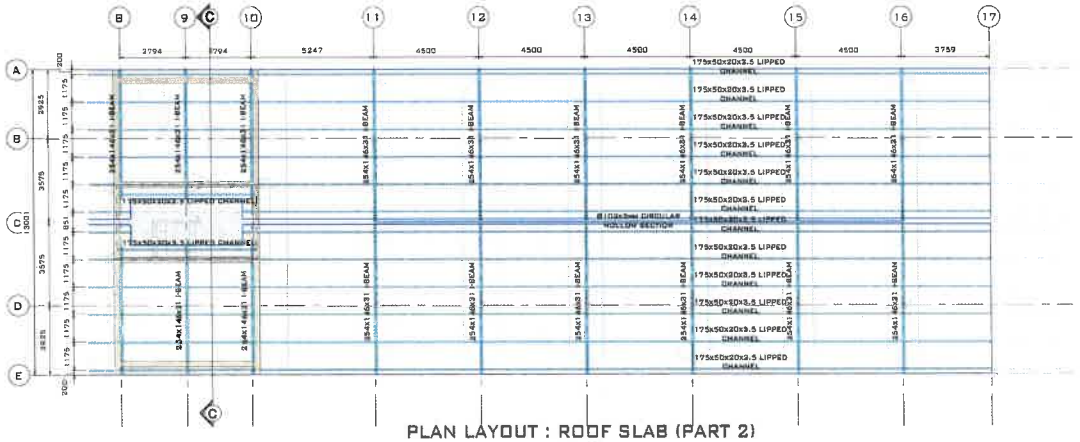
PART M : STAIRWAYS
PART P : DRAINAGE

BEAM LOAD BEARING NOTE:
ALL BEAMS TO BE AT LEAST 220MM ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.



PLAN LAYOUT : ROOF SLAB
1 : 100



PLAN LAYOUT : ROOF SLAB (PART 2)
1 : 100

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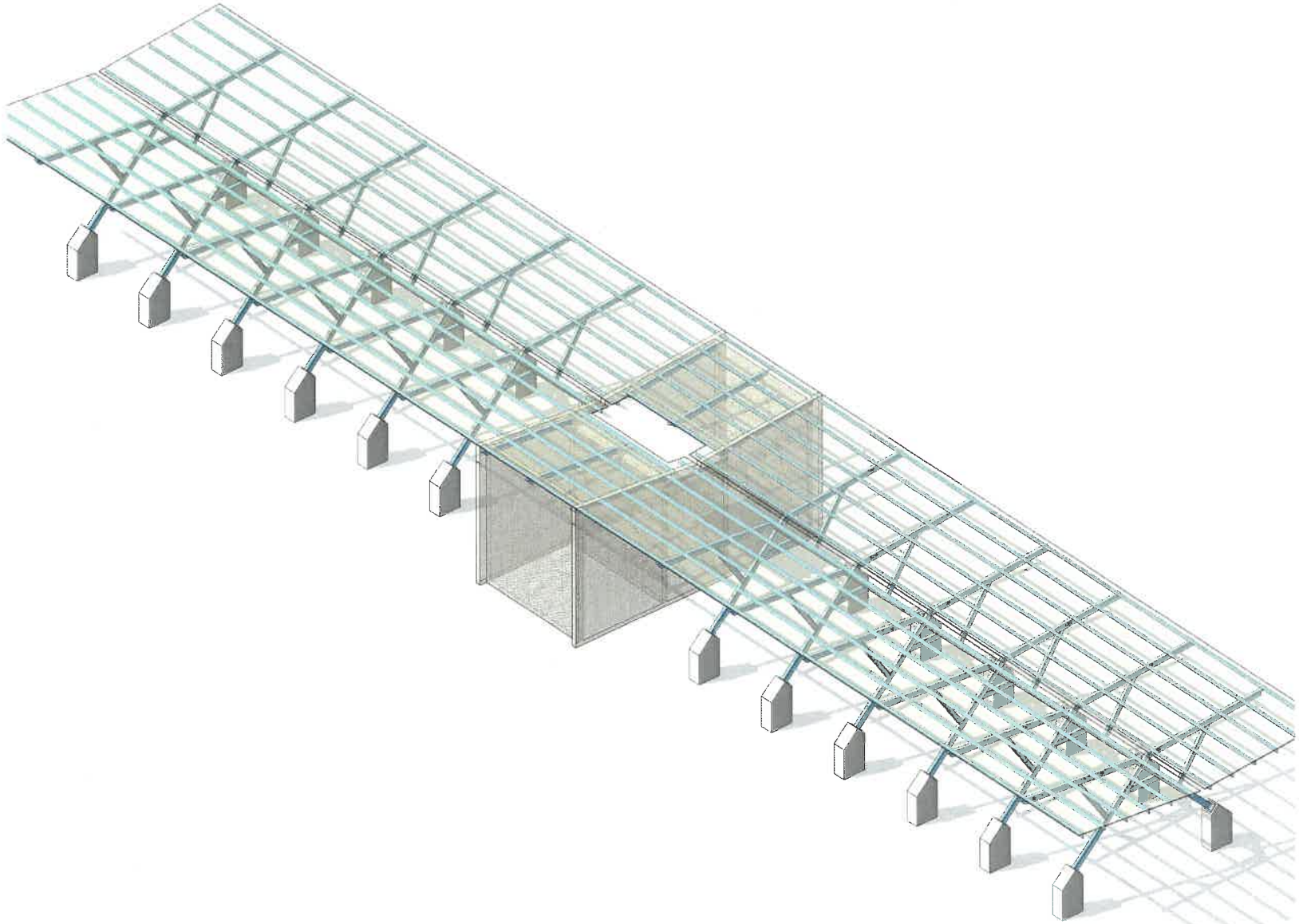
OCTOBER 2022 DATE	FOR TENDER AMENDMENTS				DRAWING NAME: TAXI RANK LOADING BAY STEEL ROOF LAYOUT	1.1	NEM/09-2022	NCE 029

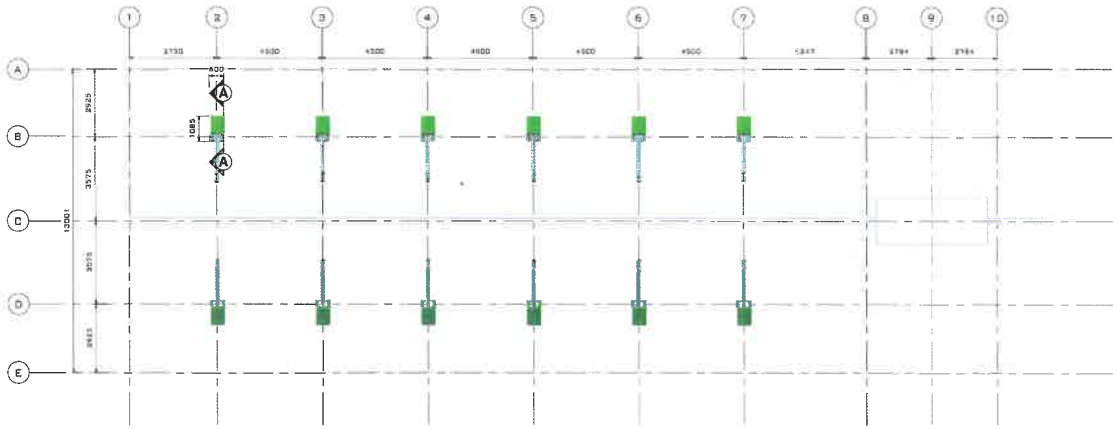


3D VIEW : MAIN STEEL STRUCTURE

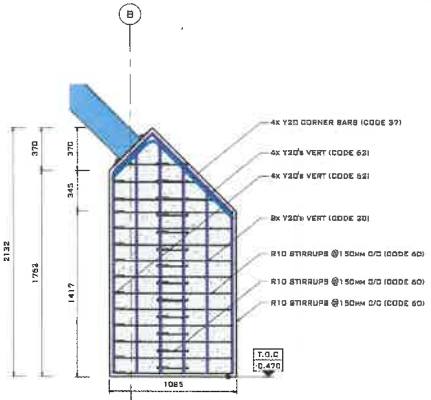
		CONSULTING FIRM: NEMORANGO ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 16A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tshaleni@nemorango.co.za	DESIGNER: NAME H.SWANEPOELI SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: TAXI RANK LOADING BAY 3D VIEWS	1.1	NEM/09-2022	NCE 030
DATE	AMENDMENTS							

PLEASE NOTE: IT IS THE RESPONSIBILITY OF THE CLIENT TO NOTIFY BESTDIV ENGINEERING AT EACH STAGE OF THE SUPER STRUCTURE, TO PERFORM AN INSPECTION ON ALL STEEL REINFORCING BEFORE CONCRETE IS POURED. IF THESE INSPECTIONS HAVE NOT BEEN DONE, BESTDIV ENGINEERING WILL NOT BE HELD LIABLE FOR THE CONCRETE ELEMENTS.

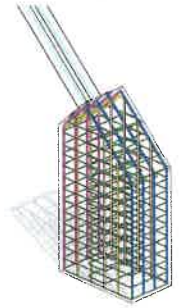
PLEASE NOTE: A COMPACTION TEST IS REQUIRED ON ALL GROUND MATTRESSES BEFORE ANY TRENCH WORK CAN COMMENCE. INSITU MATERIAL COMPACTED TO 93% MOD AASHTO. ALL TEST RESULTS MUST BE SUBMITTED TO OUR OFFICES.



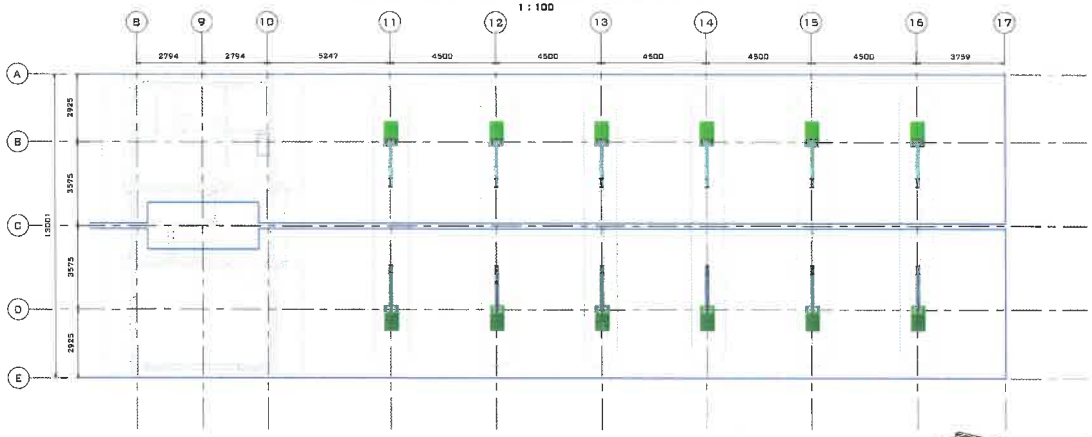
PLAN LAYOUT : GROUNDFLOOR (PART 1)
1 : 100



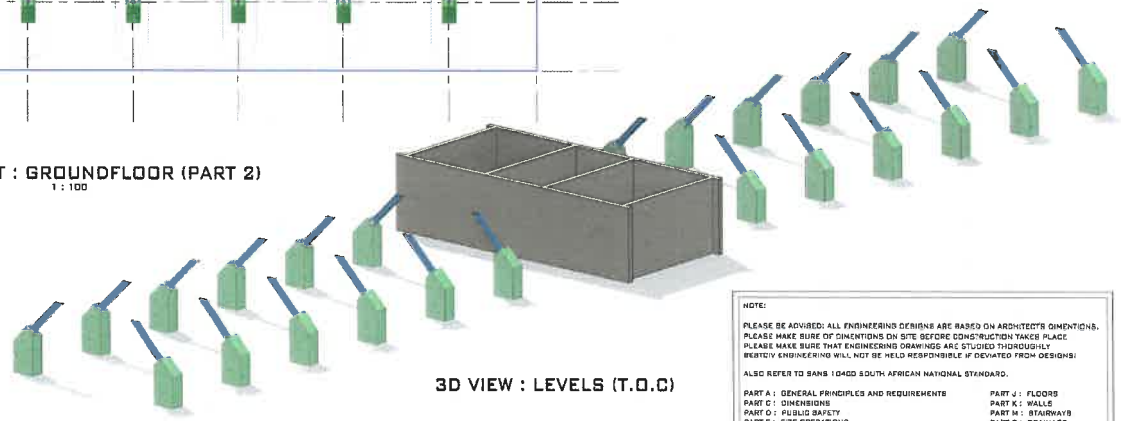
SECTION : A-A
1 : 20



3D VIEW : REINFORCING



PLAN LAYOUT : GROUNDFLOOR (PART 2)
1 : 100



3D VIEW : LEVELS (T.O.C)

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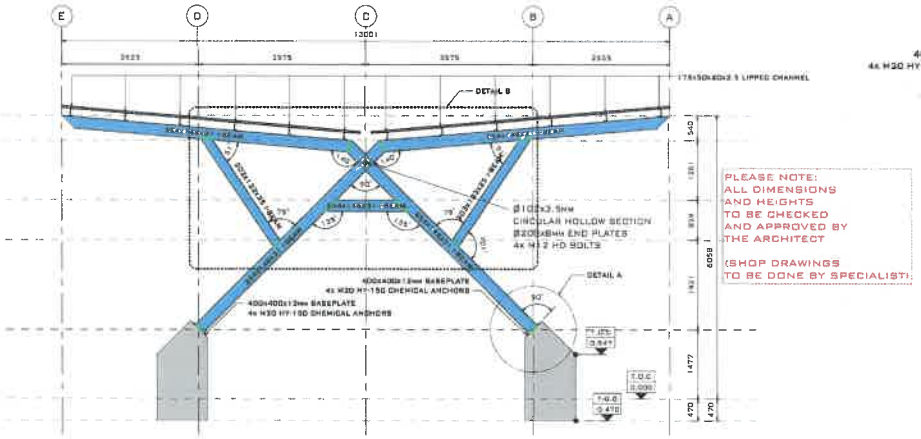
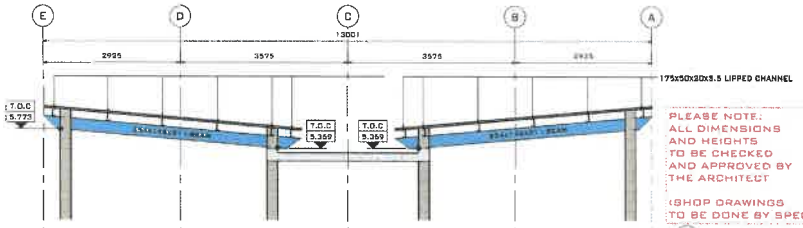
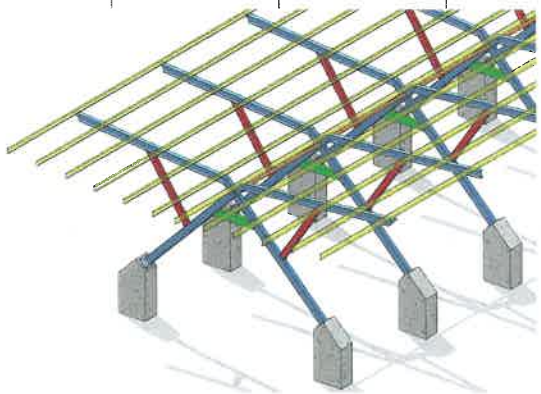
		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS /HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tasalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROCH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: TAXI RANK ADMIN BUILDING AND LOADING BAY RC COLUMNS	1.1	NEM/09-2022	NCE 031
DATE	AMENDMENTS							



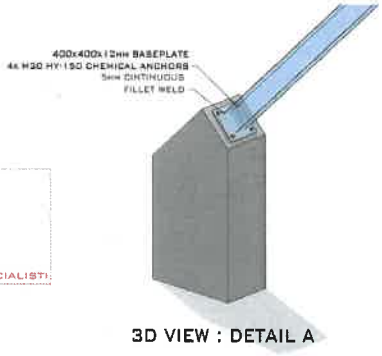
SECTION : B-B
1 : 50



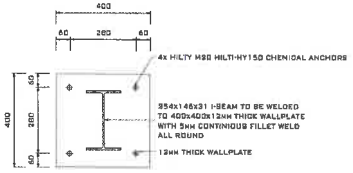
SECTION : C-C
1 : 50



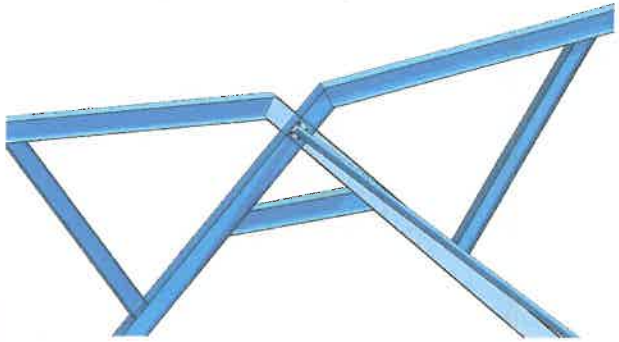
3D VIEW



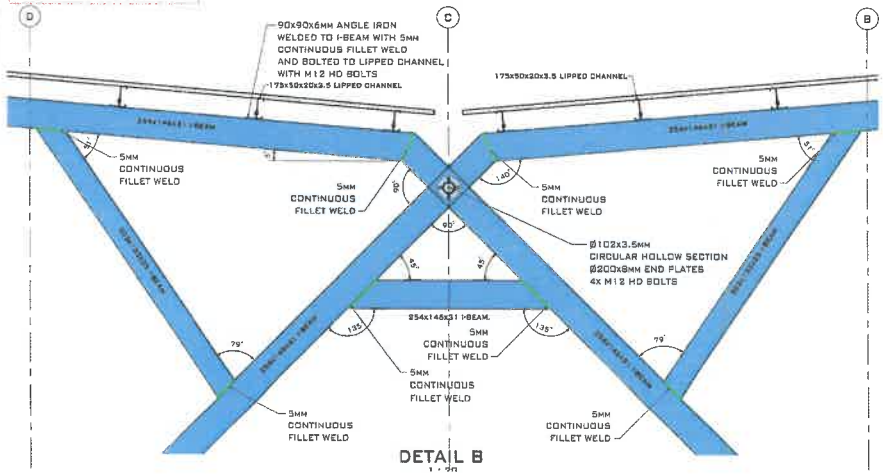
3D VIEW : DETAIL A



254x146x31 I-BEAM
400x400x12MM
THICK BASEPLATE



3D VIEW : DETAIL B



DETAIL B
1 : 20

		CONSULTING FIRM: NEMORANGO ENGINEERS KWEKWE CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2923 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : lukalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME HF-URE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0926 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022 DATE	FOR TENDER AMENDMENTS				DRAWING NAME: TAXI RANK LOADING BAYSTEEL ROOF SECTIONS AND DETAILS	1.1	NEM/09-2022	NCE 032

BEAM LOAD BEARING NOTE:
ALL BEAMS TO BE AT LEAST 220MM ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.

NOTE:

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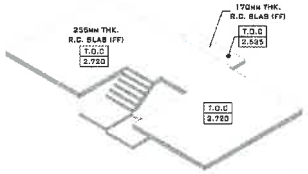
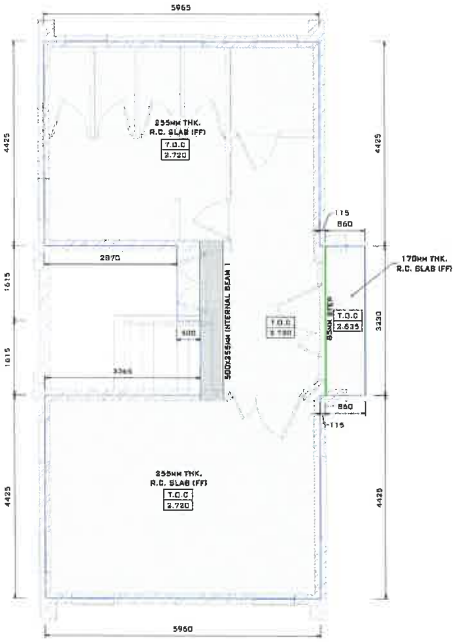
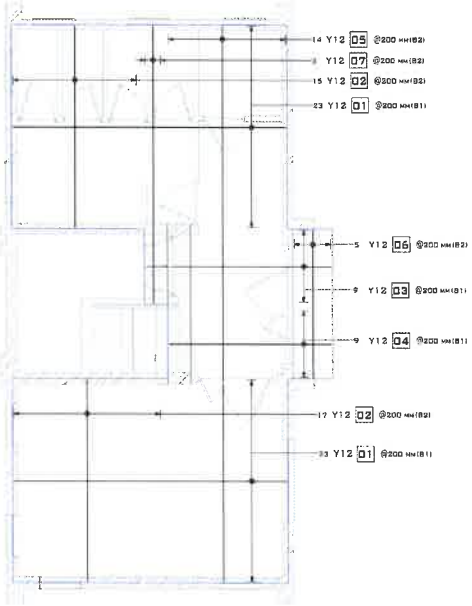


3D VIEW : LEVELS (T.O.C)

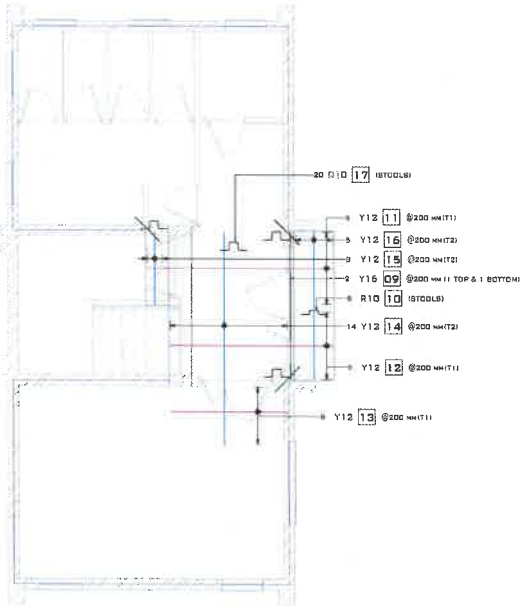


PLAN LAYOUT : FIRST FLOOR SLAB
1 : 50

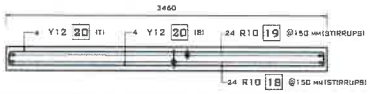
REBAR PLACEMENT NOTE:
T1 = HIGHEST OF TOP REBAR (PLACED 4TH)
T2 = SECOND HIGHEST OF TOP REBAR (PLACED 3RD)
B2 = SECOND LOWEST OF BOTTOM REBAR (PLACED 2ND)
B1 = LOWEST OF BOTTOM REBAR (PLACED 1ST)



PLAN LAYOUT : FIRST FLOOR SLAB BOTTOM REBAR



PLAN LAYOUT : FIRST FLOOR SLAB TOP REBAR



500x255MM INTERNAL BEAM 1

FLOOR SCHEDULE (AREA & VOLUME) - FIRST FLOOR

TYPE	TOTAL AREA	TOTAL VOLUME
170mm THK. R.C. SLAB (FF)	2.78 m²	0.47 m³
255mm THK. R.C. SLAB (FF)	62.33 m²	15.89 m³
	65.11 m²	16.37 m³

BEAM SCHEDULE - FIRST FLOOR (INTERNAL)

TYPE	TOTAL LENGTH	TOTAL VOLUME
500x255mm INTERNAL BEAM 1	3.46 m	0.44 m³
	3.46 m	0.44 m³

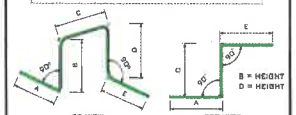
REINFORCING SCHEDULE - FIRST FLOOR

REBAR NO.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	C	D	E	TOTAL WEIGHT
(A) BOTTOM (FF)										
01	46	Y12	35	6100 MM	5900 MM	0 MM	0 MM	0 MM	0 MM	349.17 KG
02	32	Y12	35	4550 MM	4375 MM	0 MM	0 MM	0 MM	0 MM	199.39 KG
03	9	Y12	35	4200 MM	4025 MM	0 MM	0 MM	0 MM	0 MM	53.57 KG
04	9	Y12	35	3700 MM	3525 MM	0 MM	0 MM	0 MM	0 MM	39.57 KG
05	14	Y12	35	13300 MM	12925 MM	0 MM	0 MM	0 MM	0 MM	151.57 KG
06	5	Y12	35	3350 MM	3175 MM	0 MM	0 MM	0 MM	0 MM	14.87 KG
07	3	Y12	35	6175 MM	6000 MM	0 MM	0 MM	0 MM	0 MM	16.45 KG
(B) TOP (FF)										
08	6	Y16	20	790 MM	790 MM	0 MM	0 MM	0 MM	0 MM	7.11 KG
09	2	Y16	20	3175 MM	3175 MM	0 MM	0 MM	0 MM	0 MM	10.03 KG
10	8	R10	53	725 MM	200 MM	100 MM	200 MM	100 MM	200 MM	3.58 KG

REINFORCING SCHEDULE - FIRST FLOOR

REBAR NO.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	C	D	E	TOTAL WEIGHT
11	9	Y12	41	4050 MM	3075 MM	125 MM	875 MM	100 MM	75 MM	32.37 KG
12	9	Y12	41	3950 MM	2575 MM	125 MM	875 MM	100 MM	75 MM	28.37 KG
13	8	Y12	20	2850 MM	2850 MM	0 MM	0 MM	0 MM	0 MM	18.12 KG
14	14	Y12	20	4600 MM	4600 MM	0 MM	0 MM	0 MM	0 MM	57.19 KG
15	2	Y12	20	1575 MM	1575 MM	0 MM	0 MM	0 MM	0 MM	4.20 KG
16	5	Y12	20	3175 MM	3175 MM	0 MM	0 MM	0 MM	0 MM	14.10 KG
17	26	R10	53	875 MM	200 MM	175 MM	200 MM	175 MM	200 MM	14.84 KG
(D) BEAM 01 (FF)										
18	24	R10	75	1050 MM	300 MM	450 MM	0 MM	0 MM	0 MM	5.55 KG
19	24	R10	35	600 MM	450 MM	0 MM	0 MM	0 MM	0 MM	9.88 KG
20	8	Y12	35	3600 MM	3400 MM	0 MM	0 MM	0 MM	0 MM	95.57 KG
	264									863.70 KG

PLEASE NOTE:
R10 STOOLS (SHAPE CODE 53)
TO BE BEND LIKE SHAPE CODE 83



R10 STOOLS
SHAPE CODE 53

OCTOBER 2022	FOR TENDER		
DATE	AMENDMENTS		

CONSULTING FIRM:
NEMORANGO CONSULTING ENGINEERS
CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS
(015) 295 2023 FAX : (015) 295 2024
19A HANS VAN RENSBURG
POLOKWANE
0699
e-mail : takalani@nemorango.co.za

DESIGNER:
NAME H SWANEPOEL
SIGNATURE

ENGINEER:
NAME H FOURIE
SIGNATURE

EMPLOYER:
MAKHADO LOCAL MUNICIPALITY
CIVIC CENTRE CORNER KROGH & ERASMUS STREET
MAKHADO
0920
TEL: 015 519 3000

PROJECT NAME:
CONSTRUCTION OF DZANANI TAXI RANK

SCALE

PROJECT No
94 OF 2022

Rev No
0

DRAWING NAME:
TAXI RANK ADMIN BUILDING FIRST FLOOR SLAB LAYOUT, DETAILS,SECTIONS AND REINFORCEMENT

1.1

NEM/09-2022

NCE 033

BEAM LOAD BEARING NOTE:

ALL BEAMS TO BE AT LEAST 220MM ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.

NOTE:

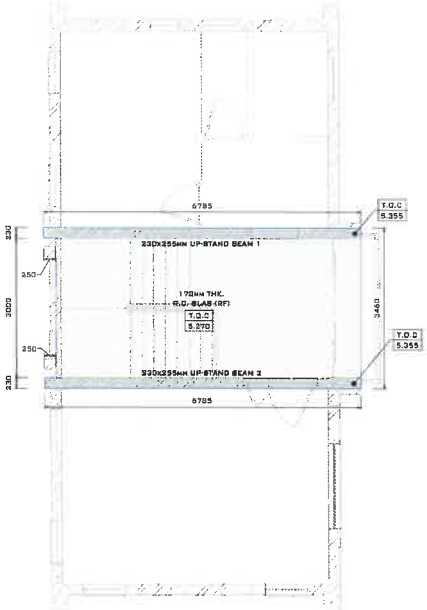
PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECT'S DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY
BESTDIV ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD.

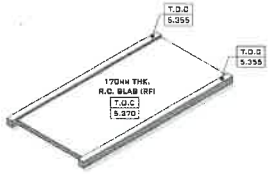
PART A : GENERAL PRINCIPLES AND REQUIREMENTS	PART J : FLOORS
PART C : DIMENSIONS	PART K : WALLS
PART D : PUBLIC SAFETY	PART M : STAIRWAYS
PART F : SITE OPERATIONS	PART P : DRAINAGE
PART G : EXCAVATIONS	

REBAR PLACEMENT NOTE:

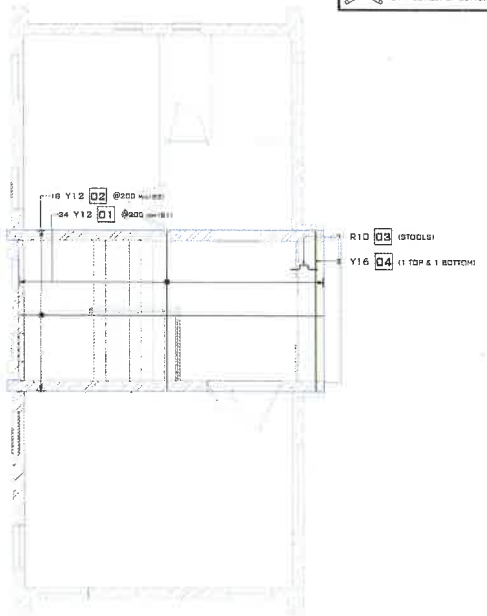
T1 = HIGHEST OF TOP REBAR (PLACED 4TH)
T2 = SECOND HIGHEST OF TOP REBAR (PLACED 3RD)
B2 = SECOND LOWEST OF BOTTOM REBAR (PLACED 2ND)
B1 = LOWEST OF BOTTOM REBAR (PLACED 1ST)



PLAN LAYOUT : ROOF SLAB
1 : 50

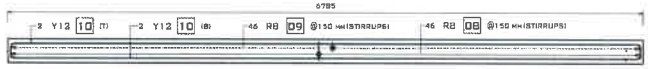


3D VIEW : LEVELS (T.O.C)



PLAN LAYOUT : ROOF SLAB BOTTOM REBAR

230X255MM UP-STAND BEAM 1



230X255MM UP-STAND BEAM 2

FLOOR SCHEDULE (AREA & VOLUME) - ROOF

TYPE	TYPICAL AREA	TOTAL VOLUME
170MM THK. R.C. SLAB (RF)	22.73 m²	3.86 m³
	22.73 m²	3.86 m³

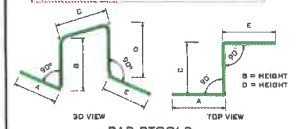
BEAM SCHEDULE - ROOF

TYPE	TYPICAL LENGTH	TOTAL VOLUME
230x255MM UP-STAND BEAM 1	6.79 m	0.13 m³
230x255MM UP-STAND BEAM 2	6.79 m	0.13 m³
	13.57 m	0.27 m³

REINFORCING SCHEDULE - ROOF

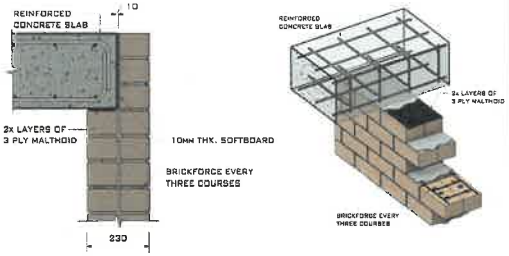
REBAR No.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	C	D	E	TOTAL WEIGHT
(A) BOTTOM (RF)										
01	34	Y12	35	3600 MM	3400 MM	0 MM	0 MM	0 MM	0 MM	108.69 KG
02	18	Y12	35	6675 MM	6475 MM	0 MM	0 MM	0 MM	0 MM	106.69 KG
03	7	R10	53	733 MM	200 MM	100 MM	200 MM	100 MM	200 MM	2.13 KG
04	2	Y16	20	3400 MM	3400 MM	0 MM	0 MM	0 MM	0 MM	10.74 KG
(B) BEAM 01 (RF)										
05	46	R8	72	750 MM	200 MM	175 MM	0 MM	0 MM	0 MM	13.63 KG
06	46	R8	35	300 MM	175 MM	0 MM	0 MM	0 MM	0 MM	5.45 KG
07	4	Y12	35	6725 MM	6725 MM	0 MM	0 MM	0 MM	0 MM	24.50 KG
(B) BEAM 02 (RF)										
08	46	R8	72	750 MM	200 MM	175 MM	0 MM	0 MM	0 MM	13.63 KG
09	46	R8	35	300 MM	175 MM	0 MM	0 MM	0 MM	0 MM	5.45 KG
10	4	Y12	35	6725 MM	6725 MM	0 MM	0 MM	0 MM	0 MM	24.50 KG
	253									516.61 KG

PLEASE NOTE:
R10 STOOLS (SHAPE CODE 53)
TO BE BEND LIKE SHAPE CODE 83

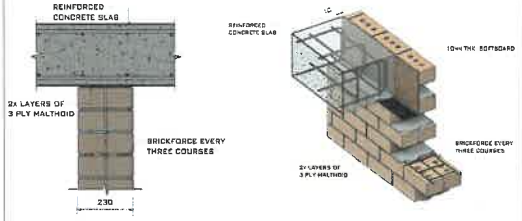


R10 STOOLS
SHAPE CODE 53

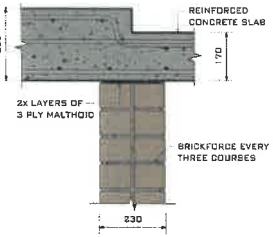
			CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tokalani@nemorango.co.za	DESIGNER: NAME H.SWANEPOEL SIGNATURE ENGINEER: NAME H.FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: TAXI RANK ADMIN BUILDING ROOF SLAB LAYOUT, DETAILS SECTIONS AND REINFORCEMENT	1.1	NEM/09-2022	NCE 034
DATE	AMENDMENTS								

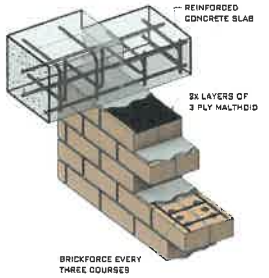


SLAB SUPPORT DETAIL 1 (TYP.)



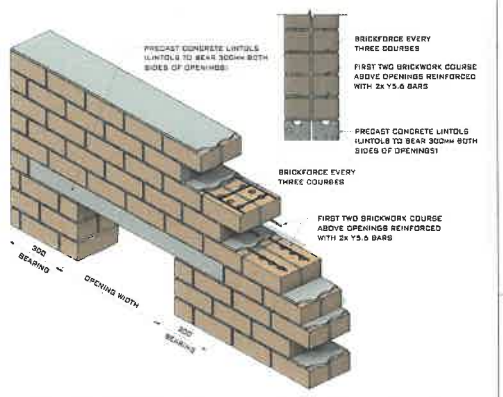
SLAB SUPPORT DETAIL 2 (TYP.)



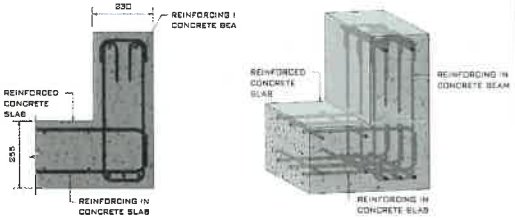


85MM WEATHER STEP DETAIL (TYP.)

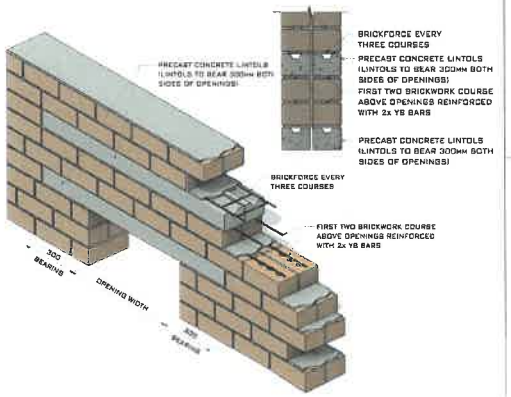
BEAM LOAD BEARING NOTE:
ALL BEAMS TO BE AT LEAST 220mm ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.



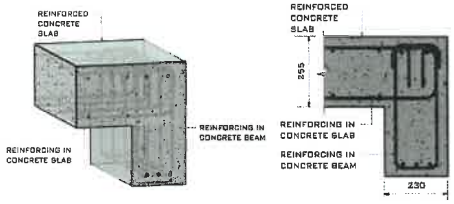
REINFORCING ABOVE OPENINGS DETAIL (TYP.)



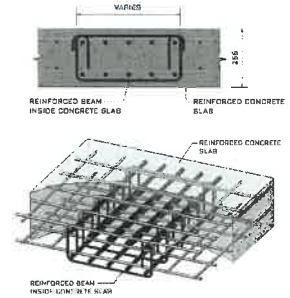
UP-STAND BEAM DETAIL (TYP.)



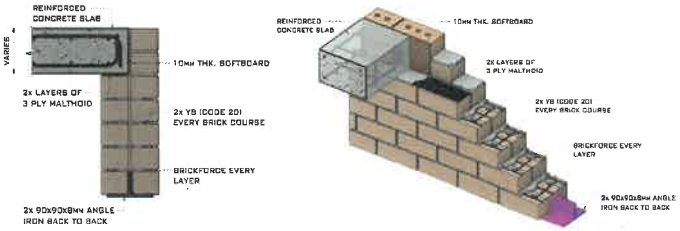
COMPOSITE BEAM ABOVE OPENINGS DETAIL (TYP.)



DOWN-STAND BEAM DETAIL (TYP.)



INTERNAL BEAM DETAIL (TYP.)

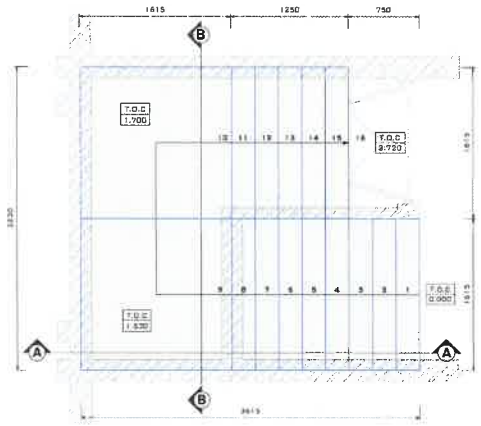


FACEBRICK COMPOSITE BEAM DETAIL (TYP.)

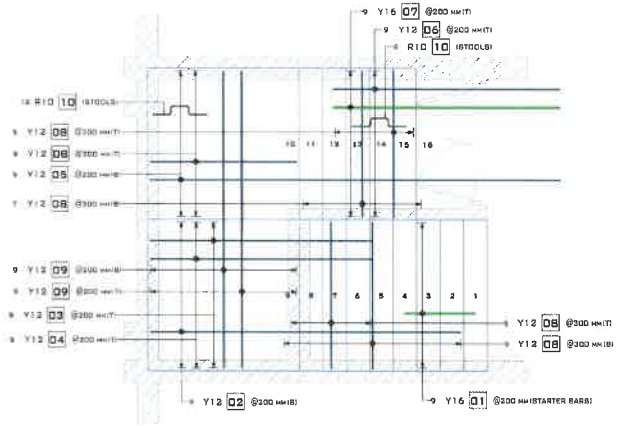
ADDITIONAL NOTES:

1. IF BEAMS ON SITE DOES NOT EXTEND TO SLAB REINFORCING IN HEIGHT DUE TO CONSTRUCTION NEEDS, PLEASE CONSULT WITH ENGINEERS.
2. PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECT'S DIMENSIONS. PLEASE MAKE SURE OF DIMENSIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
3. ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECT'S DIMENSIONS. PLEASE MAKE SURE OF DIMENSIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE. PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY BEFORE ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS
4. ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD
   - PART A : GENERAL PRINCIPLES AND REQUIREMENTS
   - PART C : DIMENSIONS
   - PART D : PUBLIC SAFETY
   - PART F : SITE OPERATIONS
   - PART G : EXCAVATIONS
   - PART J : FLOORS
   - PART K : WALLS
   - PART M : STAIRWAYS
   - PART P : DRAINAGE

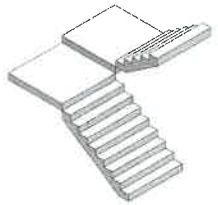
		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS — CIVIL ENGINEERS HYDROGEOLOGISTS & PROJECT MANAGERS; (015) 295 2023 FAX: (015) 295 2024; 10A HANS VAN RENSBURG POLOKWANE 0699; e-mail: lalalani@nemorango.co.za	DESIGNER: NAME H. SWANEPOEL; SIGNATURE; ENGINEER: NAME; SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY; CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920; TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: TAXI RANK ADMIN BUILDING FIRST FLOOR SLAB TYPICAL DETAILS	1.1	NEM/09-2022	NCE 035
DATE	AMENDMENTS							



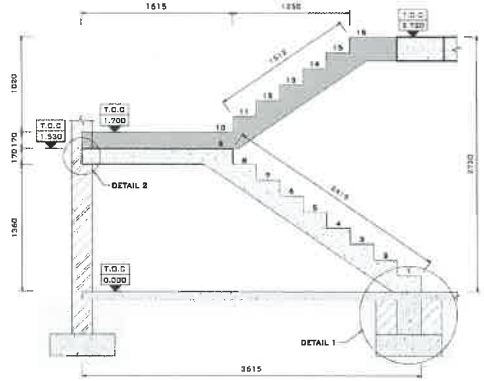
PLAN LAYOUT : STAIRCASE
1 : 25



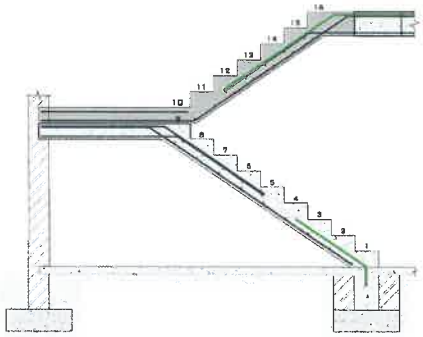
STAIRCASE : REBAR
1 : 25



3D : STAIRCASE



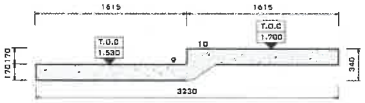
SECTION A-A
1 : 25



SECTION A-A : REBAR
1 : 25

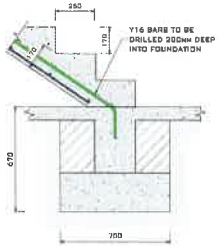
REINFORCING SCHEDULE - STAIRCASE

REBAR NO.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	C	D	E	TOTAL WEIGHT
STAIRCASE										
01	9	Y16	62	1100 MM	200 MM	175 MM	125 MM	900 MM	0 MM	15.64 KG
02	9	Y12	62	3750 MM	2600 MM	1475 MM	2150 MM	1150 MM	0 MM	29.97 KG
03	9	Y12	62	2550 MM	1125 MM	625 MM	925 MM	1450 MM	0 MM	20.38 KG
04	9	Y12	62	2600 MM	1300 MM	725 MM	1075 MM	1325 MM	0 MM	20.78 KG
05	9	Y12	41	4700 MM	1625 MM	1075 MM	1100 MM	1125 MM	1525 MM	37.56 KG
06	9	Y12	62	2600 MM	1500 MM	850 MM	1250 MM	1100 MM	0 MM	20.78 KG
07	9	Y16	62	2675 MM	1250 MM	700 MM	1025 MM	1425 MM	0 MM	38.04 KG
08	35	Y12	20	1575 MM	1575 MM	0 MM	0 MM	0 MM	0 MM	48.65 KG
09	18	Y12	41	3225 MM	1625 MM	300 MM	1300 MM	175 MM	250 MM	51.35 KG
10	24	R10	53	725 MM	200 MM	100 MM	200 MM	100 MM	200 MM	10.74 KG
	140									294.39 KG



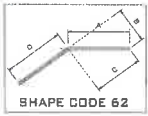
SECTION B-B
1 : 25

SECTION B-B : REBAR
1 : 25



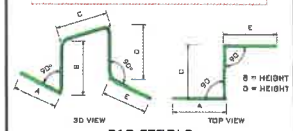
DETAIL 1
1 : 15

DETAIL 2
1 : 15



SHAPE CODE 62

PLEASE NOTE:
R10 STOOLS (SHAPE CODE 53)
TO BE BEND LIKE SHAPE CODE 83



R10 STOOLS
SHAPE CODE 53

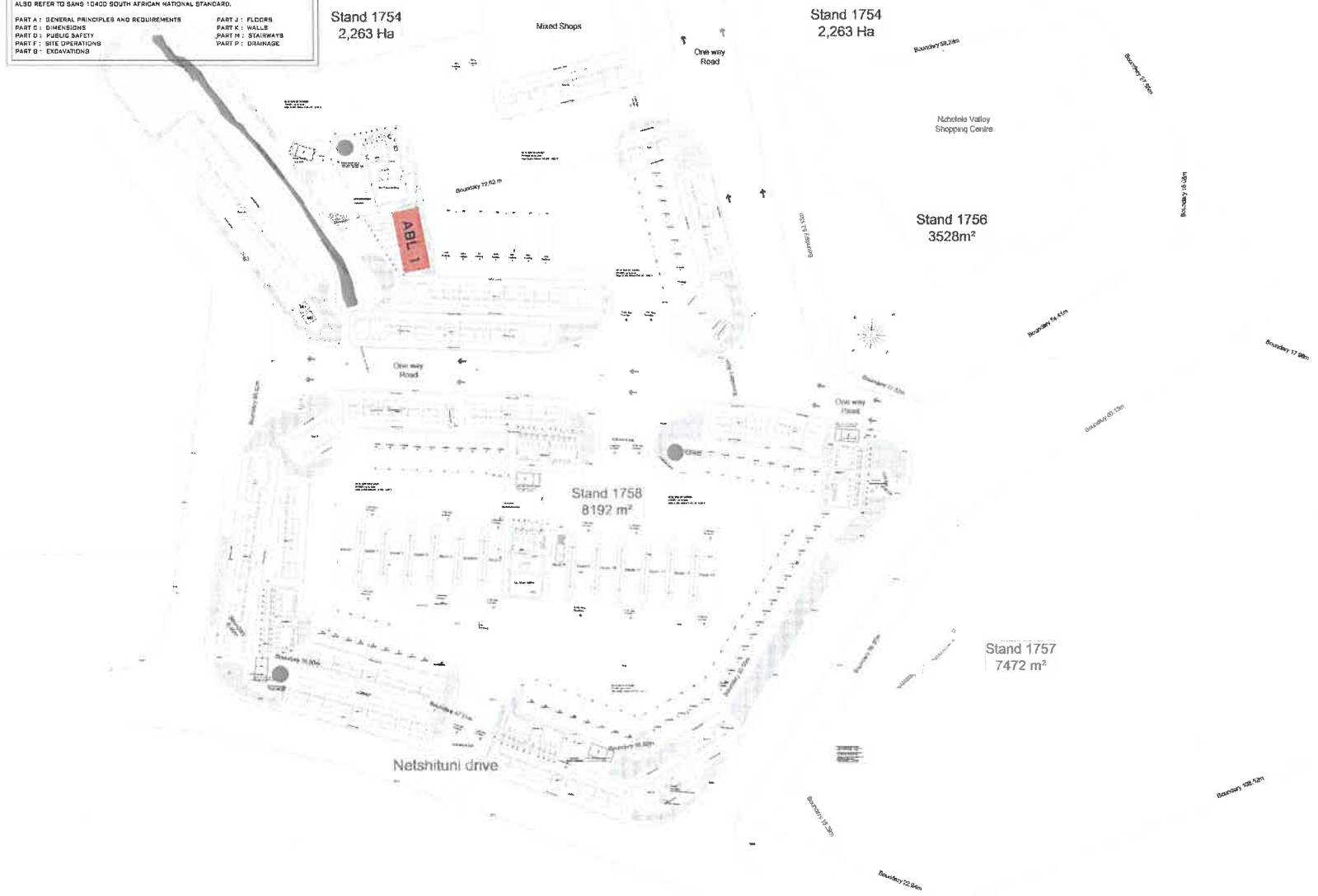
			CONSULTING FIRM: NEMORANGO CONSULTING SERVICES CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS T (015) 295 2023 FAX: (015) 295 2024 16A HANS VAN RENSBURG POLOKWANE 0699 e-mail: takalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H F JUKIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: TAXI RANK ADMIN BUILDING STAIRCASE LAYOUT AND DETAILS	1.1	NEM/09-2022	NCE 036
DATE	AMENDMENTS							

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECT'S DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY
BESTOW ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD.

PART A : GENERAL PRINCIPLES AND REQUIREMENTS	PART J : FLOORS
PART C : DIMENSIONS	PART K : WALLS
PART D : PUBLIC SAFETY	PART M : STAIRWAYS
PART F : SITE OPERATIONS	PART P : DRAINAGE
PART G : EXCAVATIONS	



PLAN LAYOUT : LOCATION PLAN

1 : 350

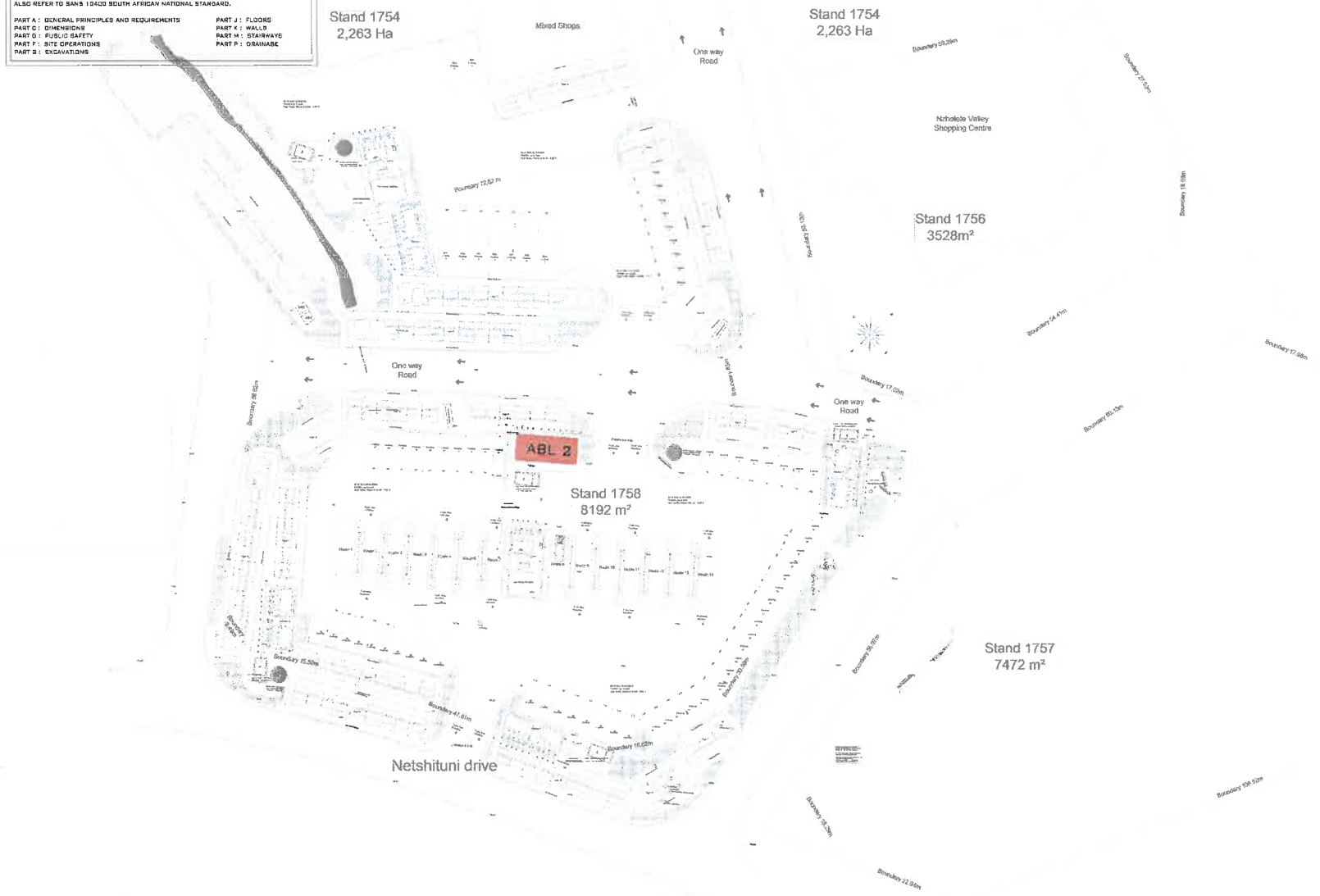
		CONSULTING FIRM: MORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tefolani@morango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H/T-OLIVE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: ABLUTION 1 LOCATION PLAN	1.1	NEM/09-2022	NCE 037
DATE	AMENDMENTS							

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECT'S DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY
BESTDIV ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD.

PART A : GENERAL PRINCIPLES AND REQUIREMENTS	PART J : FLOORS
PART C : DIMENSIONS	PART K : WALLS
PART D : PUBLIC SAFETY	PART M : STAIRWAYS
PART F : SITE OPERATIONS	PART P : DRAINAGE
PART S : EXCAVATIONS	



PLAN LAYOUT : LOCATION PLAN
1 : 350

		CONSULTING FIRM: NZHORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2623 FAX: (015) 295 2624 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : takalan@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: ABLUTION 2 LOCATION PLAN	1.1	NEM/09-2022	NCE 038
DATE	AMENDMENTS							

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECTS DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
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PART F : SITE OPERATIONS
PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
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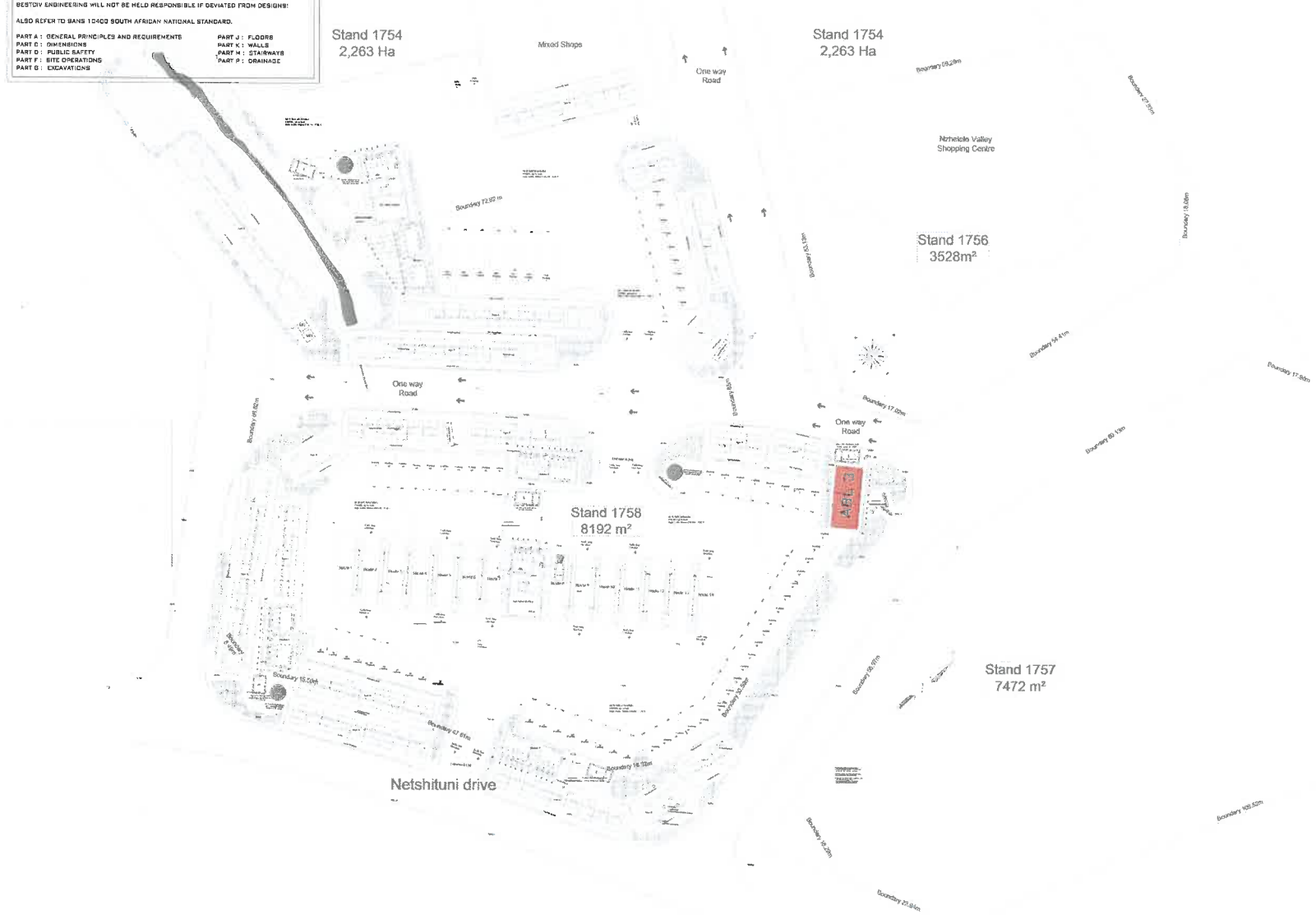

PLAN LAYOUT : LOCATION PLAN
1 : 350

		CONSULTING FIRM: NEMORANGO ENGINEERING (PTY) LTD CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 9699 e-mail : bikidiki@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: ABLUTION 3 LOCATION PLAN	1.1	NEM/09-2022	NCE 039
DATE	AMENDMENTS							

NOTE:

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PART A : GENERAL PRINCIPLES AND REQUIREMENTS
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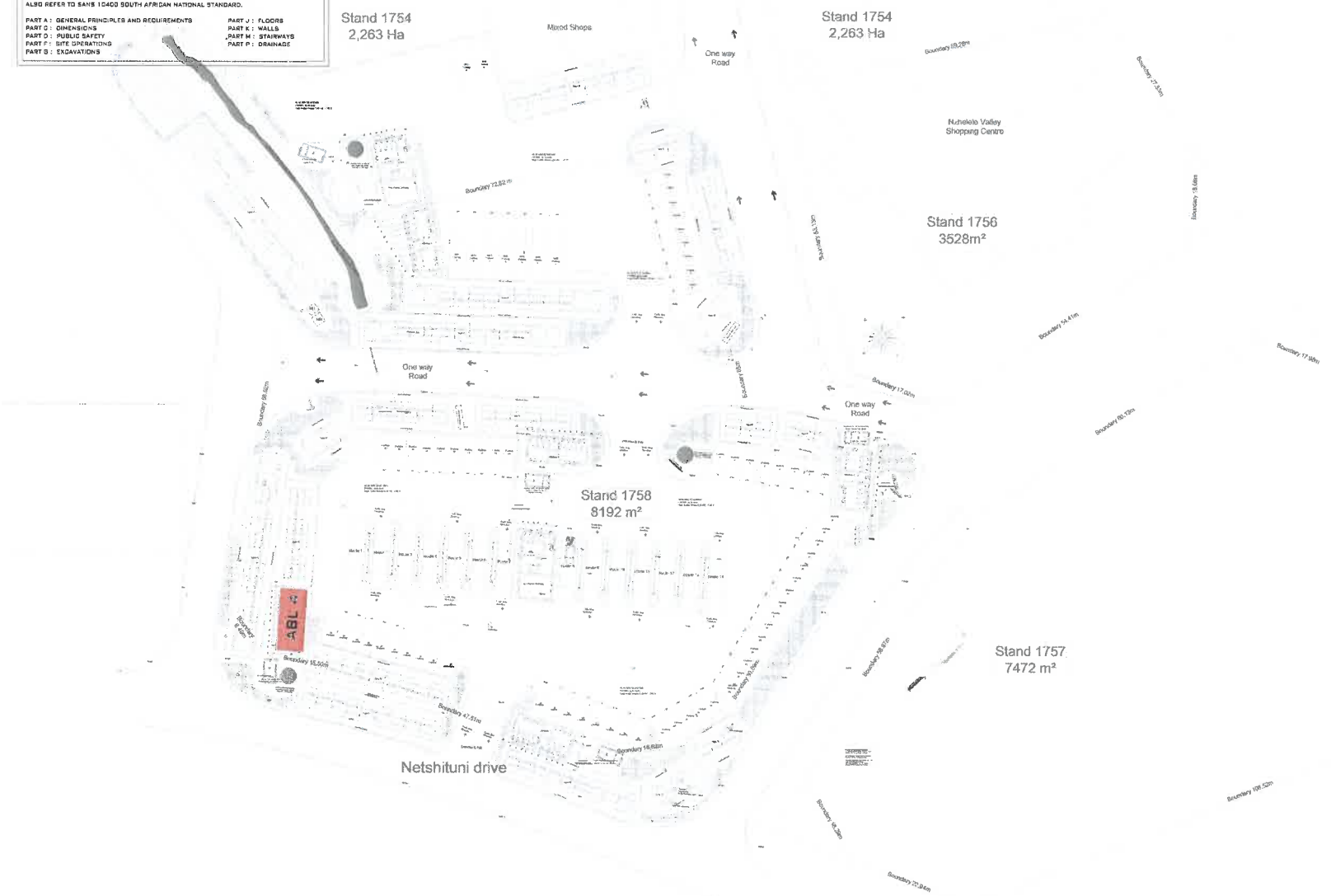
PART D : PUBLIC SAFETY
PART F : SITE OPERATIONS
PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE



PLAN LAYOUT ; LOCATION PLAN
1 : 350

		CONSULTING FIRM: NEMORANGO ENGINEERING SERVICES CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tshilalo@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: ABLUTION 4 LOCATION PLAN	1.1	NEM/09-2022	NCE 040
DATE	AMENDMENTS							

NOTE:

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PART A : GENERAL PRINCIPLES AND REQUIREMENTS
PART D : DIMENSIONS
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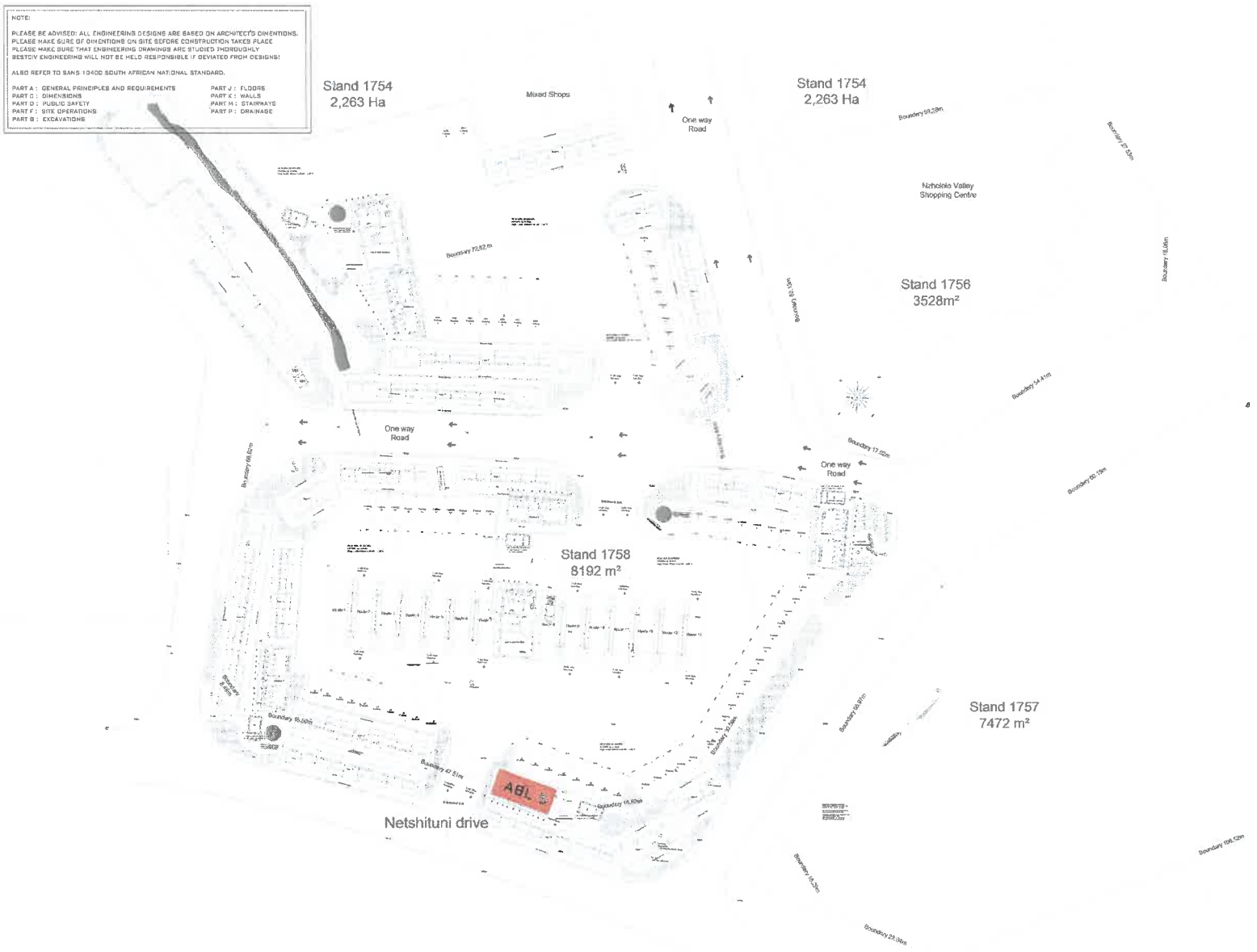
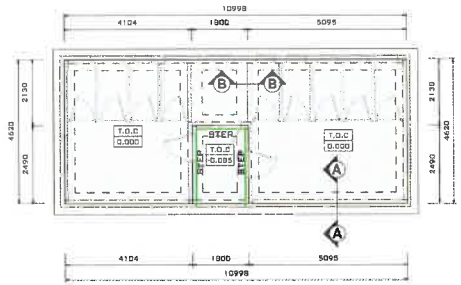
PART F : SITE OPERATIONS
PART B : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE



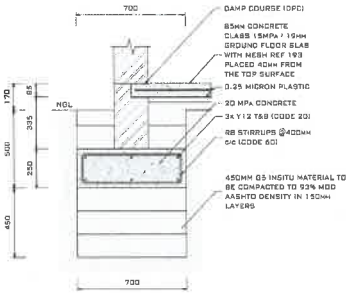
PLAN LAYOUT : LOCATION PLAN

1 : 350

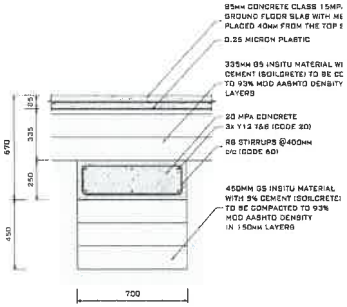
		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 19A HANS VAN RENSBURG POLOKWANE 0699 e-mail: lakalani@nemorango.co.za	DESIGNER: NAME: H SWANEPOEL SIGNATURE: ENGINEER: NAME: H ROUSE SIGNATURE:	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: ABLUTION 5 LOCATION PLAN	1.1	NEM/09-2022	NCE 041
DATE	AMENDMENTS							



PLAN LAYOUT : GROUNDFLOOR



SECTION A-A (WA)



SECTION B-B (WA)

CONCRETE

BEAM SCHEDULE - STRIP FOOTINGS

TYPE	TOTAL LENGTH	TOTAL VOLUME
700x250mm R.C. STRIP FOOTING	42.20 M	1.03 m³
	42.20 M	1.03 m³

FLOOR SCHEDULE (AREA & VOLUME) - STRIPFOOTING

TYPE COMMENTS	TYPE	DESCRIPTION	SHEETS	TOTAL AREA	TOTAL VOLUME
STRIP FOOTING	85MM THK. SURFACE BED	MESH REF 193	4.6	51.62 m²	4.39 m³
			4.6	51.62 m²	4.39 m³

REBAR

REINFORCING SCHEDULE - STRIP FOOTINGS (STIRRUPS)

BEAM TYPE	REBAR NO	TYPE	SHAPE CODE	QTY.	A	B	BAR LENGTH	REBAR WEIGHT PER METRE	TOTAL WEIGHT
STRIP FOOTING 700x250	D3	R8	60	109	192	642	1.38 M	0.395 KG/M	96.33 KG
									96.33 KG

REINFORCING SCHEDULE - STRIP FOOTINGS (STRAIGHT LENGTHS)

BEAM TYPE	TYPE	SHAPE CODE	NO. OFF 6M REBAR LENGTHS	TOTAL WEIGHT
STRIP FOOTING 700x250	Y12 (SF)	20	50.31	268.06 KG
			50.31	268.06 KG

NOTES:

1. ASSUMED BEARING CAPACITY = 100kPa.
2. UNLESS SPECIFICALLY INDICATED OTHERWISE ALL WALLS AND COLUMNS ARE PLACED CENTRALLY ON FOUNDATIONS.
3. ALL CONCRETE TO BE VIBRATED.
4. UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL DIMENSIONS ARE REFERENCED FROM GRIDLINES & TO CENTRELINES OF WALLS ABOVE SURFACE BED LEVEL.
5. LEVELS (TOC) REFER TO TOP OF CONCRETE.

NOTE:

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PART C : DIMENSIONS
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PART G : EXCAVATIONS
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PART M : STAIRWAYS
PART P : DRAINAGE

PLEASE NOTE:
ALL FOUNDATIONS TO BE (WA) UNLESS SHOWN OTHERWISE

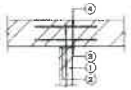
TYPE	WIDTH	DEPTH
WA	700	250

FOUNDATION : LEGEND

PLEASE NOTE : CONTROL AND ARTICULATION

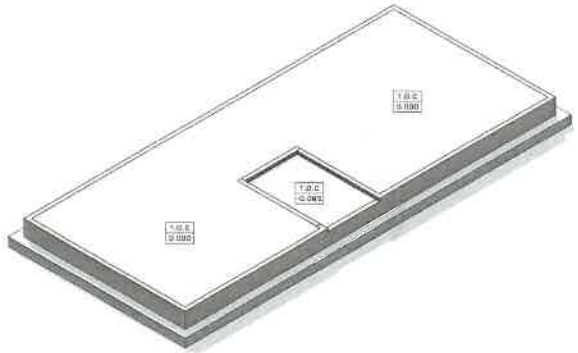
VERTICAL AND HORIZONTAL CONTROL AND ARTICULATION JOINTS SHALL BE CONSTRUCTED AT THE POSITIONS SHOWN IN THE DRAWINGS, AND SHALL BE IN ACCORDANCE WITH THE SCOPE OF WORK. SUCH JOINTS SHALL BE FREE FROM DEBRIS OVER THEIR FULL WIDTH AND, WHERE REQUIRED, FILLED WITH A COMPRESSIBLE FILLER. ANY APPLIED FINISH SHALL NOT RESTRAIN OR INHIBIT MOVEMENT OF THE JOINT.

1) 1.2mm THICK GALVANISED HOOP IRON CONCERTINA TIES EVERY 5 LAYERS
2) POLYCORD STRIPS Ø 5mm FOR 10mm JOINTS FROM SONDOR (EITHER SIDE OF WALL)
3) UV RESISTANT POLYURETHANE SEALANT PCPU FROM DEN BRAVEN 10mm x 10mm PAINTED WITH ELASTIC PAINT (EITHER SIDE OF WALL)
4) NOTES : JOINTS TO BE CLEANED FROM MORTAR



STRAIGHT AND INTERSECTION JOINT

TYPICAL DETAIL FOR CONCERTINA TIES



3D VIEW : LEVELS (T.O.C)

PLEASE NOTE:
ALL STRAIGHT LENGTH REBAR IN BEAMS (CODE 20) SHOULD BE SPLICED BY - 50 * DIAMETER.

		CONSULTING FIRM: HEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS P.O. BOX 2023 POLOKWANE 0699 TEL: (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE e-mail: lakalen@hemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: ABLUTION 1,2,3,4 AND 5 RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 042
DATE	AMENDMENTS							

NOTE:

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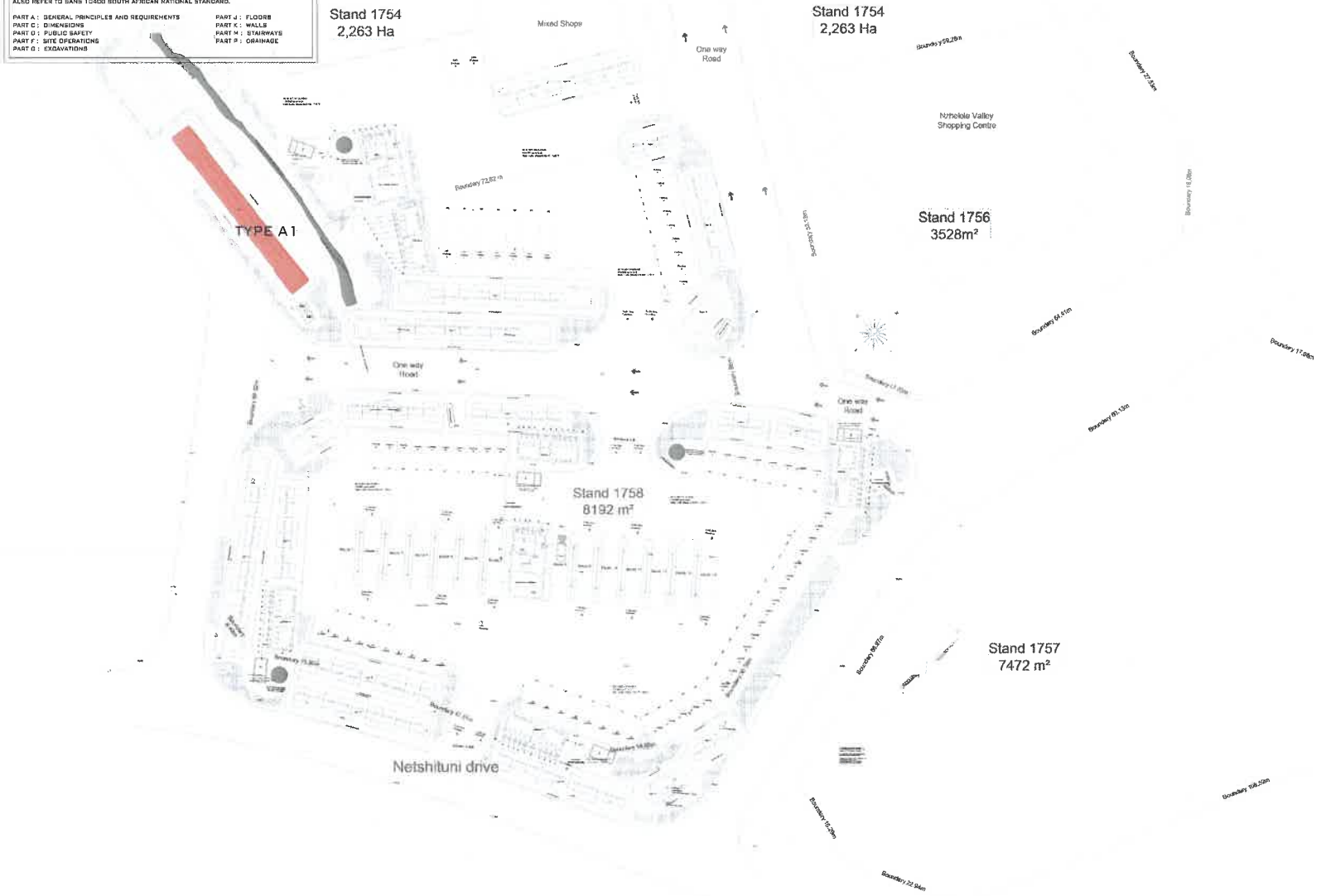

PLAN LAYOUT : LOCATION PLAN

1 : 350

		CONSULTING FIRM: NEMORANGO CONSULTING SERVICES CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX.: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tokalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE A1 LOCATION PLAN	1.1	NEM/09-2022	NCE 043
DATE	AMENDMENTS							

NOTE:

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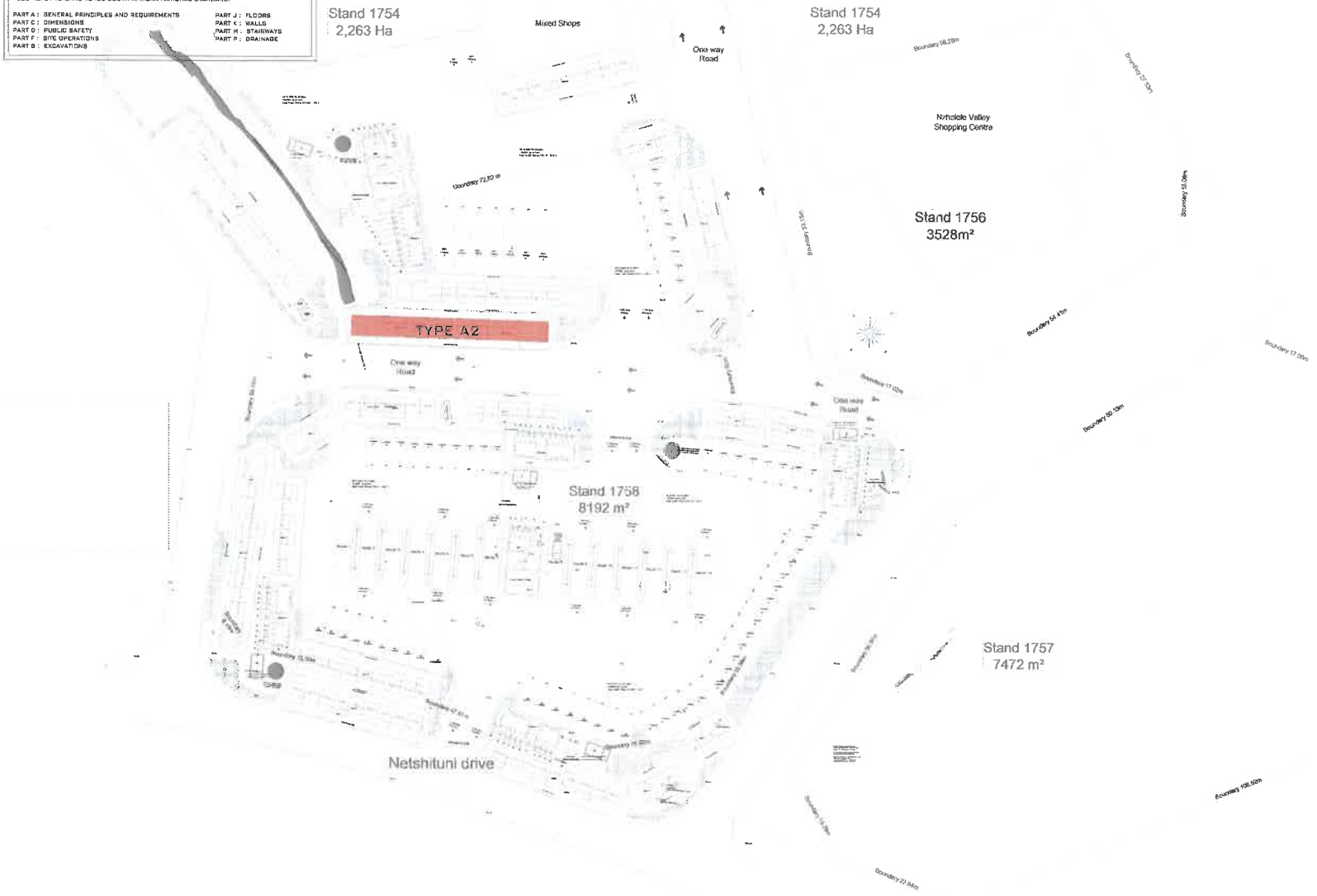

PLAN LAYOUT : LOCATION PLAN
1 : 350

		CONSULTING FIRM: MORANGO CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS. Tel: (015) 295 2023 FAX: (015) 295 2024. 10A HANS VAN RENSBURG POLOKWANE 0699. e-mail: tshilabv@mamorango.co.za	DESIGNER: NAME H.SWANEPOEL SIGNATURE. ENGINEER: NAME H.P.BURE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY. CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920. TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE A2 LOCATION PLAN	1.1	NEM/09-2022	NCE 044
DATE	AMENDMENTS							

NOTE:

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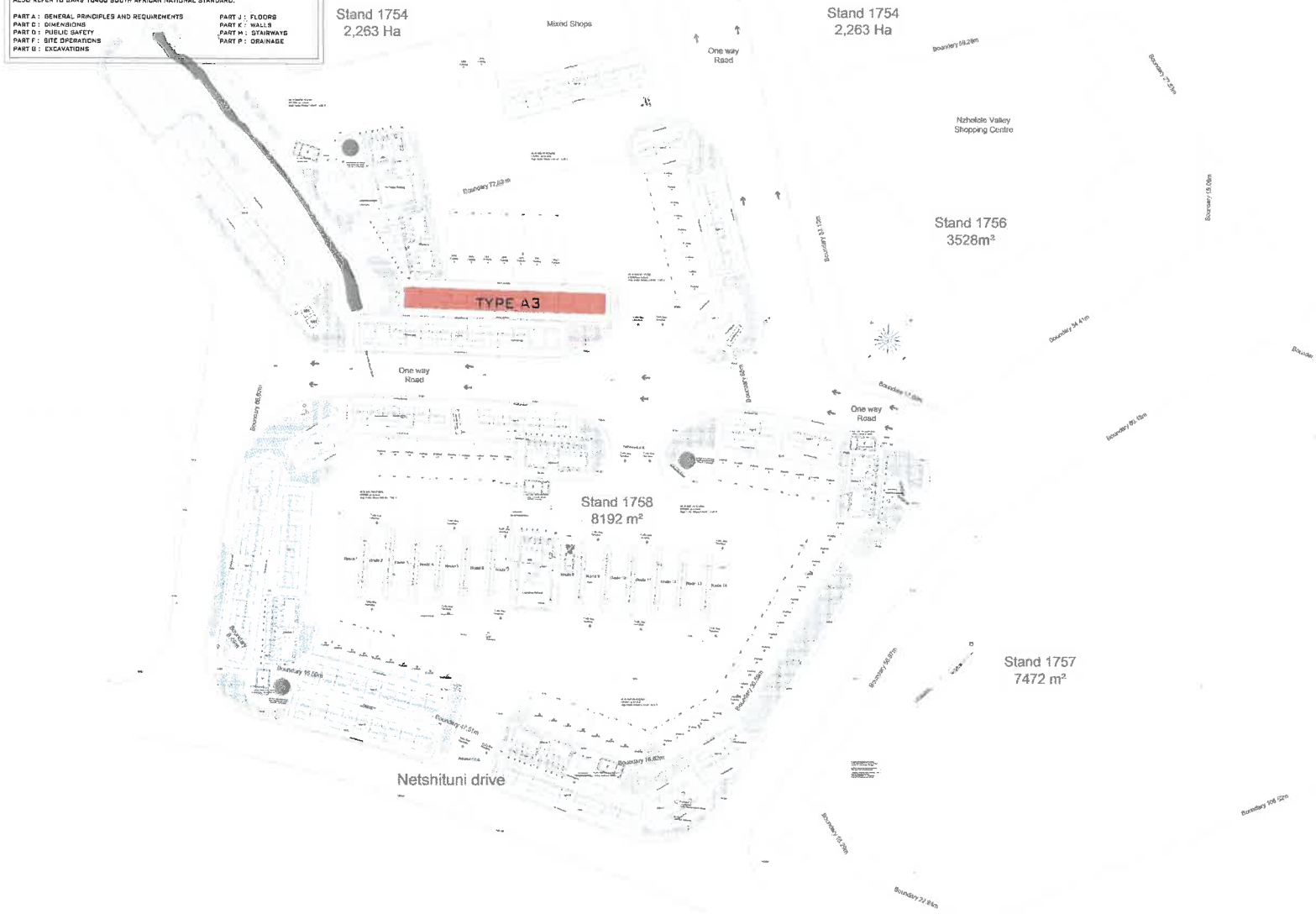

PLAN LAYOUT : LOCATION PLAN
1 : 350

		CONSULTING FIRM: NEMORANGO ENGINEERING (PTY) LTD CIVIL ENGINEERS HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : lalelani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE A3 LOCATION PLAN	1.1	NEM/09-2022	NCE 045
DATE	AMENDMENTS							

NOTE:

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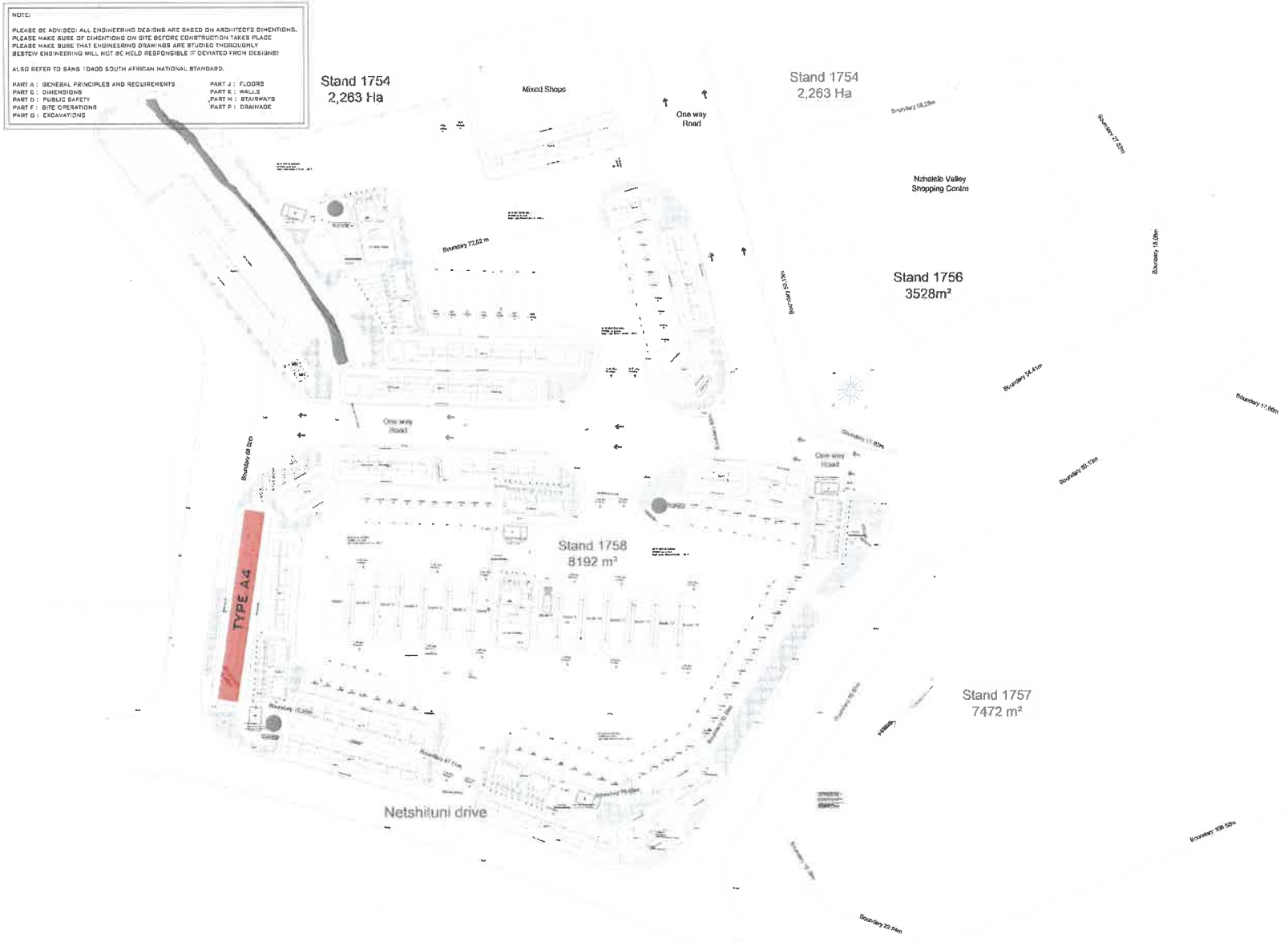
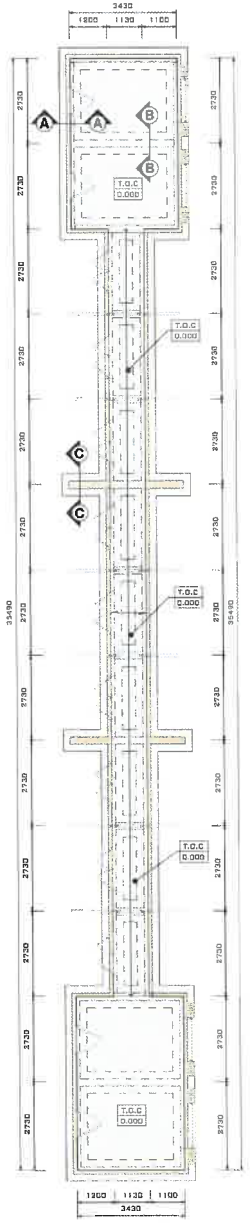
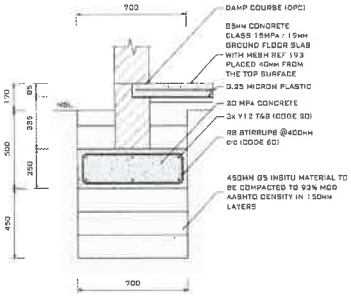


PLAN LAYOUT : LOCATION PLAN
1 : 350

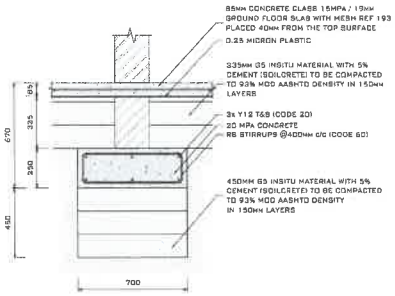
		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tsilalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CNR/C CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER		ENGINEER: NAME H FOURIE SIGNATURE		DRAWING NAME: MARKET STALL TYPE A4 LOCATION PLAN	1.1	NEM/09-2022	NCE 046
DATE	AMENDMENTS							



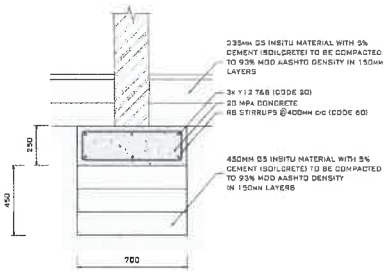
PLAN LAYOUT : GROUNDFLOOR



SECTION A-A (WA)



SECTION B-B (WA)



SECTION C-C (WA)

CONCRETE

BEAM SCHEDULE - STRIP FOOTINGS

Type	Total Length	Total Volume
700x250MM R.C. STRIP FOOTING	126.60 M	16.59 m³
	126.60 M	16.59 m³

FLOOR SCHEDULE (AREA & VOLUME) - STRIPFOOTING

Type Comments	Type	Description	Sheets	Total Area	Total Volume
STRIP FOOTING	85MM THK. SURFACE BED	MESH REF 193	5.8	65.22 m²	5.54 m³
			5.8	65.22 m²	5.54 m³

REBAR

REINFORCING SCHEDULE - STRIP FOOTINGS (STIRRUPS)

Beam Type	Rebar No.	Type	Shape Code	Qty.	A	B	Bar Length	Rebar Weight per Meter	Total Weight
Strip Footing 700x250	03	R8	50	280	192	642	1.38 m	0.395 kg/m	152.41 kg
									152.41 kg

REINFORCING SCHEDULE - STRIP FOOTINGS (STRAIGHT LENGTHS)

Beam Type	Type	Shape Code	No. Off 6M Rebar Lengths	Total Weight
Strip Footing 700x250	Y12 (6M)	20	126.72	675.16 kg
			126.72	675.16 kg

NOTE:

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PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY
BESTCIV ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD.

PART A : GENERAL PRINCIPLES AND REQUIREMENTS
PART B : DIMENSIONS
PART D : PUBLIC SAFETY
PART F : SITE OPERATIONS
PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

NOTES:

1. ASSUMED BEARING CAPACITY = 100kPa.
2. UNLESS SPECIFICALLY INDICATED OTHERWISE ALL WALLS AND COLUMNS ARE PLACED CENTRALLY ON FOUNDATIONS.
3. ALL CONCRETE TO BE VIBRATED.
4. UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL DIMENSIONS ARE REFERENCED FROM GRIDLINES & TO CENTRELINES OF WALLS ABOVE SURFACE BED LEVEL.
5. LEVELS (T.O.C) REFER TO TOP OF CONCRETE.

PLEASE NOTE:
ALL FOUNDATIONS TO BE (WA) UNLESS SHOWN OTHERWISE

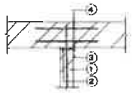
TYPE	WIDTH	DEPTH
WA	700	250

FOUNDATION : LEGEND

PLEASE NOTE : CONTROL AND ARTICULATION

VERTICAL AND HORIZONTAL CONTROL AND ARTICULATION JOINTS SHALL BE CONSTRUCTED AT THE POSITIONS SHOWN IN THE DRAWINGS, AND SHALL BE IN ACCORDANCE WITH THE SCOPE OF WORK. SUCH JOINTS SHALL BE FREE FROM DEBRIS OVER THEIR FULL WIDTH AND, WHERE REQUIRED, FILLED WITH A COMPRESSIBLE FILLER. ANY APPLIED FINISH SHALL NOT RESTRAIN OR INHIBIT MOVEMENT OF THE JOINT.

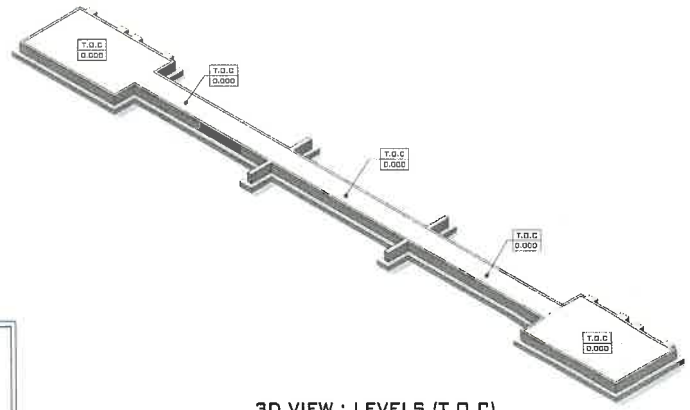
1) 1.2MM THICK GALVANISED HOOP IRON CONCERTINA TIES EVERY 5 LAYERS
2) POLYCORD STRIPS (1) 5MM FOR 10MM JOINTS FROM SONDOR (EITHER SIDE OF WALL)
3) UV RESISTANT POLYURETHANE SEALANT FOPU FROM DEN BRAVEN 10MM x 10MM PAINTED WITH ELASTIC PAINT (EITHER SIDE OF WALL)
4) NOTES : JOINTS TO BE CLEANED FROM MORTAR



STRAIGHT AND INTERSECTION JOINT

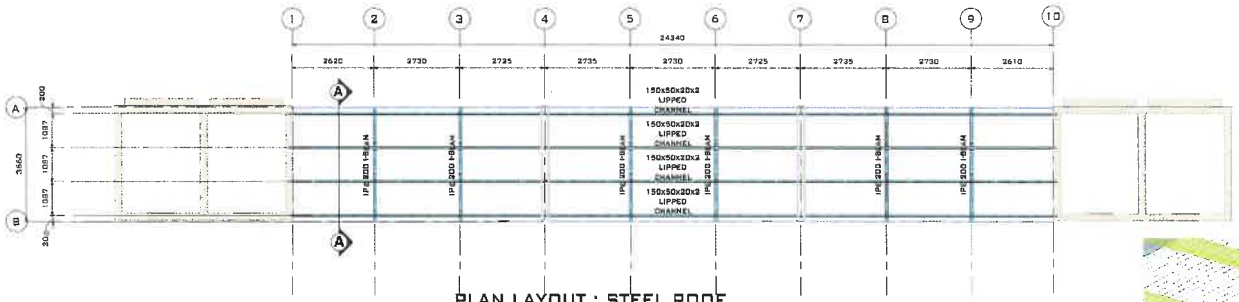
TYPICAL DETAIL FOR CONCERTINA TIES

PLEASE NOTE:
ALL STRAIGHT LENGTH REBAR IN BEAMS (CODE 20) SHOULD BE SPLICED BY - 50 * DIAMETER.

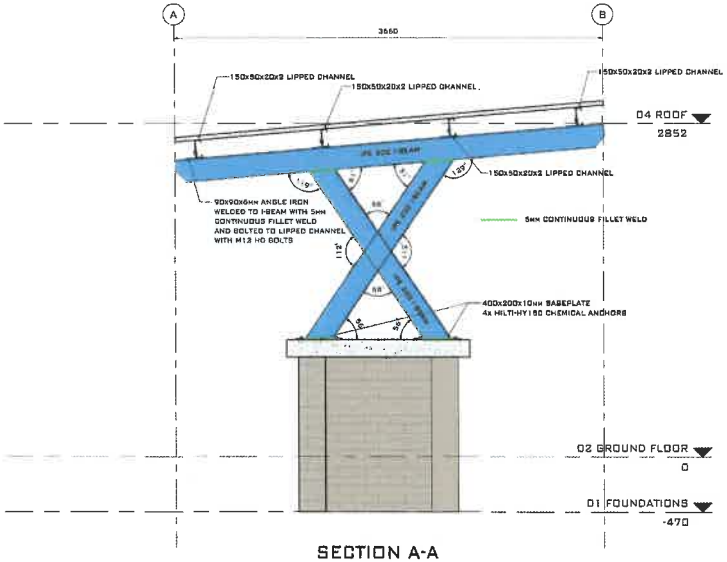


3D VIEW : LEVELS (T.O.C)

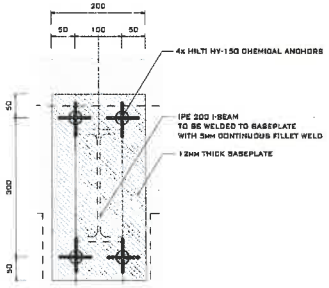
			CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tshilaleni@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE A RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 047
DATE	AMENDMENTS							



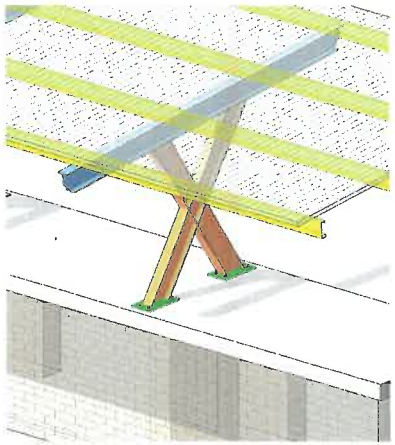
PLAN LAYOUT : STEEL ROOF
1 : 75

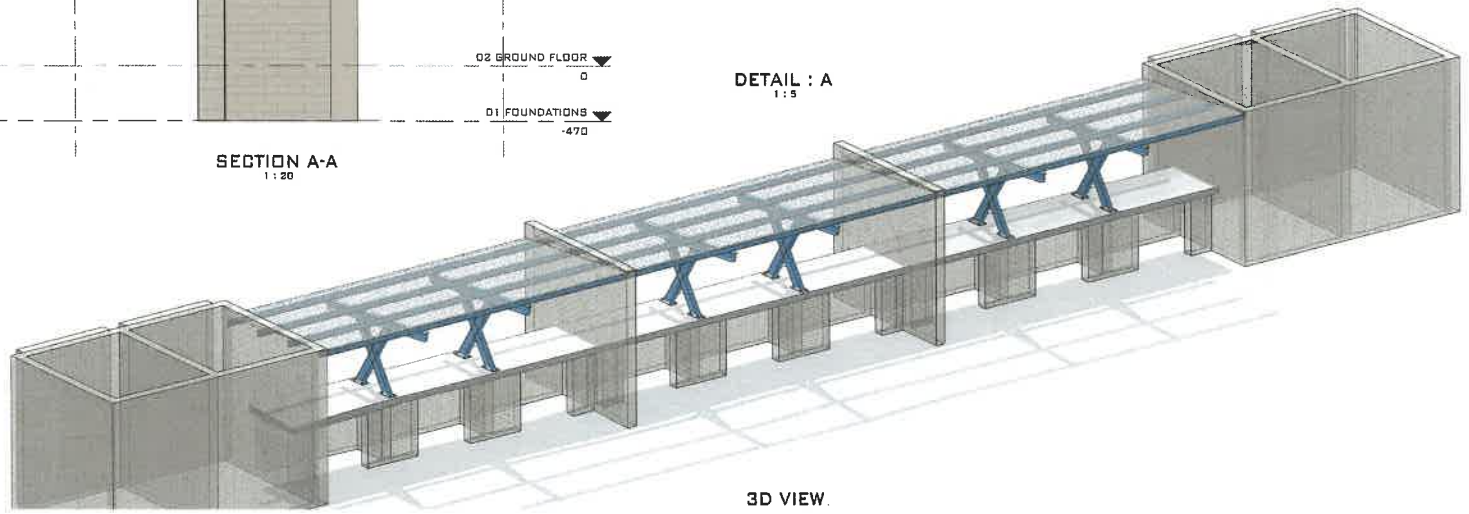


SECTION A-A
1 : 20



DETAIL : A
1 : 5





3D VIEW

		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail: tebalelo@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE A STEEL ROOF LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 048
DATE	AMENDMENTS							

NOTE:

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PART F : SITE OPERATIONS	PART P : DRAINAGE
PART S : EXCAVATIONS	

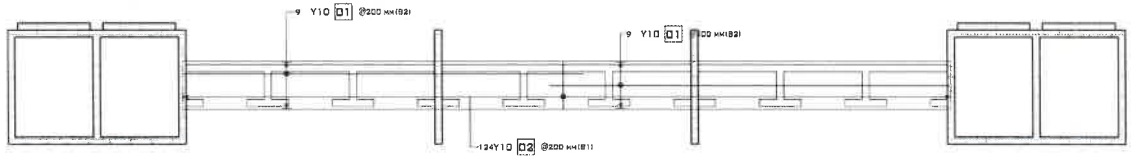
PLEASE NOTE:
STRIP BEAMS ARE NOT PHYSICAL BEAMS THEY ARE ONLY AREAS WHERE THE STRIP BEAM REBAR ARE PLACED.

LEGEND:

- STRIP BEAMS

BEAM LOAD BEARING NOTE:
ALL BEAMS TO BE AT LEAST 220MM ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.

PLAN LAYOUT :COUNTER SLAB
1 : 75



PLAN LAYOUT : COUNTER SLAB BOTTOM REBAR
1 : 75

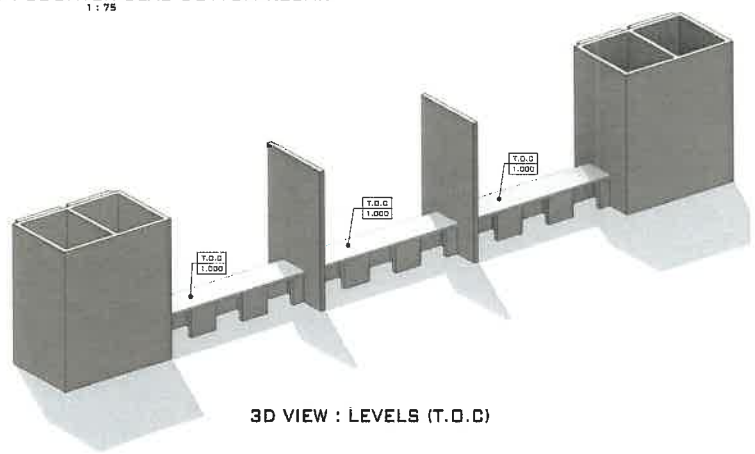
REBAR PLACEMENT NOTE:
T1 = HIGHEST OF TOP REBAR (PLACED 4TH)
T2 = SECOND HIGHEST OF TOP REBAR (PLACED 3RD)
B2 = SECOND LOWEST OF BOTTOM REBAR (PLACED 2ND)
B1 = LOWEST OF BOTTOM REBAR (PLACED 1ST)

REINFORCING SCHEDULE - FIRST FLOOR

REBAR No.	Qty.	TYPE	SHAPE CODE	BAR LENGTH	A	B	C	D	E	TOTAL WEIGHT
(A) BOTTOM CS										
01	18	Y10	34	12875 MM	12800 MM	0 MM	0 MM	0 MM	0 MM	142.99 KG
02	124	Y10	25	1550 MM	1500 MM	0 MM	0 MM	0 MM	0 MM	125.24 KG
	142									269.23 KG

FLOOR SCHEDULE (AREA & VOLUME) FIRST FLOOR

TYPE	TOTAL AREA	TOTAL VOLUME
150mm THK. R.C. SLAB (FF)	38.33 m²	5.75 m³
	38.33 m²	5.75 m³



3D VIEW : LEVELS (T.O.C)

OCTOBER 2022	FOR TENDER	
DATE	AMENDMENTS	

CONSULTING FIRM:
MORANGO CREATION
CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS
(015) 295 2023 FAX : (015) 295 2024
164 HANS VAN RENSBURG
POLOKWANE
0699
e-mail : bilulaci@morango.co.za

DESIGNER:
NAME H SWANEPOEL
SIGNATURE

ENGINEER:
NAME H FOURIE
SIGNATURE

EMPLOYER:
MAKHADO LOCAL MUNICIPALITY
CIVIC CENTRE CORNER KROGH & ERASMUS STREET
MAKHADO
0920
TEL: 015 519 3000

PROJECT NAME:
CONSTRUCTION OF DZANANI TAXI RANK

DRAWING NAME:
MARKET STALL TYPE A CONCRETE SLAB LAYOUT DETAILS AND SECTIONS

SCALE	PROJECT No	Rev No
1.1	94 OF 2022	0
	NEM/09-2022	NCE 049

NOTE:

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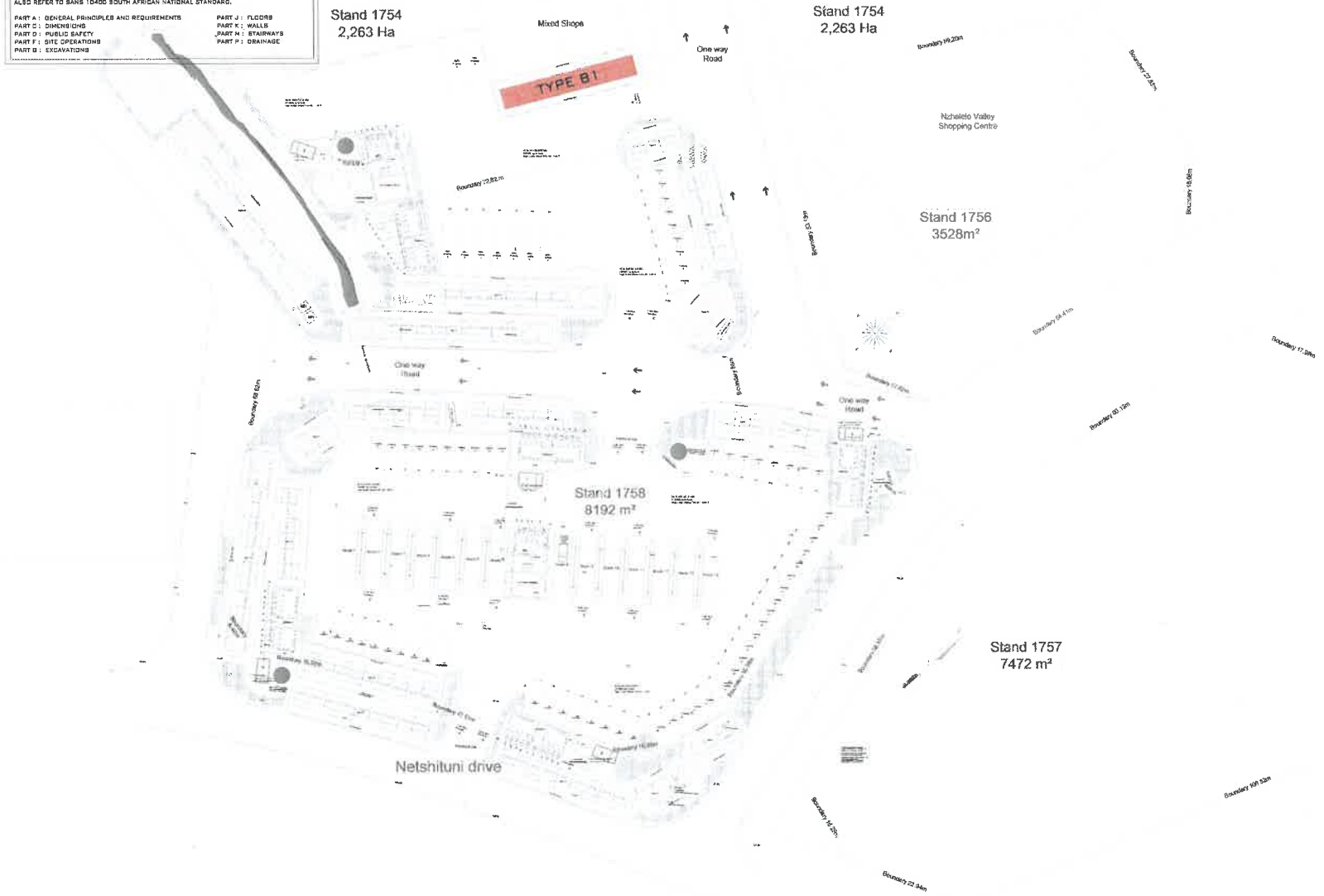
PART B : EXCAVATIONS	



PLAN LAYOUT : LOCATION PLAN
1 : 350

			CONSULTING FIRM:	DESIGNER:	EMPLOYER:	PROJECT NAME:	SCALE	PROJECT No / Rev No
			NEMORANGO CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX :(015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : lelalani@nemorango.co.za	NAME H SWANEPOEL SIGNATURE ENGINEER: NAME N FOURIE SIGNATURE	MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	CONSTRUCTION OF DZANANI TAXI RANK		94 OF 2022 / 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: MARKET STALL TYPE B1 LOCATION PLAN	1.1	NEM/09-2022 / NCE 050
DATE	AMENDMENTS							

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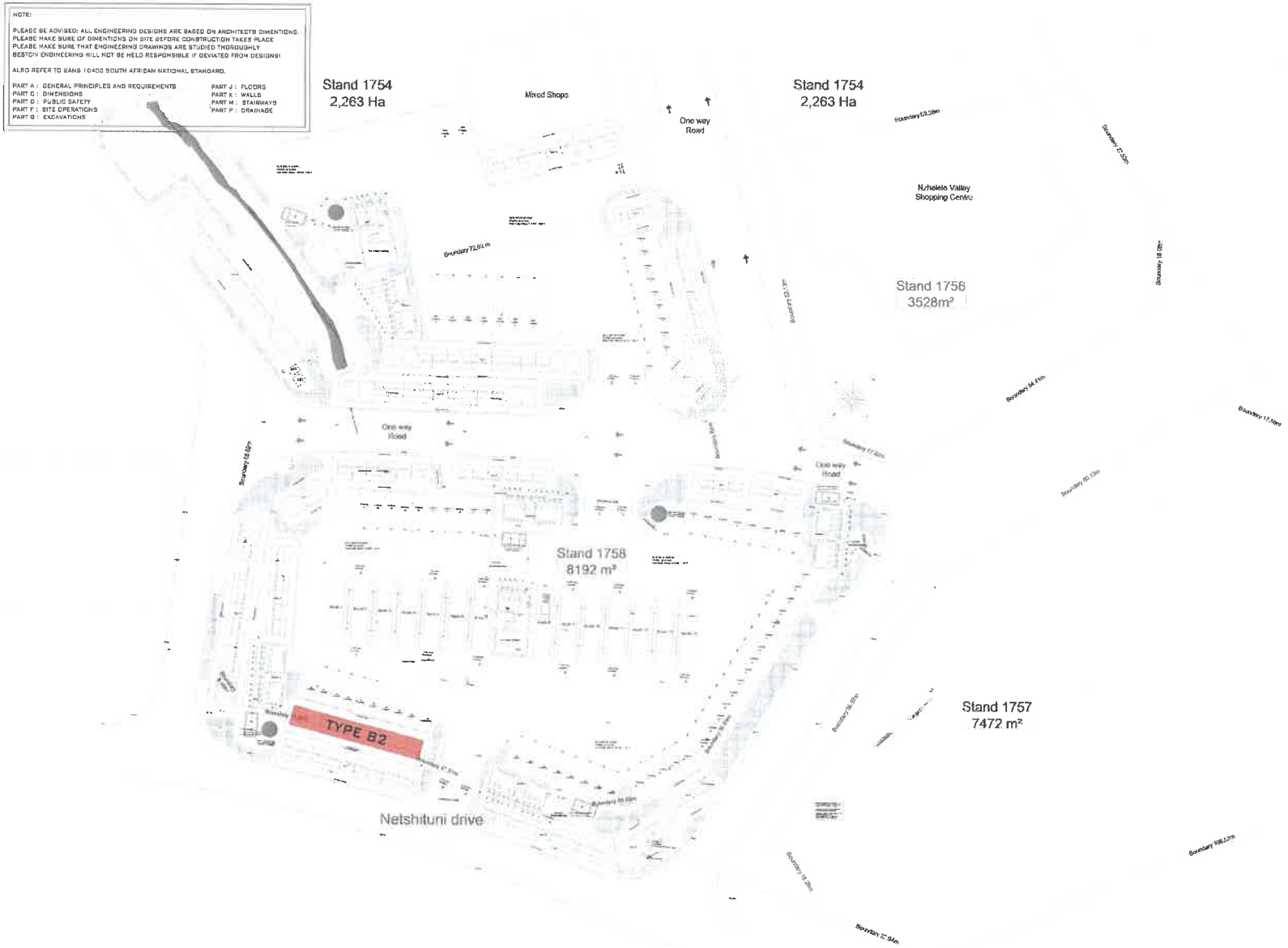

PLAN LAYOUT : LOCATION PLAN
1 : 350

		CONSULTING FIRM: NEMORANGO CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS. T (015) 295 2023 FAX : (015) 295 2024, 10A HANS VAN RENSBURG POLOKWANE 0699, e-mail : lehlalm@nemorango.co.za	DESIGNER: NAME H SWANEPOEL, SIGNATURE; ENGINEER: NAME, SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY, CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920, TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE B2 LOCATION PLAN	1.1	NEM/09-2022	NCE 051
DATE	AMENDMENTS							

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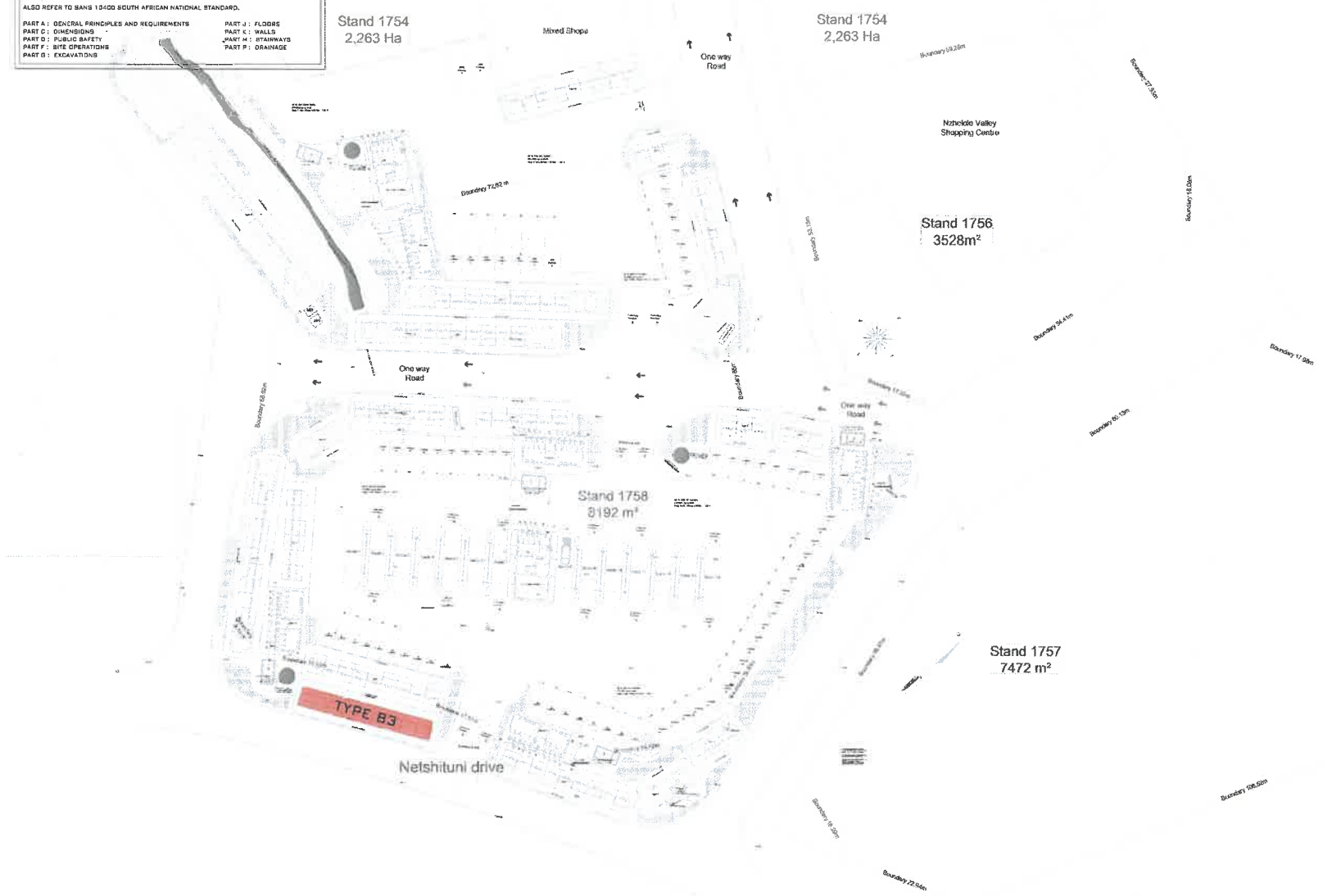

PLAN LAYOUT : LOCATION PLAN
1 : 350

		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS. (015) 295 2023 FAX : (015) 295 2024, 10A HANS VAN RENSBURG POLOKWANE 0699, e-mail : takalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL, SIGNATURE; ENGINEER: NAME H F JURIE, SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY, CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920, TEL. 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE B3 LOCATION PLAN	1.1	NEM/09-2022	NCE 052
DATE	AMENDMENTS							

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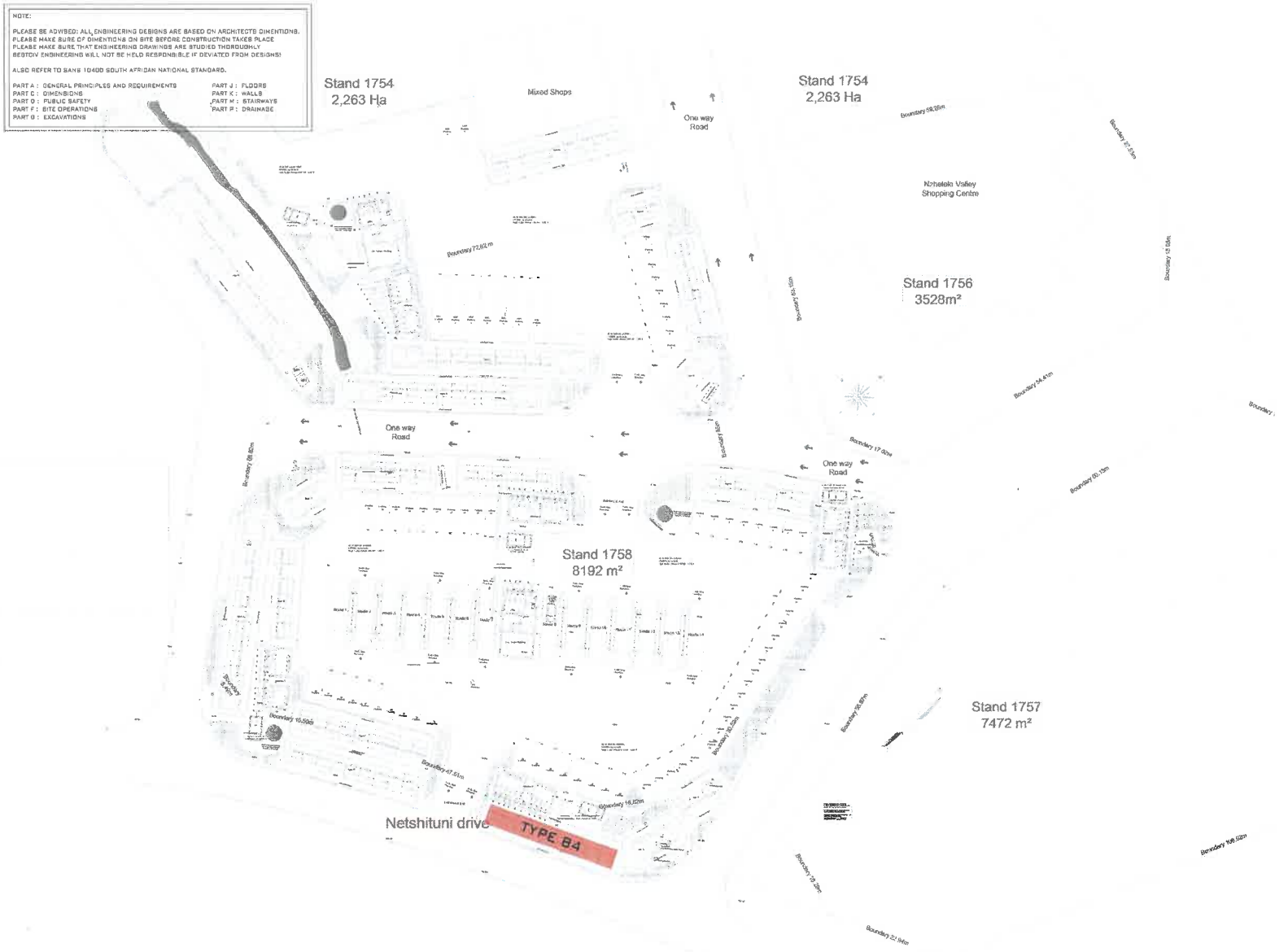
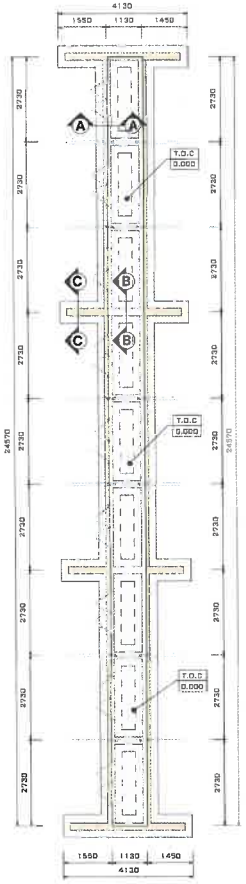


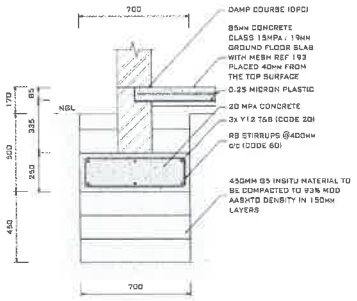
PLAN LAYOUT : LOCATION PLAN

1 : 350

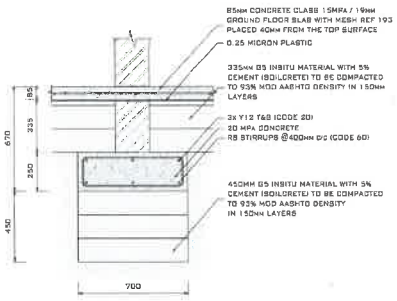
			CONSULTING FIRM: MORANGO CIVIL ENGINEERS HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2623 FAX : (015) 295 2624 19A HANS VAN RENSBURG POLOKWANE 0699 e-mail : lukulau@morangoo.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H F JUBE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: MARKET STALL TYPE B4 LOCATION PLAN	1.1	NEM/09-2022	NCE 053
DATE	AMENDMENTS								



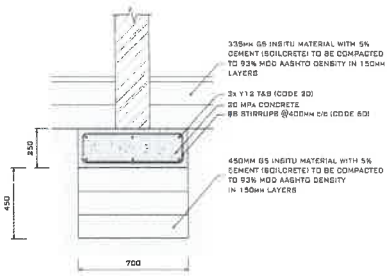
PLAN LAYOUT : GROUNDFLOOR



SECTION A-A (WA)



SECTION B-B (WA)



SECTION C-C (WA)

CONCRETE

BEAM SCHEDULE - STRIP FOOTINGS

TYPE	TOTAL LENGTH	TOTAL VOLUME
700x350mm R.C. STRIP FOOTING	72.44 m	17.37 m³
	72.44 m	17.37 m³

FLOOR SCHEDULE (AREA & VOLUME) - STRIPFOOTING

TYPE ELEMENTS	TYPE	DESCRIPTION	SHEETS	TOTAL AREA	TOTAL VOLUME
STRIP FOOTING	85mm THK. SURFACE BED	Mesh Ref 193	2.5	27.75 m²	2.36 m³
			2.5	27.75 m²	2.36 m³

REBAR

REINFORCING SCHEDULE - STRIP FOOTINGS (STIRRUPS)

BEAM TYPE	REBAR NO.	TYPE	SHAPE CODE	QTY.	A	B	BAR LENGTH	REBAR WEIGHT PER METER	TOTAL WEIGHT
STRIP FOOTING 700x350	03	R8	60	192	192	642	1.38 m	0.395 KG/M	104.51 KG
									104.51 KG

REINFORCING SCHEDULE - STRIP FOOTINGS (STRAIGHT LENGTHS)

BEAM TYPE	TYPE	SHAPE CODE	NO. OFF 6M REBAR LENGTHS	TOTAL WEIGHT
STRIP FOOTING 700x350	Y12 (BF)	20	86.21	459.32 KG
			86.21	459.32 KG

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5. LEVELS (TOC) REFER TO TOP OF CONCRETE.

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TYPE	WIDTH	DEPTH
WA	700	250

FOUNDATION : LEGEND

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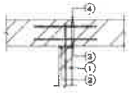

STRAIGHT AND INTERSECTION JOINT

TYPICAL DETAIL FOR CONCERTINA TIES

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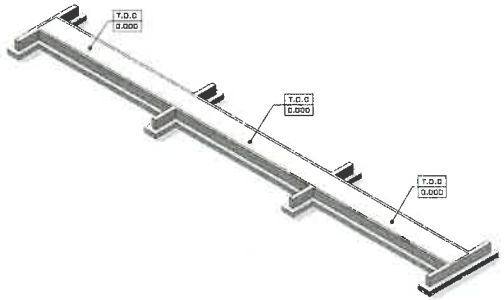


3D VIEW : LEVELS (T.O.C)

			CONSULTING FIRM: MEMORANGO ENGINEERING SERVICES CC — CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS, (015) 295 2023 FAX: (015) 295 2024, 10A HANS VAN RENSBURG POLOKWANE 0699, e-mail: tshidaro@memorango.co.za	DESIGNER: NAME H SWANEPOEL, SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY, CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920, TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER		ENGINEER: NAME HEROLINE, SIGNATURE		DRAWING NAME: MARKET STALL TYPE B RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 054
DATE	AMENDMENTS							

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECTS DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY
BESTCIV ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD.

PART A : GENERAL PRINCIPLES AND REQUIREMENTS
PART C : DIMENSIONS
PART D : PUBLIC SAFETY
PART F : SITE OPERATIONS
PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

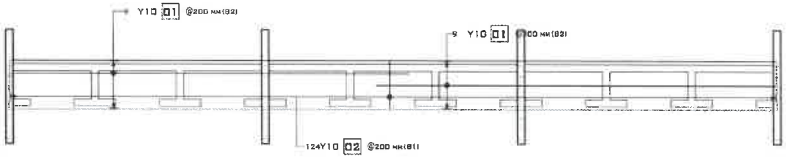
PLEASE NOTE:
STRIP BEAMS ARE NOT PHYSICAL BEAMS THEY ARE ONLY AREAS WHERE THE STRIP BEAM REBAR ARE PLACED.

LEGEND:

- STRIP BEAMS

BEAM LOAD BEARING NOTE:
ALL BEAMS TO BE AT LEAST 220MM ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.

PLAN LAYOUT :COUNTER SLAB
1 : 75



PLAN LAYOUT : COUNTER SLAB BOTTOM REBAR
1 : 75

REBAR PLACEMENT NOTE:

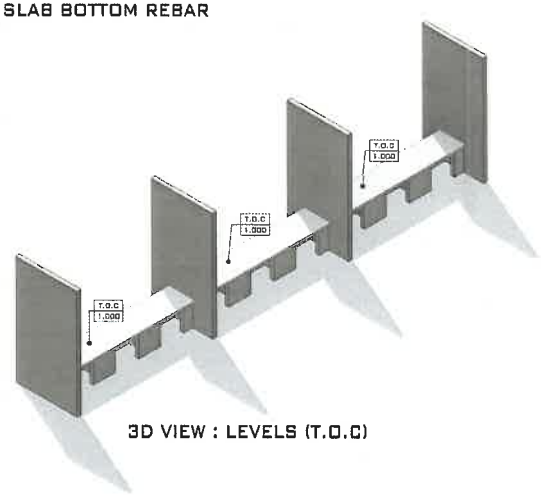
T1 = HIGHEST OF TOP REBAR (PLACED 4TH)
T2 = SECOND HIGHEST OF TOP REBAR (PLACED 3RD)
B2 = SECOND LOWEST OF BOTTOM REBAR (PLACED 2ND)
B1 = LOWEST OF BOTTOM REBAR (PLACED 1ST)

REINFORCING SCHEDULE - FIRST FLOOR

REBAR No.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	C	D	E	TOTAL WEIGHT
(A) BOTTOM CO										
01	18	Y10	34	12875 MM	12800 MM	0 MM	0 MM	0 MM	0 MM	142.99 KG
02	124	Y10	35	1650 MM	1500 MM	0 MM	0 MM	0 MM	0 MM	126.24 KG
	142									269.23 KG

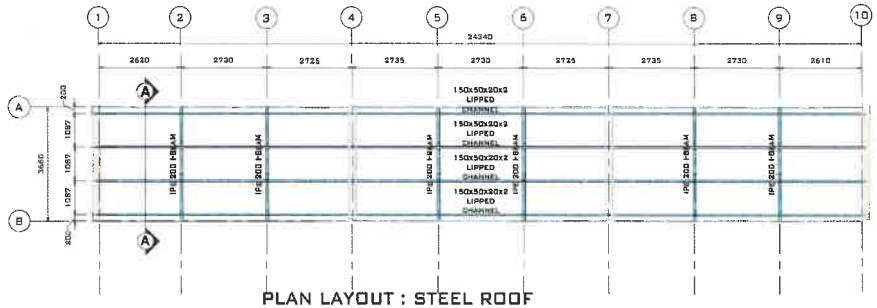
FLOOR SCHEDULE (AREA & VOLUME) - FIRST FLOOR

TYPE	TOTAL AREA	TOTAL VOLUME
150MM THK. R.C. SLAB (FF)	38.33 M²	5.75 M³
	38.33 M²	5.75 M³

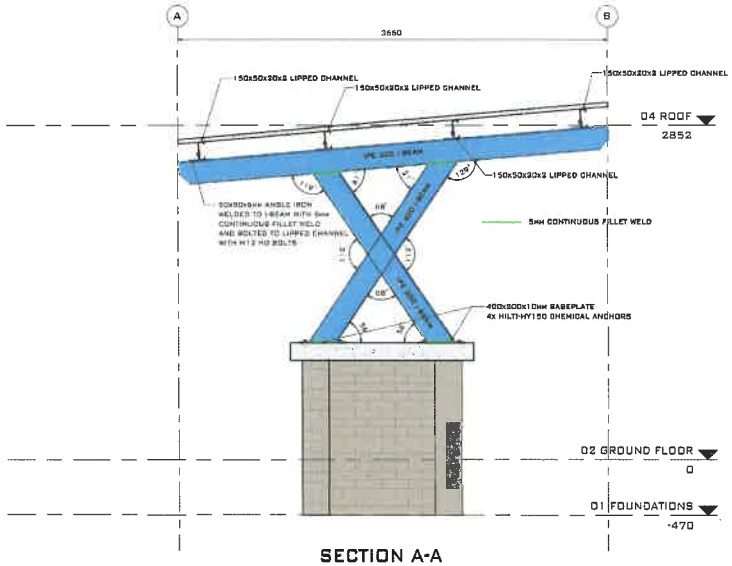


3D VIEW : LEVELS (T.O.C)

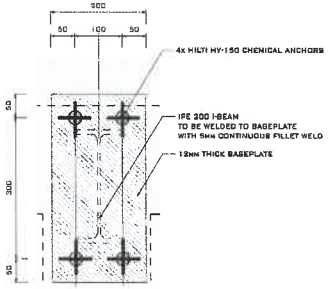
			CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS. CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS. P.O.BOX 2023 FAX : (015) 295 2024. 16A HANS VAN RENSBURG POLOKWANE 0699. e-mail : tshilileli@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE. ENGINEER: NAME SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY. CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920. TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: MARKET STALL TYPE B CONCRETE SLAB LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 055
DATE	AMENDMENTS								



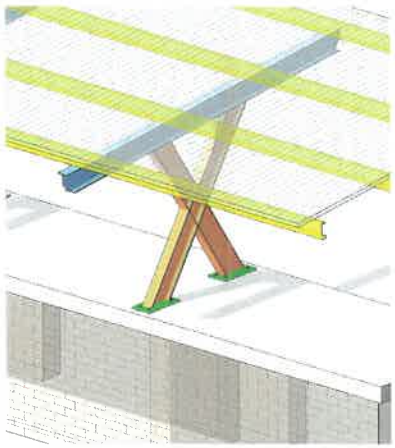
PLAN LAYOUT : STEEL ROOF
1 : 75

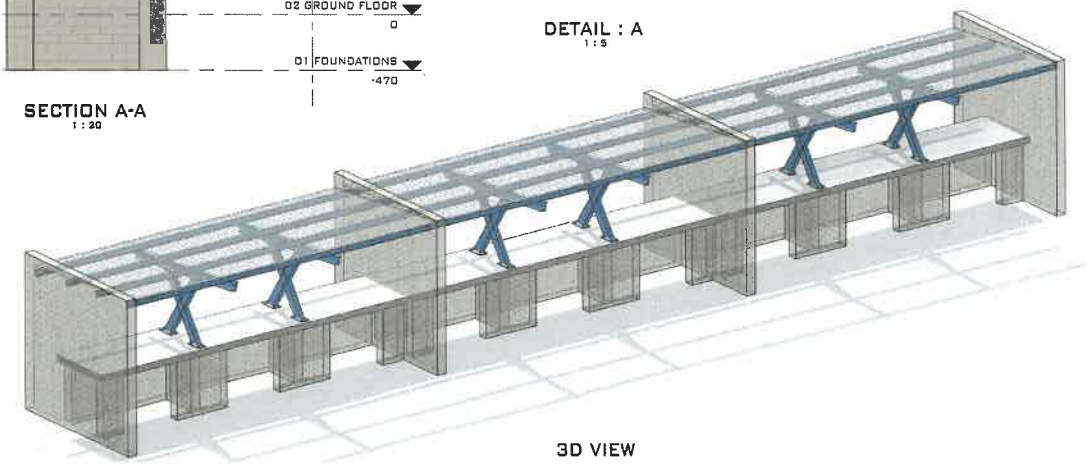


SECTION A-A
1 : 20



DETAIL : A
1 : 5





3D VIEW

		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail: lolalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE B STEEL ROOF LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 056
DATE	AMENDMENTS							

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECTS DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY
BESTCIV ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

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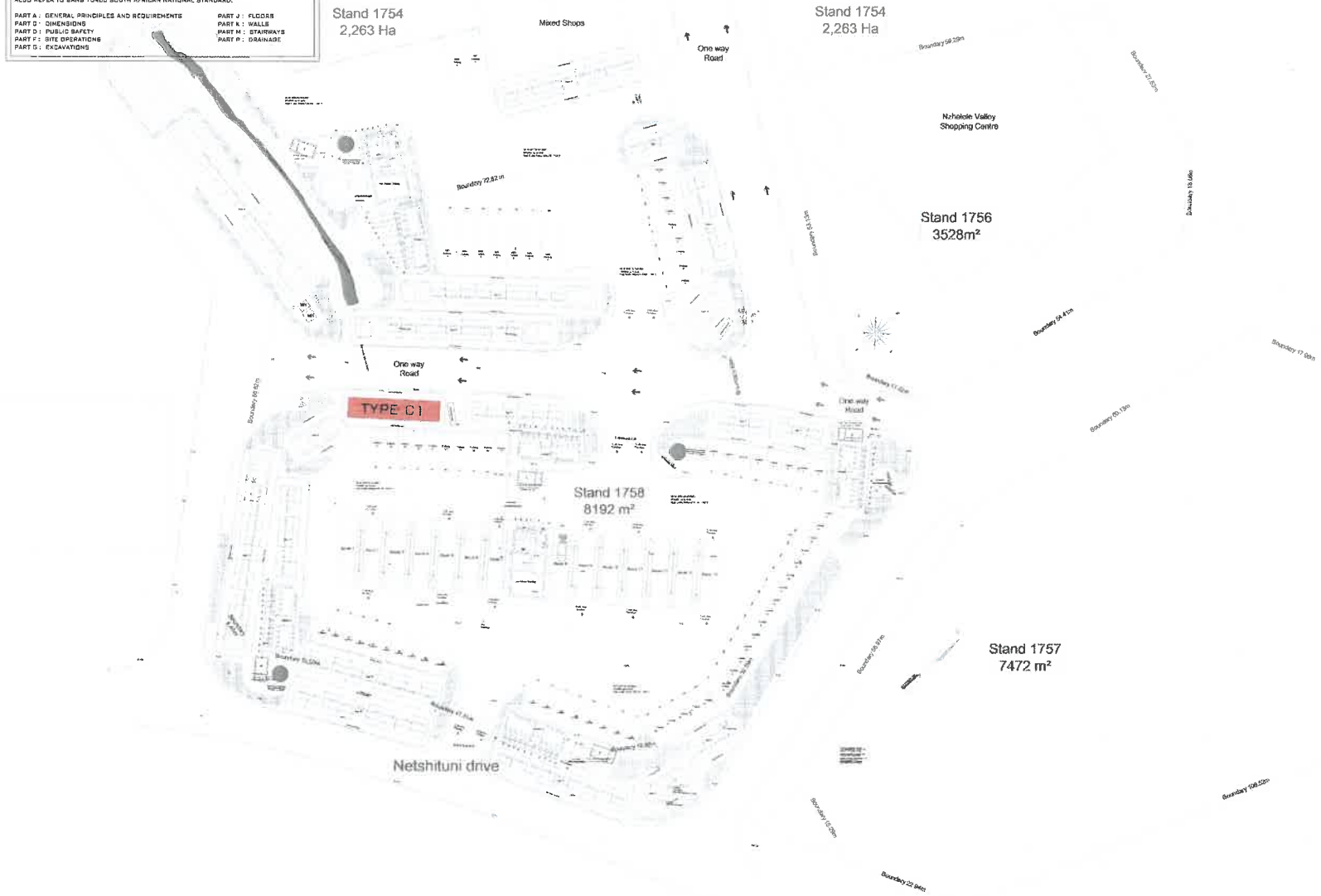
PART A : GENERAL PRINCIPLES AND REQUIREMENTS	PART J : FLOORS
PART D : DIMENSIONS	PART K : WALLS
PART D : PUBLIC SAFETY	PART M : STAIRWAYS
PART F : SITE OPERATIONS	PART P : DRAINAGE
PART G : EXCAVATIONS	



PLAN LAYOUT : LOCATION PLAN

1 : 250

		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 16A HANS VAN RENSBURG POLOKWANE 0699 e-mail : takalani@nemorange.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE C1 LOCATION PLAN	1.1	NEM/09-2022	NCE 057
DATE	AMENDMENTS							

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECT'S DIMENTIONS
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
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PART A : GENERAL PRINCIPLES AND REQUIREMENTS
PART C : DIMENSIONS
PART D : PUBLIC SAFETY
PART F : SITE OPERATIONS
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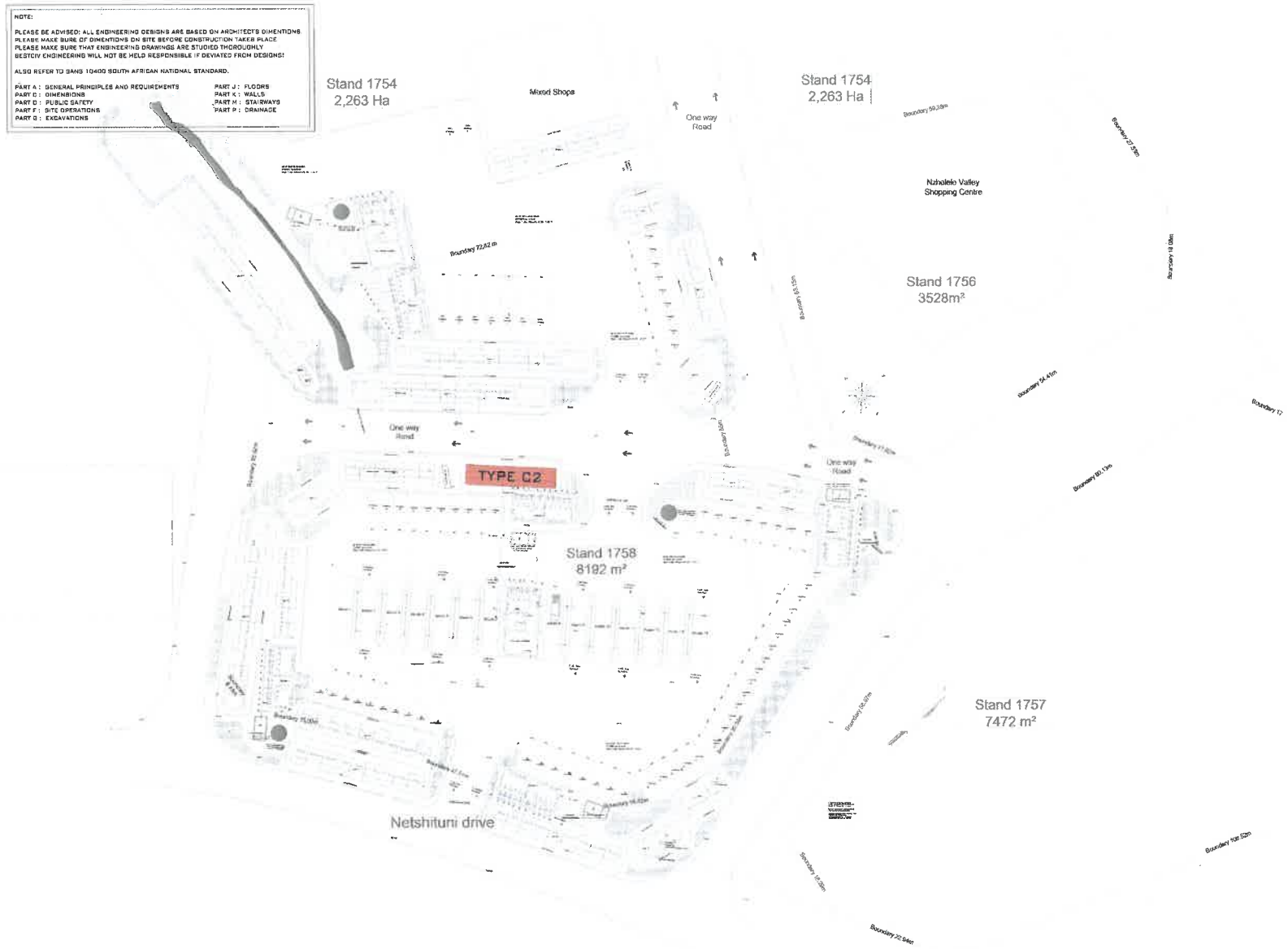
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE



PLAN LAYOUT : LOCATION PLAN
1 : 350

		CONSULTING FIRM: NEMORANGO ENGINEERING & PROJECTS (PTY) LTD CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tshalan@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE C2 LOCATION PLAN	1.1	NEM/09-2022	NCE 058
DATE	AMENDMENTS							

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECTS DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
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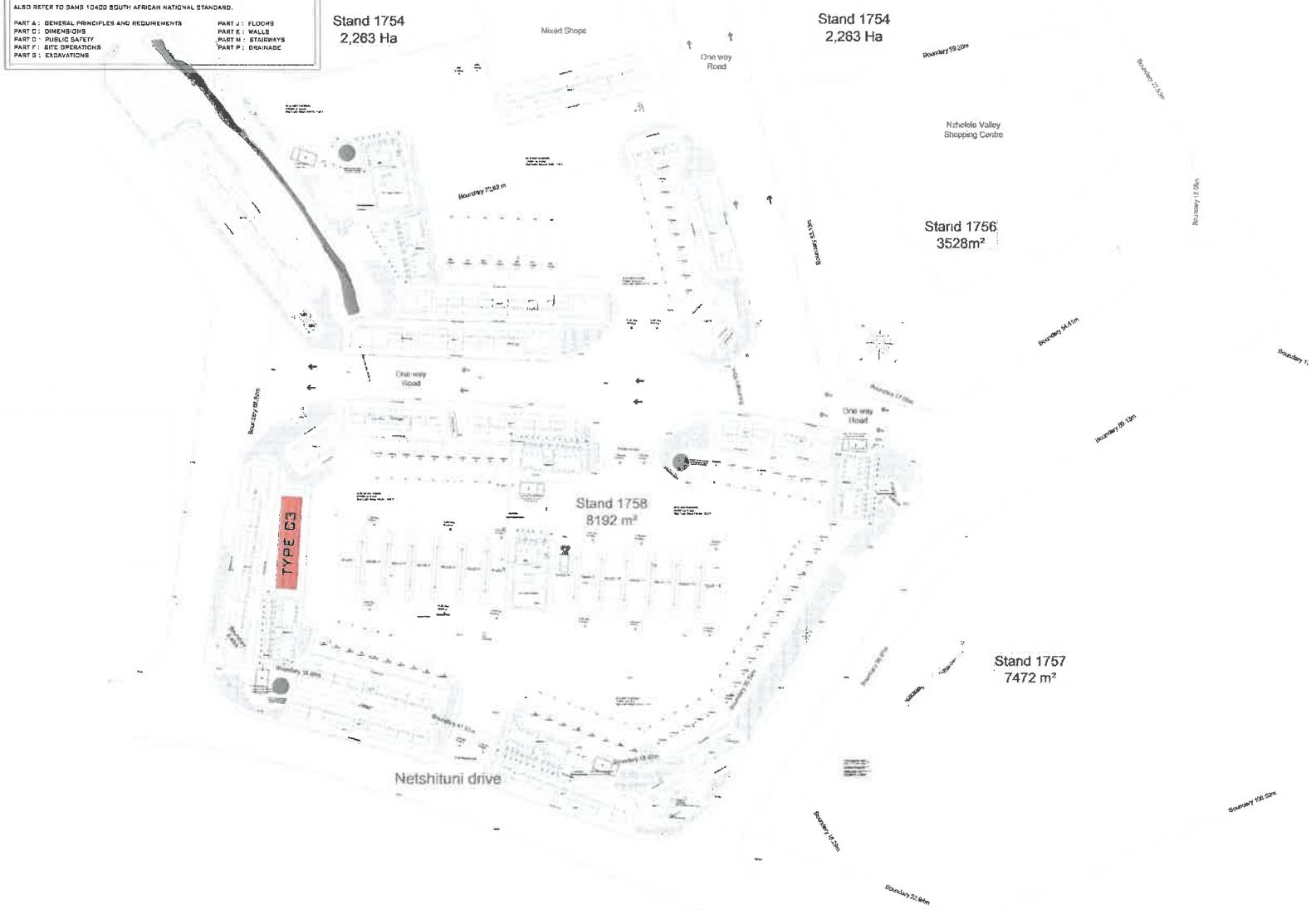
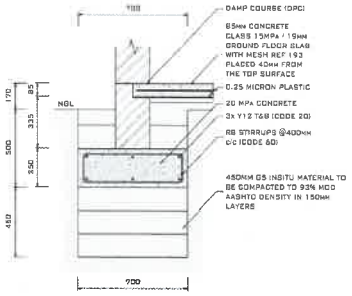
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

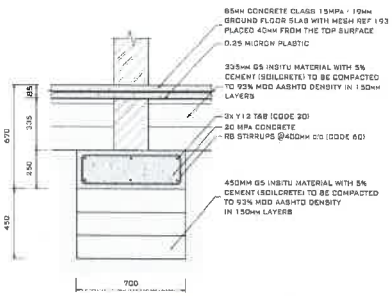


PLAN LAYOUT : LOCATION PLAN
1 : 350

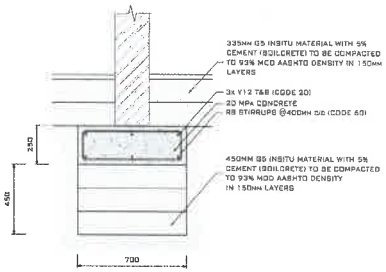
		CONSULTING FIRM: NKHORANGO CONSULTING ENGINEERS CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail: talalani@nkhorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FAJURI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE C3 LOCATION PLAN	1.1	NEM/09-2022	NCE 059
DATE	AMENDMENTS							



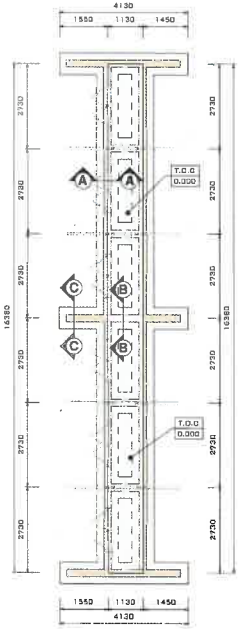
SECTION A-A (WA)



SECTION B-B (WA)



SECTION C-C (WA)



PLAN LAYOUT : GROUNDFLOOR

CONCRETE

BEAM SCHEDULE - STRIP FOOTINGS

TYPE	TOTAL LENGTH	TOTAL VOLUME
FOOTINGS W.C. STRIP FOOTING	46.69 m	7.71 m³
	46.69 m	7.71 m³

FLOOR SCHEDULE (AREA & VOLUME) - STRIPFOOTING

TYPE COMMENTS	TYPE	DESCRIPTION	SHEETS	TOTAL AREA	TOTAL VOLUME
STRIP FOOTING	85mm THK. SURFACE BED	MESH REF 193	1.7	18.51 m²	1.57 m³
			1.7	18.51 m²	1.57 m³

REBAR

REINFORCING SCHEDULE - STRIP FOOTINGS (STIRRUPS)

BEAM TYPE	REBAR NO.	TYPE	SHAPE CODE	QTY.	A	B	BAR LENGTH	REBAR WEIGHT PER METER	TOTAL WEIGHT
STRIP FOOTING 700x250	03	R8	60	133	192	642	1.36 m	0.395 KG/M	71.19 KG
									72.39 KG

REINFORCING SCHEDULE - STRIP FOOTINGS (STRAIGHT LENGTHS)

BEAM TYPE	TYPE	SHAPE CODE	No. Off 5M Rebar Lengths	TOTAL WEIGHT
STRIP FOOTING 700x250	Y12 (SF)	20	59.06	314.59 KG
			59.06	314.59 KG

NOTE:

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PART A : GENERAL PRINCIPLES AND REQUIREMENTS
PART C : DIMENSIONS
PART D : PUBLIC SAFETY
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PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

NOTES:

1. ASSUMED BEARING CAPACITY = 100kPa.
2. UNLESS SPECIFICALLY INDICATED OTHERWISE ALL WALLS AND COLUMNS ARE PLACED CENTRALLY ON FOUNDATIONS.
3. ALL CONCRETE TO BE VIBRATED.
4. UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL DIMENSIONS ARE REFERENCED FROM GRIDLINES & TO CENTRELINES OF WALLS ABOVE SURFACE BED LEVEL.
5. LEVELS (TOC) REFER TO TOP OF CONCRETE.

PLEASE NOTE:
ALL FOUNDATIONS TO BE (WA) UNLESS SHOWN OTHERWISE

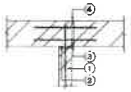
TYPE	WIDTH	DEPTH
WA	700	250

FOUNDATION : LEGEND

PLEASE NOTE : CONTROL AND ARTICULATION

VERTICAL AND HORIZONTAL CONTROL AND ARTICULATION JOINTS SHALL BE CONSTRUCTED AT THE POSITIONS SHOWN IN THE DRAWINGS, AND SHALL BE IN ACCORDANCE WITH THE SCOPE OF WORK. SUCH JOINTS SHALL BE FREE FROM DEBRIS OVER THEIR FULL WIDTH AND, WHERE REQUIRED, FILLED WITH A COMPRESSIBLE FILLER. ANY APPLIED FINISH SHALL NOT RESTRAIN OR INHIBIT MOVEMENT OF THE JOINT.

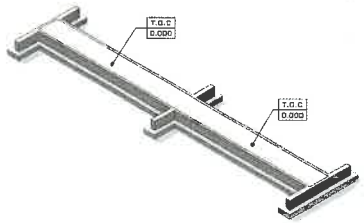
1) 1.2mm THICK GALVANISED HOOP IRON CONCERTINA TIES EVERY 3 LAYERS
2) POLYCORD STRIPS Ø15mm FOR 10mm JOINTS FROM BONDOR (EITHER SIDE OF WALL)
3) UV RESISTANT POLYURETHANE SEALANT FOPU FROM DEN BRAVEN 10mm x 10mm PAINTED WITH ELASTIC PAINT (EITHER SIDE OF WALL)
4) NOTES : JOINTS TO BE CLEANED FROM MORTAR



STRAIGHT AND INTERSECTION JOINT

TYPICAL DETAIL FOR CONCERTINA TIES

PLEASE NOTE:
ALL STRAIGHT LENGTH REBAR IN BEAMS (CODE 20) SHOULD BE SPLICED BY - 50 * DIAMETER.



3D VIEW : LEVELS (T.O.C)

			CONSULTING FIRM: MORANGO CONSULTING ENGINEERS CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 19A HANS VAN RENSBURG POLOKWANE 0699 e-mail: tatalens@tsamorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOUCHE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: MARKET STALL TYPE C RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 060
DATE	AMENDMENTS								

NOTE:

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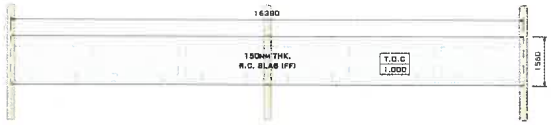
PLEASE NOTE:
STRIP BEAMS ARE NOT PHYSICAL BEAMS THEY ARE ONLY AREAS WHERE THE STRIP BEAM REBAR ARE PLACED.

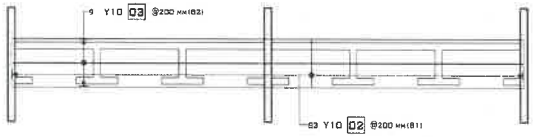
LEGEND:

- STRIP BEAMS

BEAM LOAD BEARING NOTE:
ALL BEAMS TO BE AT LEAST 220MM ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.



PLAN LAYOUT :COUNTER SLAB
1 : 75



PLAN LAYOUT : COUNTER SLAB BOTTOM REBAR
1 : 75

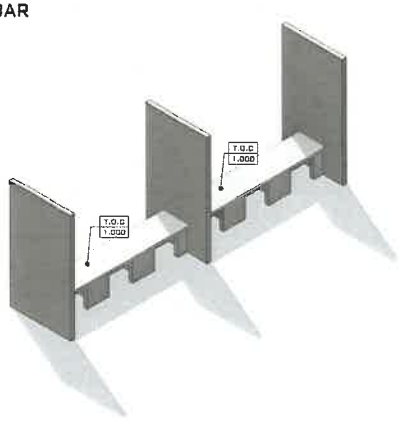
REBAR PLACEMENT NOTE:
T1 = HIGHEST OF TOP REBAR (PLACED 4TH)
T2 = SECOND HIGHEST OF TOP REBAR (PLACED 3RD)
B2 = SECOND LOWEST OF BOTTOM REBAR (PLACED 2ND)
B1 = LOWEST OF BOTTOM REBAR (PLACED 1ST)

REINFORCING SCHEDULE - FIRST FLOOR

REBAR No.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	C	D	E	TOTAL WEIGHT
(A) BOTTOM DS										
02	63	Y10	35	1650 MM	1500 MM	0 MM	0 MM	0 MM	0 MM	84.30 KG
03	9	Y10	35	16475 MM	16325 MM	0 MM	0 MM	0 MM	0 MM	91.49 KG
	72									175.98 KG

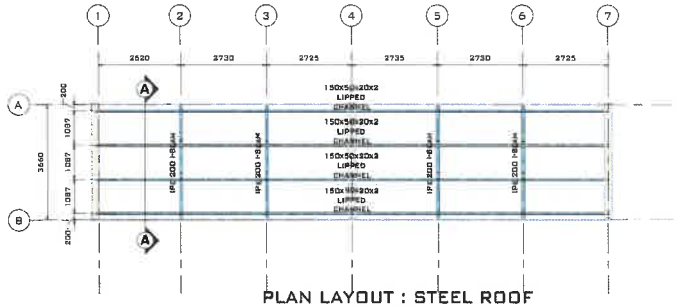
FLOOR SCHEDULE (AREA & VOLUME) - FIRST FLOOR

TYPE	TOTAL AREA	TOTAL VOLUME
150mm THK. R.C. SLAB (FF)	25.55 m²	3.83 m³
	25.55 m²	3.83 m³

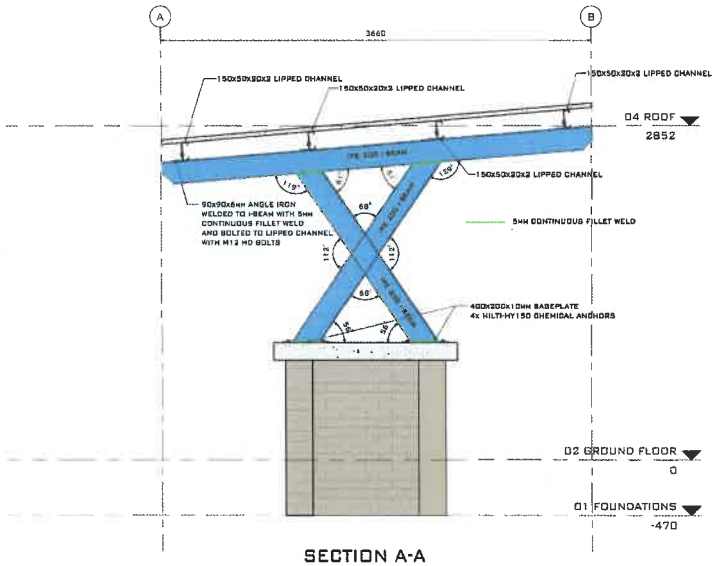


3D VIEW : LEVELS (T.O.C)

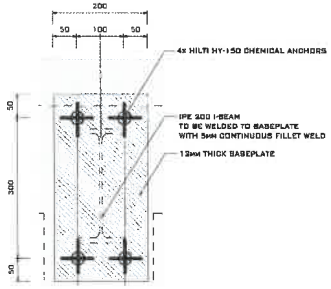
		CONSULTING FIRM: ENGORANGO ENGINEERING PROJECTS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 19A HANS VAN RENSBURG POLOKWANE 0699 e-mail: takalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE C CONCRETE SLAB LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 061
DATE	AMENDMENTS							



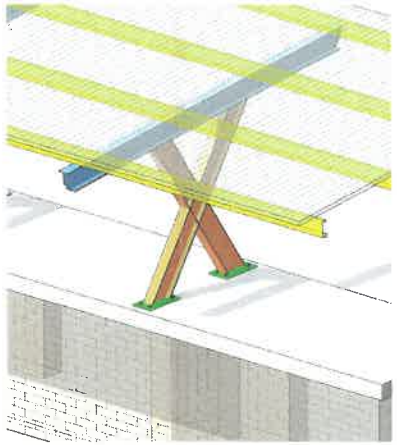
PLAN LAYOUT : STEEL ROOF
1 : 75

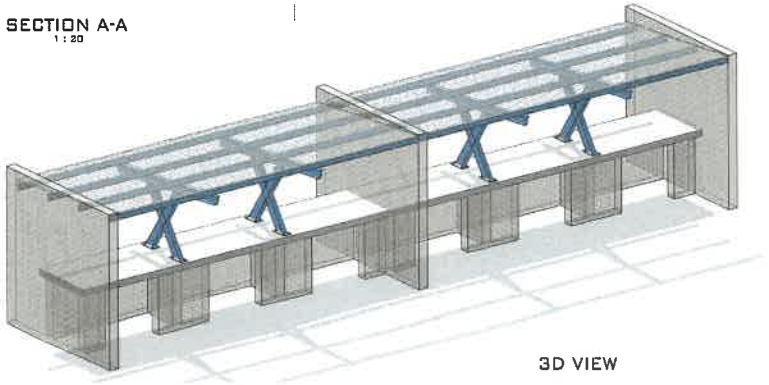


SECTION A-A
1 : 20



DETAIL : A
1 : 5





3D VIEW

			CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : lokabsi@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
	OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE C STEEL ROOF LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 062
	DATE	AMENDMENTS							

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECT'S DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY
BESTCIV ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD.

PART A : GENERAL PRINCIPLES AND REQUIREMENTS
PART C : DIMENSIONS
PART D : PUBLIC SAFETY
PART F : SITE OPERATIONS
PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

PLAN LAYOUT : LOCATION PLAN

			CONSULTING FIRM: NEMORANGO CONSULTING SERVICES CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : takalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: MARKET STALL TYPE D1 LOCATION PLAN	1.1	NEM/09-2022	NCE 063
DATE	AMENDMENTS								

NOTE:

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PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
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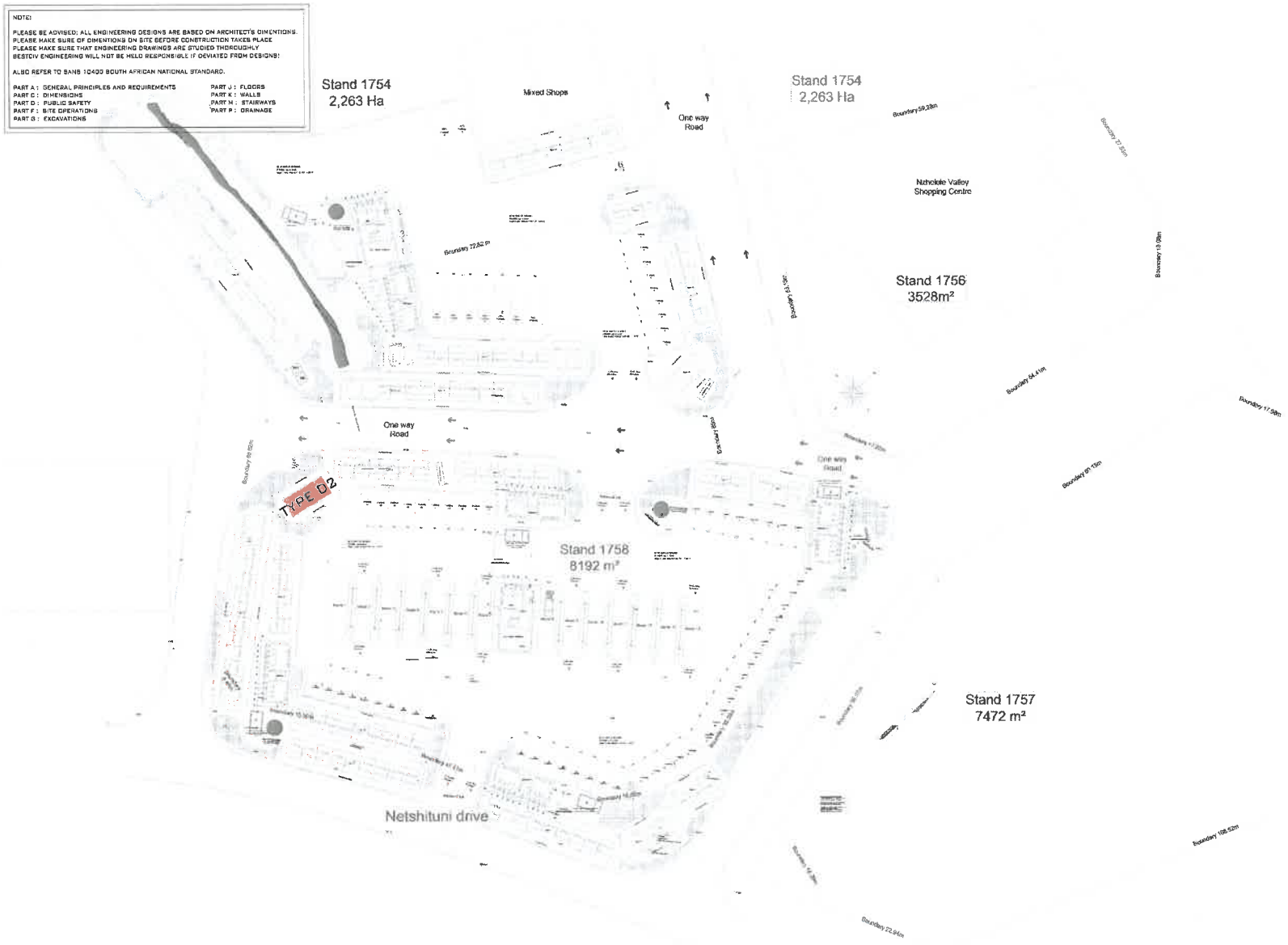
PART P : DRAINAGE



PLAN LAYOUT : LOCATION PLAN

			CONSULTING FIRM: SEMORANGO ENGINEERING (PTY) LTD CIVIL ENGINEERS HYDROGEOLOGISTS & PROJECT MANAGERS T (015) 295 2023 FAX : (015) 295 2024 16A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tsisabe@semorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H?OUSE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: MARKET STALL TYPE D2 LOCATION PLAN	1.1	NEM/09-2022	NCE 064
DATE	AMENDMENTS								

NOTE:

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PART A : GENERAL PRINCIPLES AND REQUIREMENTS
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PART F : SITE OPERATIONS
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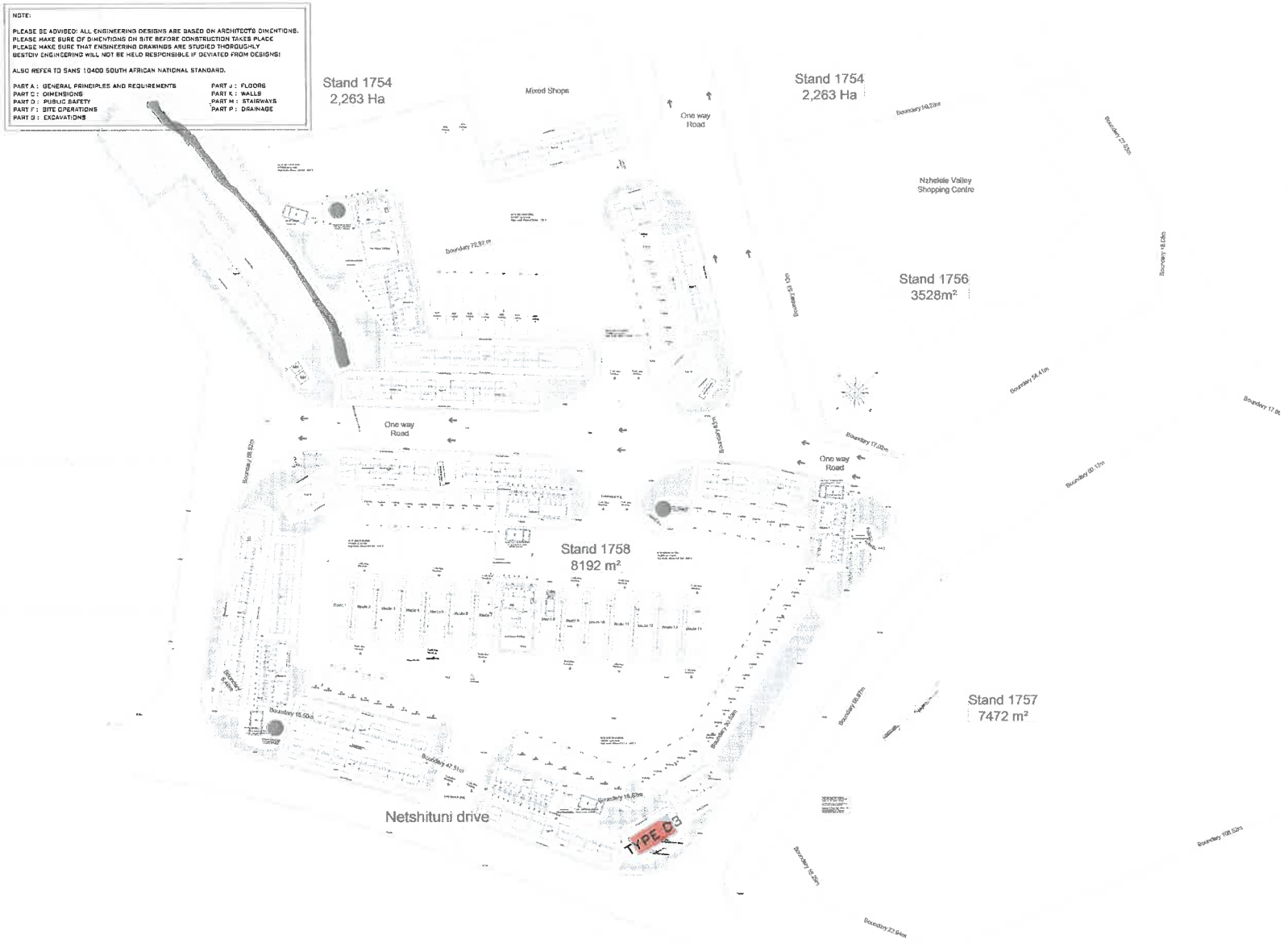
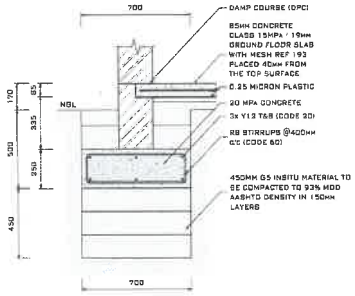
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

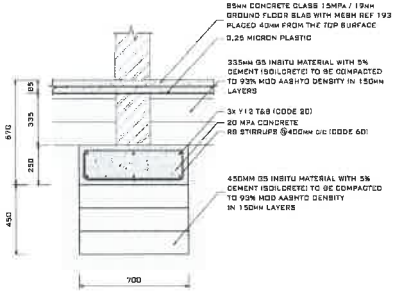


PLAN LAYOUT : LOCATION PLAN

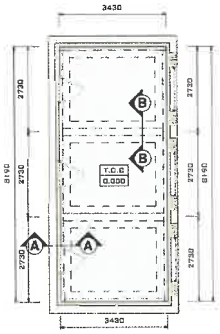
			CONSULTING FIRM: MORANGO ENGINEERS CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail: takalani@metrorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CMC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: MARKET STALL TYPE D3 LOCATION PLAN	1.1	NEM/09-2022	NCE 065
DATE	AMENDMENTS								



SECTION A-A (WA)



SECTION B-B (WA)



PLAN LAYOUT : GROUNDFLOOR

CONCRETE

BEAM SCHEDULE - STRIP FOOTINGS

TYPE	TOTAL LENGTH	TOTAL VOLUME
700x250mm R.C. STRIP FOOTING	30.10 M	5.02 M³
	30.10 M	5.02 M³

FLOOR SCHEDULE (AREA & VOLUME) - STRIPFOOTING

TYPE COMMENTS	TYPE	DESCRIPTION	SHEETS	TOTAL AREA	TOTAL VOLUME
STRIP FOOTING	85mm THK. SURFACE BED	MESH REF 193	2.5	28.09 M²	2.39 M³
			2.5	28.09 M²	2.39 M³

REBAR

REINFORCING SCHEDULE - STRIP FOOTINGS (STIRRUPS)

BEAM TYPE	REBAR NO	TYPE	SHAPE CODE	QTY.	A	B	BAR LENGTH	REBAR WEIGHT PER METER	TOTAL WEIGHT
STRIP FOOTING 700x250	03	R8	60	78	192	642	1.38 M	0.395 KG/M	42.46 KG
									42.46 KG

REINFORCING SCHEDULE - STRIP FOOTINGS (STRAIGHT LENGTHS)

BEAM TYPE	TYPE	SHAPE CODE	NO. OFF 6M REBAR LENGTHS	TOTAL WEIGHT
STRIP FOOTING 700x250	Y12 (SP)	20	35.76	190.53 KG
			35.76	190.53 KG

NOTE:

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PART A : GENERAL PRINCIPLES AND REQUIREMENTS
PART C : DIMENSIONS
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PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

NOTES:

1. ASSUMED BEARING CAPACITY = 100kPa.
2. UNLESS SPECIFICALLY INDICATED OTHERWISE ALL WALLS AND COLUMNS ARE PLACED CENTRALLY ON FOUNDATIONS.
3. ALL CONCRETE TO BE VIBRATED.
4. UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL DIMENSIONS ARE REFERENCED FROM GRIDLINES & TO CENTRELINES OF WALLS ABOVE SURFACE BED LEVEL.
5. LEVELS (TOC) REFER TO TOP OF CONCRETE.

PLEASE NOTE:
ALL FOUNDATIONS TO BE (WA) UNLESS SHOWN OTHERWISE

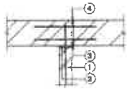
TYPE	WIDTH	DEPTH
WA	700	250

FOUNDATION : LEGEND

PLEASE NOTE : CONTROL AND ARTICULATION

VERTICAL AND HORIZONTAL CONTROL AND ARTICULATION JOINTS SHALL BE CONSTRUCTED AT THE POSITIONS SHOWN IN THE DRAWINGS, AND SHALL BE IN ACCORDANCE WITH THE SCOPE OF WORK. SUCH JOINTS SHALL BE FREE FROM DEBRIS OVER THEIR FULL WIDTH AND, WHERE REQUIRED, FILLED WITH A COMPRESSIBLE FILLER. ANY APPLIED FINISH SHALL NOT RESTRAIN OR INHIBIT MOVEMENT OF THE JOINT.

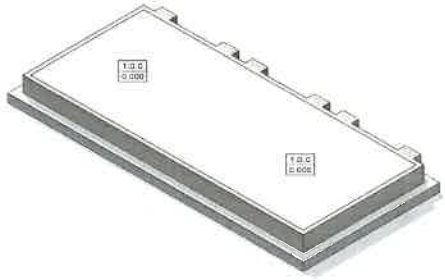
1) 1.2MM THICK GALVANISED HOOP IRON CONCERTINA TIES EVERY 5 LAYERS
2) POLYCORD STRIPS Ø15MM FOR 10MM JOINTS FROM SOMDOR (EITHER SIDE OF WALL)
3) UV RESISTANT POLYURETHANE SEALANT PCPU FROM DEN BRAVEN 10MM x 10MM PAINTED WITH ELASTIC PAINT (EITHER SIDE OF WALL)
4) NOTES : JOINTS TO BE CLEANED FROM MORTAR



STRAIGHT AND INTERSECTION JOINT

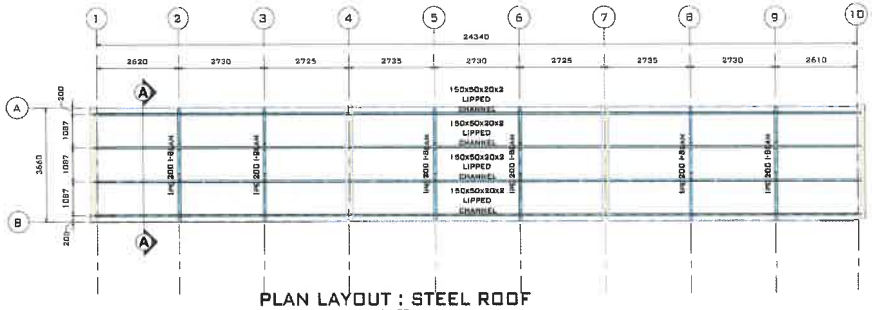
TYPICAL DETAIL FOR CONCERTINA TIES

PLEASE NOTE:
ALL STRAIGHT LENGTH REBAR IN BEAMS (CODE 20) SHOULD BE SPLICED BY - 50 * DIAMETER.

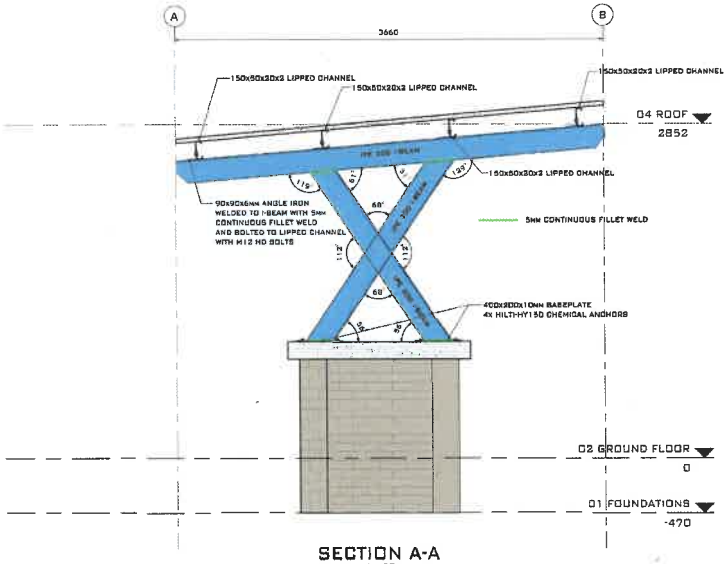


3D VIEW : LEVELS (T.O.C)

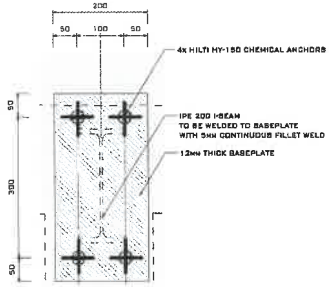
			CONSULTING FIRM: KHORANGO OPERATIONS & MAINTENANCE (PTY) LTD. CIVIL ENGINEERS	DESIGNER: NAME H SWANEPOEL SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER		& PROJECT MANAGERS TEL: (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail: lukakeni@khorango.co.za	ENGINEER: NAME H POUSE SIGNATURE		DRAWING NAME: MARKET STALL TYPE D RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 066
DATE	AMENDMENTS								



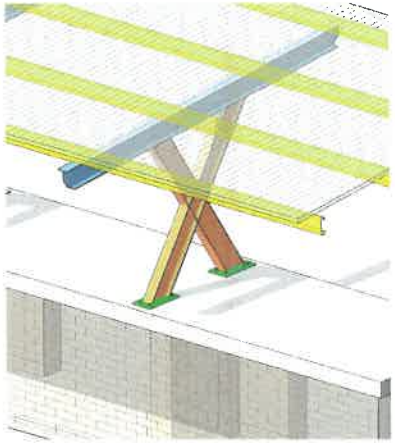
PLAN LAYOUT : STEEL ROOF
1 : 75

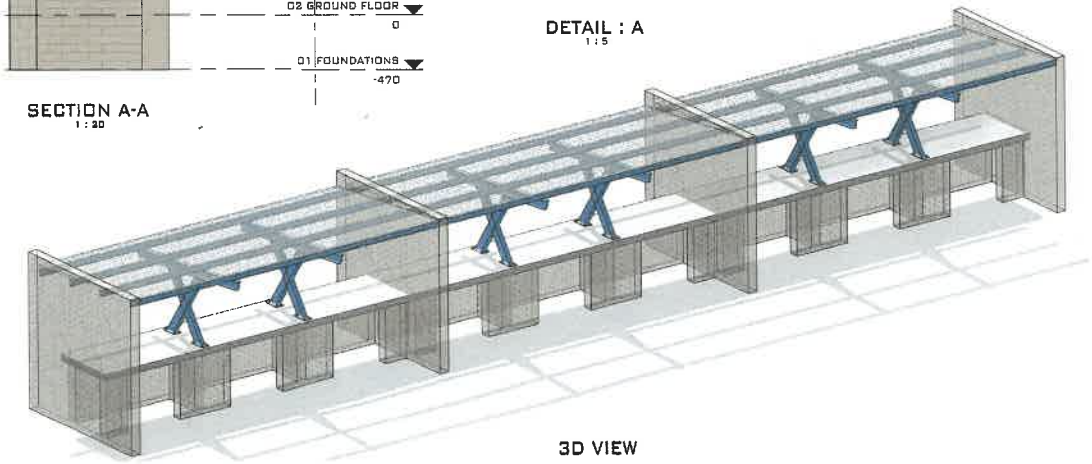


SECTION A-A
1 : 20



DETAIL : A
1 : 5





3D VIEW

		CONSULTING FIRM: MORANGO CONSULTING ENGINEERS CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail: takalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL1 SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CNC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022 DATE	FOR TENDER AMENDMENTS				DRAWING NAME: MARKET STALL TYPE D STEEL ROOF LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 067

NOTE:

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PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

PLAN LAYOUT : LOCATION PLAN
1 : 350

		CONSULTING FIRM: NEMORANGO ENGINEERING SERVICES (PTY) LTD CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : takalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE E1 LOCATION PLAN	1.1	NEM/09-2022	NCE 068
DATE	AMENDMENTS							

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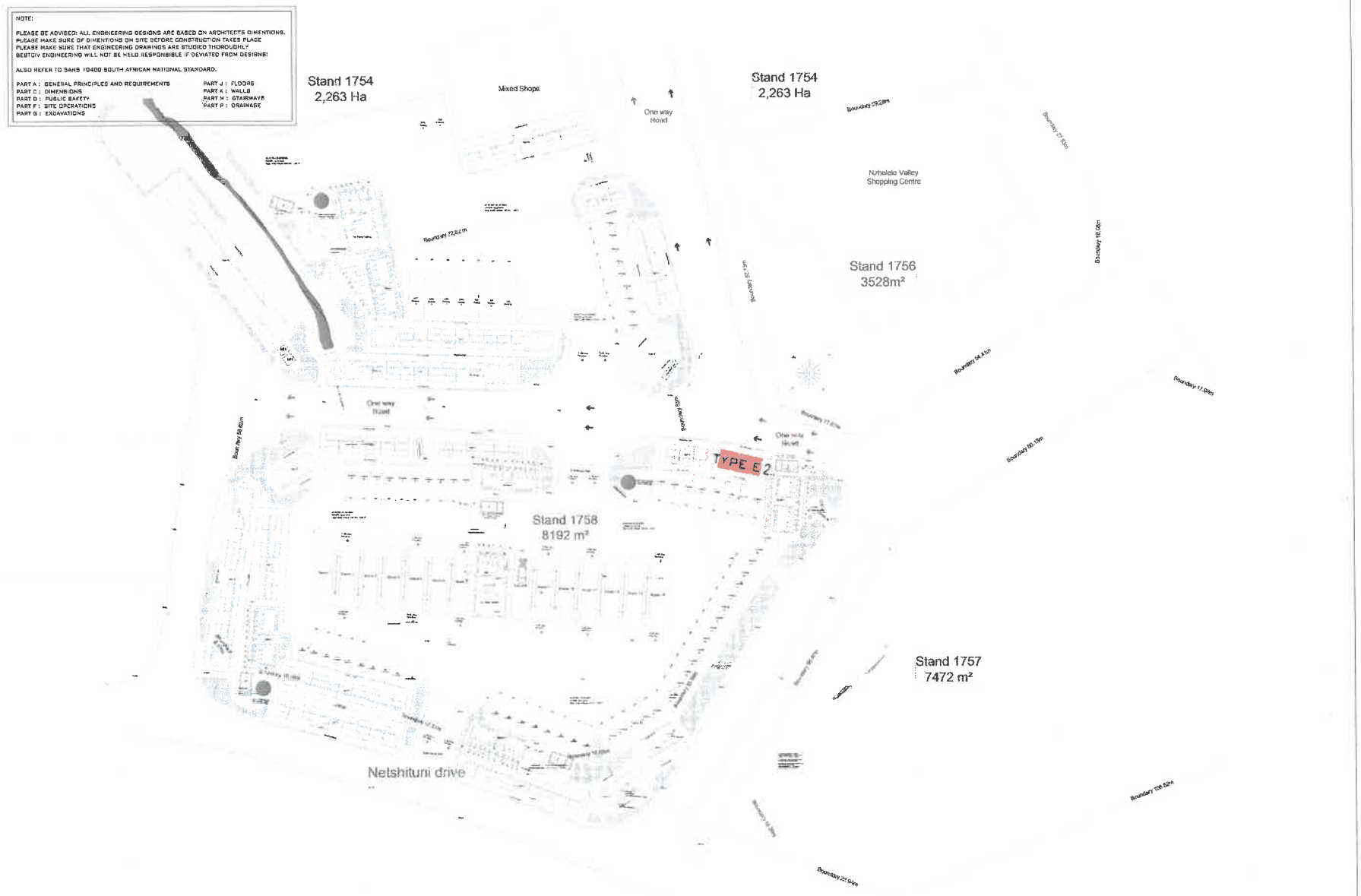
PART F : SITE OPERATIONS	PART P : DRAINAGE
PART G : EXCAVATIONS	



PLAN LAYOUT : LOCATION PLAN
1 : 350

		CONSULTING FIRM: NEMORANGO ENGINEERING CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2033 FAX : (015) 295 2024 19A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tukalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE E2 LOCATION PLAN	1.1	NEM/09-2022	NCE 069
DATE	AMENDMENTS							

NOTE:

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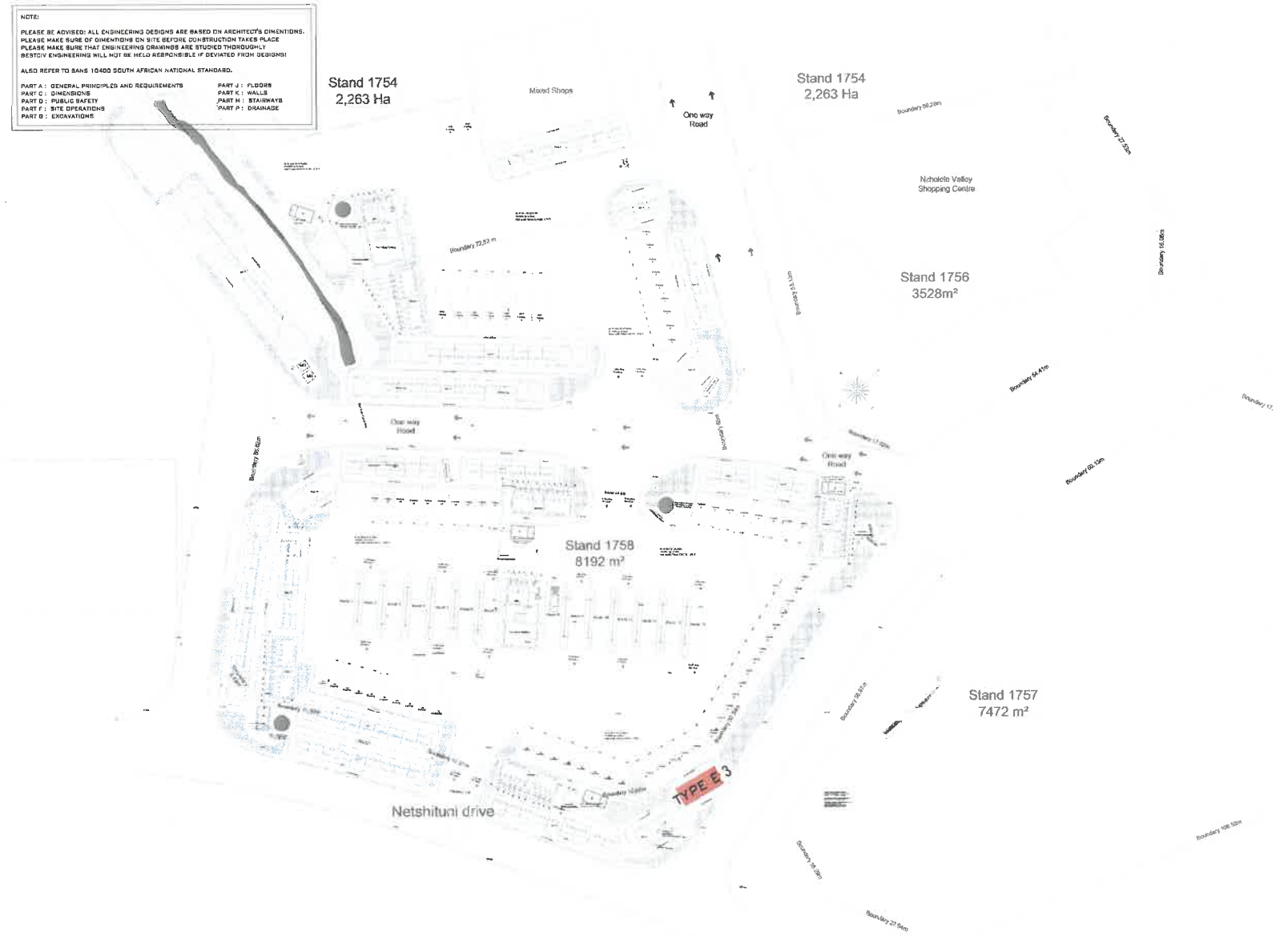
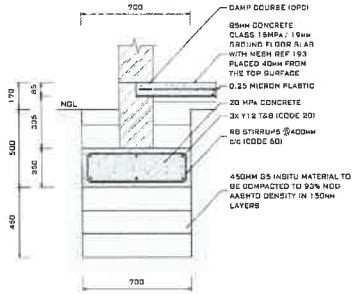
PART F : SITE OPERATIONS	PART P : DRAINAGE
PART B : EXCAVATIONS	

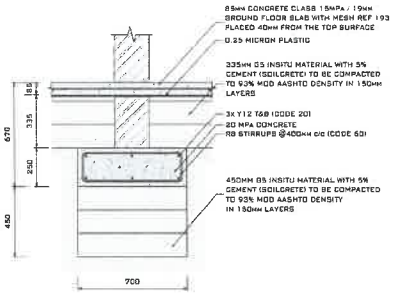


PLAN LAYOUT : LOCATION PLAN
1 : 350

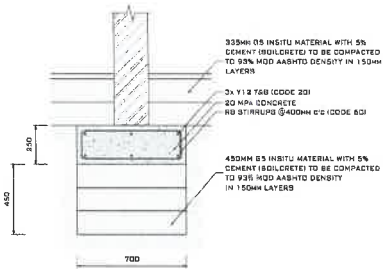
		CONSULTING FIRM: NEMORANGO ENGINEERING CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2924 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail: tshilani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME HP/URIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE E3 LOCATION PLAN	1.1	NEM/09-2022	NCE 070
DATE	AMENDMENTS							



SECTION A-A (WA)



SECTION B-B (WA)



SECTION C-C (WA)

CONCRETE

BEAM SCHEDULE - STRIP FOOTINGS

TYPE	TOTAL LENGTH	TOTAL VOLUME
700x250mm R.C. STRIP FOOTING	26.90 m	4.22 m³
	26.90 m	4.22 m³

FLOOR SCHEDULE (AREA & VOLUME) - STRIPFOOTING

TYPE	DESCRIPTION	SHEETS	TOTAL AREA	TOTAL VOLUME
STRIP FOOTING	85mm THK. SURFACE BED	MESH REF 193	9.25 m²	0.79 m³
		0.8	9.25 m²	0.79 m³

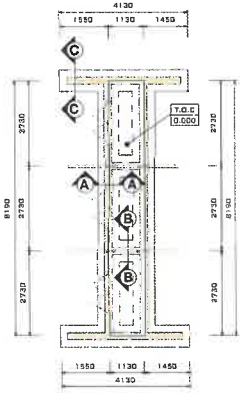
REBAR

REINFORCING SCHEDULE - STRIP FOOTINGS (STIRRUPS)

BEAM TYPE	REBAR NO.	TYPE	SHAPE CODE	QTY.	A	B	BAR LENGTH	REBAR WEIGHT PER METER	TOTAL WEIGHT
Strip Footing 700x250	03	R8	60	72	192	542	1.38 M	0.395 KG/M	39.19 KG
									39.19 KG

REINFORCING SCHEDULE - STRIP FOOTINGS (STRAIGHT LENGTHS)

BEAM TYPE	TYPE	SHAPE CODE	NO. OFF 6M REBAR LENGTHS	TOTAL WEIGHT
Strip Footing 700x250	Y12 (6F)	20	31.92	170.07 KG
			31.92	170.07 KG



PLAN LAYOUT : GROUNDFLOOR

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECT'S DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE.
PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY.
BESTCIV ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

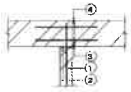
ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD.

PART A : GENERAL PRINCIPLES AND REQUIREMENTS
PART C : DIMENSIONS
PART D : PUBLIC SAFETY
PART F : SITE OPERATIONS
PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

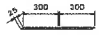
PLEASE NOTE : CONTROL AND ARTICULATION

VERTICAL AND HORIZONTAL CONTROL AND ARTICULATION JOINTS SHALL BE CONSTRUCTED AT THE POSITIONS SHOWN IN THE DRAWINGS, AND SHALL BE IN ACCORDANCE WITH THE SCOPE OF WORK. SUCH JOINTS SHALL BE FREE FROM DEBRIS OVER THEIR FULL WIDTH AND, WHERE REQUIRED, FILLED WITH A COMPRESSIBLE FILLER. ANY APPLIED FINISH SHALL NOT RESTRAIN OR INHIBIT MOVEMENT OF THE JOINT.

1) 1.2MM THICK SALVANISED HOOP IRON CONCERTINA TIES EVERY 5 LAYERS
2) POLYCORD STRIPS Ø1.5MM FOR 10MM JOINTS FROM BONDON (EITHER SIDE OF WALL)
3) UV RESISTANT POLYURETHANE SEALANT FOPU FROM DEN BRAVEN (10MM X 10MM PAINTED WITH ELASTIC PAINT (EITHER SIDE OF WALL)
4) NOTES : JOINTS TO BE CLEANED FROM MORTAR



STRAIGHT AND INTERSECTION JOINT



TYPICAL DETAIL FOR CONCERTINA TIES

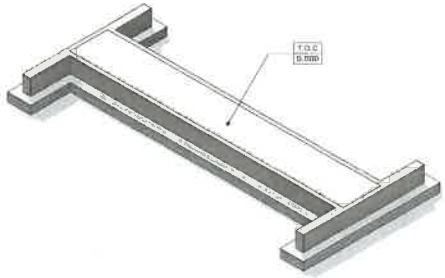
NOTES:

1. ASSUMED BEARING CAPACITY = 100kPa.
2. UNLESS SPECIFICALLY INDICATED OTHERWISE ALL WALLS AND COLUMNS ARE PLACED CENTRALLY ON FOUNDATIONS.
3. ALL CONCRETE TO BE VIBRATED.
4. UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL DIMENSIONS ARE REFERENCED FROM GRIDLINES & TO CENTRELINES OF WALLS ABOVE SURFACE BED LEVEL.
5. LEVELS ITOO REFER TO TOP OF CONCRETE

PLEASE NOTE:
ALL FOUNDATIONS TO BE (WA) UNLESS SHOWN OTHERWISE

TYPE	WIDTH	DEPTH
WA	700	250

FOUNDATION : LEGEND



3D VIEW : LEVELS (T.O.C)

PLEASE NOTE:
ALL STRAIGHT LENGTH REBAR IN BEAMS (CODE 20) SHOULD BE SPLICED BY - 50 * DIAMETER.

		CONSULTING FIRM: NEMORANGO ENGINEERING SERVICES (PTY) LTD. CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS. (015) 295 2023 FAX: (015) 295 2024. 10A HANS VAN RENSBURG POLOKWANE 0699. e-mail: fakalani@nemorango.co.za	DESIGNER: NAME H.SWANEPOEL SIGNATURE. ENGINEER: NAME H.FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY. CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920. TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE E RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 071
DATE	AMENDMENTS							

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECTS DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY
BESTDIV ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

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PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

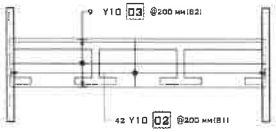
PLEASE NOTE:
STRIP BEAMS ARE NOT PHYSICAL BEAMS THEY ARE ONLY AREAS WHERE THE STRIP BEAM REBAR ARE PLACED.

LEGEND:

- STRIP BEAMS

BEAM LOAD BEARING NOTE:
ALL BEAMS TO BE AT LEAST 220MM ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.

PLAN LAYOUT :COUNTER SLAB
1 : 75



PLAN LAYOUT : COUNTER SLAB BOTTOM REBAR
1 : 75

REBAR PLACEMENT NOTE:

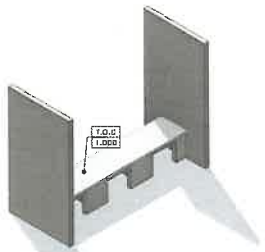
- T1 = HIGHEST OF TOP REBAR (PLACED 4TH)
- T2 = SECOND HIGHEST OF TOP REBAR (PLACED 3RD)
- B2 = SECOND LOWEST OF BOTTOM REBAR (PLACED 2ND)
- B1 = LOWEST OF BOTTOM REBAR (PLACED 1ST)

REINFORCING SCHEDULE - FIRST FLOOR

Rebar No.	Qty.	Type	Shape Code	Bar Length	A	B	C	D	E	Total Weight
(B) BOTTOM REBAR										
02	42	Y10	35	1650 MM	1500 MM	0 MM	0 MM	0 MM	0 MM	43.78 KG
03	9	Y10	35	9275 MM	9125 MM	0 MM	0 MM	0 MM	0 MM	43.93 KG
	51									88.71 KG

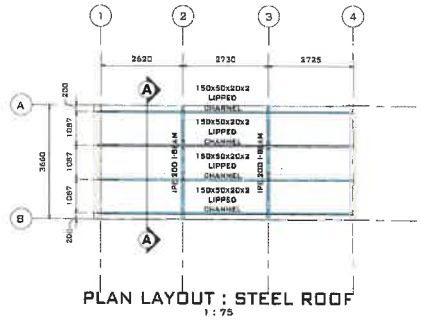
FLOOR SCHEDULE (AREA & VOLUME) - FIRST FLOOR

Type	Total Area	Total Volume
150mm THK. R.C. SLAB (FF)	12.78 M²	1.92 M³
	12.78 M²	1.92 M³

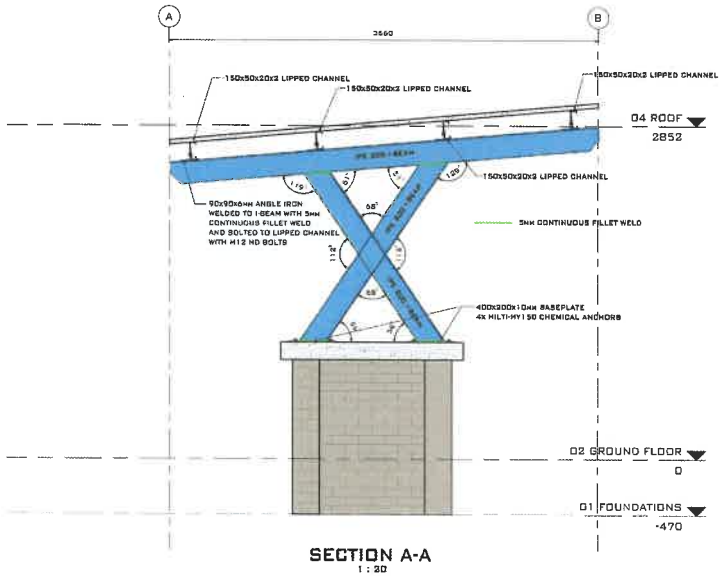


3D VIEW : LEVELS (T.O.C)

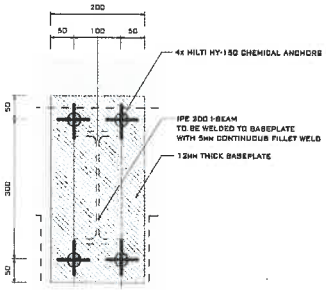
		CONSULTING FIRM: MZIMORANGO ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tshilaic@mzimorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 516 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE E CONCRETE SLAB LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 072
DATE	AMENDMENTS							



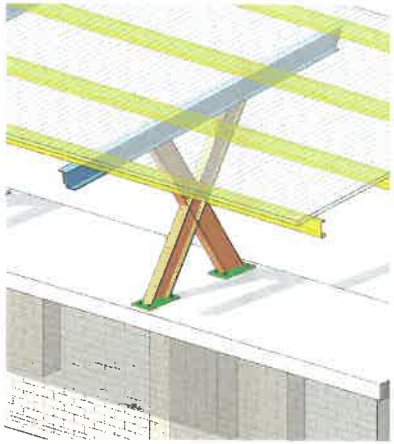
PLAN LAYOUT : STEEL ROOF
1 : 75

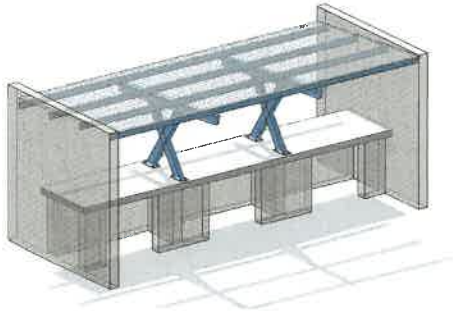


SECTION A-A
1 : 20



DETAIL : A
1 : 5





3D VIEW

		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS P(015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail: lekalane@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H POURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALL TYPE E STEEL ROOF LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 073
DATE	AMENDMENTS							

NOTE:

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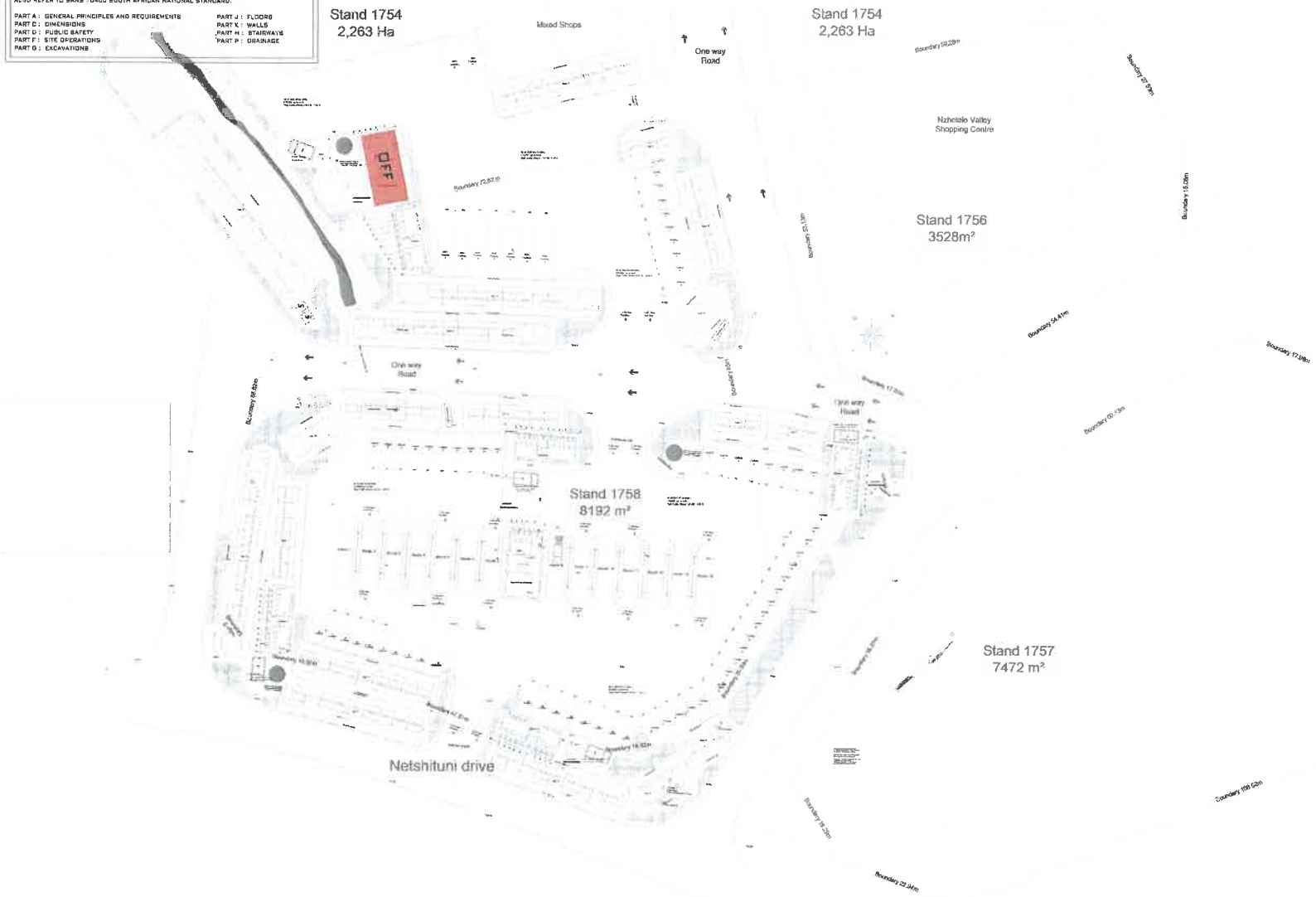
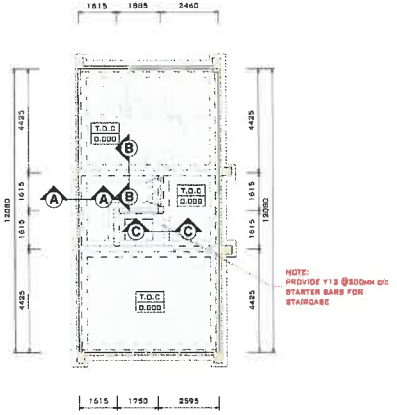
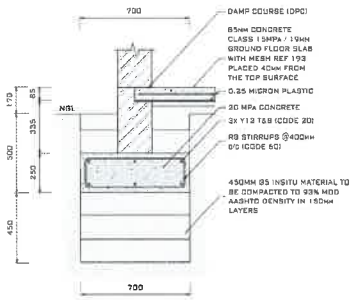


PLAN LAYOUT : LOCATION PLAN
1 : 350

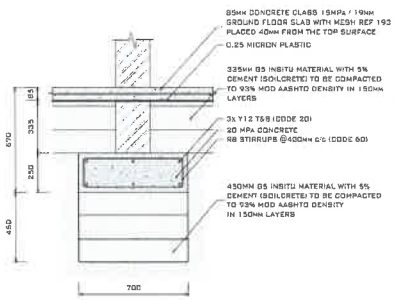
		CONSULTING FIRM: NEMORANGO CONSULTING SERVICES CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 19A HANS VAN RENSBURG POLOKWANE 0699 e-mail : lekalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER		ENGINEER: NAME H FOURIE SIGNATURE		DRAWING NAME: BUS TERMINAL BUILDING LOCATION PLAN	1.1	NEM/09-2022	NCE 074
DATE	AMENDMENTS							



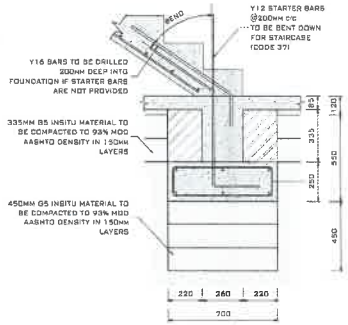
PLAN LAYOUT : GROUNDFLOOR



SECTION A-A (WA)



SECTION B-B (WA)



SECTION C-C (WA)

CONCRETE

BEAM SCHEDULE - STRIP FOOTINGS

TYPE	TOTAL LENGTH	TOTAL VOLUME
700x250mm R.C. STRIP FOOTING	58.69 m	9.41 m³
	58.69 m	9.41 m³

FLOOR SCHEDULE (AREA & VOLUME) - STRIPFOOTING

TYPE COMMENTS	TYPE	DESCRIPTION	SHEETS	TOTAL AREA	TOTAL VOLUME
STRIP FOOTING	85mm THK. SURFACE BED	MESH REF 193	6.4	72.00 m²	6.12 m³
			6.4	72.00 m²	6.12 m³

REBAR

REINFORCING SCHEDULE - STRIP FOOTINGS (STIRR: R8)

BEAM TYPE	REBAR NO.	TYPE	SHAPE CODE	QTY.	A	B	BAR LENGTH	REBAR WEIGHT PER METRE	TOTAL WEIGHT
Strip Footing 700x250	03	R8	60	155	192	642	1.38 m	0.395 KG/M	84.37 kg
									84.37 kg

REINFORCING SCHEDULE - STRIP FOOTINGS (STRAIGHT LENGTHS)

BEAM TYPE	TYPE	SHAPE CODE	NO. OFF 6m REBAR LENGTHS	TOTAL WEIGHT
(Strip Footing 700x250	Y12 (SF)	20	59.69	372.36 kg
			59.69	372.36 kg

REINFORCING SCHEDULE - STAIRCASE

REBAR MRK	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	TOTAL WEIGHT
STAIRCASE							
01	6	Y12	37	1675 mm	1200 mm	500 mm	0.92 kg
	6						0.92 kg

NOTES:

1. ASSUMED BEARING CAPACITY = 100kPa.
2. UNLESS SPECIFICALLY INDICATED OTHERWISE ALL WALLS AND COLUMNS ARE PLACED CENTRALLY ON FOUNDATIONS.
3. ALL CONCRETE TO BE VIBRATED.
4. UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL DIMENSIONS ARE REFERENCED FROM GRIDLINES & TO CENTRELINES OF WALLS ABOVE SURFACE BED LEVEL.
5. LEVELS (TOC) REFER TO TOP OF CONCRETE.

TYPE	WIDTH	DEPTH
WA	700	250

FOUNDATION : LEGEND

PLEASE NOTE:
ALL FOUNDATIONS TO BE (WA)
UNLESS SHOWN OTHERWISE

NOTE:

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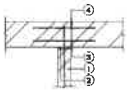
PLEASE NOTE : CONTROL AND ARTICULATION

VERTICAL AND HORIZONTAL CONTROL AND ARTICULATION JOINTS SHALL BE CONSTRUCTED AT THE POSITIONS SHOWN IN THE DRAWINGS, AND SHALL BE IN ACCORDANCE WITH THE SCOPE OF WORK. SUCH JOINTS SHALL BE FREE FROM DEBRIS OVER THEIR FULL WIDTH AND, WHERE REQUIRED, FILLED WITH A COMPRESSIBLE FILLER. ANY APPLIED FINISH SHALL NOT RESTRAIN OR INHIBIT MOVEMENT OF THE JOINT.

1) 1.2MM THICK GALVANISED HOOP IRON CONCERTINA TIES EVERY 5 LAYERS
2) POLYCORD STRIPS Ø19MM FOR 10MM JOINTS FROM SONDOR (EITHER SIDE OF WALL)
3) UV RESISTANT POLYURETHANE SEALANT FCFU FROM DEN BRAVEN 10MM x 10MM PAINTED WITH ELASTIC PAINT (EITHER SIDE OF WALL)
4) NOTES : JOINTS TO BE CLEANED FROM MORTAR



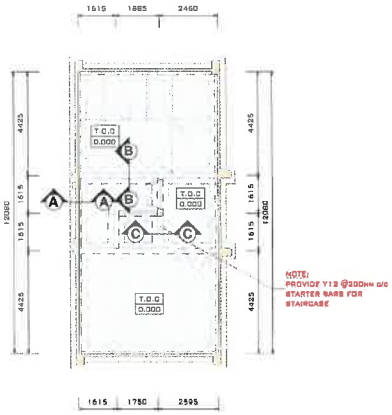
STRAIGHT AND INTERSECTION JOINT

TYPICAL DETAIL FOR CONCERTINA TIES

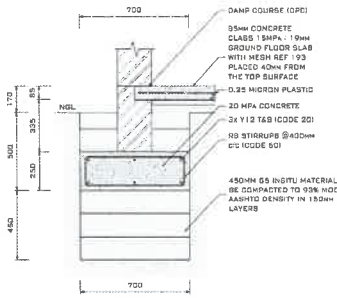
3D VIEW : LEVELS (T.O.C)

PLEASE NOTE:
ALL STRAIGHT LENGTH REBAR IN BEAMS (CODE 20)
SHOULD BE SPLICED BY - 50 * DIAMETER.

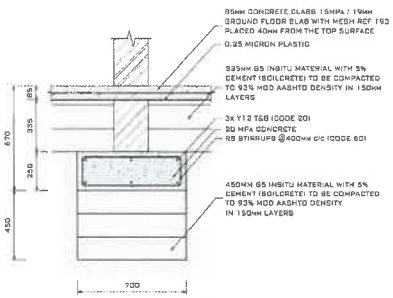
			CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 104 HANS VAN RENSBURG POLOKWANE 0699 e-mail: takalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: BUS TERMINAL ADMIN BUILDING RAFT FOUNDATION LAYOUT DETAILS AND SECTIONS	1.1	NEM/09-2022	NCE 075
DATE	AMENDMENTS								



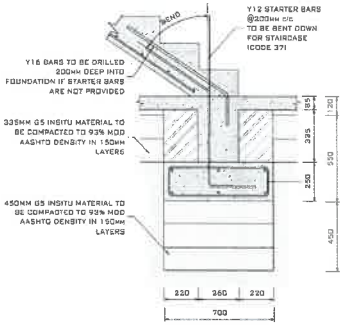
PLAN LAYOUT : GROUNDFLOOR



SECTION A-A (WA)



SECTION B-B (WA)



SECTION C-C (WA)

CONCRETE

BEAM SCHEDULE - STRIP FOOTINGS

TYPE	TOTAL LENGTH	TOTAL VOLUME
700x250mm R.C. STRIP FOOTING	58.59 m	8.61 m³
	58.59 m	8.61 m³

FLOOR SCHEDULE (AREA & VOLUME) - STRIPFOOTING

TYPE COMMENTS	TYPE	DESCRIPTION	SHEETS	TOTAL AREA	TOTAL VOLUME
STRIP FOOTING	95mm THK. SURFACE BED	MESH REF 193	6.4	72.00 m²	6.12 m³
			6.4	72.00 m²	6.12 m³

REBAR

REINFORCING SCHEDULE - STRIP FOOTINGS (STIRRUPS)

BEAM TYPE	REBAR No.	TYPE	SHAPE CODE	QTY.	A	B	BAR LENGTH	REBAR WEIGHT PER METER	TOTAL WEIGHT
Strip Footing 700x250	03	R8	60	155	193	643	1.38 m	0.395 KG/M	84.37 KG
									84.37 KG

REINFORCING SCHEDULE - STRIP FOOTINGS (STRAIGHT LENGTHS)

BEAM TYPE	TYPE	SHAPE CODE	No. Off 6M Rebar Lengths	TOTAL WEIGHT
STRIP FOOTING 700x250	Y12 (B)	20	69.69	372.35 KG
			69.69	372.35 KG

REINFORCING SCHEDULE - STAIRCASE

REBAR No.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	TOTAL WEIGHT
STAIRCASE							
01	5	Y12	37	1575 MM	1200 MM	500 MM	8.92 KG
	5						8.92 KG

NOTES:

1. ASSUMED BEARING CAPACITY = 100kPa.
2. UNLESS SPECIFICALLY INDICATED OTHERWISE ALL WALLS AND COLUMNS ARE PLACED CENTRALLY ON FOUNDATIONS.
3. ALL CONCRETE TO BE VIBRATED.
4. UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL DIMENSIONS ARE REFERENCED FROM GRIDLINES & TO CENTRELINES OF WALLS ABOVE SURFACE BED LEVEL.
5. LEVELS (TOC) REFER TO TOP OF CONCRETE.

TYPE	WIDTH	DEPTH
WA	700	250

FOUNDATION : LEGEND

PLEASE NOTE:
ALL FOUNDATIONS TO BE (WA)
UNLESS SHOWN OTHERWISE

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECT'S DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY
RESTOW ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD.

PART A : GENERAL PRINCIPLES AND REQUIREMENTS
PART C : DIMENSIONS
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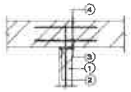
PART F : SITE OPERATIONS
PART G : EXCAVATIONS
PART J : FLOORS
PART K : WALLS
PART M : STAIRWAYS
PART P : DRAINAGE

PLEASE NOTE : CONTROL AND ARTICULATION

VERTICAL AND HORIZONTAL CONTROL AND ARTICULATION JOINTS SHALL BE CONSTRUCTED AT THE POSITIONS SHOWN IN THE DRAWINGS, AND SHALL BE IN ACCORDANCE WITH THE SCOPE OF WORK. SUCH JOINTS SHALL BE FREE FROM DEBRIS OVER THEIR FULL WIDTH AND, WHERE REQUIRED, FILLED WITH A COMPRESSIBLE FILLER. ANY APPLIED FINISH SHALL NOT RESTRAIN OR INHIBIT MOVEMENT OF THE JOINT.

1) 1.2mm THICK GALVANISED HOOP IRON CONCERTINA TIES EVERY 5 LAYERS
2) POLYCORD STRIPS Ø15mm FOR 10mm JOINTS FROM SONDOR (EITHER SIDE OF WALL)
3) UV RESISTANT POLYURETHANE SEALANT PCFU FROM DEN BRAVEN 10mm X 10mm PAINTED WITH ELASTIC PAINT (EITHER SIDE OF WALL)
4) NOTES : JOINTS TO BE CLEANED FROM MORTAR



STRAIGHT AND INTERSECTION JOINT

TYPICAL DETAIL FOR CONCERTINA TIES

3D VIEW : LEVELS (T.O.C)

PLEASE NOTE:
ALL STRAIGHT LENGTH REBAR IN BEAMS (CODE 20)
SHOULD BE SPLICED BY - 50 * DIAMETER.

			CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2923 FAX : (015) 295 2924 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : lakalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H FOURIE SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER					DRAWING NAME: BUS TERMINAL RAFT FOUNDATION LAYOUT AND SECTIONS	1.1	NEM/09-2022	NCE 076
DATE	AMENDMENTS								

BEAM LOAD BEARING NOTE:

ALL BEAMS TO BE AT LEAST 220MM ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.

NOTE:

PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECTS DIMENTIONS.
PLEASE MAKE SURE OF DIMENTIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE
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BESTDIV ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS!

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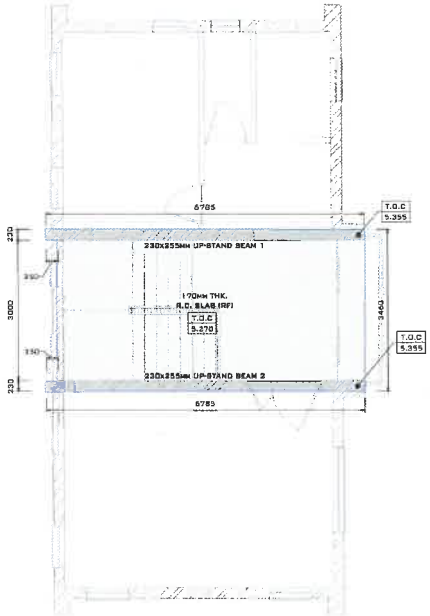
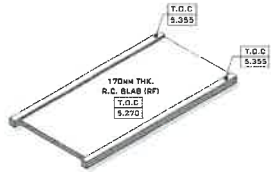
PART P : DRAINAGE

REBAR PLACEMENT NOTE:

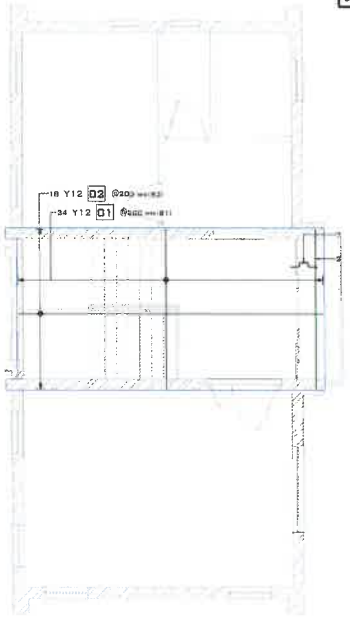
T1 = HIGHEST OF TOP REBAR (PLACED 4TH)
T2 = SECOND HIGHEST OF TOP REBAR (PLACED 3RD)
B2 = SECOND LOWEST OF BOTTOM REBAR (PLACED 2ND)
B1 = LOWEST OF BOTTOM REBAR (PLACED 1ST)



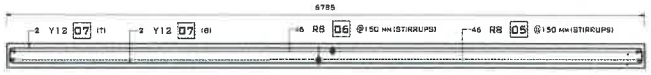
PLAN LAYOUT : ROOF SLAB
1 : 50



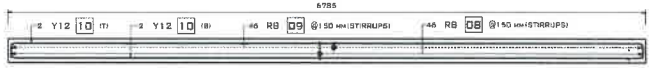
3D VIEW : LEVELS (T.O.C)



PLAN LAYOUT : ROOF SLAB BOTTOM REBAR



230x255MM UP-STAND BEAM 1



230x255MM UP-STAND BEAM 2

FLOOR SCHEDULE (AREA & VOLUME) - ROOF

TYPE	TOTAL AREA	TOTAL VOLUME
170MM THK. R.C. SLAB (RF)	22.73 M²	3.86 M³
	22.73 M²	3.86 M³

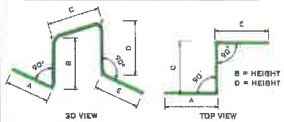
BEAM SCHEDULE - ROOF

TYPE	TOTAL LENGTH	TOTAL VOLUME
230x255MM UP-STAND BEAM 1	6.79 M	0.13 M³
230x255MM UP-STAND BEAM 2	6.79 M	0.13 M³
	13.57 M	0.27 M³

REINFORCING SCHEDULE - ROOF

REBAR No.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	C	D	E	TOTAL WEIGHT
(A) BOTTOM (RF)										
01	34	Y12	35	3600 MM	3400 MM	0 MM	0 MM	0 MM	0 MM	128.61 KG
02	18	Y12	35	5675 MM	5475 MM	0 MM	0 MM	0 MM	0 MM	106.69 KG
03	7	R10	53	726 MM	200 MM	100 MM	200 MM	100 MM	200 MM	2.13 KG
04	3	Y16	30	3400 MM	3400 MM	0 MM	0 MM	0 MM	0 MM	11.74 KG
(B) BEAM 01 (RF)										
05	46	R8	73	750 MM	200 MM	175 MM	0 MM	0 MM	0 MM	12.63 KG
06	46	R8	35	350 MM	175 MM	0 MM	0 MM	0 MM	0 MM	5.45 KG
07	4	Y12	35	6925 MM	6725 MM	0 MM	0 MM	0 MM	0 MM	24.60 KG
(B) BEAM 02 (RF)										
08	46	R8	73	750 MM	200 MM	175 MM	0 MM	0 MM	0 MM	12.63 KG
09	46	R8	35	350 MM	175 MM	0 MM	0 MM	0 MM	0 MM	5.45 KG
10	4	Y12	35	6925 MM	6725 MM	0 MM	0 MM	0 MM	0 MM	24.60 KG
	253									216.51 KG

PLEASE NOTE:
R10 STOOLS (SHAPE CODE 53)
TO BE BEND LIKE SHAPE CODE 83



R10 STOOLS
SHAPE CODE 53

OCTOBER 2022	FOR TENDER	
DATE	AMENDMENTS	

CONSULTING FIRM:
NEMORANGO GROUP
CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS
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e-mail : takalani@nemorango.co.za

DESIGNER:
NAME H SWANEPOEL1
SIGNATURE

ENGINEER:
NAME H ROUX
SIGNATURE

EMPLOYER:
MAKHADO LOCAL MUNICIPALITY
CIVIC CENTRE CORNER KROGH & ERASMUS STREET
MAKHADO
0920
TEL: 015 519 3000

PROJECT NAME:
CONSTRUCTION OF DZANANI TAXI RANK

SCALE: 1.1

PROJECT No: 94 OF 2022

Rev No: 0

DRAWING NAME:
BUS TERMINAL FIRST SLAB LAYOUT,DETAILS,SECTIONS AND REINFORCEMENT

NEM/09-2022

NCE 077

BEAM LOAD BEARING NOTE:

ALL BEAMS TO BE AT LEAST 220MM ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.

NOTE:

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ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD.

PART A : GENERAL PRINCIPLES AND REQUIREMENTS
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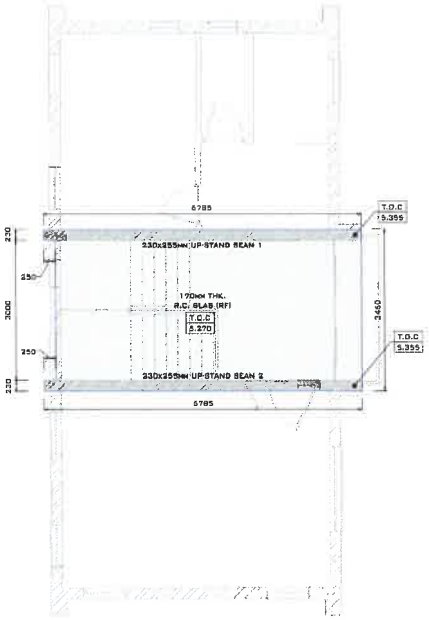
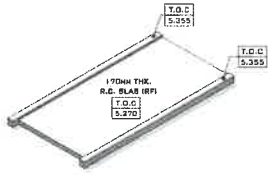
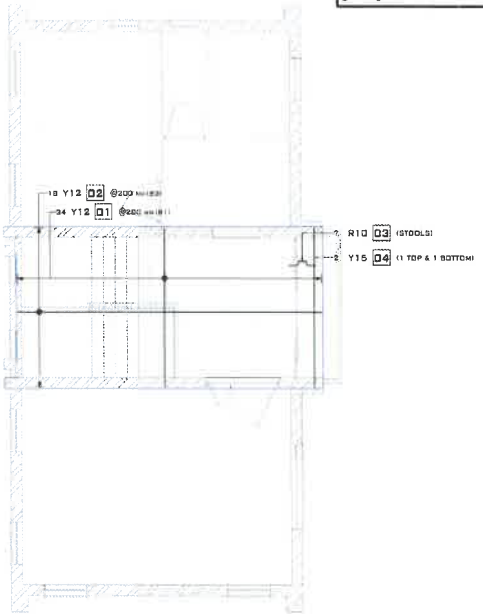


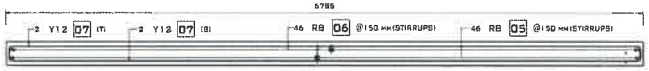
PLAN LAYOUT : ROOF SLAB
1 : 50



3D VIEW : LEVELS (T.O.C)



PLAN LAYOUT : ROOF SLAB BOTTOM REBAR



230x255MM UP-STAND BEAM 1

230x255MM UP-STAND BEAM 2

FLOOR SCHEDULE (AREA & VOLUME) - ROOF

TYPE	TOTAL AREA	TOTAL VOLUME
170mm THK. R.C. SLAB (RF)	22.73 m²	3.86 m³
	22.73 m²	3.86 m³

BEAM SCHEDULE - ROOF

TYPE	TOTAL LENGTH	TOTAL VOLUME
230x255mm UP-STAND BEAM 1	6.79 m	0.12 m³
230x255mm UP-STAND BEAM 2	6.79 m	0.12 m³
	13.57 m	0.27 m³

REINFORCING SCHEDULE - ROOF

REBAR NO.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	C	D	E	TOTAL WEIGHT
(A) BOTTOM (RF)										
01	34	Y12	35	3600 MM	3400 MM	0 MM	0 MM	0 MM	0 MM	1 [illegible] kg
02	18	Y12	35	6675 MM	6475 MM	0 MM	0 MM	0 MM	0 MM	106.69 kg
03	7	R10	53	725 MM	300 MM	100 MM	200 MM	100 MM	200 MM	2.13 kg
04	2	Y16	20	3400 MM	3400 MM	0 MM	0 MM	0 MM	0 MM	10.74 kg
(B) BEAM 01 (RF)										
05	46	R8	72	750 MM	200 MM	175 MM	0 MM	0 MM	0 MM	13.63 kg
06	46	R8	35	300 MM	175 MM	0 MM	0 MM	0 MM	0 MM	5.45 kg
07	4	Y12	35	6925 MM	6725 MM	0 MM	0 MM	0 MM	0 MM	24.80 kg
(B) BEAM 02 (RF)										
08	46	R8	72	750 MM	200 MM	175 MM	0 MM	0 MM	0 MM	13.63 kg
09	46	R8	35	300 MM	175 MM	0 MM	0 MM	0 MM	0 MM	5.45 kg
10	4	Y12	35	6925 MM	6725 MM	0 MM	0 MM	0 MM	0 MM	24.80 kg
	253									376.61 kg

PLEASE NOTE:
R10 STOOLS (SHAPE CODE 53)
TO BE BEND LIKE SHAPE CODE 83

R10 STOOLS
SHAPE CODE 53

OCTOBER 2022	FOR TENDER	
DATE	AMENDMENTS	

CONSULTING FIRM:
NEMORANGO CONSULTING ENGINEERS
CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS
TEL: (015) 295 2929 FAX: (015) 295 2924
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0699
e-mail: lakalari@nemorango.co.za

DESIGNER:
NAME: H SWANEPOEL
SIGNATURE:

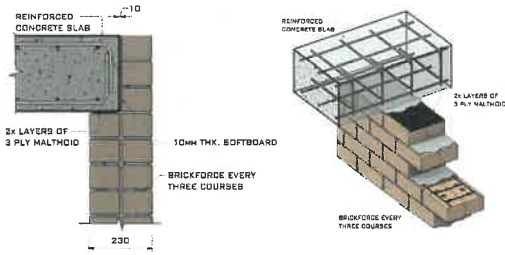
ENGINEER:
NAME: H FOURIE
SIGNATURE:

EMPLOYER:
MAKHADO LOCAL MUNICIPALITY
CIVIC CENTRE CORNER KROGH & ERASMUS STREET
MAKHADO
0920
TEL: 015 519 3000

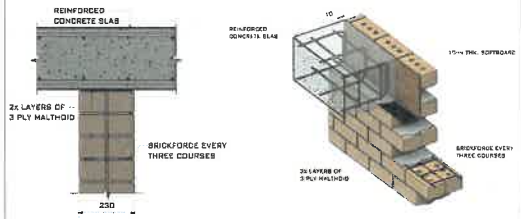
PROJECT NAME:
CONSTRUCTION OF DZANANI TAXI RANK

DRAWING NAME:
BUS TERMINAL ROOF SLAB LAYOUT, DETAILS, SECTIONS AND REINFORCEMENT

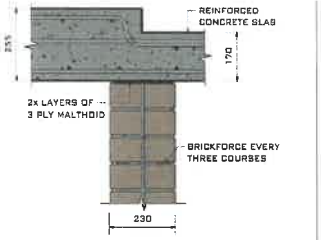
SCALE	PROJECT No	Rev No
1.1	94 OF 2022	0
	NEM/09-2022	NCE 078

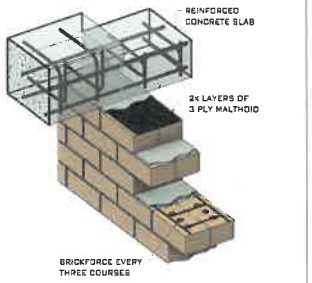


SLAB SUPPORT DETAIL 1 (TYP.)



SLAB SUPPORT DETAIL 2 (TYP.)





85mm WEATHER STEP DETAIL (TYP.)

ADDITIONAL NOTES:

1. IF BEAMS ON SITE DOES NOT EXTEND TO SLAB REINFORCING OR HEIGHT DUE TO CONSTRUCTION NEEDS, PLEASE CONSULT WITH ENGINEERS.
2. PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECTS DIMENSIONS. PLEASE MAKE SURE OF DIMENSIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE.
3. ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECTS DIMENSIONS. PLEASE MAKE SURE OF DIMENSIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE. PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY WRITTEN ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGNS.
4. ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD:
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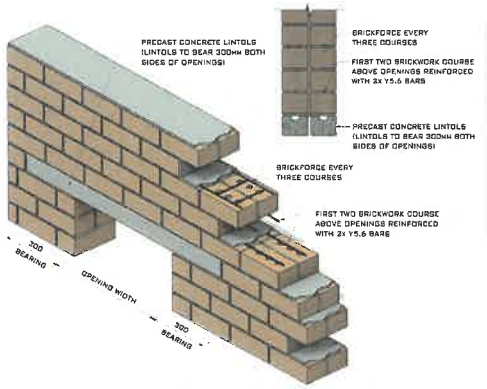
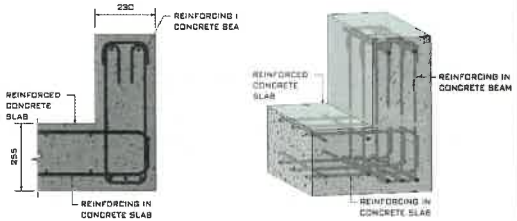
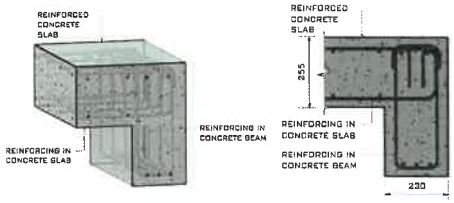
BEAM LOAD BEARING NOTE:
ALL BEAMS TO BE AT LEAST 220mm ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.



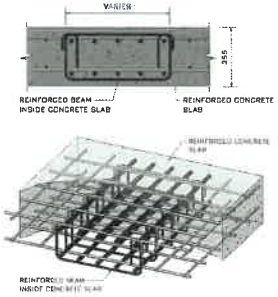
REINFORCING ABOVE OPENINGS DETAIL (TYP.)



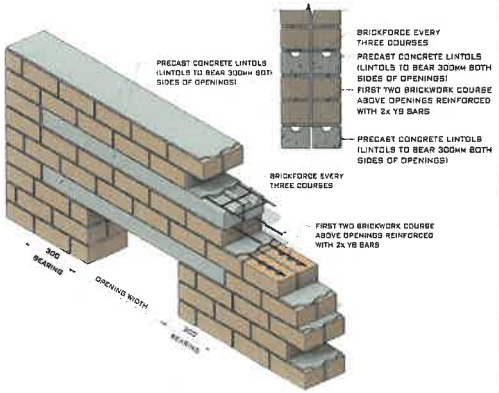
UP-STAND BEAM DETAIL (TYP.)



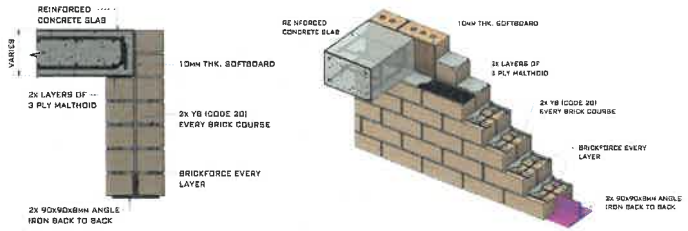
DOWN-STAND BEAM DETAIL (TYP.)



INTERNAL BEAM DETAIL (TYP.)

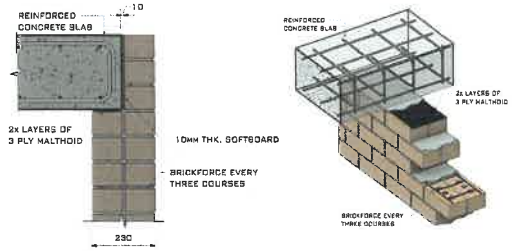


COMPOSITE BEAM ABOVE OPENINGS DETAIL (TYP.)

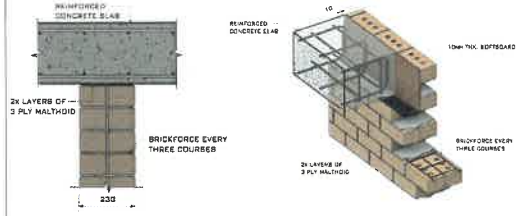


FACEBRICK COMPOSITE BEAM DETAIL (TYP.)

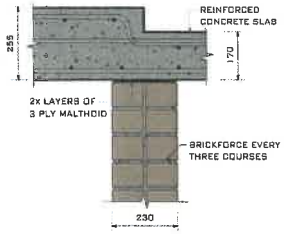
		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS T:(015) 295 2023 FAX : (015) 295 2024 10A HANS VAN REINSBURG POLOKWANE 0699 e-mail : takalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL SIGNATURE ENGINEER: NAME H PIENAR SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022 DATE	FOR TENDER AMENDMENTS				DRAWING NAME: BUS TERMINAL FIRST FLOOR SLAB TYPICAL DETAILS	1.1	NEM/09-2022	NCE 079

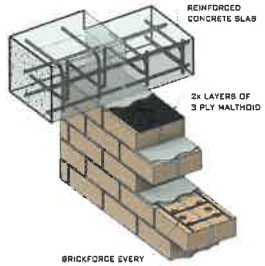


SLAB SUPPORT DETAIL 1 (TYP.)



SLAB SUPPORT DETAIL 2 (TYP.)



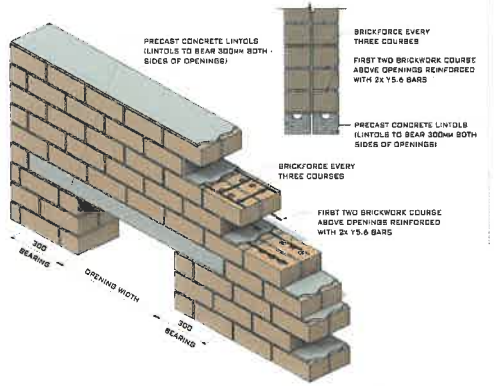


85mm WEATHER STEP DETAIL (TYP.)

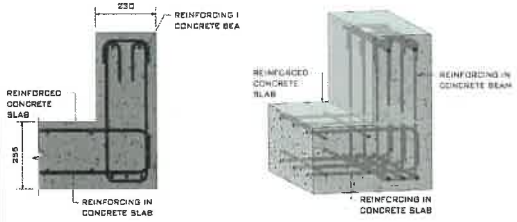
ADDITIONAL NOTES:

1. IF BEAM ON SITE DOES NOT EXTEND TO SLAB REINFORCING IN HEIGHT DUE TO CONSTRUCTION NEEDS, PLEASE CONSULT WITH ENGINEERS.
2. PLEASE BE ADVISED: ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECT'S DIMENSIONS. PLEASE MAKE SURE OF DIMENSIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE.
3. ALL ENGINEERING DESIGNS ARE BASED ON ARCHITECT'S DIMENSIONS. PLEASE MAKE SURE OF DIMENSIONS ON SITE BEFORE CONSTRUCTION TAKES PLACE PLEASE MAKE SURE THAT ENGINEERING DRAWINGS ARE STUDIED THOROUGHLY. SHOULD ENGINEERING WILL NOT BE HELD RESPONSIBLE IF DEVIATED FROM DESIGN!!
4. ALSO REFER TO SANS 10400 SOUTH AFRICAN NATIONAL STANDARD!
   - PART A : GENERAL PRINCIPLES AND REQUIREMENTS
   - PART B : DIMENSIONS
   - PART D : PUBLIC SAFETY
   - PART F : SITE OPERATIONS
   - PART G : EXCAVATIONS
   - PART J : FLOORS
   - PART K : WALLS
   - PART M : STAIRWAYS
   - PART P : DRAINAGE

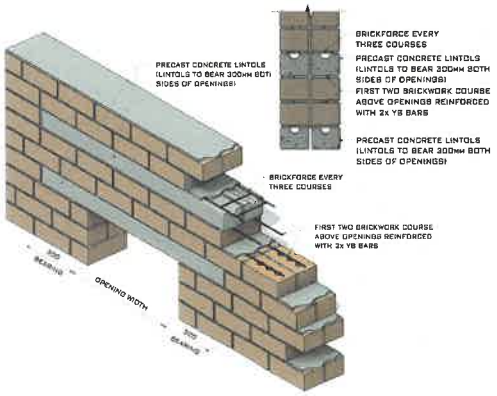
BEAM LOAD BEARING NOTE:
ALL BEAMS TO BE AT LEAST 220mm ON SUPPORTING WALLS OR AS SHOWN ON PLAN LAYOUT.



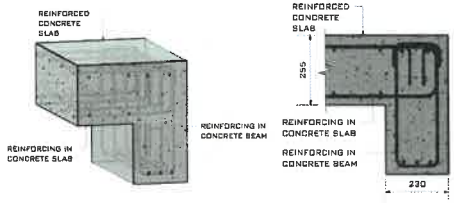
REINFORCING ABOVE OPENINGS DETAIL (TYP.)



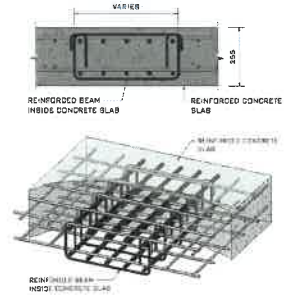
UP-STAND BEAM DETAIL (TYP.)



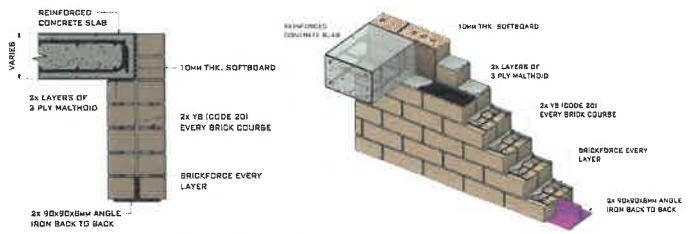
COMPOSITE BEAM ABOVE OPENINGS DETAIL (TYP.)



DOWN-STAND BEAM DETAIL (TYP.)



INTERNAL BEAM DETAIL (TYP.)



FACEBRICK COMPOSITE BEAM DETAIL (TYP.)

OCTOBER 2022	FOR TENDER	
DATE	AMENDMENTS	

CONSULTING FIRM:
NEMORANGO CONSULTING ENGINEERS
CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS
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10A HANS VAN RENSBURG
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e-mail : takalani@nemorango.co.za

DESIGNER:
NAME: H SWANEPOEL
SIGNATURE:

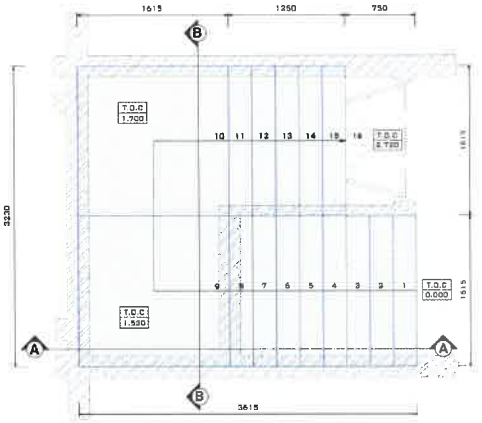
ENGINEER:
NAME: H FOURIE
SIGNATURE:

EMPLOYER:
MAKHADO LOCAL MUNICIPALITY
CIVIC CENTRE CORNER KROGH & ERASMUS STREET
MAKHADO
0920
TEL. 015 519 3000

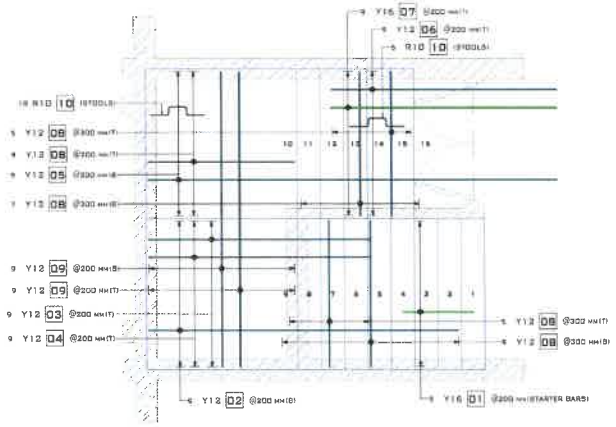
PROJECT NAME:
CONSTRUCTION OF DZANANI TAXI RANK

DRAWING NAME:
BUS TERMINAL ROOF SLAB TYPICAL DETAILS

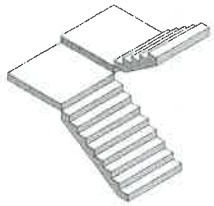
SCALE	PROJECT No	Rev No
	94 OF 2022	0
1.1	NEM/09-2022	NCE 080



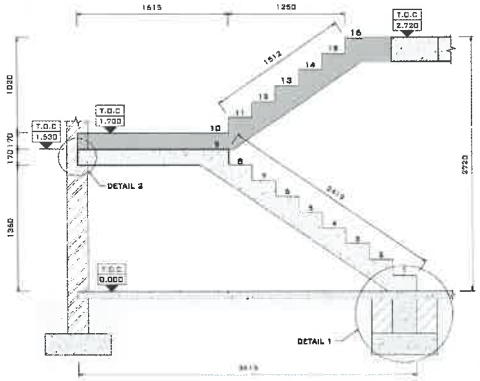
PLAN LAYOUT : STAIRCASE
1 : 25



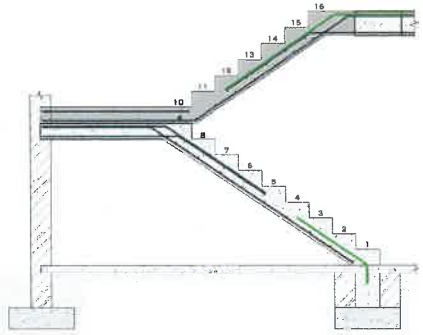
STAIRCASE : REBAR
1 : 25



3D : STAIRCASE



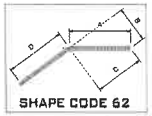
SECTION A-A
1 : 25



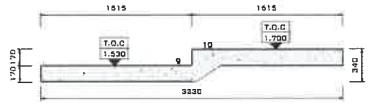
SECTION A-A : REBAR
1 : 25

REINFORCING SCHEDULE - STAIRCASE

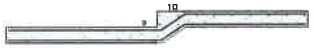
REBAR NO.	QTY.	TYPE	SHAPE CODE	BAR LENGTH	A	B	C	D	E	TOTAL WEIGHT
STAIRCASE										
01	9	Y16	62	1100 MM	200 MM	175 MM	125 MM	900 MM	0 MM	15.84 KG
02	9	Y12	62	3750 MM	2600 MM	1475 MM	2190 MM	1150 MM	0 MM	29.97 KG
03	9	Y12	62	2550 MM	1125 MM	825 MM	925 MM	1450 MM	0 MM	20.38 KG
04	9	Y12	62	2600 MM	1300 MM	725 MM	1075 MM	1325 MM	0 MM	20.78 KG
05	9	Y12	41	4700 MM	1625 MM	1975 MM	1100 MM	1125 MM	1625 MM	37.56 KG
06	9	Y12	62	2600 MM	1500 MM	850 MM	1350 MM	1100 MM	0 MM	20.78 KG
07	9	Y16	62	2675 MM	1250 MM	700 MM	1035 MM	1425 MM	0 MM	38.04 KG
08	35	Y12	20	1575 MM	1575 MM	0 MM	0 MM	0 MM	0 MM	48.95 KG
09	18	Y12	41	3225 MM	1625 MM	300 MM	1300 MM	175 MM	250 MM	51.55 KG
10	24	R10	53	725 MM	200 MM	100 MM	300 MM	100 MM	300 MM	10.74 KG
	140									294.39 KG



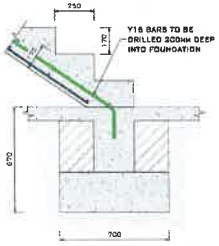
SHAPE CODE 62



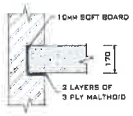
SECTION B-B
1 : 25



SECTION B-B : REBAR
1 : 25

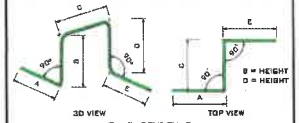


DETAIL 1
1 : 15



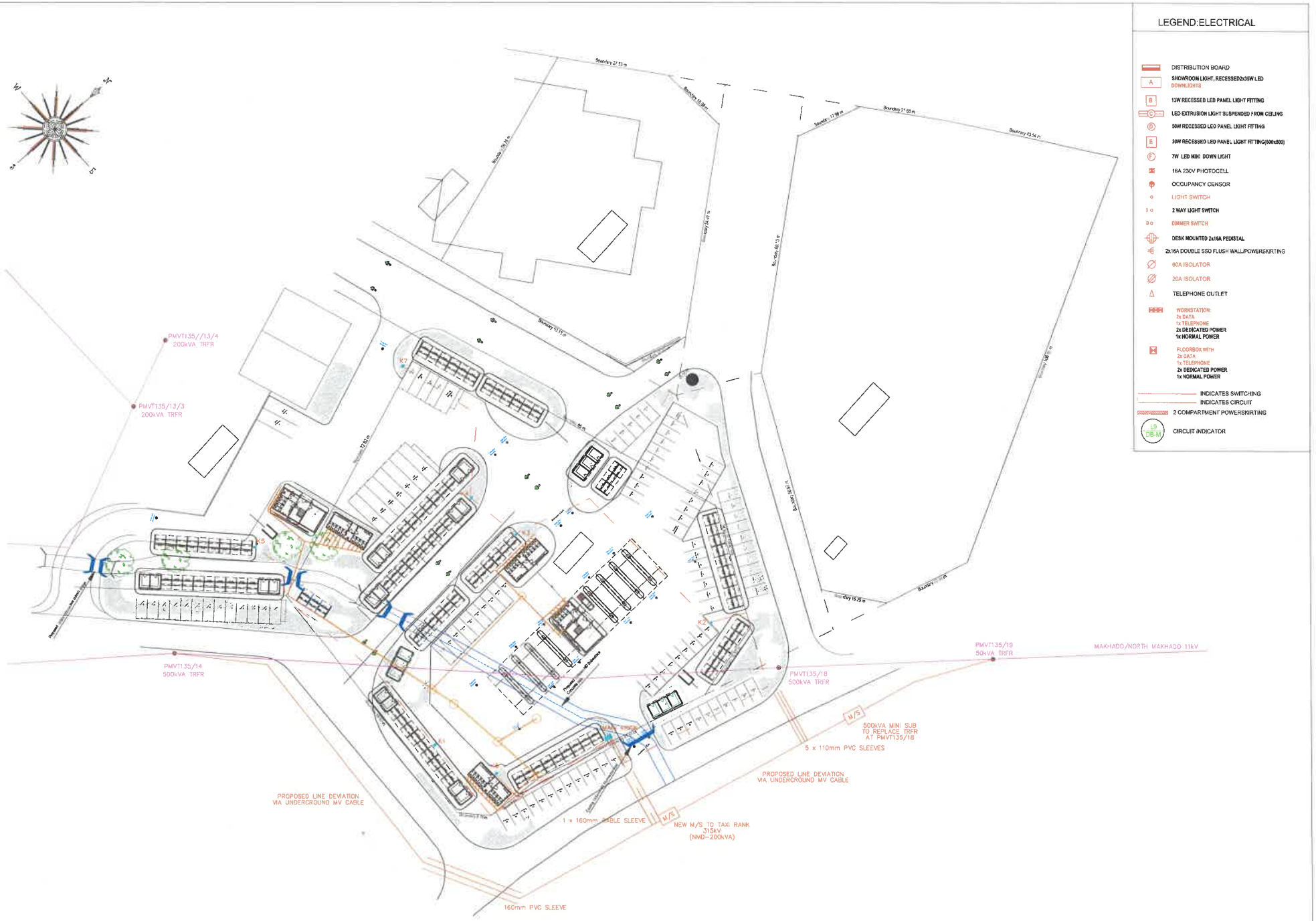
DETAIL 2
1 : 15

PLEASE NOTE:
R10 STOOLS (SHAPE CODE 53)
TO BE BEND LIKE SHAPE CODE 63



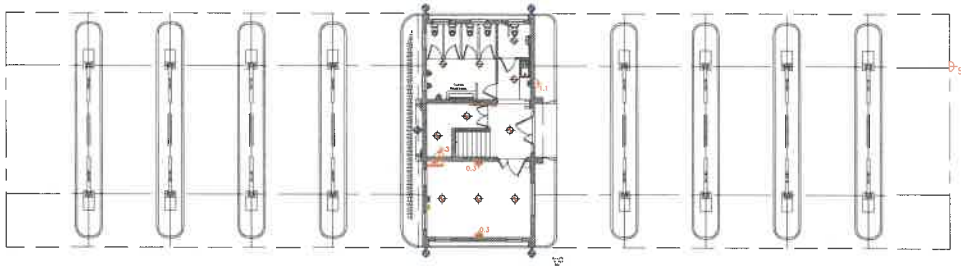
R10 STOOLS
SHAPE CODE 53

		CONSULTING FIRM: NEMORANGO ENGINEERING SERVICES (PTY) LTD. CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS. (015) 295 2023 FAX: (015) 295 2024. 19A HANS VAN RENSBURG POLOKWANE 0699. e-mail: tsilalani@nemorango.co.za	DESIGNER: NAME H SWANEPOEL. SIGNATURE. ENGINEER: NAME H FOURIE. SIGNATURE.	EMPLOYER: MAKHADO LOCAL MUNICIPALITY. CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920. TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: BUS TERMINAL STAIRCASE LAYOUT AND DETAILS	1.1	NEM/09-2022	NCE 081
DATE	AMENDMENTS							

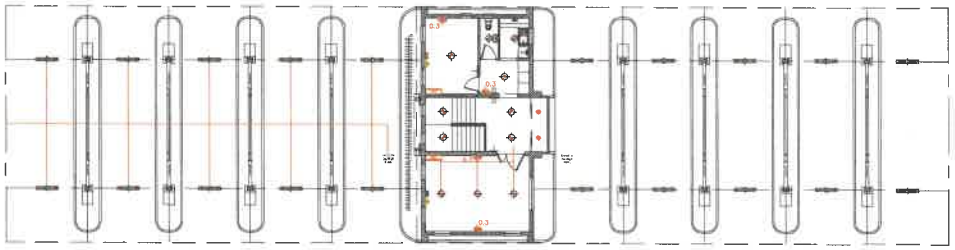


		CONSULTING FIRM: MMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : takalani@mmorengo.co.za	DESIGNER: NAME A.BARNARD SIGNATURE ENGINEER: NAME T.RAVHALALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: ELECTRICAL LAYOUT PLAN	1.1	NEM/09-2022	NCE 082
DATE	AMENDMENTS							

Ground storey Electrical Plan
Office & loading area



First storey Electrical Plan
Office & loading area



Roof Plan
Office & loading area

1)Slab 170 mm reinforced concrete slab with 230mm concrete upstand where applicable, to engineer spec. Min 40mm screed with fall (min 1:80) to edge, steel mesh as per engineer detail. Waterproofed with Derbigum or similar proofing system to be graded to edge, fullbores or weepholes. Finished with stone chip layer - type to owner spec. Underside edge provided with drip recess.

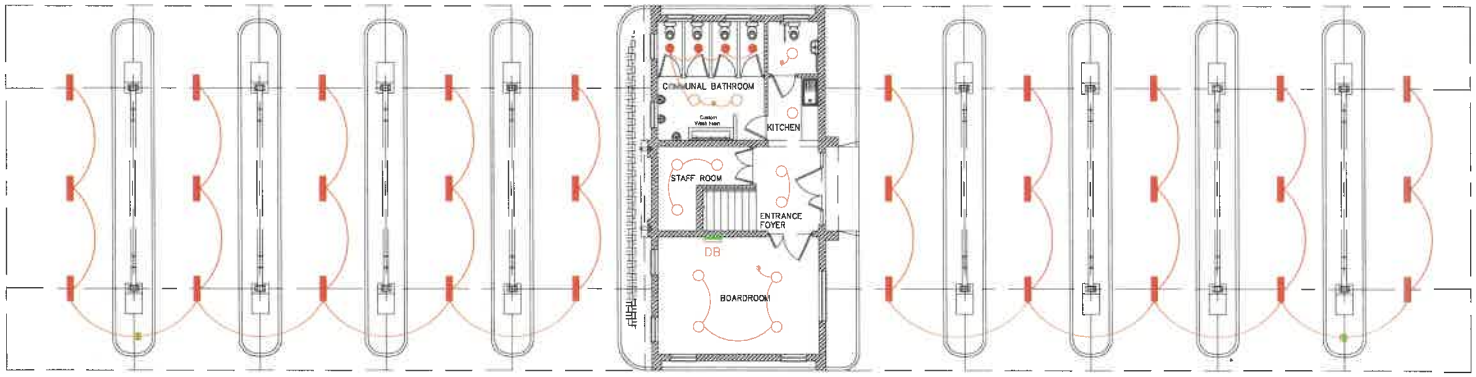
2)iso board underslab : 100mm thick (zone 5) (3.33(m²K)/W)to be installed to manufacturer detail par SANS 204 requirements. Finish with approved interior paint to owner spec.

Roof Detail:
1. Steel I-Beam Columns 305 x 165 x 46 to engineer spec.
2. 175x65x2.5 CFLC Cold Formed Lipped Channel Purlins spaced to engineer spec.
3. Sellnitra Safok 700 Slate fixed at a pitch of 5 deg.
4. Apex flashing to be fitted to spec.
5. Truss End plates bolted to I-Beam Columns with M30 bolts, washers & lock nuts.

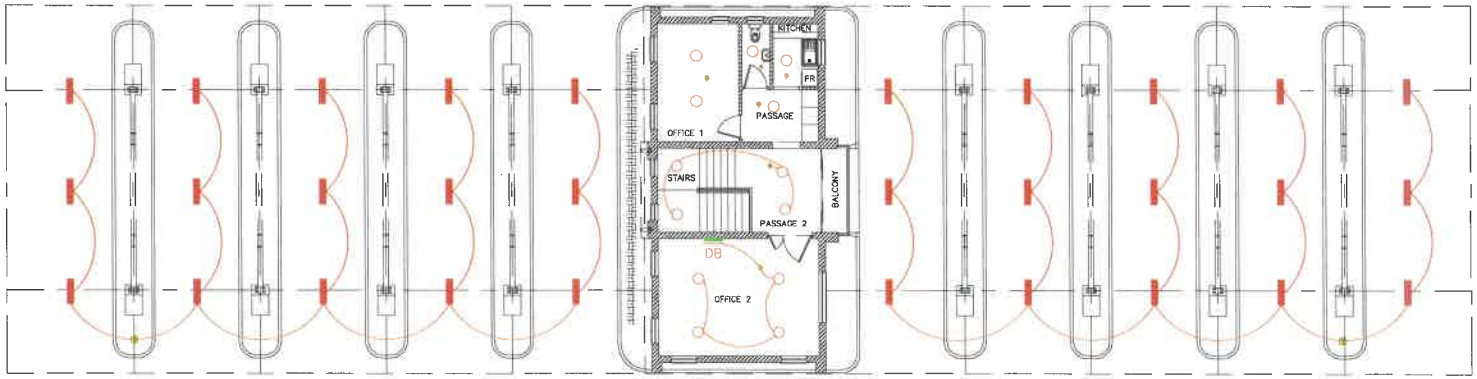
LEGEND:ELECTRICAL

- DISTRIBUTION BOARD
- A — SHOWROOM LIGHT, RECESSED2x35W LED DOWNLIGHTS
- B — 13W RECESSED LED PANEL LIGHT FITTING
- C — LED EXTRUSION LIGHT SUSPENDED FROM CEILING
- D — 50W RECESSED LED PANEL LIGHT FITTING
- E — 30W RECESSED LED PANEL LIGHT FITTING(600x600)
- F — 7W LED MINI DOWN LIGHT
- 16A 230V PHOTOCELL
- OCCUPANCY CENSOR
- LIGHT SWITCH
- 2 WAY LIGHT SWITCH
- DIMMER SWITCH
- DESK MOUNTED 2x16A PEDISTAL
- 2x16A DOUBLE 530 FLUSH WALL/POWERSKIRTING
- 60A ISOLATOR
- 20A ISOLATOR
- TELEPHONE OUTLET
- WORKSTATION:
  2x DATA
  1x TELEPHONE
  2x DEDICATED POWER
  1x NORMAL POWER
- FLOORBOX WITH
  2x DATA
  1x TELEPHONE
  2x DEDICATED POWER
  1x NORMAL POWER
- INDICATES SWITCHING
- INDICATES CIRCUIT
- 2 COMPARTMENT POWERSKIRTING
- L9 DB-A7 — CIRCUIT INDICATOR

		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2003 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : lakalani@nemorango.co.za	DESIGNER: NAME A BARNARD SIGNATURE ENGINEER: NAME T RAPHAL KLAAS SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: ADMIN BUILDING ELECTRICAL LAYOUT PLAN	1.1	NEM/09-2022	NCE 083
DATE	AMENDMENTS							



Ground storey
Office & loading area

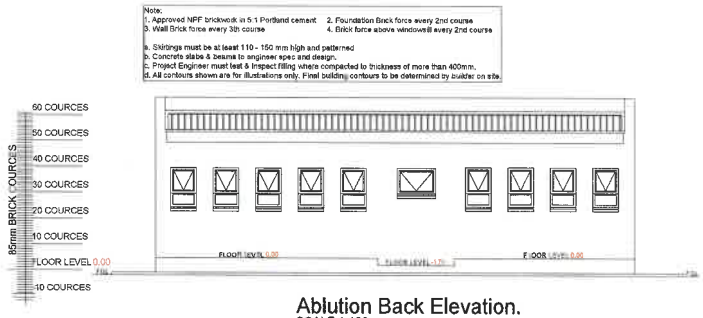


First storey
Office & loading area

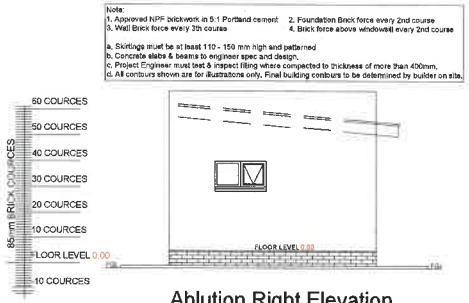
LEGEND:ELECTRICAL

- DISTRIBUTION BOARD
- A — SHOWROOM LIGHT, RECESSED2x15W LED DOWNLIGHTS
- B — 15W RECESSED LED PANEL LIGHT FITTING
- C — LED EXTRUSION LIGHT SUSPENDED FROM CEILING
- D — 50W RECESSED LED PANEL LIGHT FITTING
- E — 30W RECESSED LED PANEL LIGHT FITTING(600x600)
- F — 7W LED MINI DOWN LIGHT
- 16A 230V PHOTOCELL
- OCCUPANCY CENSOR
- LIGHT SWITCH
- 2 WAY LIGHT SWITCH
- DIMMER SWITCH
- DESK MOUNTED 2x16A PEDESTAL
- 2x16A DOUBLE SSO FLUSH WALLPOWERSKIRTING
- 60A ISOLATOR
- 20A ISOLATOR
- TELEPHONE OUTLET
- WORKSTATION: 2x DATA, 1x TELEPHONE, 2x DEDICATED POWER, 1x NORMAL POWER
- FLOORBOX WITH 2x DATA, 1x TELEPHONE, 2x DEDICATED POWER, 1x NORMAL POWER
- INDICATES SWITCHING
- INDICATES CIRCUIT
- 2 COMPARTMENT POWERSKIRTING
- CB-M — CIRCUIT INDICATOR

OCTOBER 2022	FOR TENDER	CONSULTING FIRM: NEMORANGO CIVIL ENGINEERS, HYDROGEOLOGISTS & PROJECT MANAGERS. (015) 295 2023 FAX : (015) 295 2024, 10A HANS VAN RENSBURG POLOKWANE 0699, e-mail : tebalani@nemorango.co.za	DESIGNER: NAME A BARNARD, SIGNATURE; ENGINEER: NAME T RAPHALALANI, SIGNATURE:	EMPLOYER: MAKHADO LOCAL MUNICIPALITY, CIVIC CENTRE CORNER KROCH & ERASMUS STREET MAKHADO 0920, TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
DATE	AMENDMENTS				DRAWING NAME: ADMIN BUILDING AND TAXI RANK LOADING BAY LIGHTS LAYOUT PLAN	1.1	NEM/09-2022	NCE 084

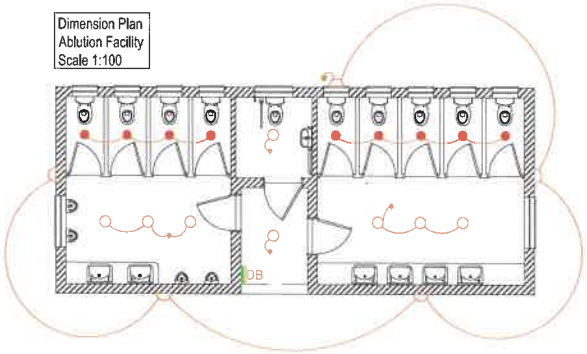


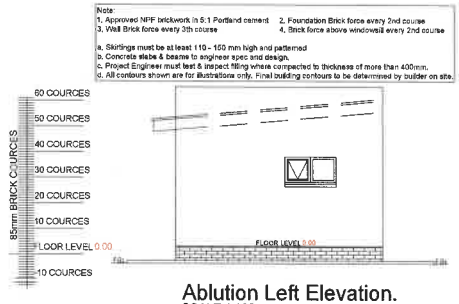
Ablution Back Elevation.
SCALE 1:100



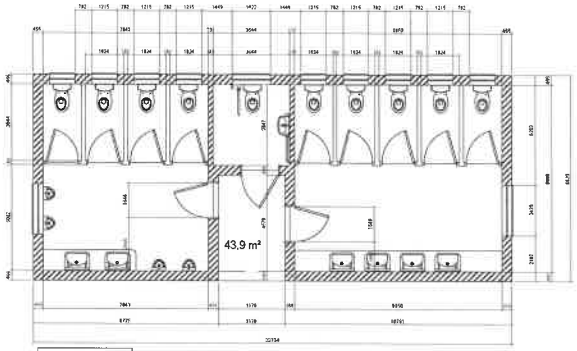
Ablution Right Elevation.
SCALE 1:100

Dimension Plan
Ablution Facility
Scale 1:100

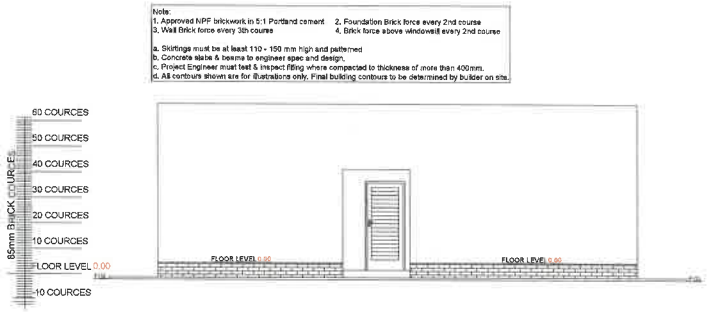




Ablution Left Elevation.
SCALE 1:100



Roof Plan
Ablution Facility
Scale 1:100



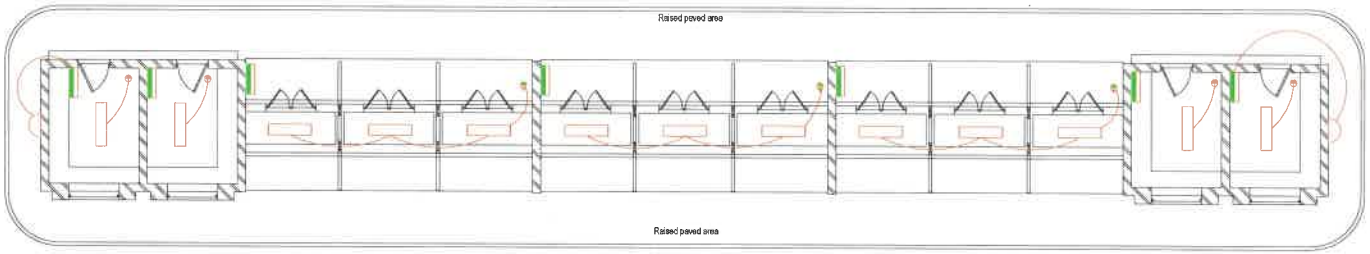
Ablution Front Elevation.
SCALE 1:100

LEGEND:ELECTRICAL

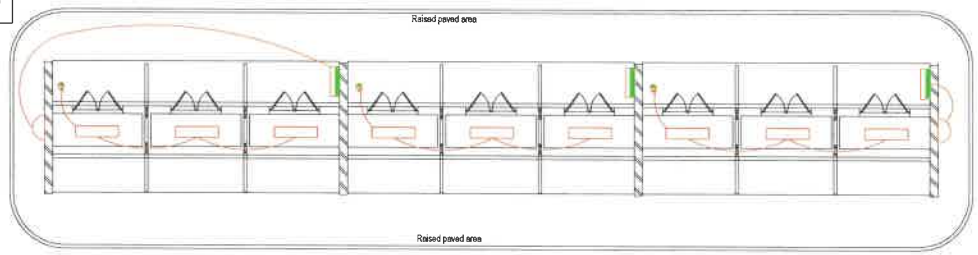
- DISTRIBUTION BOARD
- A — SHOWROOM LIGHT, RECESSED2x35W LED DOWNLIGHTS
- B — 13W RECESSED LED PANEL LIGHT FITTING
- C — LED EXTRUSION LIGHT SUSPENDED FROM CEILING
- D — 50W RECESSED LED PANEL LIGHT FITTING
- E — 36W RECESSED LED PANEL LIGHT FITTING(600x600)
- F — 7W LED MINI DOWN LIGHT
- 10A 230V PHOTOCELL
- OCCUPANCY CENSOR
- LIGHT SWITCH
- 2 WAY LIGHT SWITCH
- DIMMER SWITCH
- DESK MOUNTED 2x16A PEDISTAL
- 2x16A DOUBLE SSO FLUSH WALL/POWERSKIRTING
- 60A ISOLATOR
- 20A ISOLATOR
- TELEPHONE OUTLET
- WORKSTATION: 2x DATA, 1x TELEPHONE, 2x DEDICATED POWER, 1x NORMAL POWER
- FLOORBOX WITH: 2x DATA, 1x TELEPHONE, 2x DEDICATED POWER, 1x NORMAL POWER
- INDICATES SWITCHING
- INDICATES CIRCUIT
- 2 COMPARTMENT POWERSKIRTING
- L3 DB-A1 — CIRCUIT INDICATOR

		CONSULTING FIRM: AMORANGO & ASSOCIATES (PTY) LTD, CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS, (015) 295 2023 FAX. (015) 295 2024, 19A HANS VAN RENSBURG, POLOKWANE, 0699, email : lalalani@amorango.co.za	DESIGNER: NAME A BARNARD, SIGNATURE; ENGINEER: NAME T PAPAVALALANI, SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY, CIVIC CENTRE CORNER KROGH & ERASMUS STREET, MAKHADO, 0920, TEL. 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: ABLUTION BLOCK ELECTRICAL LAYOUT PLAN	1.1	NEM/09-2022	NCE 085
DATE	AMENDMENTS							

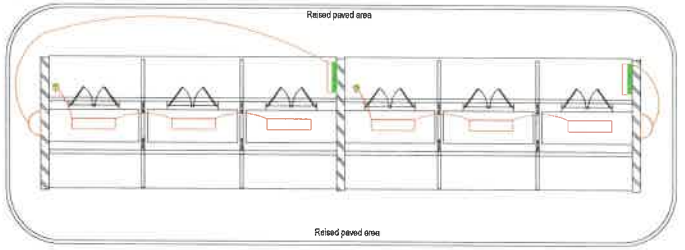
Dimension Plan
Shops Type A
Scale 1:100



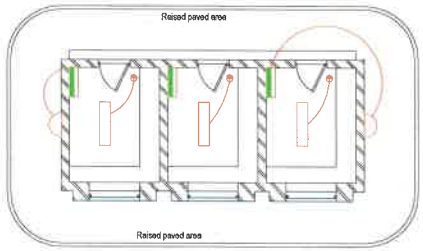
Dimension Plan
Shops Type B
Scale 1:100



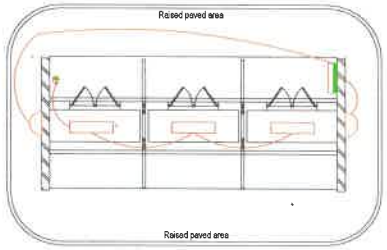
Dimension Plan
Shops Type C
Scale 1:100



Dimension Plan
Shops Type D
Scale 1:100



Dimension Plan
Shops Type E
Scale 1:100

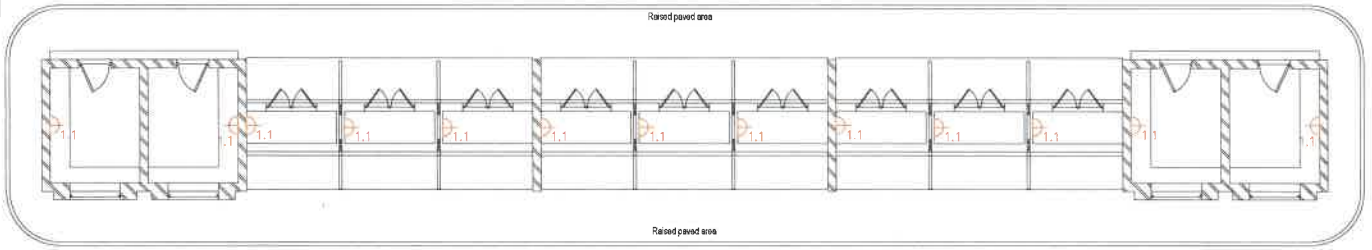


LEGEND:ELECTRICAL

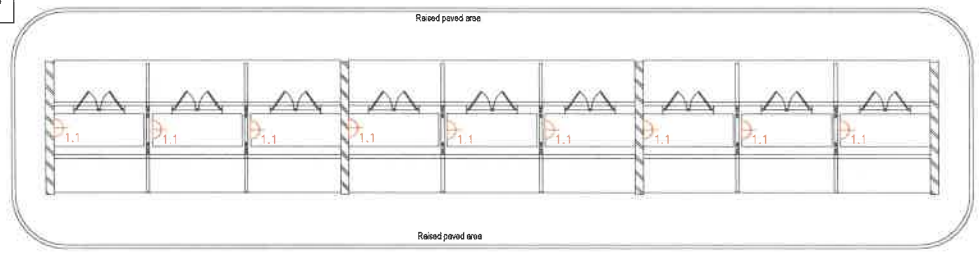
- DISTRIBUTION BOARD
- A — SHOWROOM LIGHT, RECESSED2x24W LED DOWN LIGHTS
- B — 13W RECESSED LED PANEL LIGHT FITTING
- C — LED EXTRUSION LIGHT SUSPENDED FROM CEILING
- D — 50W RECESSED LED PANEL LIGHT FITTING
- E — 30W RECESSED LED PANEL LIGHT FITTING(600x600)
- F — 7W LED MINI DOWN LIGHT
- 16A 230V PHOTOCELL
- OCCUPANCY CENSOR
- LIGHT SWITCH
- 2 WAY LIGHT SWITCH
- DIMMER SWITCH
- DESK MOUNTED 2x16A PEDISTAL
- 2x16A DOUBLE SSO FLUSH WALL/POWERSKIRTING
- 60A ISOLATOR
- 20A ISOLATOR
- TELEPHONE OUTLET
- WORKSTATION:
  2x DATA
  1x TELEPHONE
  2x DEDICATED POWER
  1x NORMAL POWER
- FLOORBOX WITH
  2x DATA
  1x TELEPHONE
  2x DEDICATED POWER
  1x NORMAL POWER
- INDICATES SWITCHING
- INDICATES CIRCUIT
- 2 COMPARTMENT POWERSKIRTING
- CIRCUIT INDICATOR

OCTOBER 2022	FOR TENDER	CONSULTING FIRM: NEMORANGO ENGINEERING (PTY) LTD CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX: (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : takalani@nemorango.co.za	DESIGNER: NAME A BARNARD SIGNATURE ENGINEER: NAME T RAPHALALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK DRAWING NAME: MARKET STALLS TYPE A,B,C,D AND E ELECTRICAL LIGHTS LAYOUT PLAN	SCALE 1.1	PROJECT No 94 OF 2022 NEM/09-2022	Rev No 0 NCE 086
DATE	AMENDMENTS						

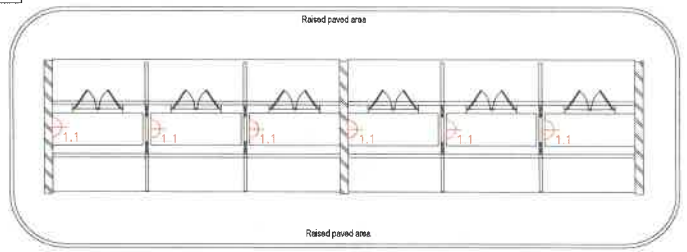
Dimension Plan
Shops Type A
Scale 1:100



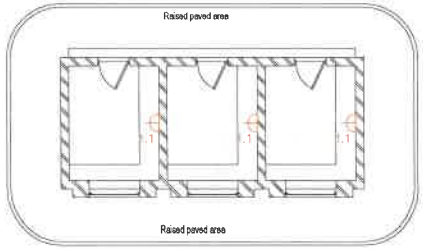
Dimension Plan
Shops Type B
Scale 1:100



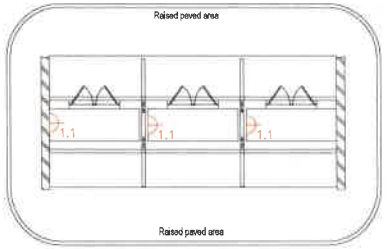
Dimension Plan
Shops Type C
Scale 1:100



Dimension Plan
Shops Type D
Scale 1:100



Dimension Plan
Shops Type E
Scale 1:100



LEGEND:ELECTRICAL

- DISTRIBUTION BOARD
- A — SHOWROOM LIGHT, RECESSED2x26W LED DOWNLIGHTS
- B — 13W RECESSED LED PANEL LIGHT FITTING
- C — LED EXTRUSION LIGHT SUSPENDED FROM CEILING
- D — 50W RECESSED LED PANEL LIGHT FITTING
- E — 36W RECESSED LED PANEL LIGHT FITTING(600x600)
- F — 7W LED MINI DOWN LIGHT
- 16A 230V PHOTOCELL
- OCCUPANCY CENSOR
- LIGHT SWITCH
- 2 WAY LIGHT SWITCH
- DIMMER SWITCH
- DESK MOUNTED 2x16A PEDSTAL
- 2x16A DOUBLE SSO FLUSH WALL/POWERSKIRTING
- 60A ISOLATOR
- 20A ISOLATOR
- TELEPHONE OUTLET
- WORKSTATION:
  2x DATA
  1x TELEPHONE
  2x DEDICATED POWER
  1x NORMAL POWER
- FLOORBOX WITH
  2x DATA
  1x TELEPHONE
  2x DEDICATED POWER
  1x NORMAL POWER
- INDICATES SWITCHING
- INDICATES CIRCUIT
- 2 COMPARTMENT POWERSKIRTING
- L9 DB-M1 — CIRCUIT INDICATOR

		CONSULTING FIRM: NEMORANGO CONSULTING ENGINEERS CIVIL ENGINEERS,HYDROGEOLOGISTS & PROJECT MANAGERS (015) 295 2023 FAX : (015) 295 2024 10A HANS VAN RENSBURG POLOKWANE 0699 e-mail : tshilabe@nemorango.co.za	DESIGNER: NAME A BARNARD SIGNATURE ENGINEER: NAME T RAPHAL ALANI SIGNATURE	EMPLOYER: MAKHADO LOCAL MUNICIPALITY CIVIC CENTRE CORNER KROGH & ERASMUS STREET MAKHADO 0920 TEL: 015 519 3000	PROJECT NAME: CONSTRUCTION OF DZANANI TAXI RANK	SCALE	PROJECT No 94 OF 2022	Rev No 0
OCTOBER 2022	FOR TENDER				DRAWING NAME: MARKET STALLS TYPE A,B,C,D AND E GENERAL ELECTRICAL LAYOUT PLAN	1.1	NEM/09-2022	NCE 087
DATE	AMENDMENTS							