forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

INVITATION TO BID

BID NUMBER: DFFE-B008 (26-27)

THE APPOINTMENT OF THE CONTRACTOR FOR THE CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) IN THE EASTERN CAPE (EC) PROVINCE, WITHIN A PERIOD OF SIX (6) MONTHS.

ENQUIRIES:

Name : SCM Officials

E-Mail : Tenders@dffe.gov.za

NATIONAL TREASURY CENTRAL SUPPLIER DATABASE (CSD) REGISTRATION INFORMATION

Company name	Supplier registration number	Unique reference number	
			Main contractor
			Sub-contracted/ joint venture comp 1
			Sub-contracted/ joint venture comp 2

The compulsory Pre-tender Site Inspection Meeting will be held as follows:

Venue: Emalahleni Local Municipality (Indwe Townhall)

GPS Co-ordinates -31.46652, 27.33.682

Date: 08 October 2026

Starting Time: 10:00 am

Site 1 - Venue: Indwe Town Transfer Station

GPS Co-ordinates: 31°28'42.07"S, 27°20'50.00"E

Date: 08 October 2026

Starting time: 11:30 am

Site 2 - Venue: Dordrecht Town Transfer Station

GPS Co-ordinates: 31°23'14.54"S, 27°3'1.69"E

Date: 08 October 2026

Starting time: 13:00 pm

THE CLOSING DATE OF THE BID: 30 OCTOBER 2026 AT 11:00 AM

PART A
INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT.					
BID NUMBER:	DFFE-B008 (26-27)	CLOSING DATE:	30 OCTOBER 2026	CLOSING TIME:	11:00 AM
DESCRIPTION	**THE APPOINTMENT OF THE CONTRACTOR FOR THE CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) IN THE EASTERN CAPE (EC) PROVINCE, WITHIN A PERIOD OF SIX (6) MONTHS.**				

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

Department of Forestry, Fisheries and the Environment, The Environment House,

473 Steve Biko Road, Cnr Soutpansberg and Steve Biko Road, Arcadia, Pretoria /Tshwane

BIDDING PROCEDURE ENQUIRIES MUST BE DIRECTED TO:		**TECHNICAL ENQUIRIES MUST BE DIRECTED TO:**	
CONTACT PERSON	SCM Officials	CONTACT PERSON	SCM Officials
TELEPHONE NUMBER		TELEPHONE NUMBER	
FACSIMILE NUMBER	N/A	FACSIMILE NUMBER	N/A
E-MAIL ADDRESS	tenders@dffe.gov.za	E-MAIL ADDRESS	tenders@dffe.gov.za

SUPPLIER INFORMATION

NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELLPHONE NUMBER					
FACSIMILE NUMBER	CODE		NUMBER		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		**OR**	CENTRAL SUPPLIER DATABASE No:	MAAA
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE	TICK APPLICABLE BOX] ☐ Yes ☐ No		B-BBEE STATUS LEVEL SWORN AFFIDAVIT		[TICK APPLICABLE BOX] ☐ Yes ☐ No

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

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

QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS

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

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

PART B
TERMS AND CONDITIONS FOR BIDDING

1.	BID SUBMISSION:
1.1.	BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.
1.2.	**ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR IN THE MANNER PRESCRIBED IN THE BID DOCUMENT.**
1.3.	THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000 AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.
1.4.	**THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (SBD7).**
2.	**TAX COMPLIANCE REQUIREMENTS**
2.1	BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
2.2	BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.
2.3	APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.
2.4	BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
2.5	IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
2.6	WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.
2.7	NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE."

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

SIGNATURE OF BIDDER: ……

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

DATE: ……...

PRICING SCHEDULE
(Professional Services)

NAME OF BIDDER: ……BID NO: DFFE-B008 (26-27)
CLOSING TIME 11:00 AM CLOSING DATE: 30 OCTOBER 2026

OFFER TO BE VALID FOR ……**120**……DAYS FROM THE CLOSING DATE OF BID.

DESCRIPTION: THE APPOINTMENT OF THE CONTRACTOR FOR THE CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) IN THE EASTERN CAPE (EC) PROVINCE, WITHIN A PERIOD OF SIX (6) MONTHS.

**(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.

Any enquiries regarding bidding procedures may be directed to the –

Department of Forestry, Fisheries and the Environment

Contact Person: SCM Officials
E-mail: Tenders@dffe.gov.za

forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

THE DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT (DFFE) AS AN ORGAN OF THE STATE SUBSCRIBES TO AND PROPAGATES THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000 (ACT NO. 5 OF 2000) AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022.

TERMS OF REFERENCE

TENDER NO: DFFE B008 (26-27): FOR THE APPOINTMENT OF THE CONTRACTOR FOR THE CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) IN THE EASTERN CAPE (EC) PROVINCE, WITHIN A PERIOD OF SIX (6) MONTHS

VOLUME 1 – TENDERING PROCEDURES
VOLUME 2 – RETURNABLE DOCUMENTS
VOLUME 3 – THE CONTRACT

TENDER DOCUMENT

OCTOBER 2026

ISSUED BY:

DEPARTMENT OF FORESTRY FISHERIES AND THE ENVIRONMENT
PRIVATE BAG X447
ENVIRONMENTAL HOUSE
PRETORIA
0001

NAME OF THE TENDERER: .....

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2. SBD 6.1 - Preference Points Claim Form in Terms of the Preferential Procurement Regulations 2022
3. B-BBEE exempted affidavit for exempted micro enterprises (issued in terms of the amended construction sector code)
4. A valid B-BBEE Status Level Verification Certificate issued by SANAS, or Accredited Verification Agency; or B-BBEE Certificate issued by CIPC,
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THE CONTRACT

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VOLUME 1:
TENDERING PROCEDURES

T1.1 NOTICE AND INVITATION OF TENDER

Project Name:	**EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) WITHIN A PERIOD OF SIX (6) MONTHS**

Advertisement Date:	01 October 2026	**Validity:**	**120 days**
Closing Date:	30 October 2026	**Closing time:**	**11h00**

The Department of Forestry, Fisheries, and the Environment (DFFE) invites CIDB-registered contractors.

It is estimated that tenderers should have a CIDB contractor grading designation of:

6 CE or higher.

Works Description: The project comprises the following main deliverables:

a) Construction of a material Recovery Facility (MRF) and Refurbishment of the existing Transfer Station at **Indwe Town:**

i. Completion of the existing Material Recovery Facility.
ii. Completion of the existing storage room.
iii. Completion of the existing ablutions.
iv. Completion of the existing changerooms.
v. Completion of the existing guard house.
vi. Installation of prefabricated conservancy tank.
vii. Establishment of a borehole and borehole pump house.
viii. Completion of loading platform for three (3) skip bins for offloading waste.
ix. Completion of the existing access roads linking to the main road network.
x. Electrification of the facilities.
xi. Installation of a complete solar power unit.
xii. Installation of 3-phase bulk electrical connection to the facility.
xiii. Installation of sewer and water reticulation.

b) Refurbishment of the existing Transfer Station at **Dordrecht Town:**

i. Refurbishment of the existing storage room.
ii. Refurbishment of the existing guard house.
iii. Refurbishment of the existing changerooms.
iv. Reconstruction of loading platform for three (3) skip bins for offloading waste.
v. Upgrading of access roads linking to the main road network
vi. Construction of ablution facility.
vii. Electrification of the facility
viii. Installation of a complete solar power unit.
ix. Installation of electrical reticulation.
x. Installation of sewer and water reticulation

Only bidders who are responsive to the following responsiveness criteria are eligible to submit tenders. Failure to comply with some of the criteria stated hereunder, shall result in the tender offer being disqualified from further consideration:

☒	Only tenderers that satisfy the eligibility criteria set out in the Tender Data are eligible to submit tenders. Tenderers must also provide proof of registration with the Construction Industry Development Board (CIDB).
☒	Proof of valid registration with CIDB.
☒	Invitation to bid (SBD 1).
☒	Submission of the Bidder's Disclosure (SBD 4).
☒	Registration on National Treasury's Central Supplier Database (CSD) and Tax Pin from SARS.
☒	B-BBEE level of contribution certificate or affidavit if B-BBEE points are claimed for Construction Sector.
☒	B-BBEE level of contribution certificate or affidavit for intended subcontractors.
☒	A consolidated B-BBEE level of contribution certificate in the case of Joint Ventures.
	For service providers to claim for preference points the following must be adhered to: A. Submit a complete and signed SBD 6.1, B. Registration on National Treasury's Central Supplier Database (CSD) C. Bidders are requested to submit a valid B-BBEE Status Level Verification Certificate issued by SANAS Accredited Verification Agency; or B-BBEE Certificate issued by CIPC, or Sworn Affidavit commissioned by Commissioner of Oaths or A Consolidated Joint Venture B-BBEE Certificate clearly outlining the % ownership by black people, women and people with disabilities. D. Verification Certificate means a B-BBEE Certificate issued in compliance with the B-BBEE Codes of Good Practice or Sector Codes issued in terms of Section 9 1 of the Broad Based Black Economic Empowerment Act 53 of 2003 as amended by Act 46 of 2013. E. Unincorporated Joint Ventures are required to submit a consolidated verification certificate
☒	Tender offer must be properly received on the tender closing date and time specified on the invitation, fully completed, and signed in black ink. Use of correction fluid is prohibited; only black ink can be used in the document (All as per Standard Conditions of Tender).
☒	Valid COIDA or FMA certificate issued by the Department of Labour
☒	Submission of the Form of Offer and Acceptance.
☒	Submission of applicable Resolution by the legal entity, or consortium / joint venture, authorizing a dedicated person(s) to sign documents on behalf of the firm / consortium / joint venture.
☒	The tenderer will be required to submit a fully priced Bills of Quantities / Lump Sum Document (complete document inclusive of all parts) together with the tender document.
☒	Submission of Site Briefing Meeting Attendance Certificate as proof of attendance of compulsory site inspection meeting (To provide the contractors with a clear understanding of the scope of works).
☒	Submission of the schedule of Tender's Past Projects in refurbishment of existing buildings and construction of new buildings and civil related works

☒	Completion of Form A for completed projects
☒	Corrections made in the document should be initialed by the authorized person (as stated in the Standard Condition of Tender attached in this tender document).
☒	Copies of the Founding Statement – CK1
☒	Certificate of Incorporation – CM1
☒	CV's and copies of qualifications and Registrations for Project Staff as per Form B
☒	Financial Institution Letter confirming financial capability
☒	Completed and signed Consent Form
NB: DFFE RESERVES THE RIGHT TO PERFORM DUE DILIGENCE AND VERIFICATION ON ALL SUBMITTED DOCUMENTS AND INFORMATION BY BIDDERS	

Bidder must comply with the Mandatory Requirements criteria for the Preferential Procurement listed below:

MANDATORY REQUIREMENTS

Does mandatory requirement apply for this bid? **YES**

The following mandatory requirement will apply and all bids that do not meet mandatory requirement will be disqualified and not be evaluated further.

The compulsory Site Briefing Meeting will be held as follows:

Venue: Emalahleni Local Municipality (Indwe Townhall)

GPS Co-ordinates -31.46652, 27.33.682
Date: 08 October 2026
Starting Time: 10:00 am

Site 1 - Venue: Indwe

GPS Co-ordinates: 31°28'42.07"S, 27°20'50.00"E
Date: 08 October 2026
Starting time: 11:30 am

Site 2 - Venue: Dordrecht Towns

GPS Co-ordinates: 31°23'14.54"S, 27°3'1.69"E
Date: 08 October 2026
Starting time: 13:00 pm

ITEM NO.	MANDATORY REQUIREMENTS
1.	The main contractor must have a CIDB contractor grading designation of 6CE or higher. **Attach proof of a valid CIDB Contractor Grading Designation of six (6) CE or higher**
2.	The proposed Occupational Health and Safety Officer **MUST** be registered with the South African Council for the Project and Construction Management Professions (SACPCMP) **Attach a copy of valid certificate as proof of registration**
3.	Attendance of a Compulsory Site Briefing Meeting **Attach proof of attendance (Site Briefing Attendance Certificate)**

Functional Evaluation Criterion Summary

The maximum points allocation per criterion is summarised in the following table:

Minimum functionality score to qualify for further evaluation:	70 Points

Functionality criteria:	**Weighting factor:**
RELEVANT CONSTRUCTION WORK EXPERIENCE ON PREVIOUS CONTRACTS OF A SIMILAR NATURE, SCOPE /OR COMPLEXITY AND VALUE	30
REFERENCE LETTERS FROM THE BIDDER'S CLIENTS FOR COMPLETED PROJECTS OF SIMILAR NATURE, SCOPE, AND VALUE	15
FINANCIAL CAPABILITY	10
COMPETENCY OF THE SITE AGENT (QUALIFICATIONS AND EXPERIENCE)	20
COMPETENCY OF THE CONTRACT MANAGER (QUALIFICATIONS AND EXPERIENCE)	15
COMPETENCE OF THE OCCUPATIONAL HEALTH AND SAFETY (OHS) OFFICER (EXPERIENCE)	10
TOTAL FUNCTIONALITY SCORE	**100 Points**

Bidders are required to demonstrate compliance with the Functional Criteria by completing the relevant forms included in the bid document and submitting completion certificates for all completed projects cited as evidence of experience. Failure to submit the required completion certificates will result in the relevant projects not being considered when assessing the bidder's experience. Consequently, no points will be awarded for such projects under the "Completed Projects" criterion.

FUNCTIONALITY EVALUATION MATRIX

Bidder's **Company Experience**, **Current Resources and Current Expertise** will be evaluated as per the matrix below.

Project Name: EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) WITHIN A PERIOD OF SIX (6) MONTHS.

No	Criteria	Evaluation Indicators	Indicator	Weight
1	**RELEVANT CONSTRUCTION WORK EXPERIENCE ON PREVIOUS CONTRACTS OF A SIMILAR NATURE, SCOPE OR COMPLEXITY AND VALUE**			**30**
		Five (5) or more completed construction of new buildings and refurbishment of existing buildings and civil related works with the minimum project value of **R3 000 000** or higher value, with duly signed final completion certificate	**(5)**	**30**
		Four (4) x completed construction of new buildings and refurbishment of existing buildings and civil related works with the minimum project value of **R3 000 000** or higher value, with duly signed final completion certificate	**(4)**	
		Three (3) x completed construction of new buildings and refurbishment of existing buildings and civil related works with the minimum project value of **R3 000 000** or higher value, with duly signed final completion certificate	(**3**)	

	Bidders must provide a descriptive list of completed projects demonstrating experience in the **construction of new buildings, refurbishment of existing buildings, and associated civil works** of a similar nature and value to this tender. Each project must be supported by a duly signed Final Completion Certificate indicating the client, contact details, contract value, commencement date, and completion date. The projects submitted for evaluation must also be reflected in the **Schedule of Tenderer's Completed Projects** included in the bid returnable documents.	**Two (2)** x completed construction of new buildings and refurbishment of existing buildings and civil related works with the minimum project value of **R3 000 000** or higher value, with duly signed final completion certificate	**(2)**	
		One (1) x completed construction of new buildings and refurbishment of existing buildings and civil related works with the minimum project value of **R3 000 000** or higher value, with duly signed final completion certificate	**(1)**	
		Not submitted any projects completed construction of new buildings and refurbishment of existing buildings and civil related works with a minimum project value of **R3 million** or higher value, with duly signed final completion certificate	**(0)**	

Portfolio of projects: Please provide documentation to support, i.e., project description; project value and services rendered for the projects listed below:

	Name of project	**Client**	**Short Description of project**	**Value of Project**
1				
2				
3				
4				
5				
6				

No	**Criteria**	**Evaluation Indicators**	**Indicator**	**Weight**

2.	**REFERENCE LETTERS FROM THE BIDDER'S CLIENTS FOR COMPLETED PROJECTS OF COMPANY IN REFURBISHMENT OF EXISTING BUILDINGS AND CONSTRUCTION OF NEW BUILDINGS AND CIVIL RELATED WORKS PROJECTS, AND VALUE INDICATING EMPLOYER/CLIENT(S) SATISFACTION IN ALL ASPECTS OF THE PROJECT IMPLEMENTATION.**			**15**
	Please provide signed reference letters on client's letterhead, from the Clients confirming your company's involvement in the projects listed in items above, and additional projects of similar nature. Attach positive reference letters indicating: Name of Client, contact number, Contract sum, Contractual commencement date and completion date and the role played by the bidder in the project. **NB: Positive reference letter(s) indicated corresponding with the Final Completion Certificate(s) provided above will be utilised to verify and evaluate the value in criteria 1**	**5 x Positive reference letters** from clients confirming satisfactory completion of completed projects demonstrating experience in the refurbishment of existing buildings, construction of new buildings, and associated civil works.	**(5)**	**15**
		4 x Positive reference letters from clients confirming satisfactory completion of completed projects demonstrating experience in the refurbishment of existing buildings, construction of new buildings, and associated civil works.	(**4**)	
		3 x Positive reference letters from clients confirming satisfactory completion of completed projects demonstrating experience in the refurbishment of existing buildings, construction of new buildings, and associated civil works.	**(3)**	
		2 x Positive reference letters from clients confirming satisfactory completion of completed projects demonstrating experience in the refurbishment of existing buildings, construction of new buildings, and associated civil works.	**(2)**	
		1 x Positive reference letter from clients confirming satisfactory completion of completed projects demonstrating experience in the refurbishment of existing buildings, construction of new buildings, and associated civil works.	**(1)**	
		Not submitted any positive reference letter from clients confirming satisfactory completion of completed projects demonstrating experience in the refurbishment of existing buildings, construction of new buildings, and associated civil works.	**(0)**	
	Name of Company	**Value of Project**	**Letter attached**	

			YES	NO
1				
2				
3				
4				
5				
6				
7				
8				
9				

No	Criteria	Evaluation Indicators	Indicator	Weight
3.	**FINANCIAL CAPABILITY**			10
	- Bidders must submit proof of financial capability in the form of a valid letter, certificate, or written communication from a registered financial institution demonstrating their ability to finance and execute the project. Evidence may include, but is not limited to: • A confirmed overdraft facility in the name of the bidder; • An undertaking by a registered financial institution to provide a revolving credit facility to the bidder in the event that the contract is awarded;	To a value of R 1 300 000 and above.	(5)	10
		To a value of R 1 000 000 to less than R 1 300 000.	(4)	
		To a value of R 700 000 to less than R1 000 000.	(3)	
		To a value of R 400 000 to less than R 700 000.	(2)	
		To a value of R 200 000 to less than R 400 000.	(1)	
		To a value less than R 200 000 or no proof has been submitted.	(0)	

	• Other verifiable financial instruments demonstrating financial capacity. The submitted evidence must clearly indicate the value of the funds, facilities, or financial resources available to the bidder and must be valid at the time of bid submission.				
No	**Name of Bank**	**Contact Person**	**Contact Number**	**Date of letter**	
1					
2					
No	**Criteria**	**Evaluation Indicators**		**Indicator**	**Weight**
4.	**COMPETENCE OF SITE AGENT**				**20**
	Qualification (s) of the Site Agent				
	Bidder(s) are required to submit / attach a copy of qualification certificate for the Site Agent in Civil Engineering	A National Diploma/Diploma (NQF 6) or higher qualification (s)		**(5)**	**5**
		No qualification (s) submitted or not relevant qualification (s) or qualification (s) below NQF 6 submitted		**(0)**	
	Experience of the Site Agent				
		Eight (8) years or more of experience as a Site Agent in the Construction of New Buildings and Refurbishment of Existing and Civil related works projects.		**(5)**	**15**

	Years of experience as a Site Agent in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil-related works projects Bidder(s) are required to submit / attach comprehensive curriculum vitae detailing experience in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil-related works projects and track record of the Site Agent to be assigned to the project	**Six (6) years or more years but less than eight (8) years** of experience as a Site Agent in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(4)**	
		Four (4) years or more years but less than six (6) years of experience as a Site Agent in the Construction of New Buildings and Refurbishment of Existing and Civil related works projects.	**(3)**	
		Two (2) years or more years but less than four (4) years of experience as a Site Agent in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(2)**	
		One (1) year or more but less than two (2) years of experience as a Site Agent in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(1)**	
		Less than one (1) or no requisite experience and qualification as a Site Agent in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil-related works projects.	**(0)**	

No	**Name of the Key Person**	**Name of the Qualification(s)**	**Portfolio/ Position**	**Qualification (s) and CVs attached**	
				YES	**NO**
1					

No	**Criteria**	**Evaluation Indicators**	**Indicator**	**Weight**
5.	**COMPETENCE OF THE CONTRACT MANAGER**			**15**
	Qualification (s) of the Contract Manager			
	Bidder(s) are required to submit / attach a copy of qualification for the Contract Manager in Civil Engineering	A Bachelor of Science in Engineering (BSc (Eng)) or Bachelor of Engineering (BEng) (NQF 8) or higher qualification (s) in Civil Engineering	**(5)**	**5**
		A Bachelor of Engineering Technology (NQF 7) qualification (s) in Civil Engineering	**(4)**	
		No qualification (s) submitted or qualification (s) or not relevant qualification (s) or below NQF 7 submitted	**(0)**	

	Experience of the Contract Manager			
	Years of experience as a Contract Manager in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects. Bidder(s) are required to submit / attach comprehensive curriculum vitae detailing experience in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects and track record of the Contract Manager to be assigned to the project	**Eight (8) years or more years** of experience as a Contract Manager in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(5)**	**10**
		Six (6) years or more years but less than eight (8) years of experience as a Contract Manager in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(4)**	
		Four (4) years or more years but less than six (6) years of experience as a Contract Manager in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil-related works projects.	**(3)**	
		Two (2) years or more years but less than four (4) years of experience as a Contract Manager in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(2)**	
		One (1) year or more but less than two (2) years of experience as a Contract Manager in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(1)**	
		Less than one year or no requisite experience as a Contract Manager in the Construction of New Buildings and Refurbishment of Existing and Civil related works projects.	**(0)**	

No	**Name of the Key Person**	**Name of the Qualification(s)**	**Portfolio/ Position**	**Proof of Registration and CVs attached**	
				YES	**NO**
1					

No	**Criteria**	**Evaluation Indicators**	**Indicator**	**Weight**
6.	**COMPETENCE OF THE OCCUPATIONAL HEALTH AND SAFETY (OHS) OFFICER**			**10**
	Experience of the Health and Safety Agent			

	Years of experience as an Occupational Health and Safety Officer in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects. Bidder(s) are required to submit/ attach comprehensive curriculum vitae detailing experience in the Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects and track record of the Occupational Health and Safety Officer (OHS Officer) to be assigned to the project	**Eight (8) years or more years** of experience as an Occupational Health and Safety Officer in Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(5)**	**10**
		Six (6) years or more years but less than eight (8) years of experience as an Occupational Health and Safety Officer in Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(4)**	
		Four (4) years or more years but less than six (6) years of experience as an Occupational Health and Safety Officer in Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(3)**	
		Two (2) years or more years but less four (4) years of experience as an Occupational Health and Safety Officer in Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(2)**	
		One (1) year or more but less than two (2) years of experience as an Occupational Health and Safety Officer in Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(1)**	
		Less than one year or no requisite experience as an Occupational Health and Safety Officer in Construction of New Buildings and Refurbishment of Existing Buildings and Civil related works projects.	**(0)**	

No	**Name of the Key Person**	**Name of the Qualification(s)**	**Portfolio/ Position**	**CVs and Qualifications attached**	
				YES	**NO**
1					
TOTAL FUNCTIONALITY SCORE1				**100**	
MINIMUM QUALIFYING SCORE FOR FUNCTIONALITY				**70**	

(Weighting will be multiplied by the scores allocated during the evaluation process to arrive at the total functionality points)

Preference Point and Price Calculation

The following preference point system will be followed to advance the categories of persons:

a) For contracts with a Rand value up to R50 000 000, a maximum of 20 points may be allocated for specific goals as contemplated above, provided that the lowest acceptable tender scores 80 points for price.

i. The applicable formula to be used is Ps=80[1-(Pt-Pmin)/Pmin]. Provided:

Ps = Points scored for price of tender under consideration;

Pt = Price of tender under consideration; and

Pmin = Price of the lowest applicable tender.

ii. A total of 20 points may be awarded to a tenderer as follows:

20 points: if the Bidder has more than 50% (fifty percent) ownership by Black people, Women, or people with disabilities

0 Points: for 50% and below ownership by stipulated categories of persons

b) A contract may be awarded to a tenderer that did not score the highest points only in accordance with section 2(1)(f) of the PPPFA.

c) Bid will be awarded to a bidder with the highest points on price and Preference Points on condition that they have met all phases of the evaluation criteria and complied with the tender requirements set out in the tender document.

d) The DFFE reserves the right to negotiate prices that are not deemed market related and not to award the tender to the bidder with the lowest price.

e) Preference points system applicable for this bid is: 80/20.

f) A maximum of***20*** points will be awarded for any one of the specific goal(s) listed in the table below..

SPECIFIC GOALS	**80/20**
>50% ownership by Black people, Or	**20**
>50% ownership by Women, Or	**20**
>50% ownership by people with Disability	**20**

For bidders to claim preference points, the following must be adhered to:

F.1) Submit a complete and signed SBD 6.1,

F.2) Submit CSD Registration Report or MAAA number/CSD Number or

F.3) Bidders are requested to submit a valid B-BBEE Status Level Verification Certificate issued by SANAS, or Accredited Verification Agency; or B-BBEE Certificate issued by CIPC, or Sworn Affidavit commissioned by Commissioner of Oaths together with their bids. **Issued in terms of the amended Construction Sector Code**

F.4) If the application is made by a Joint Venture or Partnership, the accreditation credentials in name of joined entities should be submitted. Members in the joint venture must meet the requirement of the proposal. **Issued in terms of the amended Construction Sector Code**

NB: Failure on the part of a tenderer to submit proof or documentation stated above in terms of this tender to claim preference points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

Collection of tender documents

☒ Bid documents are available for free download on the e-Tender portal www.etenders.gov.za and cidb i-tender.

Enquiries related to the technical part of the tender document may be addressed to: Tenders@dffe.gov.za.

Deposit/return of tender documents

Telegraphic, telephonic, telex, facsimile, electronic, and/or late tenders will not be accepted.
Requirements for sealing, addressing, delivery, opening, and assessment of tenders are stated in the Tender Data.

All tenders must be completed in black ink and submitted on the official forms (forms not to be re-typed).

Deposited in the tender box at:
Environmental House Ground Floor of the Department of Forestry, Fisheries and Environment 473 Steve Biko Road Arcadia, Pretoria 0083 Ground floor (At the Reception)

TECHNICAL ENQUIRIES

Should you require any further information in this regard, please do not hesitate to send written enquiries to: Tenders@dffe.gov.za

T1.2 TENDER DATA

Clause number	Tender Data
	The conditions of tender are the Standard Conditions of Tender (as published / amended by CIDB contained in Annexure C of the CIDB Standard for Uniformity in Engineering and Construction Works Contracts (August 2019) as published in Government Gazette No 42622, Board Notice 423 of 2019 of 08 August 2019. (See www.cidb.org.za). The standard conditions of tender for procurements 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 tender data given below is cross-referenced to the clause in the standard conditions of tender to which it mainly applies.
C.1.1	The employer is the **Department of Forestry, Fisheries, and the Environment**
C.1.2	For this contract, the three-volume approach is adopted: This procurement document has been formatted and compiled under the headings as contained in the CIDB's "Standard for Uniformity in Construction Procurement." **Volume 1: Tendering procedures** T1.1 - Notice and invitation to tender T1.2 - Tender data **Volume 2: Returnable documents** T2.1 - List of returnable documents C1.1 - Form of offer and acceptance T2.2 - Returnable schedules **Volume 3: Contract** **Part C1 - Agreements and Contract data** C1.1 – Form of offer and acceptance C1.2 – Contract data C1.3 – Other Standard Forms C1.4 – Additional Conditions of Contract **Part C2 - Pricing Data** C2.1 – Pricing Instructions C2.2 – Pricing Schedule **Part C3 - Scope of Works** C3.1 – Description of the works **Part C4 - Site Information** C4.2 Engineering

	C4.3 – Procurement C4.4 – Management C4.5 – Health And Safety C4.6 – Construction C4.7 – Particular Specification **Part C6 Drawings** **Part C6 Appendices**
C.1.4	The Employer's agent for the purpose of this tender is deemed to be the authorised and designated representative of the Employer. However, request for clarification of the tender document, questions, or queries, if necessary, must be submitted to the DFFE email: Tenders@dffe.gov.za at least seven (07) calendar days before the stipulated closing date and time of the tender in writing. However, DFFE shall not be liable nor assume liability for failure to respond to any questions and/or queries raised by the bidder.
C.1.5	**Cancellation and Re-Invitation of Tenders**
C.1.5.1	An employer may, prior to the award of the tender, cancel a tender if- a) due to changed circumstances, there is no longer a need for the engineering and construction works specified in the invitation. b) funds are no longer available to cover the total envisaged expenditure; or c) no acceptable tenders are received. d) there is a material irregularity in the tender process.
C.1.5.2	The decision to cancel a tender invitation must be published in the same manner in which the original tender invitation was advertised
C.1.5.3	An employer may only with the prior approval of the relevant treasury cancel a tender invitation for the second time.
C.1.6	**Procurement procedures**
C.1.6.1	Unless otherwise stated in the tender data, a contract will, subject to C.3 be concluded with the tenderer who in terms of C.3 is the highest ranked or the tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.
C.1.6.2	**Competitive negotiation procedure**
C.1.6.2.1	Where the tender data require that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of C.3, the employer shall announce only the names of the tenderers who make a submission. The requirements of C.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.
C.1.6.2.2	All responsive tenderers or at least a minimum of not less than three responsive tenderers that are highest ranked in terms of the evaluation criteria stated in the tender data shall be invited to enter into competitive

	negotiations based on the principle of equal treatment, keeping confidential the proposed solutions and associated information. Notwithstanding the provisions of C.2 the employer may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.
C.1.6.2.3	At the conclusion of each round of negotiations, tenderers shall be invited by the employer to revise their tender offer based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.
C.1.6.2.4	The contract shall be awarded in accordance with the provisions of C.3 after tenderers have been requested to submit their best and final offer.
C.2	**Tenderer's obligations**
C.2.1	**Eligibility** Only those tenderers who satisfy the following criteria are eligible to submit tenders: **a) CIDB registration** Registered with the CIDB, at close of tender, 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, as per amended notice no. 357 of 2019, for a **6CE** or higher class of construction work. Tenderers whose CIDB registration expires within the tender validity period, need to demonstrate that there is a reasonable chance of being registered in the appropriate grading designation during the tender evaluation period, by submitting a copy of their timely application for CIDB registration, with their tender submission. Tenders received from such tenderers who are not capable of being registered in the required contractor designation, within 10 working days after either expiry of their registration or after being requested to provide proof of registration, will be considered non-responsive. **Note that in terms of the Construction Industry Development Board Act, 2000 (Act No. 38 of 2000) a registered contractor must apply for renewal of registration three months before the existing registration expires.** Tenderers registered as potentially emerging enterprises but with a CIDB contractor grading designation lower 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, as per amended notice no. 357 of 2019, are not eligible to have their tenders evaluated. Joint Ventures are eligible to submit tenders provided that: a) every member of the joint venture is registered with the CIDB; b) the lead partner has a contractor grading designation of not lower than one level below the required grading designation in the class of construction works under consideration and possesses the required recognition status, and

	c) 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 **6CE** 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, as per amended notice no. 357 of 2019.
C.2.1.1	Only those bidders who satisfy the following eligibility criteria are eligible to submit bids: (a) Availability of resources: Site Agent (with a minimum qualification of National Diploma of Civil Engineering (attach the proof of qualifications) Contract Manager (with a minimum qualification of Bachelor of Science /Bachelor of Engineering in Civil Engineering or Bachelor of Technology in Civil Engineering (attach the proof of qualifications) (b) Availability of skills to manage and perform the contract – including staff which satisfies EPWP requirements (see further requirements under C.3) (c) Previous experience on contracts of a similar value and nature (d) A letter on the clients' letterhead stating that the contractor has sufficient capacity to execute the project
C.2.2	**Eligibility** **b) Risk to Employer** **Provisions applicable to Evaluation Method 1 and 2:** Tender offers will be evaluated by an Evaluation Committee based on the technical and commercial risk criteria listed hereunder. Each criterion carries the same weight / importance and will be evaluated individually based on reports presented to the Evaluation Committee by the Project Manager / Professional Team appointed on the project. For the evaluation reports to be prepared by the Professional Team, the Tenderer is obliged to provide comprehensive information on the form for the (Schedule of completed projects). Failure to complete the said form will cause the tender to be declared non-responsive and removed from any further consideration. The Employer reserves the right to request additional information over, and above that which is provided by the Tenderer on said form. The information must be provided by the Tenderer within the stipulated time as determined by the Project Manager, failing which the tender offer will *mutatis mutandis* be declared non-responsive. **Technical risks:** **a) Criterion 1: Quality of previous work** Quality of previous work performed by the Tenderer in the class of construction work stated above as per the evaluation report prepared by the Professional Team, based on its research and inspection of a representative sample of the Tenderer's previous work as well as, if necessary, of any additional work executed by the Tenderer, not reflected on form for the (Schedule of completed projects). **b) Criterion 2: Contractual commitment**

	Adherence to contractual commitments, demonstrated by the Tenderer in the performance on previous work, evaluated in terms of: 1) the level of progress on current projects in relation to the project Programme or, if such is not available/applicable, to the contractual construction period in general. 2) the degree to which previous projects have been completed within the contractual completion periods and/or extensions thereto; and **3**) general contract administration, e.g., compliance with contractual aspects such as laws and regulations, insurances, security, written contract instructions, subcontractors, time delay claims, etc. as can generally be expected in standard/normal conditions of contract. **c) Criterion 3: Commercial risks** The level to which agreement with the Tenderer is reached in respect of the adjustment of rates which are imbalanced or unreasonable and to eliminate errors or discrepancies, without changing the tendered total amount / final offer, over and above the correction of arithmetical errors as provided for in C.2 and C.3
C.2.2.1	The tenderer must be notified of all arithmetic errors, omissions and/or rate imbalances that are identified in the tender offer and request the tenderer to, within a stipulated time, accept the total of the rates / prices as corrected by the Department professional team without changing the tender amount / final offer.
C.2.2.2	**Cost of Tender** The cost of the tender documents charged by the employer shall be limited to the actual cost incurred by the employer for printing the documents. The Employer will not compensate the tenderer for any costs incurred in attending the meetings or making any submissions in the office of the Employer.
C.2.3	**Check documents** Check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.
C.2.4	**Confidentiality and copyright of documents** Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a tender offer in response to the invitation.
C.2.6	**Acknowledge addenda** Acknowledge receipt of addenda to the tender documents, which the employer may issue, and if necessary, apply for an extension to the closing time stated in the tender data, in order to take the addenda into account.
C.2.7	**Seek clarification** Request clarification of the tender documents, if necessary, by notifying the employer at least seven (07) calendar days before the closing time stated in the tender data.
C.2.8	**Insurance** Be aware that the extent of insurance to be provided by the employer (if any) might not be for the full cover required in terms of the conditions of contract identified in the contract data. The tenderer is advised to seek qualified advice regarding insurance.

C.2.9	**Pricing the tender offer**
C.2.9.3	This contract shall not be subject to Contract Price Adjustments, foreign fluctuations, etc and all rates and prices shall remain fixed, final and binding for the full duration of this contract.
C.2.11	**Alterations to documents** Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations (refer to the standard condition of Tender).
C.2.12	**Alternative tender offers** No alternative tender offers will be considered
C.2.13	**Submitting a tender offer**
C.2.13.1	Submit one tender offer only as a single tendering entity to provide the whole of the works identified in the contract data and described in the scope of works, unless stated otherwise in the tender data.
C.2.13.2	Return all returnable documents to the employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.
C.2.13.3	Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the tender data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the employer.
C.2.13.4	Sign the original and all copies of the tender offer where required in terms of the tender data. The employer will hold all authorized signatories liable on behalf of the tenderer. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.
C.2.13.5	Seal the original tender offer marked as **"ORIGINAL".** The package shall state on the outside the employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.
C.2.13.6	Bidders are requested to deliver the submission in one envelope. The Employer's address for delivery of tender offers and identification details to be shown on the tender offer package is: **Title to appear on envelope one (1):** 1. CONTRACT NO.: DFFE-B008 (26-27)..... ***(TECHNICAL PROPOSALS)*** **The appointment of a contractor for the completion of <u>A Material Recovery Facility (MRF) and the refurbishment of two (2) existing transfer stations for the Emalahleni local municipality (Indwe and Dordrecht towns) in the Eastern Cape Province within a period of six (6) months</u>, on behalf of the Department of Forestry, Fisheries, and the Environment.** This envelope must contain the returnable SCM Documentations, Relevant Annexures and Appendixes. This envelope must contain **printed copies** of all the pages in this document, duly completed and signed, **inclusive of the pricing schedules (bill of quantities), which must be submitted in one envelope as detailed below.**

	For identification purposes, bidders are requested to ensure that the envelopes containing the company's bids are clearly marked and are easily identifiable by the company's logo or name. **Location of tender box:** Ground Floor of the Department of Forestry, Fisheries and Environment **Physical address:** Location of tender box: DFFE Head Office Reception **Physical address:** 473 Steve Biko Road, Arcadia, 0083 **Identification details:** TENDER BOX
C.2.13.7	Seal the original tender offer in an outer package that states on the outside only the employer's address and identification details as stated in the tender data.
C.2.13.8	Accept that the employer will not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.
C.2.13.9	Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer.
C.2.14	**Information and data to be completed in all respects** Accept that tender offers, which do not provide all the data or information requested completely and, in the form, required, may be regarded by the employer as non-responsive.
C.2.15	**Closing time** The closing time for submission of tender offers is 11h00 The **Department of Forestry, Fisheries and the Environment** is not obliged to accept the lowest or any tender and reserves the right to accept any tender in whole or in part.
C.2.16	The tender offer validity period is 120 days from the closing date.
C.2.17	**Clarification of tender offer after submission** Provide clarification of a tender offer in response to a request to do so from the employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.
C.2.18.2	The Tenderer shall, when requested by the Employer to do so, submit the names of all management and supervisory staff that will be employed to supervise the labour-intensive portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirements.
C.2.19	**Inspections, tests, and analysis** Provide access during working hours to premises for inspections, tests and analysis as provided for in the tender data.
C.2.20	**Submit securities, bonds, and policies** If requested, submit for the employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies, and certificates of insurance required in terms of the conditions of contract identified in the contract data.

	Provide access during working hours to premises for inspections, tests and analysis as provided for in the tender data.
C.2.23	The Tenderer is required to submit his/her tender with all documents and schedules listed under T2.1 and T2.2.
C.2.24	Canvassing and obtaining of additional information by tenderers The Tenderer shall not make any attempt either directly or indirectly to canvass any of the Employer's officials or the Employer's agent in respect of his tender, after the opening of the tenders but prior to the Employer arriving at a decision thereon. The Tenderer shall not make any attempt to obtain particulars of any relevant information, other than that disclosed at the opening of tenders.
C.2.25	Prohibitions on awards to persons in service of the state The Employer is prohibited to award a tender to a person - a) who is in the service of the state; or b) if that person is not a natural person, of which any director, manager, principal shareholder or stakeholder is a person in the service of the state; or c) a person who is an advisor or consultant contracted with the Department. **In the service of the state** means to be - a) a member of:- • any municipal council; • 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; e) provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999); f) a member of the accounting authority of any national or provincial public entity; or g) An employee of Parliament or a provincial legislature. In order to give effect to the above, the questionnaire for the declaration of interests in the tender of persons in service of state in part T2 of this procurement document must be completed.
C.3	**The employer's undertakings**
C.3.1	**Respond to requests from the tenderer** The Employer will respond to requests for clarification received up to five (5) working days before the tender closing time.
C.3.2	**Issue Addenda** Addenda will be issued until five (5) working days before the tender closing time.
C.3.5	The time and location for opening of the tender offers are:

	11h00 on 30 October 2026 at the **Department of Forestry, Fisheries and the Environment**: Head Office Reception Physical address: 473 Steve Biko Road, Arcadia, 0083
C.3.9	**Arithmetical errors, omissions, and discrepancies**
C.3.9.1	Check the highest ranked tenders or tenderers with the highest number of tender

Item No.	Administrative Requirements	Check/Compliance
1	Master Bid Document	Provided and bound
2	Electronic Copy (USB)	Same as the master bid document
3	B-BBBE Certificate or Sworn Affidavit	Valid B-BBEE Status Level Verification Certificate issued by SANAS, or Accredited Verification Agency, or B-BBEE Certificate issued by CIPC, or a Sworn Affidavit commissioned by the Commissioner of Oaths together with their bids and CSD report
4	Tax Compliance and CSD Registration	CSD supplier number/ CSD registration report and/ or SARS Tax Pin
5	SCM - SBD 1 - Invitation to Bid	Completed and signed
6	SBD 3.3 - Aligned to Annexure A Pricing Schedule	Completed
7	SCM - SBD 4 – Bidders Disclosure	Completed and signed
8	SCM - SBD 6.1 - Preference Points Claim Form in terms of the Preferential Procurement Regulations 2022	Completed and signed,
9	In case of bids where Consortia / Joint Ventures, Consortia/ Joint Venture agreement signed by both parties, that agreement must be submitted with bid proposal	JV agreement completed and signed, if applicable
10	Letter of Authority to sign documents on behalf of the company.	Signed
11	Consent and Indemnity Form	Completed and signed

	evaluation points after the evaluation of tender offers in accordance with C.3 for: a) the gross misplacement of the decimal point in any unit rate; b) omissions made in completing the pricing schedule or bills of quantities; or c) arithmetic errors in: i) line-item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or the summation of the prices.
C.3.9.2	The arithmetical errors shall be corrected 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. The Tender Offer will be rejected if the tenderer does not correct or accept the Correction of the arithmetical error in the manner described above.
C.3.11	**Functionality, Price and Preference** The purpose of the evaluation is to ensure and promote compliance with the Constitution, specifically Section 217, which provides that when organs of state contract for goods or services, they must do so in accordance with a system which is fair, equitable, transparent, competitive and cost-effective. The evaluation of bids will be undertaken in **4 stages.**
C.3.12	**Stage 1: Initial screening (pre-compliance) on Supply Chain Management returnable requirements** During this phase bid documents will be reviewed to determine the compliance with Standard Bidding Documents (SBD), SCM returnable, tax matters and contractor had registered on Central Data Base (CSD). All returnable documents must be submitted with the bid documents at the closing date and time of the bid. Bids which do not satisfy the compliance criteria may be disqualified and will not be evaluated further on the next stage of the evaluation- criteria. The bid proposal will be screened for compliance with administrative requirements as indicated below and bidders must circle the correct answer.
	Stage 2: Mandatory Requirements The following mandatory requirements will apply and all bids that do not meet mandatory requirements will be disqualified and will not be evaluated further on functionality criteria.

Criteria	Yes/No
Main contractor must have a CIDB contractor grading designation of 6 CE or higher	**Yes**

	The proposed Occupational Health and Safety Officer must be registered with the South African Council for the Project and Construction Management Professions (SACPCMP)	**Yes**
	A contractor must attend a compulsory Site Briefing Meeting on the date and time published on the tender document	**Yes**

Stage 3: Functional Evaluation

The Functional Evaluation will be carried out to assess the Bidder's suitability to undertake the project, the Bidder's Company Experience, Current Resource, Current Expertise and project cost will be evaluated. Bidders who fail to obtain a minimum 70 Points for functionality under **Stage 3** will not be considered further. DFFE shall not be held responsible for incorrect judgement misled by unclear written letters/words on the forms below, to be completed by the Bidder(s). **DO NOT COMPLETE THE FORMS BY WRITING "SEE ATTACHED"**, Bidder(s) who refer to attachment **MAY BE SCORED ZERO**. Attachment shall strictly be made where specified and at the correct location, any attachment other than what has been requested by DFFE, shall be completely ignored, and scored zero, where points allocation is required.

When completing Forms, Bidder(s) may make copies of the original Forms, should the provided forms be inadequate for their completion of the information required. Forms must be hand completed in black ink, no computer regenerated forms will be accepted. Forms must be completed in full, forms not completed in full shall be rejected by scoring zero.

Stage 4: Price and Preference Points

Price and Preference Points Calculation

The following preference point system will be followed to advance the categories of persons:

a) For contracts with a Rand value up to R50 000 000, a maximum of 20 points may be allocated for specific goals as contemplated above, provided that the lowest acceptable tender scores 80 points for price.

The applicable formula to be used is Ps=80[1-(Pt-Pmin)/Pmin]. Provided:

Ps = Points scored for price of tender under consideration.

Pt = Price of tender under consideration; and

Pmin = Price of the lowest applicable tender.

A total of 20 points may be awarded to a tenderer as follows:

20 points: if the Bidder has more than 50% (fifty percent) by Black people, Women, or people with disabilities

0 Points: for 50% and below ownership by stipulated categories of persons

b) A contract may be awarded to a tenderer that did not score the highest points only in accordance with section 2(1)(f) of the PPPFA.

c) Bid will be awarded to a bidder with the highest points on price and Preference Points on condition that they have met all phases of the evaluation criteria and complied with the tender requirements set out in the tender document.

d) The DFFE reserves the right to negotiate prices that are not deemed market related and not to award the tender to the bidder with the lowest price.

e) Preference point system applicable for this bid is: **80/20**

f) A total of ***20*** points will be allocated for either of the specific goals.

SPECIFIC GOALS	80/20
>50% ownership by Black people, Or	**20**
>50% ownership by Women, Or	**20**
>50% ownership by people with Disability	**20**

For service providers to claim for preference points the following must be adhered to:

a) Submit a complete and signed SBD 6.1,

b) CSD registration report/MAAA number/CSD number

c) Bidders are requested to submit a valid B-BBEE Status Level Verification Certificate issued by SANAS Accredited Verification Agency; or B-BBEE Certificate issued by CIPC, or Sworn Affidavit commissioned by Commissioner of Oaths or A Consolidated Joint Venture B-BBEE Certificate clearly outlining the % ownership by black people, women and people with disabilities. **Issued in terms of the amended Construction Sector Code.**

d) Verification Certificate means a B-BBEE Certificate issued in compliance with the B-BBEE Codes of Good Practice or Sector Codes issued in terms of Section 9 1 of the Broad Based Black Economic Empowerment Act 53 of 2003 as amended by Act 46 of 2013. **Issued in terms of the amended Construction Sector Code.**

e) Unincorporated Joint Ventures are required to submit a consolidated verification certificate

C.3.13.1

Tender offers will only be accepted on condition that:

a) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation;

b) the bidder or any of its directors is not listed in the Register of Bid Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector;

c) the bidder has not:

i. abused the Employer's Supply Chain Management System; or

ii. failed to perform on any previous contract and has been given a written notice to this effect.

d) Has completed the Returnable SBD4, 6.1, forms and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process

Has submitted the documentation listed in T2.21 and T2.22

C.3.18	**The number of paper copies of the signed contract to be provided by the employer is ONE.**
	Additional information on Subcontracting requirements: All specialist contractors and subcontractors engaged by the Contractor shall possess the registrations to professional / regulatory institutions in the case of professional services, licences and accreditations required by law and by the CIDB regulatory framework applicable to the works assigned.
	Additional information on legislative framework of the bid: Privacy and Protection of Personal Information Act 4 of 2013 a) Protecting personal information is important to the Department of Forestry, Fisheries, and the Environment. To do so, the DFFE follows general principles by applicable privacy laws and the Protection of Personal Information Act 4 of 2013 (POPIA). b) The DFFE's role as the responsible party is amongst others to process personal information for the intended purpose for which it was obtained and in line with legal agreements with its respective/ prospective service providers and third parties. c) The DFFE will process personal information only with the knowledge and authorisation of the bidder/ respondent and will treat the personal information which comes to its knowledge as confidential and will not disclose it unless so required by law or subject to the exception contained in the POPIA. d) The DFFE reserves all the rights afforded to it by the POPIA in the processing of any of its information as contained in this bid and the bidder/respondent is required to comply with all prescripts as detailed in the POPIA relating to all information concerning the DFFE. e) In responding to this bid, the DFFE acknowledges that it will obtain and have access to the personal information of the bidder/ respondent. The DFFE agrees that it shall only process the information disclosed by the bidder/ respondent in their response to this bid for evaluation and subsequent award of the tender and by any applicable law.
	Additional special conditions of the contract: a) The DFFE will consider Company and Individual(s) (Key Resources) experience and Qualifications obtained within and outside the Republic of South Africa (RSA). For evaluation purposes, qualifications obtained outside RSA must be accompanied by the SAQA Certificate of Evaluation (SCoE). The SCoE must indicate the recognition decision taken by SAQA concerning the foreign qualification and the comparability of that qualification with a South African qualification registered on the National Qualification Framework (NQF). Foreign qualifications that are not accompanied by the SCoE will not be considered for evaluation in this contract. b) The recognition of foreign qualifications is in terms of the South African National Qualifications Framework (NQF) conducted by SAQA. SAQA derives this mandate from the NQF Act, 67 of 2008 (as amended) and performs the function according to the Policy and Criteria for Evaluating Foreign Qualifications within the South African NQF (as amended, 2017). (www.saqa.org.za)" c) The Contractor is required to comply with all applicable statutory requirements throughout the contract period, including maintaining valid professional registrations where required.

	d) The contractor is required to provide competent and suitably authorised personnel (key resources) for the execution of the works. Any replacement of key resources during implementation must be subject to the approval of the Employer and the proposed replacement must possess equivalent or superior qualifications, experience, competency, and professional registration (if applicable) to those of the individual originally evaluated during the tender process

FORM A: SCHEDULE OF BIDDER'S EXPERIENCE IN CONSTRUCTION PROJECTS

DFFE shall not be held responsible for incorrect judgment misled by unclear written letters/words on the forms below, to be completed by the Bidder(s). **DO NOT COMPLETE THE FORMS BY WRITING "SEE ATTACHED"**, Bidder(s) who refer to the attachment may be scored zero. Attachment shall strictly be made where specified and at the correct location, any attachment other than what has been requested by DFFE shall be completely ignored, and scored zero, where points allocation is required.

When completing Forms, Bidder(s) may make copies of the original Forms, should the provided forms be inadequate for their completion of the information required. Forms must be hand completed in black ink; no computer-regenerated forms will be accepted. Forms must be completed in full, forms not completed in full shall be rejected by scoring zero.

i) In order to qualify for maximum points, the bidder's Contractor must have completed construction of ***more than five (5) in related projects with a minimum value of R3 000 000, excluding VAT.***

FORM A: COMPLETED PROJECTS

Name of the Bidder		
NUMBER OF YEARS' EXPERIENCE IN THE BUILT ENVIRONMENT OR CONSTRUCTION		
PROJECT No.	**1**	**2**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**Name, Tel/ Cell no and Fax no)**		
Clients Contact Person (email address)		
Consulting Engineer (**Name, Tel/ Cell no and Fax no)**		
Appointment Value (at least R3 000 000)		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes / No)		
Completion certificate attached (Yes or No)		

Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Main Contractor (Yes / No)		

PROJECT No.	**3**	**4**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**Name, Tel/ Cell no and Fax no)**		
Clients Contact Person (email address)		
Consulting Engineer (**Name, Tel/ Cell no and Fax no)**		
Appointment Value (at least R3 000 000)		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes / No)		
Completion certificate attached (Yes or No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Main Contractor (Yes / No)		

PROJECT No.	**5**	**6**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**Name, Tel/ Cell no and Fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value (at least R3 000 000)		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Completion certificate attached (Yes or No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Main Contractor (Yes/No)		

PROJECT No.	**7**	**8**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**Name, Tel/ Cell no and Fax no)**		
Clients Contact Person (email address)		
Consulting Engineer (**Name, Tel/ Cell no and Fax no)**		
Appointment Value (at least R3 000 000)		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes / No)		
Completion certificate attached (Yes or No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Main Contractor (Yes / No)		

PROJECT No.	**9**	**10**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**Name, Tel/ Cell no and Fax no)**		
Clients Contact Person (email address)		
Consulting Engineer (**Name, Tel/ Cell no and Fax no)**		
Appointment Value (at least R3 000 000)		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes / No)		
Completion certificate attached (Yes or No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If completed) (months/year)		
Main Contractor (Yes / No)		

FORM B: EXPERIENCE OF NOMINATED PERSONNEL

Bidders must have experienced staff, who have previously worked on similar projects. The information will be verified with the references provided. Any information found to be untruthful will lead to the immediate disqualification of the Service Provider. In order to qualify for maximum points, the bidder must have in its proposal a: -

i) Site Agent with a minimum qualification of National Diploma in Civil Engineering and more than 8 years' experience in Construction of New Buildings and Refurbishment of Existing Buildings and/or Civil related works projects.

ii) Contract Manager with a minimum qualification of a Bachelor of Science degree/Bachelor of Engineering in Civil Engineering or Bachelor of Technology Degree in Civil Engineering and more than 8 years' experience in Construction of New Buildings and Refurbishment of Existing Buildings and/or Civil related works projects.

iii) OHS Officer with more than 8 years' experience in site safety management of Construction of New Buildings or Refurbishment of Existing Buildings and/or Civil related works projects.

Bidders are required to complete the forms attached as evidence and submit detailed CVs as well as the qualifications and professional registrations of the above-mentioned personnel.

NB:

ONE INDIVIDUAL MAY NOT BE NOMINATED FOR MORE THAN ONE ROLE OR POSITION FOR THIS BID. IF AN INDIVIDUAL IS NOMINATED FOR MORE THAN ONE ROLE THEN THE POINTS WILL ONLY BE ALLOCATED FOR ONE OF THE ROLES AND THE BIDDER WILL SCORE ZERO ON ANY OTHER ROLE.

It is **the requirement** to complete all fields in Form B for each project listed as this information will be deemed to be material to the award of the Contract. Failure to complete all fields for the project listed may lead to the bidder losing points during functional evaluation under the categories. Should the bidder choose to present the required information in the attachments, then the bidder must **COMPLETE FORM (B) FIRST and then** make a clear reference to such attachments so that they may be considered, and such attachments must provide the same information requested for in Form B.

FORMS TO BE COMPLETED BY THE BIDDERS

- **Form B (i) Contract Manager**
- **Form B (ii) Site Agent**
- **Form B (iii) OHS Officer**

FORM B (i) CONTRACT MANAGER

Contract Manager in the Company

Post	Name	Qualifications	Experience in years
Contract Manager			

Minimum Qualifications - A Bachelor of Science degree/Bachelor of Engineering in Civil Engineering or Bachelor of Technology Degree in Civil Engineering

Bidders are required to submit as attachments after this page, completed CV.

Signature _____ Date _____

Name _____ Capacity _____

Bidder _____

Contract Manager

The Bidder must note that repeating the same year under different project will still be considered as one year's experience.

Contract Manager		
Name and Surname		
Experience (years) as Contract Manager		
EXPERIENCE AS CONTRACT MANAGER		
YEAR of Experience as Contract Manager	**Year 1 (…….) (e.g.2019 etc.)**	**Year 2 (……) (e.g.2018).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/Responsibilities performed by the Bidder on the project:		

EXPERIENCE AS CONTRACT MANAGER		
YEAR of Experience as Contract Manager	**Year 3 (…….)** **(e.g.2019 etc.)**	**Year 4 (……)** **(e.g.2018).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/Responsibilities performed by the Bidder on the project:		

EXPERIENCE AS CONTRACT MANAGER		
YEAR of Experience as Contract Manager	**Year 5 (…….) (e.g.2019 etc.)**	**Year 6 (……) (e.g.2018).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/Responsibilities performed by the Bidder on the project:		

EXPERIENCE AS CONTRACT MANAGER		
YEAR of Experience as Contract Manager	**Year 7 (…….)** **(e.g.2019 etc.)**	**Year 8 (……)** **(e.g.2018).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/ Responsibilities performed by the Bidder on the project:		

EXPERIENCE AS CONTRACT MANAGER		
YEAR of Experience as Contract Manager	**Year 9 (…….) (e.g.2019 etc.)**	**Year 10 (…….) (e.g.2018).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/ Responsibilities performed by the Bidder on the project:		

Signature _____ Date _____

Name _____ Capacity _____

Bidder _____

FORM B (ii) SITE AGENT

Post	Name	Qualifications	Experience in years
Site Agent			

Minimum Qualifications National Diploma in Civil Engineering

Bidders are required to submit as attachments after this page, the CV, and any other information they may consider relevant.

Signature _____ Date _____

Name _____ Capacity _____

Bidder _____

Site Agent

The Bidder must note that repeating the same year under different project will still be considered as one year's experience.

SITE AGENT		
Name and Surname		
Experience (years) as Site Agent		
EXPERIENCE AS SITE AGENT		
YEAR of Experience as Site Agent	**Year 1 (…….) (e.g.2019 etc.)**	**Year 2 (……) (e.g.2018).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/Responsibilities performed by the Bidder on the project:		

EXPERIENCE AS SITE AGENT		
YEAR of Experience as Site Agent	**Year 3 (…….)** **(e.g.2017 etc.)**	**Year 4 (……)** **(e.g.2016).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/Responsibilities performed by the Bidder on the project:		

EXPERIENCE AS SITE AGENT		
YEAR of Experience as Site Agent	**Year 5 (…….)** **(e.g.2015 etc.)**	**Year 6 (……)** **(e.g.2014).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/Responsibilities performed by the Bidder on the project:		

EXPERIENCE AS SITE AGENT		
YEAR of Experience as Site Agent	**Year 7 (…….) (e.g.2013 etc.)**	**Year 8 (…….) (e.g.2012).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/Responsibilities performed by the Bidder on the project:		

EXPERIENCE AS SITE AGENT		
YEAR of Experience as Site Agent	**Year 9 (…….) (e.g.2013 etc.)**	**Year 10 (…….) (e.g.2012).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/Responsibilities performed by the Bidder on the project:		

Signature _____ Date _____

Name _____ Capacity _____

Bidder _____

FORM B (iii) Occupational Health and Safety (OHS) Officer

Post	Name	SACPCMP registration	Experience in years
OHS Officer			

Bidders are required to submit as attachments after this page, e.g. the qualifications.

Signature _____ Date _____

Name _____ Capacity _____

Bidder _____

OHS Agent/ Safety Officer

OCCUPATIONAL HEALTH AND SAFETY (OHS) OFFICER		
Name and Surname		
Experience (in years) as an OHS Officer		
EXPERIENCE AS AN OHS OFFICER IN SITE MANAGEMENT OF CONSTRUCTION PROJECTS.		
YEAR of Experience as an OHS Agent	**Year 1 (…….) (e.g.2019 etc.)**	**Year 2 (…….) (e.g.2018).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/Responsibilities performed by the Bidder on the project:		

EXPERIENCE AS AN OHS OFFICER IN SITE MANAGEMENT OF CONSTRUCTION PROJECTS.		
YEAR of Experience as an OHS Officer	**Year 3 (…….) (e.g.2017 etc.)**	**Year 4 (……) (e.g.2016).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/Responsibilities performed by the Bidder on the project:		

EXPERIENCE AS AN OHS OFFICER IN SITE MANAGEMENT OF CONSTRUCTION PROJECTS.		
YEAR of Experience as an OHS Officer	**Year 5 (…….) (e.g.2015 etc.)**	**Year 6 (……) (e.g.2014).**
Project Name		
Nature of Project		
Client (Responsible for supervision)		
Client Contact person		
Clients Contact Person (**name, Tel/Cell no and fax no)**		
Clients Contact Person (email address)		
Consulting Engineer **(name, Tel no and fax no)**		
Appointment Value		
Project Location (Province)		
Project Duration(months)		
Project Commencement Date (months/year)		
Is the Project Completed (Yes/No)		
Estimated Completion Date (If not yet Completed)		
Completion Date (If Completed) (months/year)		
Roles/Responsibilities performed by the Bidder on the project:		

Signature _____ Date _____

Name _____ Capacity _____

Bidder _____

ANNEXURE – C

STANDARD CONDITION OF TENDER

Annex C

Standard Conditions of Tender

C.1 General

C.1.1 Actions

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

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

Note: 1) A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.
2) Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty which would in any way affect any decisions taken.

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

C.1.2 Tender Documents

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

C.1.3 Interpretation

C.1.3.1 The tender data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of these conditions of tender.
C.1.3.2 These conditions of tender, the tender data and tender schedules which are required for tender evaluation purposes, shall form part of any contract arising from the invitation to tender.
C.1.3.3 For the purposes of these conditions of tender, the following definitions apply:

a) conflict of interest means any situation in which:

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

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

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

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

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

C.1.4 Communication and employer's agent

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

C.1.5 Cancellation and Re-Invitation of Tenders

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

a) due to changed circumstances, there is no longer a need for the engineering and construction works specified in the invitation;
b) funds are no longer available to cover the total envisaged expenditure; or
c) no acceptable tenders are received.
d) there is a material irregularity in the tender process.

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

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

C.1.6 Procurement procedures

C.1.6.1 General

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

C.1.6.2 Competitive negotiation procedure

C.1.6.2.1 Where the tender data require that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of C.3.4, the employer shall announce only the names of the tenderers

who make a submission. The requirements of C.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.

C.1.6.2.2 All responsive tenderers or at least a minimum of not less than three responsive tenderers that are highest ranked in terms of the evaluation criteria stated in the tender data shall be invited to enter into competitive negotiations based on the principle of equal treatment, keeping confidential the proposed solutions and associated information.
Notwithstanding the provisions of C.2.17, the employer may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

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

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

C.1.6.3 Proposal procedure using the two stage-system

C.1.6.3.1 Option 1

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

C.1.6.3.2 Option 2

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

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

C.2 Tenderer's obligations

C.2.1 Eligibility

C.2.1.1 Submit a tender offer only if the tenderer satisfies the criteria stated in the tender data and the tenderer, or any of his principals, is not under any restriction to do business with employer.
C.2.1.2 Notify the employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used by the employer as the basis in a prior process to invite the tenderer to submit a tender offer and obtain the employer's written approval to do so prior to the closing time for tenders.

C.2.2 Cost of tendering

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

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

C.2.3 Check documents

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

C.2.4 Confidentiality and copyright of documents

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

C.2.5 Reference documents

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

C.2.6 Acknowledge addenda

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

C.2.7 Clarification meeting

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

C.2.8 Seek clarification

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

C.2.9 Insurance

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

C.2.10 Pricing the tender offer

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

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

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

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

C.2.11 Alterations to documents

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

C.2.12 Alternative tender offers

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

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

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

C.2.13 Submitting a tender offer

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

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

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

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

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

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

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

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

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

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

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

C.2.15 Closing time

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

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

C.2.16 Tender offer validity

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

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

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

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

C.2.17 Clarification of tender offer after submission

Provide clarification of a tender offer in response to a request to do so from the employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.
Note: Sub-clause C.2.17 does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the Employer elect to do so.

C.2.18 Provide other material

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

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

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

C.2.19 Inspections, tests and analysis

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

C.2.20 Submit securities, bonds and policies

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

C.2.21 Check final draft

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

C.2.22 Return of other tender documents

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

C.2.23 Certificates

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

C.3 The employer's undertakings

C.3.1 Respond to requests from the tenderer

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

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

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

C.3.2 Issue Addenda

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

C.3.3 Return late tender offers

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

C.3.4 Opening of tender submissions

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

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

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

C.3.5 Two-envelope system

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

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

C.3.6 Non-disclosure

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

C.3.7 Grounds for rejection and disqualification

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

C.3.8 Test for responsiveness

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

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

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

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

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

C.3.9 Arithmetical errors, omissions and discrepancies

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

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

a) the gross misplacement of the decimal point in any unit rate;
b) omissions made in completing the pricing schedule or bills of quantities; or
c) arithmetic errors in:
    (i) line item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or
    (ii) the summation of the prices.

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

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

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

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

C.3.10 Clarification of a tender offer

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

C.3.11 Evaluation of tender offers

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

Conditions of tender are by definition the document that establishes a tenderer's obligations in submitting a tender and the employer's undertakings in soliciting and evaluating tender offers. Such conditions establish the rules from the time a tender is advertised to the time that a contract is awarded and require employers to conduct the process of offer and acceptance in terms of a set of standard procedures. The CIDB Standard Conditions of Tender are based on a procurement system that satisfies the following system requirements:

Requirement	Qualitative interpretation of goal
Fair	The process of offer and acceptance is conducted impartially without bias, providing simultaneous and timely access to participating parties to the same information.
Equitable	Terms and conditions for performing the work do not unfairly prejudice the interests of the parties.
Transparent	The only grounds for not awarding a contract to a tenderer who satisfies all requirements are restrictions from doing business with the employer, lack of capability or capacity, legal impediments and conflicts of interest.
Competitive	The system provides for appropriate levels of competition to ensure cost effective and best value outcomes.
Cost effective	The processes, procedures and methods are standardized with sufficient flexibility to attain best value outcomes in respect of quality, timing and price, and least resources to effectively manage and control procurement processes.

The activities associated with evaluating tender offers are as follows:

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

C.3.11.1 General

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

C.3.12 Insurance provided by the employer

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

C.3.13 Acceptance of tender offer

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

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

C.3.14 Prepare contract documents

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

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

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

C.3.15 Complete adjudicator's contract

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

C.3.16 Registration of the award

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

C.3.17 Provide copies of the contracts

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

C.3.18 Provide written reasons for actions taken

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

[For more information the Bidders should download a full document of Annexure C for Standard Conditions of Tender]

VOLUME 2:
RETURNABLE DOCUMENTS

T2.1. LIST OF RETURNABLE DOCUMENTS

Checklist for the Returnable Documents Required for Tender Evaluation Purposes (as stipulated in the table of content above**)**

T2.2 Returnable Documents required for tender evaluation purposes.

Note: Failure to submit the applicable documents listed under Mandatory/Eligibility Requirements will result in the tender offer being disqualified from further consideration.

Tender document name	Reference	Returnable document
Mandatory/Eligibility Requirements (disqualification if not met):		
Form of Offer and Acceptance		☒Yes ☐No
Bills of Quantities/Lump Sum Document and Final Summary (in Volume – 3 (C2.2))		☒Yes ☐No
Functionality Evaluation Criteria		☒Yes ☐No
Site Briefing Meeting Certificate		☒Yes ☐No
Schedule of Tenderer's Completed Projects		☒Yes ☐No
Returnable Documents Subject to Clarification		
Bidders Disclosure	SBD 4	☒Yes ☐No
Resolution of Board of Directors		☒Yes ☐No
Resolution of Board of Directors to enter into Consortia or Joint Ventures Special Resolution of Consortia or Joint Ventures (*if applicable)*		☒Yes ☐No
Special Resolution of Consortia or Joint Ventures *(if applicable)*		☒Yes ☐No
Preference Points Claim Form in terms of the Preferential Procurement Regulations 2022	SBD 6.1	☒Yes ☐No
Affidavit		☒Yes ☐No

T2.2.1 Returnable documents that will be incorporated into the contract.

Note: Failure to submit the applicable documents may result in the Tenderer having to submit same upon request within a stipulated time, and if not complied with, may result in the tender offer being disqualified from further consideration. [See also the Standard Conditions of Tender]

Tender document name	Reference	Returnable document
Record of Addenda to tender documents) *(if applicable)*		☒Yes ☐No
Credentials of Mechanical, equipment and plant schedules *(if applicable)*		☒Yes ☐No
Credentials of plumbing Contractor (s)		☒Yes ☐No
Credentials of Electrical Contractor (s)		☒Yes ☐No
Schedule for Imported Materials and Equipment		☒Yes ☐No

T2.2.2 Additional Information that might be required for tender evaluation purpose.

Legal Status of Tendering Entity: If the Tendering Entity is: ZX	Documentation to be submitted with the tender, or which may be required during the tender evaluation:
a. A close corporation, incorporated prior to 1 May 2011 under the Close Corporations Act, 1984 (Act 69 of 1984, as amended)	Copies of the Founding Statement – CK1
b. A profit company duly registered as a private company. [including a profit company that meets the criteria for a private company, whose Memorandum of Incorporation states that the company is a personal liability company in terms of Section 8(2)(c) of the Companies Act, 2008 (Act 71 of 2008, as amended)].	Copies of: i. Certificate of Incorporation – CM1. ii. Shareholding Certificates of all Shareholders of the company, plus a signed statement of the company's Auditor, certifying each Shareholder's ownership / shareholding percentage relative to the total; and/or iii. Memorandum of Incorporation in the case of a personal liability company.
c. A profit company duly registered as a private company in which any, or all, shares are held by one or more other close corporation(s) or company(ies) duly registered as profit or non-profit company(ies).	Copies of documents referred to in a. and/or b. above in respect of all such close corporation(s) and/or company(ies).

Legal Status of Tendering Entity: If the Tendering Entity is: ZX	Documentation to be submitted with the tender, or which may be required during the tender evaluation:
d. A profit company duly registered as a public company.	Copy of Certificate of Incorporation – CM1, and a signed statement of the company's Secretary or Auditor confirming that the company is a public company.
e. A non-profit company, incorporated in terms of Section 10 and Schedule 1 of the Companies Act, 2008 (Act 71 of 2008, as amended).	Copies of: i the Founding Statement – CK1; and ii the Memorandum of Incorporation setting out the object of the company, indicating the public benefit, cultural or social activity, or communal or group interest.
f. A natural person, sole proprietor or a Partnership	Copy(ies) of the Identity Document(s) of: i. such natural person/ sole proprietor, or each of the Partners to the Partnership.
g. A Trust	Deed of Trust duly indicating names of the Trustee(s) and Beneficiary (ies) as well as the purpose of the Trust and the mandate of the Trustees.

Additional returnable documents required for tender evaluation purposes.

Note: Failure to submit the applicable documents may result in the Tenderer having to submit same upon request within a stipulated time and if not complied with, will result in the tender offer being disqualified from further consideration. [See also the Standard Conditions of Tender]

Tender document name	Reference	Returnable document
Any additional information required to complete a risk assessment		☒Yes ☐No

Signed by the Tenderer/Bidder

Name of representative	**Signature**	**Date**

C1.1 FORM OF OFFER AND ACCEPTANCE

STAMP

OFFER

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

EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) WITHIN A PERIOD OF SIX (6) MONTHS The Tenderer, identified in the Offer signature block below, has examined the documents listed in the Tender Data and addenda thereto as listed in the returnable schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the Tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance, the Tenderer offers to perform all of the obligations and liabilities of the Contractor under the Contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the Conditions of Contract identified in the Contract Data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VALUE ADDED TAX IS:

Rand (in words):	
Rand (in figures):	R
DFFE reserves the right, where permitted by applicable SCM prescripts, to negotiate with the highest scoring responsive bidder for purposes of achieving value for money, provided that such negotiations do not materially alter the scope of work or unfairly prejudice other bidders.	

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

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

Company or Close Corporation:		Natural Person or Partnership:
……..……		……
……..……		……
And: Whose Registration Number is:		Whose Identity Number(s) is/are:
……..……	**OR**	……
And: Whose Income Tax Reference Number is:		Whose Income Tax Reference Number is/are:
……..……		……
CSD supplier number:……..…….		CSD supplier number:…….

AND WHO IS (if applicable)**:**

Trading under the name and style of:
……

AND WHO IS:

Represented herein, and who is duly authorised 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 Offer, authorizing the Representative to make this offer.**

SIGNED FOR THE TENDERER:

Name of representative	Signature	Date

WITNESSED BY:

Name of witness	Signature	Date

This Offer is in respect of: (Please indicate with an "X" in the appropriate block)

The official documents …… ☐

The official alternative …….…….. ☐

Own alternative (only if documentation makes provision therefore) .. ☐

(N.B.: Separate Offer and Acceptance forms are to be completed for the main and for each alternative offer)

SECURITY OFFERED:

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Tenderer's Offer shall form an agreement, between the Employer and the Tenderer upon the terms and conditions contained in this Agreement and in the, Contract that is the subject of this Agreement.

The terms of the contract, are contained in:

Part C1 Agreements and Contract Data, (which includes this Agreement)

Part C2 Pricing Data

Part C3 Scope of Work

Part C4 Site Information

and Tender drawings and documents or parts thereof, which may be incorporated by reference into Parts C1 to C4. 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 Tenderer and the Employer during this process

of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this schedule.

The Tenderer shall within two weeks after receiving a letter of acceptance, contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Contractor) within five 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

NAME(s): (BLOCK LETTERS) ....

CAPACITY of authorized agents: ....

SIGNATURE(s) of authorized agents: ....

SIGNED at ..... on this ..... day of .....

WITNESSE(s): (Full name – BLOCK LETTERS – and signature)

1. ....

....

T2.1 & T2.2
RETURNABLE DOCUMENTS

BIDDERS DISCLOSURE

Failure to complete this form in full and signed by the duly authorized person, as indicated on the Resolution of board of directors or Special resolution of consortia or joint ventures, may render the tender non-responsive and will be removed from any and all further contention.

1. PURPOSE OF THE FORM

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

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

2. Bidder's declaration

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

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

Full Name	Identity Number	Name of State institution

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

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

2.2.1 If so, furnish particulars:

……

……

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

2.3.1 If so, furnish particulars:

……

……

3 DECLARATION

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

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

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

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

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

3.5 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.

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

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

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

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

.....	.....
Signature	**Date**
.....	.....
Capacity	**Name of Bidder**

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Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

RESOLUTION OF BOARD OF DIRECTORS

RESOLUTION of a meeting of the Board of *Directors / Members / Partners of:

_____

(*Legally correct full name and registration number, if applicable, of the Enterprise)*

Held at_____(*place)*on_____*(date)* **RESOLVED**

that:

1. The Enterprise submits a Bid / Tender to the Department of Forestry, Fisheries and Environment in respectof the following project:

   _____

   EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) WITHIN A PERIOD OF SIX (6) MONTHS (*Project description as per Bid / Tender Document)*

   Bid / Tender Number: DFFE-B008 (26-27) *(Bid / Tender Number as per Bid/Tender Document)*

2. *Mr/Mrs/Ms:

   in *his/her Capacity as:_____ *(Position in the Enterprise)*

   and who will sign as follows:

   _____

   be, and is hereby, authorized to sign the Bid / Tender, and any and all other documents and/or correspondence in connection with and relating to the Bid / Tender, as well as to sign any Contract, and any and all documentation, resulting from the award of the Bid / Tender to the Enterprise mentioned above.

No.	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

The bidding enterprise hereby absolves the Department of Forestry, Fisheries and Environment from any liability whatsoever that mayarise as a result of this document being signed.

Note:	**ENTERPRISE STAMP**
1. ** Delete which is not applicable.* 2. ***NB:*** *This resolution must, where possible, be signed by all the Directors / Members / Partners of the Bidding Enterprise.* 3. *In the event that paragraph 2 cannot be complied with, theresolution must be signed by Directors / Members / Partners holding a majority of the shares / ownership of theBidding Enterprise (attach proof of shareholding / ownership hereto).* 4. *Directors / Members / Partners of the Bidding Enterprise may alternatively appoint a person to sign this document on behalf of the Bidding Enterprise, which person must beso authorized by way of a duly completed power of attorney, signed by the Directors / Members / Partners holding a majority of the shares / ownership of the Bidding Enterprise (proof of shareholding / ownership and power of attorney are to be attached hereto).* 5. *Should the number of Directors / Members / Partners exceed the space available above, additional names and signatures must be supplied on a separate page.*	

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

RESOLUTION OF BOARD OF DIRECTORS TO ENTER INTO CONSORTIA OR JOINT VENTURES

RESOLUTION of a meeting of the Board of *Directors / Members / Partners of:

_____

_____

(*Legally correct full name and registration number, if applicable, of the Enterprise)*

Held at_____(*place)*on_____*(date)* **RESOLVED that:**

1. The Enterprise submits a Bid /Tender, in consortium/Joint Venture with the following Enterprises:

   _____

   _____

(List all the legally correct full names and registration numbers, if applicable, of the Enterprises forming the Consortium/JointVenture)

to the Department of Forestry, Fisheries and Environment in respect of the following project:

EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) WITHIN A PERIOD OF SIX (6) MONTHS (*Project description as per Bid /Tender Document)*

Bid / Tender Number: DFFE-B008 (26-27) (*Bid / Tender Number as per Bid / Tender Document)*

2. *Mr/Mrs/Ms: _____

in *his/her Capacity as:_____*(Position in the Enterprise)*

and who will sign as follows:

_____

be, and is hereby, authorized to sign a consortium/joint venture agreement with the parties listed under item 1 above, and any and all other documents and/or correspondence in connection with and relating tothe consortium/joint venture, in respect of the project described under item 1 above.

3. The Enterprise accepts joint and several liabilities with the parties listed under item 1 above for the due fulfilmentof the obligations of the joint venture deriving from, and in any way connected with, the Contract to be enteredinto with the Department in respect of the project described under item 1 above.

4. The Enterprise chooses as its *domicilium citandi et executandi* for all purposes arising from this joint ventureagreement and the Contract with the Department in respect of the project under item 1 above:

Physical address: _____

_____

_____

_____ (code)

Postal Address: _____

_____

_____

_____ (code)

Telephone number: _____

Fax number: _____

No.	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
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9			
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11			
12			

The bidding enterprise hereby absolves the Department of Forestry, Fisheries and the Environment from any liability whatsoever that mayarise as a result of this document being signed

Note:

1. ** Delete which is not applicable.*
2. ***NB:*** *This resolution must, where possible, be signed by allthe Directors / Members / Partners of the Bidding Enterprise.*
3. *In the event that paragraph 2 cannot be complied with, theresolution must be signed by Directors / Members / Partners holding a majority of the shares / ownership of the Bidding Enterprise (attach proof of shareholding / ownership hereto).*
4. *Directors / Members / Partners of the Bidding Enterprise may alternatively appoint a person to sign this document on behalf of the Bidding Enterprise, which person must beso authorized by way of a duly completed power of attorney, signed by the Directors / Members / Partners holding a majority of the shares / ownership of the BiddingEnterprise (proof of shareholding / ownership and power ofattorney are to be attached hereto).*
5. *Should the number of Directors / Members / Partners exceed the space available above, additional names and signatures must be supplied on a separate page.*

ENTERPRISE STAMP

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Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

SPECIAL RESOLUTION OF CONSORTIA OR JOINT VENTURES

RESOLUTION of a meeting of the duly authorized representatives of the following legal entities whohave entered into a consortium/joint venture to jointly bid for the project mentioned below: (*legally correct full names and registration numbers, if applicable, of the Enterprises forming a Consortium/Joint Venture)*

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

6. _____

_____

7. _____

_____

8. _____

_____

Held at_____(*place)*on_____*(date)* **RESOLVED that:**

RESOLVED that:

A. The above-mentioned Enterprises submit a Bid in Consortium/Joint Venture to the Department of Forestry, Fisheries, and the Environment in respect of the following project:

EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) WITHIN A PERIOD OF SIX (6) MONTHS (*Project description as per Bid /Tender Document)*

Bid / Tender Number: DFFE-B008 (26-27) (*Bid / Tender Number as per Bid /Tender Document)*

B. *Mr/Mrs/Ms:

in *his/her Capacity as:_____*(Position in the Enterprise)*

and who will sign as follows:

_____

be, and is hereby, authorized to sign the Bid, and any and all other documents and/or correspondence inconnection with and relating to the Bid, as well as to sign any Contract, and any and all documentation, resulting from the award of the Bid to the Enterprises in Consortium/Joint Venture mentioned above.

C. The Enterprises constituting the Consortium/Joint Venture, notwithstanding its composition, shall conductall business under the name and style of:

_____

D. The Enterprises to the Consortium/Joint Venture accept joint and several liabilities for the due fulfilment ofthe obligations of the Consortium/Joint Venture deriving from, and in any way connected with, the Contract entered into with the Department in respect of the project described under item A above.

E. Any of the Enterprises to the Consortium/Joint Venture intending to terminate the consortium/joint ventureagreement, for whatever reason, shall give the Department 30 days' written notice of such intention. Notwithstanding such decision to terminate, the Enterprises shall remain jointly and severally liable to theDepartment for the due fulfilment of the obligations of the Consortium/Joint Venture as mentioned underitem D above.

F. No Enterprise to the Consortium/Joint Venture shall, without the prior written consent of the other Enterprises to the Consortium/Joint Venture and of the Department, cede any of its rights or assign any of its obligations under the consortium/joint venture agreement in relation to the Contract with the Department referred to herein.

G. The Enterprises choose as the *domicilium citandi et executandi* of the Consortium/Joint Venture for all purposes arising from the consortium/joint venture agreement and the Contract with the Department in respect of the project under item A above:

Physical address: _____

_____

_____

_____ (code)

Postal Address: _____

_____

_____

_____ (code)

Telephone number: _____

Fax number: _____

No.	Name	Capacity	Signature
1			
2			
3			
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15			

The bidding enterprise hereby absolves the Department of Fisheries and the Environment from any liability whatsoever that may arise as a result of this document being signed.

Note:

1. ** Delete which is not applicable.*
2. ***NB:*** *This resolution must be signed by all the Duly Authorized Representatives of the Legal Entities to the consortium/joint venture submitting this tender, as named in item 2 of Resolution of board of directors to enter into consortia or joint ventures.*
3. *Should the number of the Duly Authorized Representatives of the Legal Entities joining forces in this tender exceed the space available above, additional names, capacity and signatures must be supplied on a separate page.*
4. *Resolution of board of directors to enter into consortia or joint ventures, duly completed and signed, from the separate Enterprises who participate in this consortium/joint venture, must be attached to this Special Resolution (special resolution of consortia or joint ventures).*

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Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Site Briefing Meeting Certificate

Project Name:	**EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) WITHIN A PERIOD OF SIX (6) MONTHS**		
Tender no:	DFFE-B008 (26-27)	**Reference no:**	
Advertising date:	**01 October 2026**	**Closing date:**	30 October 2026

This is to certify that I,_____representing _____in the company of _____visited the site on: _____

I have made myself familiar with all local conditions likely to influence the work, and the cost thereof. I further certify that I am satisfied with the description of the work, and explanation given at the site inspection meeting, and that I perfectly understand the work to be done, as specified and implied, in the execution of this contract.

Name of Tenderer	Signature	Date

Name of DFFE Representative (PM / SCM)	Signature	Date

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Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

SBD 6.1

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

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

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

---

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included).

1.2 The applicable preference points is as follows:

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

b) **80/20 preference point system** will be applicable in this tender. The lowest acceptable tender will be used to determine the accurate system once tenders are received.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

(a) Price; and

(b) Specific Goals.

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	**80**
SPECIFIC GOALS	**20**
Total points for Price and SPECIFIC GOALS	**100**

1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

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

2. DEFINITIONS

(a) "tender" means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;

(b) "price" means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;

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

(d) "tender for income-generating contracts" means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and

(e) "the Act" means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1 THE 80/20 PREFERENCE POINT SYSTEMS

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

80/20

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

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

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

3.2.1. POINTS AWARDED FOR PRICE

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

80/20

$$\boldsymbol{Ps = 80\left(1 + \frac{Pt - P\,max}{P\,max}\right)}$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

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

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

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

(b) any other invitation for tender, that either the 80/20 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system, then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

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

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

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

The specific goals allocated points in terms of this tender	**Number of points allocated (80/20 system) (To be completed by the organ of state)**	**Number of points claimed (80/20 system) (To be completed by the tenderer)**
>50% ownership by Black people, Or	20	
>50% ownership by Women, Or	20	
>50% ownership by people with Disability	20	

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm ……

4.4. Company registration number: …….…...

4.5. TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One-person business/sole propriety
- ☐ Close corporation
- ☐ Public Company
- ☐ Personal Liability Company
- ☐ (Pty) Limited
- ☐ Non-Profit Company
- ☐ State Owned Company

[TICK APPLICABLE BOX]

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

i) The information furnished is true and correct;

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

iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;

iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –

(b) disqualify the person from the tendering process;

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

(d) 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;

(e) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the audi alteram

partem (hear the other side) rule has been applied; and

(f) forward the matter for criminal prosecution, if deemed necessary.

WITNESSES	..... SIGNATURE(S) OF BIDDERS(S)
1. ..... 2.	DATE..... ADDRESS..... ....

Schedule of Tenderer's Completed Projects

Project Name:	**EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS WITHIN A PERIOD OF SIX (6) MONTHS**		
Tender No:	**DFFE-B008 (26-27)**	**Closing date:**	30 October 2026
Advertising date:	01 October 2026	**Validity period:**	**120 days**

1. Particulars of Tenderer's Completed commitments.

1.1. Completed Projects

Projects completed not above 10 (ten) years		Name of the Employer or Representative of the Employer	Contact Cell / Tel. no. of the Employer or Representative of the Employer	Contract amount	Contractual commencement date	Contractual completion date	Actual completion date	Date of Certificate of Practical Completion
1								
2								
3								
4								
5								
6								
7								

8								
9								
10								

Name of Tenderer	Signature	Date

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Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

RECORD OF ADDENDA TO TENDER DOCUMENTS

Project Name:	**EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) IN THE EASTERN CAPE (EC) PROVINCE, WITHIN A PERIOD OF SIX (6) MONTHS.**
Tender no:	**DFFE-B008 (26-27)**

1. I / We confirm that the following communications received from the Department of Forestry, Fisheries and Environment before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer: (Attach additional pages if more space is required)

No.	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Name of Tenderer	Signature	Date

2. I / We confirm that no communications were received from the Department of Forestry, Fisheries and Environment before the submission of this tender offer, amending the tender documents.

Name of Tenderer	Signature	Date

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

SCHEDULE FOR IMPORTED MATERIALS AND EQUIPMENT

Project Name:	**EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) IN THE EASTERN CAPE (EC) PROVINCE, WITHIN A PERIOD OF SIX (6) MONTHS.**
Tender no:	**DFFE-B008 (26-27)**

This schedule should be completed by the tenderer. (Attach additional pages if more space is required)

Item	Material / Equipment	Rand (R) (Excluding VAT)
1.		**R**
2.		**R**
3.		**R**
4.		**R**
5.		**R**
6.		**R**

The Contractor shall list imported items, materials and/or equipment which shall be excluded from the Contract Price Adjustment Provisions (if applicable) and shall be adjusted in terms of currency fluctuations only. Copies of the supplier's quotations for the items, materials or equipment (provided that such costs shall not be higher than the relevant contract rate as listed above) should be lodged with the Principal Agent / Engineer of the Department of Forestry, Fisheries and Environment within sixty (60) days from the date of acceptance of the tender. No adjustment of the local VAT amount, nor the contractor's profit,discount, mark-up, handling costs, etc. shall be allowed.

These net amounts will be adjusted as follows:

FORMULA:

The net amount to be added to or deducted from the contract sum: $A = V\left(\frac{Z}{Y} - 1\right)$

A = the amount (R) of adjustment

V = the net amount (supplier's quotation) (R) of the imported item Y = exchange rate at the closing date of tender submission

Z = exchange rate on the date of payment.

Name of Tenderer	Signature	Date

ELECTRICAL CONTRACTOR CREDENTIALS

Project Name:	**EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) IN THE EASTERN CAPE (EC) PROVINCE, WITHIN A PERIOD OF SIX (6) MONTHS**
Tender no:	**DFFE-B008 (26-27)**

1. The bidder is required to submit the credentials of the Electrical Contractor that will be utilised on the project, as per the below documents.

No.	Submission Document	Submitted (Yes/No)
1.	Registration with the Electrical Contractors Association (SA)	
2.	Individual Electrician curriculum Vitae	
3.	Individual Electrician passed trade certificates	
4.	Company must have five years Electrical Construction experience	
5.	Relevant OHS Training Certificates for individuals (for Electrical)	
6.		
7.		
8.		
9.		
10.		

Name of Tenderer	Signature	Date

2. I / We confirm that no communications were received from the Department of Forestry, Fisheries and Environment before the submission of this tender offer, amending the tender documents.

Name of Tenderer	Signature	Date

PLUMBING CONTRACTOR CREDENTIALS

Project Name:	**EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO (2) EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) WITHIN A PERIOD OF SIX (6) MONTHS.**
Tender no:	**DFFE-B008 (26-27)**

3. The bidder is required to submit the credentials of the Plumbing Contractor that will be utilised on the project, as per the below documents.

No.	Submission Document	Submitted (Yes/No)
11.	Registration with the Plumbing Industry Registration Board (PIRB)	
12.	Individual plumbers curriculum Vitae	
13.	Individual Plumbers passed trade certificates	
14.	Company must have five years Plumbing Construction experience	
15.	Individual Plumbers certificates in terms of the Skills Development Act	
16.	Relevant OHS Training Certificates for individuals (for Plumbing)	
17.		
18.		
19.		
20.		

Name of Tenderer	Signature	Date

4. I / We confirm that no communications were received from the Department of Forestry, Fisheries and Environment before the submission of this tender offer, amending the tender documents.

Name of Tenderer	Signature	Date

B-BBEE EXEMPTED AFFIDAVIT FOR EXEMPTED MICRO ENTERPRISES
(ISSUED IN TERMS OF THE AMENDED CONSTRUCTION SECTOR CODE)
(Gazette Vol. 630 No. 41287)
Issued in terms of paragraph 3.6.2.4.1 (B)

I, the undersigned,

Full names and 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 (If Applicable):			
Registration Number:			
Physical Address:			
Type of Entity (CC, (Pty) Ltd, Sole Prop etc.):			
Nature of Construction Business: ***Indicate the applicable category with a tick.***	**BEP** (Built Environment Professional)	**Contractor**	**Supplier**
Definition of "Black People"	As per the Broad-Based Black Economic Empowerment Act 53 of 2003 as Amended by Act No 46 of 2013 "Black People" is a generic term which means Africans, Coloureds and Indians – who are citizens of the Republic of South Africa by birth or descent; or who became citizens of the Republic of South Africa by naturalization before 27 April 1994; or after 27 April 1994 and who would have been entitled to acquire citizenship by naturalization prior to that date;"		
Definition of "Black Designated Groups"	"Black Designated Groups" means: (a) unemployed black people not attending and not required by law to attend an educational institution and not awaiting admission to an educational institution; (b) Black people who are youth as defined in the National Youth Commission Act of 1996; (c) Black people who are persons with disabilities as defined in the Code of Good Practice on employment of people with disabilities issued under the Employment Equity Act; (d) Black people living in rural and under-developed areas; (e) Black military veterans who qualifies to be called a military veteran in terms of the Military Veterans Act 18 of 2011;"		

3) I hereby declare under Oath that as per Amended Code Series 100 of the Amended Codes of Good Practice issued under section 9 (1) of B-BBEE Act No 53 of 2003 as Amended by Act No 46 of 2013,

- The Enterprise is _____% Black Owned
- The Enterprise is _____% Black Female Owned
- The Enterprise is _____% Owned by Black Designated Group (provide Black Designated Group Breakdown below as per the definition in the table above)

  o Black Youth % _____%
  o Black Disabled % _____%
  o Black Unemployed % _____%
  o Black People living in Rural areas % _____%
  o Black Military Veterans % _____%

- Based on the Financial Statements/Management Accounts and other information available on the latest financial year-end of _____, the annual Total Revenue was less than the applicable amount confirmed **by ticking the applicable box below.**

BEP	R1.8 million	
Contractor	R3.0 million	
Supplier	R3.0 million	

If the turnover exceeds the applicable amount in the table above then this affidavit is no longer applicable and an EME certificate must be obtained from a rating agency accredited by SANAS or when applicable a B-BBEE Verification Professional Regulator appointed by the Minister of Trade and Industry.

- Please Confirm on the below table the B-BBEE Level Contributor, **by ticking the applicable box below.**

100% Black Owned	**Level One** (135% B-BBEE procurement recognition level)	
At least 51% Black Owned	**Level Two** (125% B-BBEE procurement recognition level)	
At least 30% Black Owned	**Level Four** (100% B-BBEE procurement recognition level)	
Less than 30% Black Owned	**Level Five** (80% B-BBEE procurement recognition level)	

3. 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.

Construction Sector Affidavit

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

Deponent: _____

Signature: _____

Date: _____

_____
Commissioner of Oaths

_____
Signature

Official Stamp (with date)

Construction Sector Affidavit

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Consent and Indemnity Form

CLIENT INFORMATION "CLIENT"			
Client Name	**Department of Forestry, Fisheries and the Environment**	Authorised Representative	
Email Address		Phone Number	

COMPANY INFORMATION														
Company Name														
Company Registration Number														
Director Name														
Director Surname														
SA ID Number														
Passport Number														

VERIFICATION

☑ Commercial Enquiry

Reason for Enquiry:

- Confirmation of Company Statutory Information
- Confirmation of Director Details of the Company

INDEMNITY

I hereby authorise the Client / the Client's duly authorised verification agent, to forward my personal information, including but not limited to my name, surname, and identity number, to the verification suppliers acting on behalf of the Client (including but not limited to SAPS, the Government of RSA, any educational training, credit bureau and fraud prevention organisation).

I authorise the Client / the Client's duly authorised verification agent to conduct all verification checks (including but not limited to credit bureau searches, drivers' licenses, employment history, employment salary verification and any other relevant checks in the pre- and post – employment vetting process).

I authorise Client / the Client's duly authorised verification agent to furnish personal information regarding my credentials, whether claimed or not, to the Client. I unconditionally indemnify the Client / the Client's duly authorised verification agent and its verification information suppliers against any liability which results or may result from furnishing information in this regard.

I understand that it is a condition of the South African Police Service and Tertiary Education Institutions, that:

- The information furnished to the Client will be disclosed to me for comment before a decision is made on my employment / application; and
- The Client is responsible for verifying the accuracy in respect of information furnished to the South African Police Service.

Signed at (Place)		On (Date)	
Authorised Director Signature			
Name and Surname of Authorised Director			

Consent and Indemnity Form | Initials

forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

OCTOBER 2026

GCC 2025 TENDER DOCUMENT TEMPLATE VOLUME 3

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PART C1: AGREEMENT AND CONTRACT DATA

C1.1: FORM OF OFFER AND ACCEPTANCE

Offer

The employer, identified in the acceptance signature block, has solicited offers to enter into a contract for the procurement of:

Contract No.:

Project Title: EC – CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO EXISTING TRANSFER STATIONS FOR THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS) WITHIN A PERIOD OF SIX (6) MONTHS

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

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

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VALUE ADDED TAX IS:

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

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

Signature(s) . . . . . .
Name(s) . . . . . .
Capacity . . . . . .

for the tenderer

(Name and . . . . . .
address of organization/) . . . . . .
. . . . . .

Name and signature of witness . . . . . Date . . . . . .

Acceptance

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

The terms of the contract are contained in:

Part C1: Agreements and contract data (which includes this agreement)
Part C2: Pricing data
Part C3: Scope of work
Part C4: Site information and drawings and documents or parts thereof, which may be incorporated by reference into the above listed Parts.

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

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

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

Signature(s) . . . . . .

Name(s) . . . . . .

Capacity . . . . . .

for the Employer

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

Name and . . . . . .
signature
of witness . . . . . Date . . . . . .

Name and signature of witness . . . . . Date . . . . . .

Schedule of Deviations

Notes:

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

2. A Tenderer's covering letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of Agreements reached during the process of offer and acceptance, the outcome of such Agreement shall be recorded here,

3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract shall also be recorded here,

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

1 Subject . . . . . .
Details . . . . . .
. . . . . .
. . . . . .
. . . . . .

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

2 Subject . . . . . .
Details . . . . . .
. . . . . .
. . . . . .
. . . . . .
3 Subject . . . . . .
Details . . . . . .
. . . . . .
. . . . . .
. . . . . .
4 Subject . . . . . .
Details . . . . . .
. . . . . .
. . . . . .

By the duly authorised representatives signing this Schedule of Deviations, the Employer and the Tenderer agree to and accept the foregoing Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and Addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Tenderer and the Employer during this process of offer and acceptance.

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

FOR THE TENDERER:

Signature(s) _____ _____

Name(s) _____ _____

Capacity _____ _____

_____

[Name and address of organisation]

Name and signature of witness _____ Date _____

FOR THE EMPLOYER:

Signature(s) _____ _____

Name(s) _____ _____

Capacity _____ _____

_____

[Name and address of organisation]

Name and signature of witness _____ Date _____

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

CONFIRMATION OF RECEIPT

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

The..... *[day]*

of ..... *[month]*

20..... *[year]*

at .....*[place]*

For the Tenderer: .....
Signature

.....
Name

.....
Capacity

Signature and name of witness: .....
Signature

.....
Name

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

C1.2 CONTRACT DATA

C1.2.1 General Conditions of Contract

The Conditions of Contract are the General Conditions of Contract for Construction Works (2015 3 rd Edition), (GCC 2015) published by the South African Institution of Civil Engineering. Copies of these conditions of contract may be obtained from the South African Institution of Civil Engineering (Tel: 011-805-5947, Fax: 011-805-5971, E-mail: civilinfo@saice.org.za).

The Contract Data (including variations and additions) shall amplify, modify, or supersede the GCC 2015 to the extent specified below, and shall take precedence and shall govern. Each item of data given below is cross-referenced to the clause in the GCC 2015 to which it mainly applies.

C1.2.2 Data provided by the Employer

Clause	Definitions
1.1.1.13	The Defects Liability Period, from the date of the Certificate of Completion, is 12 Months .
1.1.1.14	The time for achieving Practical Completion, from the Commencement Date, is 6 Months. The period as stated in 5.3.2, and the 7 days referred to in 5.3.3, are included in the above time for achieving Practical Completion. The special non-working days, as stated in 5.8.1, are excluded from the above time for achieving Practical Completion.
1.2.1.2	The address of the Employer is: Physical: DFFE, 473 Steve Biko Road, Arcadia, Pretoria Postal: 0002 Telephone: 043 722 3469 Fax: Not Applicable E-Mail: nmkhengcele@dffe.gov.za or zinhlapo@dffe.gov.za
1.1.1.16	The name of the Employer's Agent is Engineering Aces
1.2.1.2	The address of the Employer's Agent is: Physical: 58 Victoria Rd, Willows, Bloemfontein Postal: 9320 Telephone: 051 430 0994 Fax: Not Applicable E-Mail: admin@engineeringaces.com
1.1.1.26	The Pricing Strategy is by Re-measurement Contract
3.2.3	The Employer's Agent shall obtain the specific approval of the Employer before executing any of his functions or duties according to the following Clauses of the General Conditions of Contract: • 6.3: Employer's approval in order to authorise any expenditure in excess of the Tender Sum plus 15% contingencies.

4.11.1	To carry out and complete the works, the Contractor shall employ a competent Site Agent and Contract Manager as part of the key staff. It is a requirement for the Contractor's Site Agent and Contract Manager to each have a minimum of 3 years relevant experience, including experience on projects of a similar nature. The CV's of the Site Agent and the Contract Manager shall be submitted to the Employer's Agent's Representative for acceptance by the Department (reference is made to Cl.5.3.1 of the Contract Data). Note: i) "similar nature" implies projects that were of a value of at least 70% of this tender's value, and had a comparable Scope of Work in terms of technical requirements and operations. ii) "experience" implies experience on projects of a similar nature. iii) "accredited degree/diploma" implies a minimum 3-year qualification within the built environment, from a registered University or Institute of Technology.
5.3.1	The documentation required before commencement with Works execution are: • Health and Safety Plan (refer to Clause 4.3) • Initial Programme (refer to Clause 5.6) • Security (refer to Clause 6.2) • Insurance (refer to Clause 8.6) • CV(s) of Key Site Staff (refer to Clause 4.11.1) • If required to be registered, in terms of the Occupational Injuries and Diseases Act (130 of 1993 as amended), the Contractor is to supply proof of being registered and in good standing with the compensation fund by submitting a valid Letter of Good Standing from the Compensation Commissioner. Should the Contractor's Letter of Good Standing be expired, but an application for renewal has been made, the Contractor is to submit the expired Letter of Good Standing AND proof of an application for renewal.
5.3.2	The time to submit the documentation required before commencement with Works is 14 Days.
5.3.3	If a construction work permit, in terms of Clause 3(1) of the Construction Regulations (2014), is applicable, the instruction to commence carrying out of the works may only be issued once the construction work permit has been obtained by the Employer's Agent. If a construction work permit is applicable, the contractor shall allow for a minimum period of 30 days, after the submission (or re-submission) of the documentation referred to in Clause 5.3.1., for the issuing of the construction work permit.
5.8.1	The non-working days are Sundays.
(5.1.1)	The special non-working days are: • All statutory holidays as declared by National or Regional Government. • The year-end break: • Commencing on the first working day after 15 December. • Work resumes on the first working day after 5 January of the next year.
5.8.1	The construction working hours are from 07:00 to 17:00.

5.12.2.2	Abnormal Climatic Conditions (Rain Delays) - The numbers of days per month, on which work is expected not to be possible as a result of rainfall, for which the Contractor shall make provision, is given in the table below. During the execution of the Works, the Employer's Agent's Representative will certify a day lost due to rainfall only if at least 75% of the work force and plant on site could not work during that specific working day. Extension of time as a result of rainfall shall be calculated monthly being equal to the number days certified by the Employer's Agent's Representative as lost due to rainfall, less the number of days allowed for as in table below, which could result in a negative figure for certain months. The total extension of time for which the Contractor may apply, shall be the cumulative algebraic sum of the monthly extensions. Should the sum thus obtained be negative, the extension of time shall be taken as NIL.
5.13.1	The penalty for delay in failing to complete the Works is R 1 000.00 (per calendar day)
5.14.1	The requirements for achieving Practical Completion will be determined by the Employer's Agent (in consultation with the Contractor) and recorded in the minutes of the first Site Meeting / Handover Meeting. (Refer to 1.1.1.24 for a generic definition.) The requirements are to be regularly reviewed with respect to any variations to the Contract.
5.16.3	The **latent defect liability** period is **10 Years.**
6.2.1	Security (Performance Guarantee): The liability of the Performance Guarantee shall be stated as per the following table:

Value of Contract (incl. VAT)	**Performance Guarantee Required**
Less than or equal to R 1m	Nil
Greater than R 1m and less than or equal to R 10m	5% of the Contract Sum
Greater than R 10m	10% of the Contract Sum

6.5.1.2.3	The percentage allowance to cover overhead charges for daywork are as follows: • 80% of the gross remuneration of workmen and foremen actually engaged in the daywork; • 20% on the net cost of materials actually used in the completed work. No allowance will be made for work done, or for materials and equipment for which daywork rates have been quoted at the tender stage.
6.8.2	Contract Price Adjustment Factor: The value of the certificates issued shall be adjusted in accordance with the Contract Price Adjustment Schedule (GCC 2025 - page 86) with the following Indices / Descriptions / Coefficients: • The proportion not subject to adjustment: x = 0.10. • The base month will be the month prior to the month in which tenders close. • The Index for, Plant, Materials, and Fuel shall be based on 2023 = 100. • The Index for Labour shall be based on 2024 = 100.

STATS SA Statistical Release	**Table**	**Description**	**Coefficient**
P0141	Table A	Geographic Indices;	**a = 0.28**

			CPI per Province; Eastern Cape	
	P0151.1	Table 4	Plant and Equipment	**b = 0.28**
	P0151.1	Table 6	Civil Engineering Material (excluding bitumen)	**c = 0.38**
	P0142.1	Table 1	Coke, petroleum, chemical, rubber and plastic products; Coal and petroleum products; Diesel	**d = 0.06**

6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is 80%.
6.10.3	Retention Money: The percentage retention on the amounts due to the Contractor is 10%. The limit of "retention money" is 5% of the Contract Sum. Should the Contract Price exceed the Contract Sum, then the limit of "retention money" is 5% of the Contract Price. Interest will not be paid on retention withheld by the Employer.
8.6.1.1.2	The value of **Plant and materials** supplied by the Employer to be included in the insurance sum: **Not Required**
8.6.1.1.3	The **amount to cover professional fees** for repairing damage and loss to be included in the insurance sum: **Not Required**
8.6.1.2	**SASRIA Coupon Policy** for Special Risks to be issued in joint names of Council and Contractor for the full value of the works (including VAT).
8.6.1.3	The limit of indemnity for **liability insurance**: **R 10,000,000.00**
8.6.1.4	**Ground Support Insurance**: • Minimum amount for any one occurrence, unlimited as to the number of occurrences, against any claim for damages or loss caused by vibration and / or removal of lateral support: **Not Required**. • Maximum first excess: Nil
8.6.1.5	Furthermore, the insurance cover effected by the Contractor shall meet the following requirements: **Third Party Insurance (Public Liability)** • Minimum amount for any one occurrence, unlimited as to the number of occurrences, for the period of the contract, inclusive of the maintenance period: **R 5,000,000.00.** • Consequential loss to be covered by policy: **Yes** • Liability section of policy to be extended to cover blasting: **Nil**. • Maximum excess per claim or series of claims arising out of any one occurrence: **R 10,000.00.** **Principal's own surrounding Property Insurance** • Minimum amount for any one occurrence unlimited as to the number of occurrences against any claim for damage which may occur to the Council's own surrounding property: **R 1,000,000.00.**

<table>
<tr><td></td><td>

- Maximum first excess: **R 10,000.00**.

Insurance of Works

- Minimum amount for additional removal of debris (no damage): **Nil**
- Minimum amount for temporary storage of materials off site, excluding Contractor's own premises: **Nil**
- Minimum amount for transit of materials to site: **Nil**.

</td></tr>
<tr><td>8.6.5</td><td>

Approval by Employer: At the end of the sub-clause, add the following paragraph:

"Except where otherwise provided in the Special Conditions of Contract, the insurance cover effected by the Contractor in terms of this clause shall not carry a first loss amount greater than those set out below:

<table>
<tr><th>Contract Price</th><th>First Loss</th></tr>
<tr><td>Less than R 100,000</td><td>R 5,000</td></tr>
<tr><td>R 100,000 to R 500,000</td><td>R 10,000</td></tr>
<tr><td>R 500,000 to R 1,000,000</td><td>R 20,000</td></tr>
<tr><td>R 1,000,000 to R 2,000,000</td><td>R 30,000</td></tr>
<tr><td>R 2,000,000 to R 4,000,000</td><td>R 40,000</td></tr>
<tr><td>Greater than R 4,000,000</td><td>R 50,000</td></tr>
</table>

The insurance policy shall contain a specific provision whereby cancellation of the policy prior to the end of the period referred to in Cause 8.2.1 cannot take place without the prior written approval of the Employer.

</td></tr>
<tr><td>10.7.1</td><td>Failing ad-hoc adjudication, the determination of disputes shall be by arbitration.</td></tr>
</table>

C1.2.3 DATA PROVIDED BY THE CONTRACTOR

A: CONTACT DETAILS

The legal name of the Contractor is

……

The Physical address of the Contractor is:

……

……

……

The Postal address of the Contractor is:

……

……

……

The contact numbers of the Contractor are:

Telephone: .....

Facsimile: .....

E-mail Address: .....

The authorised and designated representative of the Contractor is:

Name: .....

Telephone: .....

Facsimile: .....

E-mail Address: .....

B: KEY PERSONS

The Key Persons and their jobs/ functions in relation to the project are as follows:

Name	Principal and/or employed Person(s)	Specific duties
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

C: INFORMATION REQUIRED FOR THE PUBLICATION OF THE AWARD AS PER NATIONAL TREASURY NOTE

Name of Partners, Members or Directors	Appointment Date	Designation	Professional Registration Number (Where applicable)

C1.3 OTHER STANDARD FORMS

C1.3.1 FORM OF GUARANTEE

Note to tenderer:
This proforma guarantee is included for information purposes only. Where required in terms of the Contract, a separate form of Guarantee will be issued to the successful tenderer for completion and signature

TO: DFFE
ADDRESS
POSTAL CODE

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: .....

Physical address: .....

"Employer" means: .....

"Contractor" means: .....

"Engineer" means: .....

"Works" means: .....

"Site" means: .....

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

"Contract Sum" means: The accepted amount inclusive of tax of R .....

Amount in words: .....

"Guaranteed Sum" means: The maximum aggregate amount of R .....

Amount in words:

"Expire Date" means:

CONTRACT DETAILS

Engineer issues: Interim Payment Certificates, Final Payment Certificate and the Certificate Completion of the Works as defined in the Contract.

PERFORMANCE GUARANTEE

1 The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.

2 The Guarantor's period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the Expiry Date or the date of issue by the Engineer of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed Sum, whichever occurs first. The Engineer and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.

3 The Guarantor hereby acknowledge that:

3.1 any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;

3.2 its obligation under this Performance Guarantee is restricted to the payment of money.

4 Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:

4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Engineer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

4.2 A first written demand issued by the Employer to the guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;

4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 4.

5 Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:

5.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 5; or

5.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; and

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

6 It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.

7 Where the Guarantor has made payment in terms of 5, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.

8 Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.

9 Payment by the Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.

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

11 The Guarantor chooses the physical address as stated above for the service of all notices for al purposes in connection herewith.

12 This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.

13 This Performance Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.

14 Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at

Date .....

Guarantor's signatory: (1) .....

Capacity .....

Guarantor's signatory: (2) .....

C1.4 ADDITIONAL CONDITIONS OF CONTRACT

C1.4.1 Community Liaison Officer (CLO)

The Ward Councillor(s) in whose ward(s) work is to be done will, collectively, identify a community liaison officer (CLO) for the project and make the person known to the Contractor within two days of being requested to do so. The Contractor will be required to enter a written contract with the CLO that specifies:

- The hours of work and the wage rate of the CLO (200% of the Civil Engineering Industry minimum wage).
- The duration of the appointment.
- The duties to be undertaken by the CLO which could include, but not limited to the following:
    - Assisting in all respects relating to the recruitment of local labour.
    - Acting as a source of information for the community and councillors on issues related to the contract.
    - Keeping the Contractor advised on community issues and issues pertaining to local security.
    - Assisting in setting up any meetings or negotiations with affected parties.
    - Keeping a written record of any labour or community issue that may arise.
    - Any other duties that may be required by the Contractor.

Responsibility for the identification of a pool of suitable labour shall rest with the CLO, although the Contractor shall have the right to choose from that pool. The Contractor shall have the right to determine the total number labourers required at any one time and this may vary during the contract.

The Contractor shall have the right to replace labour that is not performing adequately. Should such occasion arise, it must be done in conjunction with the CLO.

Payment: The CLO will be reimbursed from the PC Sum item in the Preliminary & General Section of the Bill of Quantities.

C1.4.2 Employment of local labour

It is a condition of contract that the contractor will be required to employ local labour as specified by the Employer's Policy The contractor will be required to ensure that a minimum of 50% of the labour force is made up of local labour. For the purposes of this contract, "Local labour" will be deemed to be any person who resides within the Ward in which the project is implemented. The contractor will be required to provide proof of the authenticity of local labour. Signed confirmation by the appointed CLO will suffice for this. No additional costs will be entertained due to this Particular Specification. The contractor will remain responsible for providing proper supervision of all labour and will be responsible for the quality of work produced.

PART C2: PRICING DATA

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C2.1 PRICING INSTRUCTIONS

C2.1.1 For the purposes of this Pricing Schedule, 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 Scope of Works.

Quantity: The number of units of work for each item as provided by the Employer or as tendered by the Service Provider.

Rate: The payment per unit of work for which a rate has been provided by the Employer or for which the Service Provider tenders to do the work.

Amount: The product of the quantity and the rate tendered for an item.

Lump Sum: An amount tendered for an item, the extent of which is described in the Pricing Schedule, the Scope of Work or elsewhere, but of which the quantity of work is not measured in units.

Provisional Sum: An amount allowed for in the Pricing Schedule, for which the quantity of work is not known.

Prime Cost: Is a specific type of Provisional Sum where payment is made on the production of invoices showing the cost price of the implementation or installation of the service required. Services rendered in this manner carry a cost for which a rate or a lump sum is offered at tender stage to cover all the tenderer's handling, supervision and liability costs in providing the item or services.

C2.1.2 The quantities provided by the Employer in the Pricing Schedule are only approximate quantities. The quantities of work finally accepted and certified for payment, and not the quantities given in the Pricing Schedule, will be used to determine payments to the Service Provider.

The validity of the Contract shall in no way be affected by differences between the quantities in the Pricing Schedule and the quantities finally certified for payment. Work is valued at the rates or lump sums tendered.

C2.1.3 Rates and lump sums shall include full compensation for overheads, profits, incidentals, tax (other than VAT), etc., and for the completed items of work as specified in the Scope of Works and Contract Data and for all the risks, obligations and responsibilities specified in the General Conditions of Contract, Particular or Special Conditions of Contract, except in so far as the quantities given in the Pricing Schedule are only approximate.

C2.1.4 The tenderer shall fill in a quantity or a rate or a lump sum for each item where provision is made. Items against which no rate or lump sum has been entered in the tender will not be paid for when the work is executed, as payment for such work will be regarded as being covered by other rates or lump sums in the pricing schedule.

The tenderer shall fill in a rate against all items where the words "rate only" appears in the amount column. Although no work is foreseen under such item and no quantities are consequently given in the quantity column, the tendered rate shall apply should work under this item actually be required. Tenders should note the provisions of clause C2.1.10 of this preamble.

The tendered lump sums and rates shall be valid irrespective of any change in the quantities during the execution of the contract.

C2.1.5 The short descriptions of the payment items in the Pricing Schedule are only given to identify the items and to provide specific details. Reference shall, *inter alia*, be made to the Contract Data, General Conditions of Contract and Particular/Special Conditions of Contract and Scope of Works for more detailed information regarding the extent of work entailed under each item.

C2.1.6 Interim payments for lump sum payment items may be permitted. Such interim payments shall however be limited to proven progress achieved for that particular service deliverable. The sum of any progress payments made under a particular lump sum payment item shall be deducted prior to calculating any adjustments for escalation.

C2.1.7 Provisional and Prime Cost Sums: Each Sum shall only be used, in whole or in part, in accordance with the Employer's instructions and the Contract Price shall be adjusted accordingly. The total sum paid to the Service Provider shall include only such amounts, for the work, supplies or services to which the Sum relates, as the Employer shall have instructed.

For each Sum, the Employer may instruct plant, materials or services to be procured by the Service Provider in accordance with the Employer's policies, and for which there shall be included in the Contract Price:
- The actual amounts paid (or due to be paid) by the Service Provider under the Sum, and
- An item for compilation and printing of procurement documentation, quotation/tender process and evaluation, and all overhead charges and profit, tendered in the Pricing Schedule. Provided that for Prime Cost Sums only, where a percentage mark-up or lump sum mark-up is tendered, which shall exclude profit.

The Service Provider shall produce all quotations, invoices, vouchers and accounts or receipts in substantiation of any claim under a Sum.

Any percentage adjustment or lump sum mark-up against the Sum for handling fee, profits, etc. shall not be negative.

C2.1.8 Subject to the conditions stated in Clause C2.1.9 below, the rates and lump sums filled in by the tenderer in the pricing schedule shall be final and binding with regard to submitting the tender and may not be adjusted should there be any mistakes in the extensions thereof and in the total sums appearing in the tender. Should there be any discrepancies between the tender sum and the correctly extended and totalled pricing schedule, the rates and the lump sums will be regarded as being correct, and the Employer shall have the right to make adjustments to the tender sum to reconcile the tender sum with the total of the pricing schedule. In such an event the tenderer will be consulted but, failing agreement between the parties, the decision of the Employer shall be final and binding. Adjustment of the tender sum will take place prior to the signing of the contract. In their own interest tenderers must make doubly sure of the correctness of their tendered rates and lump sums, the extensions and the tender sum.

C2.1.9 A tender shall be deemed non-responsive if the unit rates or lump sums for some of the items in the Pricing Schedule are, in the opinion of the Employer, unreasonable or out of proportion, and if the tenderer fails, within a period of seven (7) days of having been notified in writing by the Employer to adjust the unit rates or lump sums for such items, to make such adjustments.

C2.1.10 All rates and sums of money quoted in the Pricing Schedule shall be in South African Rand and whole cents

C2.2 PRICING SCHEDULE

Note to tenderer:

The tenderer will be declared non-responsive if:

- A signed Form of Offer is submitted with an incomplete Pricing Schedule.
- A signed Form of Offer is submitted without a Pricing Schedule, but only the Summary of Pricing Schedule submitted.
- The Contractor is required to complete the Bill of Quantities below taking into account the requirements as set out in the specifications of this tender document.

SANS 1200 A	:	PRELIMINARY AND GENERAL	C2.5
SANS 1200 C	:	SITE CLEARANCE	C2.8
SANS 1200 D	:	EARTHWORKS	C2.9
SANS 1200 DB	:	EARTWORKS (PIPE TRENCHES)	C2.10
SANS 1200 G	:	CONCRETE STRUCTURAL	C2.11
SANS 1200 H	:	STRUCTURAL STEELWORKS	C2.12
SANS 1200 L	:	MEDIUM PRESSURE LINES	C2.13
SANS 1200 LB	:	BEDDING (PIPES)	C2.15
SANS 1200 LD	:	SEWERS	C2.16
SANS 1200 LK	:	VALVE INSTALLTIONS	C2.17
SANS 1200 ME	:	SUBBASE	C2.18
SANS 1200 MF	:	BASE	C2.19
SANS 1200 MJ	:	SEGEMETED PAVING	C2.20
SANS 1200 MK	:	KERBING AND CHANNELLING	C2.21
PART PA	:	FENCING	C2.22
PART PD	:	BUILIDNG WORK	C2.23
BILL 1	:	LV RETICULATION AND GENERAL	C2.28
BILL 2	:	INTERNAL RETICULATION	C2.30
SUMMARY OF BILL OF QUANTITIES			C2.35
CALCULATION OF TENDER SUM			C2.35

PART C3: SCOPE OF WORK

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C3.1 DESCRIPTION OF WORKS

C3.1.1 Employer's Objectives

The Employer's objectives are to secure the services of a suitably qualified and competent Contractor to construct the Construction of a Material Facility (MRF), the refurbishment of the two existing Transfer Station in Indwe and Dordrecht Towns.

The appointment might be in part or as a whole and shall be a function of the funding made available by the Employer.

C3.1.2 Project Background

The Employer previously initiated the development of a Material Recovery Facility (MRF) at Indwe and the establishment of associated Transfer Station facilities at Indwe and Dordrecht as part of its waste management infrastructure improvement programme. The objective of the project was to improve waste handling, sorting, storage, and transfer operations within the municipal area while promoting environmentally sustainable waste management practices.

Construction activities commenced under a previous contract; however, due to circumstances beyond the Employer's control, the project was not completed and portions of the works remain unfinished. As a result, several structures, civil works, electrical installations, and municipal services infrastructure are partially completed and require completion, refurbishment, testing, commissioning, and handover.

The Employer intends to appoint a suitably qualified Contractor to assess the status of the existing works and complete all outstanding construction activities required to achieve a fully operational facility. The appointed Contractor shall be responsible for completing the unfinished works, rectifying any defects identified within the existing infrastructure where necessary, and ensuring that all facilities comply with the applicable statutory requirements, design specifications, and relevant standards.

The scope of work includes the completion of the Material Recovery Facility and associated support infrastructure at Indwe, together with the refurbishment and upgrading of the existing Transfer Station facilities at Dordrecht. The works shall include all labour, materials, plant, equipment, testing, commissioning, and any ancillary activities necessary to deliver a complete and functional facility ready for operation by the Employer.

Tenderers are advised that portions of the infrastructure have already been constructed and that the works under this Contract primarily comprise the completion, refurbishment, upgrading, and commissioning of the remaining outstanding works. Tenderers shall familiarize themselves with the existing site conditions and the extent of completed works prior to submitting their tenders.

C3.1.3 Overview of the Works

The work to be carried out at **Indwe** includes;

i. Completion of the existing Material Recovery Facility.
ii. Completion of the existing storage room.
iii. Completion of the existing ablutions.
iv. Completion of the existing changerooms.
v. Completion of the existing guard house.
vi. Installation of prefabricated conservancy tank.

vii. Establishment of a borehole and borehole pump house.
viii. Completion of loading platform for three (3) skip bins for offloading waste.
ix. Completion of the existing access roads linking to the main road network.
x. Electrification of the facilities.
xi. Installation of a complete solar power unit.
xii. Installation of 3-phase bulk electrical connection to the facility.
xiii. Installation of sewer and water reticulation.

The work to be carried out at **Dordrecht** includes;

i. Refurbishment of the existing storage room.
ii. Refurbishment of the existing guard house.
iii. Refurbishment of the existing changerooms.
iv. Reconstruction of loading platform for three (3) skip bins for offloading waste.
v. Upgrading of access roads linking to the main road network
vi. Construction of ablution facility.
vii. Electrification of the facility
viii. Installation of a complete solar power unit.
ix. Installation of electrical reticulation.
x. Installation of sewer and water reticulation

The Scope of this Contract shall require that the "Contractor" as defined in the GENERAL CONDITIONS OF CONTRACT FOR CONSTRUCTION WORKS: FOURTH EDITION - 2025, hereinafter referred to as GCC 2025; Clause 1.1.1.9 to have included in his/her tender price for, and is not limited to, the supply of all materials, labour, tools, plant, workmanship, supervision, transport, water, compressed air, electrical power, and whatever else is deemed necessary to ensure due and proper construction and Completion of the Works. The Works shall be completed in accordance with the terms as specified in this Contract Document.

This description of the Works is not necessarily complete and shall not limit the work to be carried out by the Contractor under this Contract.

Approximate quantities of each type of work are given in the Bill of Quantities.

C3.1.4 Scope and Extent of the Works

The contractor should make themselves familiar with the extent of work already completed. This description of the Works is not necessarily complete and shall not limit the work to be carried out by the Contractor under this Contract.

- Establishment on site;
- Clearing and grubbing of the site;
- Refurbish the existing buildings;
- Completion of existing buildings
- Completion of the MRF
- Completion of fencing
- Mass earthworks;
- Installation of paving
- Road marking and road signs;
- The supply, delivery, laying and bedding of valves, fittings and specials;
- The supply, delivery and installation of solar system for the facility;
- Electrification of facilities
- De-establishment of site on completion of works.

C3.1.5 Contractor Responsibilities

The Contractor shall execute and complete all works described in Section C3.1.4 and elsewhere in the Contract Documents in accordance with the approved drawings, specifications, applicable South African National Standards (SANS), statutory requirements, and accepted engineering practices.

The Contractor shall satisfy themselves as to the nature and extent of the existing partially completed works and shall be deemed to have allowed in their tender for all activities necessary to complete, refurbish, rectify, test, commission, and hand over the facilities in a fully functional condition.

In addition to the construction works, the Contractor shall be responsible for the following design-related activities:

1. **Assessment of Existing Structures**
    - Undertake a detailed condition assessment of all partially completed structures, including the Material Recovery Facility (MRF) structure and associated buildings.
    - Verify the suitability, integrity, and adequacy of the existing structural elements for completion of the works.
2. **Structural Design Review and Certification**
    - Appoint a suitably qualified and professionally registered Professional Engineer to assess the existing MRF structure and any other structural components deemed necessary.
    - Prepare and submit a Structural Assessment and Design Report for acceptance by the Employer prior to commencement of structural completion works.
    - The report shall include, but not be limited to:
        - Assessment of the existing structure and foundations.
        - Structural design calculations.
        - Verification of design assumptions.
        - Connection details for all structural steelwork and associated elements.
        - Details of any remedial works required.
        - Compliance with relevant design codes and standards.
        - Material certificates clearly indicating material grades, strengths, and relevant properties.
        - Recommendations for completion and commissioning of the structure.
3. **Shop Drawings and Construction Documentation**
    - Prepare and submit detailed shop drawings for all structural, mechanical, electrical, civil, and ancillary works requiring fabrication or specialist installation.
    - Shop drawings shall be submitted to the Employer's Representative for review and acceptance prior to manufacture, procurement, or installation.
4. **Professional Registration Requirements**
    - The Professional Engineer responsible for the structural assessment, design review, and certification shall be registered with the relevant statutory professional body.
    - The Contractor shall submit the following documentation for acceptance by the Employer before commencement of the design-related activities:
        - Curriculum Vitae of the Professional Engineer.
        - Proof of professional registration and current licence/certificate of good standing.
        - Details of relevant experience on similar projects.
5. **Completion Certification**
    - Upon completion of the works, the Professional Engineer shall issue a signed structural completion certificate confirming that the completed structure has been assessed and completed in accordance with the approved design, applicable standards, and sound engineering practice.

6. **Submission and Acceptance**
    - All reports, calculations, certificates, shop drawings, and supporting documentation shall be submitted to the Employer's Representative for review and acceptance.
    - No construction activities related to the relevant design components shall commence until the required documentation has been reviewed and accepted by the Employer.

The Contractor shall remain fully responsible for the adequacy, accuracy, and completeness of all designs, assessments, drawings, reports, and certifications produced under this Contract.

C3.1.6 Progress and Technical Meetings

The Tenderer shall meet formally with the Employer, the Employer's Agent at least every fortnight to discuss progress on the project. The Employer may ask for additional meetings in the event of progress being behind the approved programme. All meetings shall take place on site or at a convenient place within the Municipality area. The meetings shall continue during the construction stage, with the specific purpose of presenting cost forecasts to the Employer and highlighting any technical or contractual issues.

C3.1.7 Project Advisory Committee (PAC) Meetings

The Contractor shall attend Project Advisory Committee (PAC) meetings convened by the Employer for the duration of the Contract.

Project Advisory Committee meetings shall be held once per month to review project progress, discuss key project matters, monitor programme performance, address risks and challenges, and facilitate stakeholder engagement. The Contractor shall provide the necessary progress reports and supporting information as required by the Employer.

The Contractor shall make allowance in the Contract Price for attendance at all scheduled PAC meetings and any associated preparation and reporting requirements.

C3.1.8 Reporting Requirements

The Contractor shall submit progress reports and project information as required by the Employer throughout the duration of the Contract. The purpose of such reporting shall be to monitor project performance, expenditure, programme compliance, local labour participation, and achievement of project objectives.

The Contractor shall, as a minimum, submit the following:

Monthly Progress Reports

- Physical progress achieved during the reporting period.
- Progress against the approved construction programme.
- Updated programme indicating planned and actual progress.
- Summary of completed and outstanding activities.
- Photographic record of work completed.
- Labour statistics, including local labour employment.
- Plant and equipment deployed on site.
- Health and Safety statistics and incidents.
- Environmental compliance matters.

- Risks, challenges, delays, and proposed mitigation measures.
- Cash flow projections and expenditure incurred.

Project Advisory Committee (PAC) Reports

- A summary of project progress and key milestones achieved.
- Status of contractual deliverables.
- Community liaison and stakeholder engagement activities.
- Identification of project risks and interventions required.

Ad Hoc Reports

- Any additional reports reasonably required by the Employer, Engineer, or relevant authorities in connection with the Contract.

The Employer will provide the Contractor with the necessary reporting templates, formats, and guidance, including any requirements associated with the Department's Project Performance Reporting (PPR) system. No prior knowledge of the PPR system is required at tender stage. The Contractor shall, however, ensure that all information required for reporting purposes is collected, maintained, and submitted timeously in the format prescribed by the Employer.

C3.1.9 Project Duration

The project duration is 6 months. The successful bidder will be appointed for a period of 6 months on the project.

The following are milestones and key dates

Table 1: Project Milestones

Milestone	Activities	Key Dates
1. Contract Commencement and Site Establishment	Contract award, handover of site, submission of insurances, performance guarantee, Health & Safety File, baseline programme, site establishment.	Week 1–2
2. Assessment, Design Review and Procurement	Assessment of existing structures, submission of Structural Assessment Report, design review, shop drawings, procurement of long-lead items and materials.	Week 2–4 (Month 1)
3. Completion of Structural and Civil Works	Completion/refurbishment of buildings, MRF structure, guard house, storage room, ablutions, changerooms, loading platforms, fencing, earthworks, paving and access roads.	Month 2–5
4. Mechanical, Electrical and Utility Installations	Water and sewer reticulation, electrification, 3-phase electrical connection, solar power installation, borehole and pump house, conservancy tank and associated services.	Month 3–6
5. Testing, Commissioning and	Testing and commissioning of all civil, structural, electrical and mechanical installations, rectification of	Month 6 (until mid-

Defect Rectification	defects, submission of completion certificates and operation manuals.	month)
6. Practical Completion	Practical Completion Inspection, preparation of snag list and commencement of outstanding snag items.	End of Month 6
7. Completion and Handover	Completion of outstanding snag items, submission of as-built drawings, final documentation, statutory certificates, structural completion certificate and handover of the facilities to the Employer.	Within 07 days after Practical Completion

C3.1.10 Oversight audits

During the duration of the project, there will be an independent oversight visit carried out by the Client and statutory oversight bodies. The Contractor shall ensure that these activities are accommodated, as and when required and ensure co-operation. These will be communicated through the Department and the Employer's Agent.

C3.1.11 Changes to scope of work

It is a condition of this contract that the employer reserves the right to limit the total expenditure on the Works due to possible budget constraints. Should the tender sum exceed the budgeted amount, the scope of the works may be reduced at any time before or during the contract period to ensure that the final contract amount does not exceed the budgeted amount, subject to applicable legislation, the PFMA, Treasury Regulations, PPPFA requirements, CIDB prescripts, and the DFFE SCM Policy.

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PART C4: SITE INFORMATION

C4.1.1 LOCATION FOR THE WORKS

The project area is located in Indwe and Dordrecht, small towns in Chris Hani District Municipality in the Eastern Cape province in South Africa. The coordinates of the site are as follows: Indwe **- 31°28'42.07"S; 27°20'50.00"E** and Dordrecht - **31°23'14.54"S** and **27°3'1.69"E**.

Figure 1: indicates the Dordrecht project site

Figure 2: indicates the Indwe project site

C4.1.2 Access to Works site

No restriction on access to the Site of the Works but personnel must comply with the security and safety requirements of the Emalahleni Local Municipality. The Contractor must keep the Employer informed of staff changes. The making good of any damage caused by non-observance of such restrictions will be for the Contractor's account.

Any vehicle used to transport and/or equipment on Site, shall not exceed the maximum permissible axles loading as allowed under the Provincial regulations.

C4.1.3 Services known to be in the vicinity of the site

Existing services on site include overhead electrical cables, water pipelines, buildings, fencing.

C4.2 ENGINEERING

C4.2.1 Design services and activity matrix

The following responsibilities for design and related documentation are applicable to this Contract:

Design Stage	Works designed by
Concept, feasibility and overall process	Engineer
Basic engineering and detail layouts at tender stage	Engineer
Final design for construction stage	Engineer
Temporary works	Contractor
Preparation of as built drawings	Contractor

C4.2.2 Employer's design

The Employer's design required to be priced can comprise a combination of communications referred to as addendums issued prior to tenders closing, drawings for tender purposes, and the tender document containing the general and specifications, relevant to the Works. Once the Contract is awarded the Employer's design may be amended and such amendments shall be managed via the Specific Contract Provisions.

C4.2.3 Contractor's design

Where the Contractor is to supply the design of designated parts of the permanent Works or temporary Works, he shall supply full working drawings supported by a professional engineer's design certificate.

C3.2.4 Drawings

The drawings form part of the tender document and are issued for tender purposes only.The appointed Contractor will be supplied with one A1 paper print and a pdf copy on CD of each of the drawings. This print and pdf copy are issued free of charge and the Contractor will need to make or obtain any additional prints he may require at his own cost.

The Contractor shall use only the dimensions stated in figures on the Drawings in setting out the Works, and dimensions shall not be scaled from the Drawings, unless required by the Engineer. The Engineer will, on the request of the Contractor in accordance with the provisions of the Conditions of Contract, provide such dimensions as may have been omitted from the Drawings.

The Contractor shall ensure that accurate as-built records are kept of all infrastructure installed or relocated during the Contract. The position of pipe bends, junction boxes, duct ends and all other underground infrastructure shall be given by either co-ordinates, or stake value and offset. Where necessary, levels shall also be given. A marked-up set of drawings shall also be kept and updated by the Contractor. This information shall be supplied to the Engineer's Representative on a regular basis.

All information in possession of the Contractor, required by the Engineer and/or the Engineer's Representative to complete the as-built/record drawings, must be submitted to the Engineer's Representative before a Certificate of Completion will be issued.

The Drawings prepared by the Employer for the permanent Works are listed and bound in the tender document. The Employer reserves the right to issue amended and/or additional drawings during the Contract.

C4.3 PROCUREMENT

C4.3.1 Preferential procurement procedures

C4.3.1.1 Requirements

The Employer intends through this Contract to provide work opportunities for the local residents.The Employer wishes to apply labour intensive construction methods to develop and empower the local residents.This Contractor shall therefore employ local labour where possible and align his construction activities with labour intensive construction methods.

C4.3.2 Employment targets

C4.3.2.1 Employment of local community labour

The maximum possible number of workers must be employed from the ranks of the currently unemployed persons in the local community. Minimum number of person days shall be 2400 and minimum persons to employ shall be 20.

To this end the Contractor is required to give preference to the use of local community labour and limit the use of non-local labour to key personnel only.

Local community labour is defined as people who reside in Indwe and Dordrecht and whose name appears on the local unemployed labour list.

Key personnel are defined as supervisors, team leaders and skilled labourers without whom a specific task cannot be completed.The target for local labour is 80% of non-key personnel.

C4.3.2.2 Employment of women

The target for employment of women is 30% of the total workforce.

C4.3.2.3 Employment of youth

The target for employment of youth (18-35 years of age) is 30% of the total workforce.

C4.3.2.4 Employment of disabled people

A minimum of one (1) disabled person must be employed on this contract.

C4.3.2.5 Remuneration of local labourers

The minimum wages shall be R259.11 per day or R28.79 per hour in a 9-hour day.

C4.3.3 Contractor's Staff

It is required that the Site Agent for this project to have a NQF level 6 qualification. If the Contractor fails to produce such person a suitable Site Agent will be appointed by the Client and paid in full by the Contractor.

C4.4 MANAGEMENT

C4.4.1 Management of the Works

C4.4.1.1 Planning and programming

C4.4.1.1.1 Submitted programme

The Contractor's programme, required in terms of Clause 5.6.1 of GCC 2025, shall be in a bar chart form.

In addition to the requirements of Clause 5.6.1 of GCC 2025, the Contractor's programme shall show:

a) The various activities, related to a time scale, for each element of the Works, including those of Nominated and/or Subcontractors, in sufficient detail to be able to assess construction progress,
b) Critical path activities and their dependencies,
c) Key dates in respect of work to be carried out by others,
d) Key dates in respect of information to be provided by the Engineer and/or others,

If any change to the critical path occurs, the Contractor shall as soon as practicable notify the Engineer in writing.

The Contractor's programme and method statement will not be accepted as the basis for claims for additional compensation without due reference to all relevant associated factors.

C4.4.1.1.2 General Allowances

When drawing up his programme, the Contractor shall, take into consideration and make allowance for, inter alia:
a) Expected weather conditions and their effects,
b) Known physical conditions or artificial obstructions,
c) Searching for, dealing with and carrying out alterations to the existing services,
d) The accommodation of public access and traffic,
e) The provision and implementation of the health and safety plan in terms of the Construction Regulations, 2014 of the Occupational Health and Safety Act, and
f) The design, testing and approval of the concrete mixes.

C4.4.1.2 Review of progress

The Contractor shall review his progress each month and should progress lag behind the latest accepted programme, by more than 2 weeks, he shall submit a revised programme and method statement of how he proposes to make up the lost time. If, in the opinion of the Engineer, such revised programme will not make up the lost time, the Engineer shall have the right to request the Contractor to reorganize his work in a manner which will ensure an acceptable programme. Claims for additional payment to meet any costs incurred due to such reorganisation will not be accepted.

C4.4.1.3 Methods and procedures

C4.4.1.3.1 Method statements

When requested by the Engineer, the Contractor shall submit, within 2 weeks (14 days) of date of such written request, a method statement detailing the Contractor's proposed construction procedure of certain elements of the Works.No work shall commence before the method statement has been submitted and approved. The approval shall not relieve the Contractor from his responsibilities in terms of the General Conditions of Contract.

C4.4.1.3.2 Neatness of the site

The general neatness and tidiness of the vicinity of Dordrecht and Indwe are of particular concern. The Works will be visible to the public. The Contractor shall, therefore, on a day-to-day basis, keep the area of the Works in a condition acceptable to the Engineer.

C4.4.1.4 Weather conditions

C4.4.1.4.1 Extension of time for completion resulting from abnormal fall

Extension of time for completion will not be considered for normal rainfall but only for abnormal rainfall or saturated conditions and will be calculated in accordance with the following method:

a) The Contractor shall, in his programme, allow for the anticipated number of working days on which work could be delayed - as given in the Schedule below.

b) Extension of time will be calculated for each calendar month or part thereof over the full period for the completion of the Work, plus any approved extension thereof, as follows:
   - i) A delay caused by abnormal rainfall will only be accepted for extension of time if, in the opinion of the Engineer, it delays an item or items which lie on the critical path determined by the Contractor's programme. Only delays on working days will be considered.
   - ii) Abnormal rainfall will be considered to be days, as approved, on which rain delayed operations, less the anticipated number of days given in` the Schedule below.
   - iii) The net extension of time determined for each month, which may be negative, shall accumulate algebraically to determine the net number days for extension of time due to abnormal rainfall, but a negative total at the end of the construction period will not be taken into account.
   - iv) Where a portion of a month is involved, a pro rata number of days shall be calculated.

SCHEDULE

Anticipated number of working days on which work could be delayed as a result of rainfall and saturated conditions.

Month	**Nn (days)**	**Rn (mm)**
January	7	165.08
February	7	115.54
March	6	88.83
April	4	60.28
May	2	18.62
June	2	26.78
July	1	15.20
August	2	20.20
September	2	25.95
October	5	93.88
November	7	137.28
December	9	148.01
Total	**54**	**915.65**

X = 20 and Y = 10

The additional clauses to the General Conditions of Contract are:
Extensions of time in respect of clause 42 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 provided in the table above), on which a rainfall of Y mm or more per day 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 provided in the table above.

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 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.

C4.4.1.4.2 Recording of weather

The Contractor shall provide a rain gauge as directed by the Engineer and precautions shall be taken to restrict access to the rain gauge by unauthorised persons.

C4.4.1.5 Quality plans and control

The Contractor shall prepare a quality management plan to be followed during the course of the Contract.

The quality management plan shall

i. clearly indicate the methods, programmes, procedures and other methods that the Contractor intends using as process control to ensure compliance of materials and workmanship with the requirements of the Contract (process control testing)

ii. Include the proof of status of calibration of all measuring devices that are to be used during the course of the Contract.

C4.4.1.6 Environment

C4.4.1.6.1 Protection of the environment

C4.4.1.6.1.1 Environment management plan

The Contractor shall comply with the provisions of the environmental management specification.

C4.4.1.6.1.2 Fires and burning of vegetation

No fires may be lit except at places approved by the relevant authority. The Contractor shall ensure that the fire hazard on and near the Site is reduced to a minimum and shall take immediate and effective steps to extinguish any fire that may break out.

Burning of vegetation and trees cleared from the Site and/or any other material may only be done on site if permitted in writing by the relevant authority, and shall then be strictly controlled by a competent supervisor, shall be carried out strictly in accordance with any directions given and shall be carried out solely at the risk of the Contractor.

C4.4.1.6.1.3 Preservation of flora and fauna and soil conservation

The Contractor shall:

a) take all precautions to prevent:
   i) the erosion of soils and/or
   ii) loss of or injury to domestic and other animals from any lands used or occupied by the Contractor;
b) refrain from destroying, removing or clearing trees, timber and scrub to any extent greater than is necessary for the execution of the Contract,
c) take care to cause the minimum of disturbance to the fauna and flora.
d) erect temporary fences on the servitude lines during the construction period to prevent loss of fauna. The fences shall be removed as soon as construction and testing are complete.
e) take precautions to keep the risk of fire to a minimum,
f) arrange that timber for firewood be obtained only from such places as may be approved by the Engineer;
g) take such measures as to ensure that his employees are aware of all laws and restrictions governing the hunting, disturbing, capturing or destroying of animals and birds in the vicinity of the camp or the Works or the taking of fish from any water ; and
h) prohibit all firearms from the site and temporary camps.

C4.4.1.7 Format of communications

Communications and instructions shall be given in writing and sent either by post, or facsimile. Site instructions shall be given in the Site Communication Book, which shall be a triplicate book provided by the Contractor.

C4.4.1.8 Management meetings

The Contractor will be required to attend the following site meetings during the term of the contract:

a) An inaugural site meeting to be held within three weeks after the Commencement Date.

b) Monthly site meetings from the order to commence the Works until the Completion of the Works.

c) Monthly Health and Safety meetings.

C4.4.1.9 Daily records

Daily records of all site activities and progress of work shall be kept by the Contractor. Any possible causes for delay to the Contract or which may result in additional costs to the Employer shall be recorded as clearly as possible. The records shall also include the plant on Site and personnel employed. The records shall be kept at all times in the Engineer's Site Office.

C4.4.1.9.1 Monthly labour returns

The Contractor shall submit with each statement for payment a labour return showing the Number Person Days and Labour Days recorded for the Contract. The returns shall be similar to the format approved by the Engineer.

C4.4.1.10 Lighting

Should the Contractor wish to undertake work when natural lighting is inadequate for the type of work to be performed, he shall, at his own expense, provide and maintain in good and safe condition adequate high-powered flood lighting for all the work areas where he is operating.

C4.4.1.11 Payment certificates

The statement to be submitted by the Contractor in terms of Clause 6.10 of the General Conditions of Contract shall be prepared in accordance with the standard payment certificate prescribed by the Engineer and shall be provided electronically in Microsoft Excel format.
All costs incurred by the Contractor resulting from the preparation and submission of the statements shall be borne by the Contractor.

A final payment certificate must be submitted to the employer's PMU office by the 15th day of each month. Failure to which, it shall be considered the following month's processing.

C4.4.2 Site establishment

C4.4.2.1 Services and facilities existing and/or provided by the Employer

C4.4.2.1.1 Water and power supply and other services

The Contractor shall make his own arrangements and pay all installation and consumption charges for the supply of water, electrical power and other services required.

C4.4.2.1.2 Camps and depot

The Contractor may erect his site offices and storage depot within the boundaries of the area indicated by the Engineer.

No housing is available and the Contractor shall make his own arrangements to house his employees and transport them to and from the Site. All arrangements for housing workmen shall be made in accordance with and subject to applicable regulations and requirements.

C4.4.2.2 Facilities provided by the Contractor

C4.4.2.2.1 Facilities for the Engineer

The Contractor shall provide for the use of the Engineer, maintain and service, as applicable, the following facilities as specified in SANS 1200 A and SDA:

a) One furnished office,

b) Latrine and ablution facilities,
c) Carport for 1 x vehicle,
d) 1 x Smart Phone
e) Photo-copying machine,
f) I7, 12GB Ram notebook computer and A3 printer/ scanner,
g) Survey equipment,
h) Two survey assistants,
i) A triplicate site instruction book,
j) Protective clothing,
k) Safety equipment,
l) First aid medical box,
m) Nine 150 mm concrete cube moulds and a temperature-controlled cube-curing water bath,
n) A concrete slump test mould, rod and base plate

Unless specified otherwise, on completion of the Works some of these facilities shall revert to the Contractor who shall remove them from the site excluding items f and h.

The term "use of the Engineer" will be deemed to include, as appropriate, use by the Engineer's staff and the Engineer's Representative and his staff.

C4.4.3 Existing services

C4.4.3.1 Treatment of existing services

C4.4.3.1.1 Continuance of operation of existing services

All existing services shall be maintained in operation, unless prior arrangements have been made with the relevant authority and written permission for an interruption of the service has been granted and adequate notice has been given to the affected residents.

C4.4.3.1.2 Continuous operation of existing works

The construction works take place around existing services. Existing works must remain in operation at all times. The Contractor shall ensure that, wherever possible, the Employer's personnel have unhindered access to, and use of, all parts of the existing works at all times, as necessary.

The Contractor's operations shall also be carried out in such a way as to minimize the formation of dust and the fouling of water in the existing works.

The Contractor shall provide sufficient notice to the Engineer when he intends to interrupt the operations of the existing works in order to effect connections with the new works. Approval for such work will be given only when the timing of the work is suitable to the Employer.

C4.4.3.1.3 Connection to existing services

All connections to the existing systems shall be undertaken in a manner and at times to be approved by the Engineer. It is anticipated that this work may have to be done at night in order to minimise inconvenience to users. No claims for additional payment will be considered in this regard.

C4.4.4 Health and safety

C4.4.4.1 Health and safety requirements and procedures

C4.4.4.1.1 General

In addition to Subclause 5.7 of SANS 1200 A (5.4 of SANS 1200 AA; 5.8 of SANS 1200 AD; 5.3 of SANS 1200 AH) and the Occupational Health and Safety Specification provide, the Contractor shall comply with the Occupational Health and Safety Act (Act No. 85 of 1993) (OHS Act) and in particular its Construction Regulations, 2014.

C4.4.4.1.2 Health and Safety Plan

Without limiting his obligations and liabilities in terms of the Construction Regulations, 2014 of the OHS Act, the Contractor, in his Health and Safety Plan to be submitted in terms of Clause 5.3.1 of the Project Data, shall inter alia deal with the safety provisions he will set up in respect of the aspects specified in the Specification Data and the Standard Specification.

The Health and Safety Plan shall be neatly set out in a lever-arch type file, with labelled dividers for each section

A copy of the approved Health and Safety Plan shall be kept on Site and made available upon request.

C4.4.4.1.3 Safety of general public

Open excavations and other hazardous conditions on site shall be barricaded and precautions shall be taken to protect the public from the same in terms of the OHS Act (Clause 4.3.10.2).

As the Works are on an operating water treatment works site, the Contractor shall take special precautions to prevent access to any danger areas on the Works, e.g. by temporary barricades, notices and/or fencing.

The Contractor shall direct, control, facilitate and safeguard all pedestrian traffic during construction of the Works, provide all notices, and arrange for watching and lighting in accordance with the requirements of the relevant authorities

C4.4.4.1.4 Sanitary conditions

Unhygienic habits and other behaviour that may cause contamination of any part of the Works or the surrounding areas are strictly prohibited. The Contractor shall ensure that sanitary conditions prevail throughout the Site and that all his workmen are aware of, and comply with, this rule.

C4.4.4.1.5 Protection of the public

Open excavations and other hazardous conditions on site shall be barricaded and precautions shall be taken to protect the public from the same in terms of the OHS Act.

As the Works are on an operating reservoir site, the Contractor shall take special precautions to prevent access to any danger areas on the Works, e.g. by temporary barricades, notices and/or fencing.

The Contractor shall direct, control, facilitate and safeguard all pedestrian traffic during construction of the Works, provide all notices, and arrange for watching and lighting in accordance with the requirements of the relevant authorities.

C4.4.4.1.6 Excavations

Without limiting his responsibility for the safety of his workers in any excavation, the Contractor shall ensure the safety of his workers in trenches and excavations deeper than 1,0 m. in terms of the provisions of the OHS Act. The Contractor may choose to batter excavations to a safe slope if sufficient space is available, or adequately shore the excavations.

C4.4.4.1.7 Health and safety specialist

The Contractor shall employ a health and safety specialist, with suitable and proven qualifications, either on full-time or part-time basis, for the duration of the Contract.

This specialist shall assist with the preparation of the health and safety plan required in terms of the Specification Data, shall provide on-going training for all construction staff (at least 1 hour per week whilst work on site is in progress, in the form of weekly tool-box talks), and shall assist with the upkeep of the Health and Safety Plan and associated regular inspections etc.

C4.4.6.1.8 Monthly health and safety reports

The health and safety specialist required in terms of the Specification Data, shall submit a report to the Engineer at the monthly site meetings, detailing the state of health and safety on the sites over the last month, new risk assessments added, potential new risks, new precautions taken, and summarising the results of various inspections required in terms of the health and safety plan, etc.

If this report is not submitted at each monthly site meeting, the Engineer shall impose a fine of R 1 000.00 on the Contractor, in each instance.

C4.5 HEALTH AND SAFETY

C4.5.1 HEALTH AND SAFETY REQUIREMENTS AND PROCEDURES

(a) Construction Regulations, 2014

The Contractor shall be required to comply with the Occupational Health and Safety Act, 1993: Construction Regulations, 2014. Non-compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

The Contractor shall in terms of regulation 5(1) provide a comprehensive health and safety plan detailing his proposed compliance with the regulations, for approval by the Employer.

The Contractor shall at all times be responsible for full compliance with the approved plan as well as the Construction Regulations and no extension of time will be considered for delays due to non-compliance with the abovementioned plan or regulations.

A payment item is included in the Bill of Quantities to cover the Contractor's cost for compliance with the OHS Act and the abovementioned regulations.

C4.5.2 PROTECTION OF THE PUBLIC

Refer to the Occupational Health and Safety Act, 1993 and the Construction Regulations, 2014.

C4.5.3 BARRICADES AND LIGHTING

Refer to the Occupational Health and Safety Act, 1993 and the Construction Regulations, 2014.

C4.5.4 TRAFFIC CONTROL ON ROADS

Refer to the Occupational Health and Safety Act, 1993 and the Construction Regulations, 2014.

C4.5.5 MEASURES AGAINST DISEASE AND EPIDEMICS

Refer to the Occupational Health and Safety Act, 1993 and the Construction Regulations, 2014.

C4.5.6 AIDS AWARENESS

Refer to the Occupational Health and Safety Act, 1993 and the Construction Regulations, 2014.

C4.6 CONSTRUCTION

C4.6.1 Existing services

C4.6.1.1 Damage to services

The Contractor is required to carry out all of his construction activities with due caution in order to prevent damage to existing services and infrastructure. The Contractor shall repair or arrange to repair any damage to known existing services at his own cost.

The Contractor shall repair or arrange to repair any damage to known existing services at his own cost.

C4.6.1.2 Reinstatement of services and structures damaged during construction

The Contractor shall immediately inform the Engineer of any damage to existing services or structures. The Contractor shall take immediate steps to reinstate any damaged services.

C4.6.2 Disposal sites

The Contractor shall locate suitable sites, off site for the disposal of cleared vegetation, rubble, unsuitable material, excavation or surplus material. The Contractor shall obtain the Engineer's approval for the site he proposes to use.

Surplus excavation, other than described above, will be spread on site at locations indicated by the Engineer.

C4.6.3 Alterations, additions, extensions and modifications to existing works

The Contractor shall satisfy himself that the dimensional accuracy, alignment, levels and setting out of existing structures or components thereof are compatible with the proposed works (including modifications). If the Contractor finds any discrepancy, he shall immediately notify the Engineer in writing of the discrepancy before proceeding with any construction which may be affected by the discrepancy.

Should the Contractor detect any defect(s) in existing structures or works which are likely to affect the integrity or quality of work executed by himself, he shall immediately notify the Engineer in writing. The Engineer will inspect the defect(s) and, if necessary, issue an instruction regarding how the defect(s) are to be repaired. The Contractor shall then execute those repairs to existing structures or works which are prescribed by the Engineer.

C4.6.4 FEATURES REQUIRING SPECIAL ATTENTION

C4.6.4.1 Aids awareness

The Contractor is to have sufficient signage regarding HIV/AIDS, notifying the workers of the dangers, and where to obtain the counselling etc.

C4.6.4.2 Site maintenance

During progress of the work and upon completion thereof, the Site of the Works shall be kept and left in a clean and orderly condition. The Contractor shall store materials and equipment for which he is responsible in an orderly manner, and shall keep the Site free from debris and obstructions.

C4.6.4.3 Testing and quality control

C4.6.4.3.1 Contractor to engage services of an independent laboratory

Notwithstanding the requirements of the Specifications pertaining to testing and quality control, the Contractor shall engage the services of an approved independent laboratory to undertake all testing of materials, the results of which are specified in, or may reasonably be inferred from, the Contract. These results will be taken into consideration by the Engineer in deciding whether the quality of materials utilised and workmanship achieved by the Contractor comply with the requirements of the Specifications. The foregoing shall apply irrespective of whether the specifications indicate that the said testing is to be carried out by the Engineer or by the Contractor.

The Contractor shall be responsible for arranging with the independent testing laboratory for the timeous carrying out of all such testing specified in the Contract, at not less than the frequencies and in the manner specified. The Contractor shall promptly provide the Engineer with copies of the results of all such testing carried out by the independent laboratory.

For the purposes of this clause, an "independent laboratory" shall mean a laboratory certified by the South African National Accreditation Systems (SANAS) or approved by the engineer in writing which is not under the management or control of the Contractor and in which the Contractor has no financial interest, nor which has any control or financial interest in the Contractor.

C4.6.4.3.2 Additional testing required by the Engineer

In addition to the provisions of subclause C3.6.4.3.1: Contractor to engage services of an independent laboratory, the Engineer shall be entitled at times during the Contract to require that the Contractor arrange with the independent laboratory to carry out any such tests, additional to those described in subclause C3.6.4.3.1, at such times and at such locations in the Works as the Engineer shall prescribe. The Contractor shall promptly and without delay arrange with the independent laboratory for carrying out all such additional testing as required by the Engineer, and copies of the test results shall be promptly submitted to the Engineer.

C4.6.4.3.3 Costs of testing

(a) Tests in terms of subclause C3.6.4.3.1

The costs of all testing carried out by the independent laboratory in accordance with the requirements of subclause C3.6.3.1 above shall be borne by the Contractor and shall be deemed to be included in the tendered rates and prices for the respective items of work as listed in the Bill of Quantities and which require testing in terms of the Specifications. No separate payments will be made by the Employer to the Contractor in respect of any testing carried out in terms of subclause C3.6.4.3.1

Where, as a result of the consistency of the materials varying or as a result of failure to meet the required specifications for the work, it becomes necessary to carry out additional tests (e.g. re-tests on rectified work and/or replacement materials), the costs of such additional testing shall be for the Contractor's account.

(b) Additional tests required by the Engineer
The costs of any additional tests required by the Engineer in terms of subclause C3.6.4.3.1: Additional testing required by the Engineer, shall be reimbursed to the Contractor against substitution of the Provisional Sum allowed therefore in the Bill of Quantities; provided always that the costs of any such additional tests ordered by the Engineer, the results of which indicate that the quality of the materials utilised and/or the standard of workmanship achieved are/is not in accordance with the specifications, shall not be reimbursable to the Contractor.

C4.6.4.4 Contractor supplied equipment

The Contractor shall when required to supply any testing, measuring and/or survey equipment for the Engineer's use provide calibration certificates or verification certificates (as appropriate) for all equipment. This shall apply for both shared equipment as well as for equipment specified to be provided for the Engineer's use on site.

Calibration or verification, by certified authorities shall be subject to the Engineer's approval:
• prior to the delivery of any equipment to the Engineer and
• thereafter at intervals as prescribed for the relevant equipment but not less than every twelve (12) months

The calibration/verification certificate for each item of equipment shall be submitted to the Engineer for approval prior to its use or within seven (7) days of subsequent re-calibration/verification.
Unless otherwise provided for in the bill of quantities the cost of providing the above specified equipment.

Failure to submit certificates shall result in payment for the equipment being withheld.

C4.6.4.5 Subcontractors

All matters pertaining to subcontractors (including Nominated Subcontractors) and the work executed by them shall be dealt with directly between the Engineer and the Contractor in the context of all subcontract work being an integral part of the Works for which the Contractor is responsible.

The Engineer will not liaise directly with any subcontractors nor will he issue instructions concerning the subcontract works directly to any subcontractor.

All matters arising from the subcontract agreements shall be dealt with directly between the Contractor and the subcontractors and the Engineer will not become involved.

C4.6.4.6 Opening up and closing down of designated borrow pits

Measurement and payment for opening up and closing down designated borrow pits, including removing and stockpiling overburden and restoring the Site, shall be made under item 8.3.4 of SANS 1200 D. This item applies to all borrow material required under this Contract.

The requirements of subclause 5.2.2.2 of SANS 1200 D regarding the opening up, maintenance and closing down of borrow pits shall be adhered to.

C4.6.4.7 Monthly statements and payment certificates

The statement to be submitted by the Contractor in terms of Clause 6.10 of the Conditions of Contract shall be prepared by the Contractor at his own cost, strictly in accordance with the standard payment certificate

prescribed by the Engineer, in digital electronic computer format. The Contractor shall, together with a copy of the digital electronic computer file of the statement, submit two (2) A4 size paper copies of the statement.

For the purposes of the Engineer's payment certificate, the Contractor shall subsequently be responsible, at his own cost, for making such adjustments to his statement as may be required by the Engineer for the purposes of accurately reflecting the actual quantities and amounts which the Engineer deems to be due and payable to the Contractor in the payment certificate.

The Contractor shall, at his own cost, make the said adjustments to the statement and return it to the Engineer within three (3) normal workings days from the date on which the Engineer communicated to the Contractor the adjustments required. The Contractor shall submit to the Engineer five (5) sets of A4 size paper copies of such adjusted statement, together with a copy of the electronic digital computer file thereof.

Any delay by the Contractor in making the said adjustments and submitting to the Engineer the requisite copies of the adjusted statement for the purposes of the Engineer's payment certificate will be added to the times allowed to the Engineer in terms of Clause 6.10.4 of the Conditions of Contract to submit the signed payment certificate to the Employer and the Contractor. Any such delay will also be added to the period in which the Employer is required to make payment to the Contractor.

C4.6.4.8 Workmanship and quality control

The onus to produce work that conforms in quality and accuracy of detail to the requirements of the Specifications and Drawings rests with the Contractor, and the Contractor shall, at his own expense, institute a quality control system and provide suitably qualified and experienced engineers, foremen, surveyors, materials technicians, other technicians and technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the Works at all times.

The cost of supervision and process control, including testing carried out by the Contractor, will be deemed to be included in the rates tendered for the related items of work.

The Contractor's attention is drawn to the provisions of the various Standardized Specifications regarding the minimum frequency of testing required. The Contractor shall, at his own discretion, increase this frequency where necessary to ensure adequate control.
On completion and submission of every part of the work to the Engineer for examination and measurement, the Contractor shall furnish the Engineer with the results of the relevant tests, measurements and levels to demonstrate the achievement of compliance with the Specifications.

SPECIFICATIONS

C7 VARIATIONS AND ADDITIONS TO SANS 1200 STANDARDIZED SPECIFICATIONS AND PARTICULAR SPECIFICATIONS

The Specification Data gives amendments and additions to the specifications that are listed in the List of Applicable Specifications. Clause headings are prefixed by the letters "SD" followed by alphabetic and numeric characters which identify the specification and main clause of the applicable specification. Sub-clauses are numbered sequentially. The clause reference to which a sub-clause refers, either to amend or to add to, is given after the sub-clause heading. Where the Specification Data sub-clause is an addition and there is no appropriate clause in the applicable specification to which to link it, no clause reference is given in the heading.

Should any requirement of the Specification Data conflict with any requirement of the specifications listed, the requirement of the Specification Data shall prevail.

1. Management

1.1 Although not bound in or issued with this document, the following Standardised Specifications for Civil Engineering Construction, as amended in the Project Specifications, form part of this document. (Notwithstanding Subclause 2.2 of SANS 1200A*, the edition specified below shall apply).

SANS 1200 A - : Preliminary and general

1.2 The following Standard and Particular Specifications, as bound in this document, and as amended in the Project Specifications, shall apply:

Project Specific Health and Safety Specification
Environmental Best Practice Specifications: Construction

2. Construction

2.1 Although not bound in and/or issued with the Tender Document, the following listed Standardized SANS 1200 Specification for Civil Engineering Construction, as approved by the Council of the South African Bureau of Standards, shall apply to the Project.

The Contractor shall be in possession of these Standardized Specifications and the related SANS 0120 Code of Practice which apply equally and shall keep a copy of each on site for reference by him and the Employer's Agent for the duration of the Contract.

SANS 1200 A - : General
SANS 1200 C - : Site Clearance
SANS 1200 D - : Earthworks
SANS 1200 DB - : Earthworks (pipe trenches)
SANS 1200 G - : Concrete (Structural)
SANS 1200 H - : Structural Steel Work
SANS 1200 L - : Medium Pressure Pipelines
SANS 1200 LB - : Bedding (pipes)
SANS 1200 LD - : Sewers
SANS 1200 LK - : Valve Installation
SANS 1200 ME - : Subbase
SANS 1200 MF - : Base

SANS 1200 MJ	-	: Segmented Paving
SANS 1200 MK	-	: Kerbing and Channelling

Particular Specification and Electrical Works

The Following particular generic specifications forming part of the contract have been written to cover phases or items of work involving a specialist type of operations or material to be encountered on this contract and that are not adequately covered by the sans 1200 or general specifications.

PART PA	-	: Fencing
PART PD	-	: Building Work
Electrical Bill 1	-	: LV Reticulation and General
Electrical Bill 2	-	: Internal Electrical Installation
Bill 3		: Recycling Equipment

Note 1 The Standard Specifications are not bound into the tender and contract documents, but are available at the Tenderer's/Contractor's expense from the South African Bureau of Standards in Pretoria, Private Bag X191, PRETORIA, 0001.

Note 2 Each of the Standard Specifications contains an appendix, which in turn lists further specifications, which are not bound into the tender and contract documents.

Note 3 Both of the Standard Specifications, as well as those specifications that are listed in the appendix to the Standard Specifications, shall apply to the Contract to the same extent as if each of these specifications had been bound into the tender/contract documents.

SDA GENERAL

SDA 1 SCOPE

REPLACE THE CONTENTS OF SUBCLAUSE 1.1, INCLUDING THE NOTES, WITH THE FOLLOWING:

"1.1 This specification covers requirements, principles and responsibilities of a general nature which are generally applicable to civil engineering construction and building works contracts, as well as the requirements for the Contractor's establishment on the Site."

SDA 2 INTERPRETATIONS

PSA2.1 APPLICATION

Save by arrangement with the Employer's Agent, the Contractor will not be restricted in the use of resources and in particular in the use of mechanical plant.

SDA 2.3 DEFINITIONS

IN THE OPENING PHRASE BETWEEN THE WORDS "specification" *AND* "the following", *INSERT THE WORDS* "the definitions given in the Conditions of Contract and".

(a) General

ADD THE FOLLOWING DEFINITIONS:

" 'General Conditions' and 'Conditions of Contract': The General Conditions of Contract specified for use with this Contract, together with the Contract Data (GCC 2025) as applicable.

'Specified': As specified in the Standardized Specifications, the Drawings or the Project Specifications. 'Specifications' shall have the corresponding meaning."

The terms "ESCOM", "ESC" and "Electricity Supply Commission" shall mean "
"Eskom".

The terms "GPO", "P&T", "Department of Posts and Telecommunications" and "Telkom" shall mean "Telkom SA Limited".

Except for references to the Bureau itself, and to the (official) SANS mark, the term "SANS" shall mean "SANS".

The term "Schedule of Quantities" and "Bill of Quantities" shall mean the same.

The term "Project Specification" shall mean that portion of the Scope of the Works that completes and/or amends the standardised and standard specifications.

(c) Measurement and payment

REPLACE THE DEFINITIONS FOR "Fixed charge", "Time-related charge" *AND* "Value-related charge" *WITH THE FOLLOWING:*

" 'Fixed charge': A charge that is not subject to adjustment on account of variations in the value of the Contract Price or the time allowed in the Contract for the completion of the work.

'Time-related charge': A charge, the amount of which varies in accordance with the Time for Completion of the Works, adjusted in accordance with the provisions of the Contract.

'Value-related charge': A charge, the amount of which varies pro rata with the final value of the measured work executed and valued in accordance with the provisions of the Contract.' "

SDA 2.4 ABBREVIATIONS

(a) Abbreviations relating to standard documents

ADD THE FOLLOWING ABBREVIATION:

"CKS: SABS Co-ordinating Specification."

SDA2-8 Items in Bill of Quantities - Principle (Subclause 2.8.1)

In the fourth line of Subclause 2.8.1, after the word "specification", add: "or in the measurement and payment clause of the standard specification, particular specification or Specification Data".

Add the following paragraphs:

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

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

(b) the hydrological and climatic conditions,

(c) the extent and nature of work and materials necessary for the execution and completion of the Works,

(d) the means of access to the Site and the accommodation he may require

and, in general, shall be deemed to have obtained all information as to risks, contingencies and all other circumstances which may influence or affect his tender.

The Contractor shall be deemed to have based his tender on the technical data given in the Documents and, if in the performance of the Contract any circumstances shall differ from the said technical data, which difference causes delay or additional Cost, the Contractor shall be entitled to make a claim in accordance with Clause 10.1.1.

The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the Works and of the rates and prices stated in the priced Bill of Quantities and the Schedule of Rates and Prices (if any) or in the specification, which rates and prices shall (except in so far as otherwise provided in the Contract) collectively cover full payment for the discharge of all his obligations under the Contract and all matters and things necessary for the proper completion of the Works."

SDA 3 MATERIALS

SDA 3.1 QUALITY

ADD THE FOLLOWING AT THE END OF SUBCLAUSE 3.1:

"All manufactured materials supplied shall be new materials unless the contrary is specified. All materials specified to be in accordance with SABS Specifications shall bear the SABS mark, where such a mark is available for the type of product."

SDA 4 PLANT

SDA 4.1 SILENCING OF PLANT

REPLACE THE CONTENTS OF SUBCLAUSE 4.1 WITH THE FOLLOWING:

"The Contractor's attention is drawn to the applicable regulations pertaining to noise and hearing conservation, framed under the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) as amended.

The Contractor shall at all times and at his own cost, be responsible for implementing all necessary steps to ensure full compliance with such regulations, including but not restricted to the provision and use of suitable and effective silencing devices for pneumatic tools and other plant which would otherwise cause a noise level in excess of that specified in the said regulations.

Where appropriate, the Contractor shall further, by means of temporary barriers, effectively isolate the source of such noise in order to comply with the said regulations."

SDA4-2 CONTRACTOR'S OFFICES STORES AND SERVICES

ADD THE FOLLOWING ATE THE END OF SUBCLAUSE 4.2:

The latrine services required by the General Conditions of Contract and Clause 28 of the Construction Regulations, shall be of the chemical type and shall be readily accessible to workers at all areas of the site.

The Contractor shall make all the necessary arrangements with the relevant local authority for the disposal of the contents of the toilets on a regular basis.

The suitable first aid services required in terms of Subclause 4.2 of SANS 1200 A shall include, inter alia, a First Aid cabinet fully equipped and maintained with at least the minimum contents as listed in the Annexure (Regulation 3) to the General Safety Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), to deal with accidents and ailments which are likely to occur during the construction period.

The Contractor shall provide personal safety equipment and facilities as required by Regulation 2 of the General Safety Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993).

SDA 5 CONSTRUCTION

SDA5-1 Survey

SDA5-1.1 Setting out of the Works. (Subclause 5.1.1)

Before commencing any construction, the Contractor shall check the relative positions and levels of all reference pegs and bench marks and inform the Engineer of any discrepancy.

Add to Subclause 5.1.1

"The Contractor shall be responsible for the true and proper setting out of the Works and for the correctness of the position, levels, dimensions and alignment of all parts of the Works and for the provisions of all necessary instruments, appliances and labour in connection therewith.

The Contractor shall carefully protect and preserve all benchmarks, sight-rails, pegs and other things used in setting out the Works.

The checking of any setting-out or of any line or level by the Engineer shall not relieve the Contractor of his responsibility for the correctness thereof.

If at any time during the progress of the Works, any error shall appear or arise in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required to do so by the Engineer, shall at his own expense rectify such error to the satisfaction of the Engineer, but if such error is based on incorrect data supplied in writing by the Engineer or if there is any delay in providing the particulars required, the Contractor shall, in respect of that delay and the Cost of such RETICULATION, be entitled to make a claim in accordance with Clause 10.1.1."

The Contractor shall advise the Engineer of any conflict between the position of any part of the Works and an existing feature.

SDA 5.2 WATCHING, BARRICADING, LIGHTING AND TRAFFIC CROSSINGS.

ADD THE FOLLOWING AFTER THE SECOND SENTENCE OF SUBCLAUSE 5.2:

" The Contractor shall, in connection with the Works, provide and maintain all signs, signboards, lights, barriers, barricades, fencing and watching when and where:

a) specified in or reasonably to be inferred from the Contract, or

b) required by any competent statutory or other authority, or

c) required by the Engineer for the protection of the Works or for the safety or convenience of the public or others;

provided that, if the Engineer shall instruct the Contractor to provide any sign, signboard, light, barrier, barricade, fencing or watching not included in paragraphs (a), (b) or (c), such requirement shall constitute a variation by the Engineer in terms of Clause 6.4 of the General Conditions of Contract".

All temporary signs shall be of the type and size required for rural roads, as applicable, as specified in the "Southern African Development Community Road Traffic Signs Manual" and Chapter 13, [Roadworks Signing] of the South African Road Traffic Signs Manual".

Unless the closing of streets, accesses and thoroughfares has been properly arranged, the Contractor shall accommodate and provide for through traffic, traffic at crossings and vehicular access to houses and buildings at all times. If necessary, safe ramps to mount road kerbs shall be provided where traffic is to be diverted.

SDA 5.3 PROTECTION OF EXISTING STRUCTURES

REPLACE "Machinery and Occupational Safety Act, 1983 (Act No 6 of 1983)" *WITH* "Occupational Health and Safety Act, 1993 (Act No 85 of 1993), as amended," *AND INSERT THE FOLLOWING AFTER* "(Act No. 27 of 1956)": "as amended".

SDA 5.4 PROTECTION OF OVERHEAD AND UNDERGROUND SERVICES

REPLACE THE HEADING AND THE CONTENTS OF SUBCLAUSE 5.4 WITH THE FOLLOWING:

"SDA 5.4 LOCATION AND PROTECTION OF EXISTING SERVICES

SDA 5.4.1 Location of existing services

Before commencing with any work in an area, the Contractor shall ascertain the presence and actual position of all services which can reasonably be expected by an experienced and competent contractor to be present on, under, over or within the Site.

Without in any way limiting his liability in terms of the Conditions of Contract in relation to damage to property and interference with services, the Contractor shall, in collaboration with the Engineer, obtain the most up-to-date plans as are available, showing the positions of services existing in the area where he intends to work. Neither the Employer nor the Engineer offers any warranty as to the accuracy or completeness of such plans and because services can often not be reliably located from plans, the Contractor shall ascertain the actual location of services depicted on such plans by means of careful inspection of the Site.

Thereafter, the Contractor shall, by the use of appropriate methodologies, carefully expose the services at such positions as are agreed to by the Engineer, for the purposes of verifying the exact location and position of the services. Where the exposure of existing services involves excavation to expose underground services, the further requirements of subclauses 4.4 and 5.1.2.2 of SABS 1200 D (as amended) shall apply.

The aforesaid procedure shall also be followed in respect of services not shown on the plans but which may reasonably be anticipated by an experienced Contractor to be present or potentially present on the site.

All services, the positions of which have been determined as aforesaid at the critical points, shall henceforth be designated as 'known services' and their positions shall be indicated by the Contractor on a separate set of drawings, a copy of which shall be furnished to the Engineer without delay.

As soon as any service which has not been identified and located as described above is encountered on, under, over or within the site, it shall henceforth be deemed to be a known service and the aforesaid provisions pertaining to locating, verifying and recording its position on the balance of the site shall apply. The Contractor shall notify the Engineer immediately when any such service is encountered or discovered on the Site.

Whilst he is in possession of the Site, the Contractor shall be liable for all loss of or damage as may occur to

(a) known services, anywhere along the entire lengths of their routes, as may reasonably be deduced from the actual locations at which their positions were verified as aforesaid, due cognizance being taken of such deviations in line and level which may reasonably be anticipated, and

(b) any other service which ought reasonably to have been a known service in accordance with the provisions of this clause.

The Contractor shall also be liable for consequential damage in regard to (a) and (b), whether caused directly by the Contractor's operations or by the lack of proper protection.

No separate payment will be made to the Contractor in respect of his costs of providing, holding available on the Site and utilising the said detecting and testing equipment, nor for any costs incurred in preparing and submitting to the Engineer the Drawings as aforesaid. These costs shall be deemed included in the Contractor's other tendered rates and prices included in the Contract.

Payment to the Contractor in respect of exposing services at the positions agreed by the Engineer and as described above will be made under the payment items (if any) as may be provided for in the respective sections of the specifications pertaining to the type of work involved.

SDA 5.4.2 Protection during construction

The Contractor shall take all reasonable precautions and arrange its operations in such a manner as to prevent damage occurring to all known services during the period which the Contractor has occupation and/or possession of the Site.

Services left exposed shall be suitably protected from damage and in such a manner as will eliminate any danger arising therefrom to the public and/or workmen, all in accordance with the requirements of the prevailing legislation and related regulations.

Unless otherwise instructed by the Engineer, no services shall be left exposed after its exact position has been determined and all excavations carried out for the purpose of exposing underground services shall be promptly backfilled and compacted. In roadways, the requirements of subclause 5.9 of SABS 1200 DB should be observed. In other areas compaction is to be to 90% modified AASHTO density.

SDA 5.4.3 Alterations and repairs to existing services

Unless the contrary is clearly specified in the Contract or ordered by the Engineer, the Contractor shall not carry out alterations to existing services. When any such alterations become necessary, the Contractor shall promptly inform the Engineer, who will either make arrangements for such work to be executed by the owner of the service, or instruct the Contractor to make such arrangements himself.
Should damage occur to any existing services, the Contractor shall immediately inform the Engineer, or when this is not possible, the relevant authority, and obtain instructions as to who should carry out repairs. In urgent cases, the Contractor shall take appropriate steps to minimise damage to and interruption of the service. No repairs of telecommunication cables or electric power lines and cables shall be attempted by the Contractor.
Before the commencement of any excavation the Contractor shall confirm the name and telephone number of the relevant officials directly concerned with the known or suspected services, shall acquaint himself with the position of the control points of the services and shall have readily available the equipment necessary to shut-off and isolate any such service. The Contractor shall liaise with the relevant authorities or controlling bodies for the necessary temporary closure of any services during construction.

PSA5.5 DEALING WITH WATER ON THE WORKS

The Contractor's attention is drawn to the fact that, apart from normal dealing with stormwater and seepage water which may influence the construction of the permanent Works, special arrangements and de-watering measures will have to be made to control and/or remove water for the protection of excavations.

PSA5.8 GROUND AND ACCESS TO THE WORKS

Refer also Clause C3.1.4

The Contractor shall provide temporary access to the Works and to the dumping areas/ spoil site, as may be required by him and to the approval of the Employer's Agent.

PSA5.9 WORKMAN'S COMPENSATION ACT

All labour employed on the Site shall be covered by the Workmen's Compensation Act. The Contractor shall pay in full, such amounts, as are due in terms of the Act, including the payment of the necessary levies.

The manner in which Workman's Compensation will be handled, shall be resolved by the Contractor with all the relevant parties at the commencement of the Contract.

SDA 5.7 SAFETY

REPLACE THE CONTENTS OF SUBCLAUSE 5.7 WITH THE FOLLOWING:

"Pursuant to the provisions of the Conditions of Contract, and without in any way limiting the Contractor's obligations thereunder, the Contractor shall at his own expense (except only where specific provision (if any) is made in the Contract for the reimbursement to the Contractor in respect of particular items), provide the following:

(a) Provide to its Employees on the site of the works, all safety materials, clothing and equipment necessary to ensure full compliance with the provisions of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) as amended (hereinafter referred to as the Act) at all times, and shall institute appropriate and effective measures to ensure the proper usage of such safety materials, clothing and equipment at all times;

(b) Provide, install and maintain all barricades, safety signage and other measures to ensure the safety of workmen and all persons in, on and around the site, as well as the general public;

(c) Implement on the site of the works, such procedures and systems and keep all records as may be required to ensure compliance with the requirements of the Act at all times;

(d) Implement all necessary measures so as to ensure compliance with the Act by all subcontractors engaged by the Contractor and their employees engaged on the works;

(e) Full compliance with all other requirements pertaining to safety as may be specified in the Contract.

The Employer and the Engineer shall be entitled, although not obliged, to make such inspections on the site as they shall deem appropriate, for the purpose of verifying the Contractor's compliance with the requirements of the Act. For this purpose, the Contractor shall grant full access to the site of all parts of the site and shall co-operate

fully in such inspections and shall make available for inspection all such documents and records as the Employer's and/or Engineer's representative may reasonably require.

Where any such investigations reveal, or where it comes to the Engineer's attention that the Contractor is in any way in breach of the requirements of the Act or is failing to comply with the provisions of this clause, the Engineer shall, in accordance with the provisions of Clause 5.11.3 (GCC 2025) of the Conditions of Contract, be entitled to suspend progress on the works or any part thereof until such time as the Contractor has demonstrated to the satisfaction of the Engineer, that such breach has been rectified.

The Contractor shall have no grounds for a claim against the Employer for extension of time and/or additional costs if the progress on the works or any part thereof is suspended by the Engineer in terms of this clause, and the Contractor shall remain fully liable in respect of the payment of penalties for late completion in accordance with the provisions of Clause 5.13.1 (GCC 2025) of the Conditions of Contract should the Contractor fail to complete the Works on or before the specified due completion date in consequence of the suspension.

Persistent and repeated breach by the Contractor of the requirements of the Act and/or this clause shall constitute grounds for the Engineer to act in terms of Clause 9.2.1.1 (GCC 2025) of the Conditions of Contract and for the Employer to cancel the Contract in accordance with the further provisions of the said Clause 9.2.1 (GCC 2025)."

ADD THE FOLLOWING SUBCLAUSES TO CLAUSE 5:

SDA 5.9 SITE MEETINGS

The Contractor or his authorised agent will be required to attend regular site meetings, which shall normally be held once a month on dates and at times determined by the Engineer, but in any case, whenever reasonably required by the Engineer. Unless otherwise indicated in the Contract or instructed by the Engineer, such meetings shall be held at the Contractor's offices on the site. At such monthly meetings, matters such as general progress on the works, quality of work, problems, claims, payments, and safety shall be discussed, but not matters concerning the day-to-day running of the Contract.

SDA 6 TOLERANCES

ADD THE FOLLOWING SUBCLAUSE TO CLAUSE 6:

"SDA 6.4 USE OF TOLERANCES

No guarantee is given that the full specified tolerances will be available independently of each other, and the Contractor is cautioned that the liberal or full use of any one or more of the tolerances may deprive him of the full or any use of tolerances relating to other aspects of the work.

Except where the contrary is specified, or when clearly not applicable, all quantities for measurement and payment shall be determined from the 'authorised' dimensions. These are specified dimensions or those shown on the Drawings or, if changed, as finally prescribed by the Engineer, without any allowance for the specified tolerances. Except if otherwise specified, all measurements for determining quantities for payment will be based on the 'authorised' dimensions.

If the work is constructed in accordance with the 'authorised' dimensions plus or minus the tolerances allowed, the calculation of quantities will be based on the 'authorised' dimensions, regardless of the actual dimensions to which the work has been constructed.

When the work is not constructed in accordance with the 'authorised' dimensions plus or minus the tolerances allowed, the Engineer may nevertheless, at his sole discretion, accept the work for payment. In such cases no payment shall be made for quantities of work or material in excess of those calculated for the 'authorised' dimensions, and where the actual dimensions are less than the 'authorised' dimensions minus the tolerance allowed, quantities for payment shall be calculated based on the actual dimensions as constructed."

SDA 7 TESTING

SDA 7.1 PRINCIPLES

SDA 7.2 APPROVED LABORATORIES

REPLACE THE CONTENTS OF SUBCLAUSE 7.2 WITH THE FOLLOWING:

"Unless otherwise specified in the relevant specification or elsewhere in the Project Specification, the following shall be deemed to be approved laboratories in which design work, or testing required in terms of a specification for the purposes of acceptance by the Engineer of the quality of materials used and/or workmanship achieved, may be carried out:

(a) Any testing laboratory certified by the South African National Accreditation Systems (SANAS) in respect of the nature and type of testing to be undertaken for the purposes of the Contract;

(b) Any testing laboratory owned, managed or operated by the Employer or the Engineer;

(a) Any testing laboratory established and operated on the Site by or on behalf of the Employer or the Engineer.

(d) Any other laboratory that the Engineer approves in his absolute discretion."

SDA 8 MEASUREMENT AND PAYMENT

SDA 8.1 MEASUREMENT

SDA 8.1.1 Method of measurement, all sections of the Schedule

IN THE SECOND LINE OF SUBCLAUSE 8.1.1, AFTER THE WORDS" standardized specification or in" *ADD "BETWEEN THE WORDS* "specification" *AND* "the following", *INSERT THE WORDS"* the measurement and payment clause of the standard specification, particular specification or".

DELETE THE WORDS "and South West Africa".

SDA 8.1.2 Preliminary and General item or section

SDA 8.1.2.1 Contents

REPLACE THE LAST SENTENCE OF SUBCLAUSE 8.1.2.1(b) WITH THE FOLLOWING:

"Separate items will be scheduled to cover the fixed, value-related and time-related components of the Contractor's preliminary and general costs."

SDA 8.1.2.2 Tendered sums

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"Except only where specific provision is made in the Specifications and/or the Schedule of Quantities for separate compensation for any of these items, the Contractor's tendered sums under items SDA 8.3 and SDA 8.4 shall collectively cover all charges for:

- Risks, costs and obligations in terms of the Conditions of Contract and of this standardized specification;
- Head-office and site overheads and supervision;
- Profit and financing costs;
- Expenses of a general nature not specifically related to any item or items of the permanent or temporary work;
- providing such facilities on site as may be required by the Contractor for the proper performance of the Contract and for its personnel, including, but without limitation, providing offices, storage facilities, workshops, ablutions, services such as water, electricity, sewage and rubbish disposal, access roads and all other facilities required, as well as for the maintenance and removal on completion of the works of these facilities and cleaning-up of the site of the Contractor's establishment and reinstatement to not less than its original condition;
- Providing the facilities for the Engineer and his staff as specified in the Contract and their removal from the site on completion of the Contract;
- Erection, maintenance and removal of temporary fencing and barricades;
- Dealing with water (Subclause 5.5);
- Access to works (Subclause 5.8); and
- Providing and maintaining the fire-fighting equipment, as well as training the work teams in their use."

SDA 8.2 PAYMENT

SDA 8.2.1 Fixed-charge and value-related items

REPLACE THE CONTENTS OF SUBCLAUSE 8.2.1 WITH THE FOLLOWING:

SDA 8.2.1.1 Fixed-charge items

"Payment of fixed charges in respect of item 8.3.1 will be made as follows:

(a) EIGHTY PER CENT (80%) of the sum tendered will be paid when the facilities have been provided and approved;

(b) The remaining TWENTY PER CENT (20%) will be paid when the works have been completed, the facilities have been removed and the site of the Contractor's establishment has been cleared and cleaned to the satisfaction of the Engineer.

No adjustment will be made to the sum tendered in respect of item 8.3.1 should the value of the works finally executed or the time for completion vary in any way from that specified in the tender.

SDA 8.2.1.2 Value-related items

Payment for the sum tendered under item 8.3.2 will be made in three separate instalments as follows:

(a) The first instalment, which is 40% of the sum, will be paid when the Contractor has fulfilled all his obligations to date under this specification, the General Conditions of Contract and the Contract Data (GCC 2025), and when the value of work certified for payment, excluding materials on site and payments for preliminary and general items, is equal to not less than 5% of the total value of the work listed in the Schedule of Quantities.

(b) The second instalment, which is 40% of the sum, will be made when the amount certified for payment, including retention moneys but excluding this second instalment, exceeds 50% of the tender sum.

(c) The final payment, which is 20% of the sum, will be made when the works have been certified as completed and the Contractor has fulfilled all his obligations to date under this Specification, the General Conditions of Contract and the Contract Data (GCC 2025).

Should the value of the measured work finally completed be more or less than the tender sum, the sum tendered under item 8.3.2 will be adjusted up or down in accordance with the provisions of Clause 6.11. of the Contract Data amended to clause 6.11 of the variation of the conditions of contract, and this adjustment will be applied to the third instalment."

SDA 8.2.2 Time-related items

REPLACE THE CONTENTS OF SUBCLAUSE 8.2.2 WITH THE FOLLOWING:

"Subject to the provisions of subclauses 8.2.4, payment under item 8.4.1 (time-related item) will be made monthly in equal amounts, calculated by dividing the sum tendered for the item by the tendered Contract period in months, provided always that the total of the monthly amounts so paid for the item is not out of proportion to the value of the progress of the Works as a whole."

Notwithstanding the stipulation of Subclause 8.2.2, an approved extension of time will only entitle the Contractor to payment in terms of clause 5.12.3 of GCC 2025.

SDA 8.3 SCHEDULED FIXED-CHARGE AND VALUE-RELATED ITEMS

REPLACE THE CONTENTS OF SUBCLAUSE 8.3.1 WITH THE FOLLOWING:

"SDA 8.3.1 Fixed preliminary and general charges Unit: sum

The sums tendered shall include full compensation for all fixed-charge preliminary and general charges as described in subclause SDA 8.1.2.2. Payment will be made as described in subclause SDA 8.2.1.1.

Payment for "operation and maintenance of facilities for the Engineer", in accordance with Subclause 8.4.2.1 will not be authorized by the Engineer until the name board has been erected and approved.

SDA 8.3.2 Value-related preliminary and general charges Unit: sum

The sums tendered shall include full compensation for all value-related preliminary and general charges as described in subclause SDA 8.1.2.2. Payment will be made as described in subclause SDA 8.2.1.2."

SDA 8.4 SCHEDULED TIME-RELATED ITEMS

REPLACE THE CONTENTS OF SUBCLAUSE 8.4 WITH THE FOLLOWING:

"SDA 8.4.1 Time-related preliminary and general charges Unit: sum

The sum tendered shall include full compensation for all time-related preliminary and general charges as described in subclause SDA 8.1.2.2. Payment will be made as described in subclause SDA 8.2.2."

SDA 8.5 SUMS STATED PROVISIONALLY BY THE ENGINEER

REPLACE THE CONTENTS OF SUBCLAUSE 8.5 WITH THE FOLLOWING:

"SDA 8.5.1 Works executed by the subcontractor

(a) Description of item to which Prime Cost Sum applies Unit: Prov Sum

(b) Charge required by Contractor on subitem (a) above Unit: %

Subitems (a) and (b) will be provided in the Schedule of Quantities for each different Subcontract included in the Contract.

The Contractor shall be reimbursed under subitem (a), in substitution of the respective Provisional Sums (if any) allowed in the Schedule of Quantities, the amounts actually paid or payable by the Contractor to the respective Nominated Subcontractors, in accordance with the provisions of Clause 6.6 of the Conditions of Contract.

The Contractor shall be paid under subitem (b), either:

(a) where the unit of measurement for subitem (b) was specified as being a percentage, the respective percentage, as stated by the Contractor in is tender, of the amount certified by the Engineer for payment under the related subitem (a), all in accordance with the provisions of Clause 6.6.1.2.1 of the Conditions of Contract, or

(b) where the unit of measurement for subitem (b) was specified as being a lump sum, an amount which is in the same proportion to the amount certified for payment under subitem (a) and the tendered lump sum is to the amount of the Provisional Sum stated under subitem (a) in accordance with the provisions of Clause 6.6.1.2.2.

The percentage or sum (as applicable) paid under subitem (b) as aforesaid, shall be deemed to include for full and final compensation to the Contractor for all costs as may be incurred and all charges and profits associated with the engagement, supervision, administration and management of the Nominated Subcontractor required of him in fulfilling its obligations under the Contract as the Principal Contractor."

SDA 8.5.2 Works executed by Nominated Subcontractors

(a) Work to be executed by a Nominated Subcontractor Unit: Prov Sum

(b) Overheads, charges and profit on item (a) above Unit: % or sum

Subitems (a) and (b) will be provided in the Schedule of Quantities for each different Nominated Subcontract included in the Contract.

The Contractor shall be reimbursed under subitem (a), in substitution of the respective Provisional Sums (if any) allowed in the Schedule of Quantities, the amounts actually paid or payable by the Contractor to the respective Nominated Subcontractors, in accordance with the provisions of Clause 45 of the Conditions of Contract.

The Contractor shall be paid under subitem (b), either:

(a) where the unit of measurement for subitem (b) was specified as being a percentage, the respective percentage, as stated by the Contractor in is tender, of the amount certified by the Engineer for payment under the related subitem (a), all in accordance with the provisions of Clause 45.1.2.1.1 of the Conditions of Contract, or

(b) where the unit of measurement for subitem (b) was specified as being a lump sum, an amount which is in the same proportion to the amount certified for payment under subitem (a) and the tendered lump sum is to the amount of the Provisional Sum stated under subitem (a) in accordance with the provisions of Clause 45.1.2.1.2.

The percentage or sum (as applicable) paid under subitem (b) as aforesaid, shall be deemed to include for full and final compensation to the Contractor for all costs as may be incurred and all charges and profits associated with the engagement, supervision, administration and management of the Nominated Subcontractor required of him in fulfilling its obligations under the Contract as the Principal Contractor."

SDA 8.6 PRIME COST ITEMS

REPLACE SUBCLAUSE 8.6 WITH THE FOLLOWING:

"SDA 8.6 PRIME COST SUMS

(a) Description of item to which Prime Cost Sum applies Unit: PC Sum

(b) Charge required by Contractor on subitem (a) above Unit: %

Subitems (a) and (b) will be provided in the Schedule of Quantities for each different item to which a Prime Cost Sum applies.

The Contractor shall be reimbursed under subitem(s) (a) in substitution of the respective Prime Cost Sums included in the Contract, the actual price(s) paid or payable by him in respect of the goods, materials or services supplied, but excluding any charges for the Contractor's labour, profit, carriage, establishment or other charges related to such goods, services or materials.

The Contractor shall be paid under subitem (b), the respective percentage, as stated by the Contractor in his tender, of the amount certified by the Engineer for payment under the related subitem (a). The percentages tendered by the Contractor for each respective subitem (b) included in the Schedule of Quantities shall be deemed to be in full and final compensation to the Contractor in respect of any charge by the Contractor for labour, carriage profit, establishment and for any other charges related to the goods, services or materials supplied under the related subitem (a).

If the Contractor shall have omitted within his tender to insert a tendered percentage under subitem (b), or tendered a zero percentage, the Contractor's tendered rate for subitem (b) shall be deemed to be zero and the Contractor shall not be entitled to any payment under subitem (b).

Note in connection with additional tests required by the Engineer:

When a PC sum is included in the Schedule of Quantities for additional tests required by the Engineer, the Contractor shall be responsible for both the cost of normal testing as described in subclause SDA 8.1.2.2 of the Project Specifications and for the cost of any additional test that indicates that the specifications have not been complied with."

SDA 8.7 DAYWORK

REPLACE THE CONTENTS OF SUBCLAUSE 8.7 WITH THE FOLLOWING:

"Measurement and payment shall be in accordance with the provisions of Clause 6.5.1.1 (GCC 2025) of the Conditions of Contract."

ADD THE FOLLOWING ITEMS:

"SDA 8.9 COMPLIANCE WITH OHS ACT AND REGULATIONS (INCLUDING THE CONSTRUCTION REGULATIONS 2014) Unit: sum

The tendered sum shall include full compensation to the Contractor for compliance with all the requirements of the OHS Act and Regulations (including the Construction Regulations 2014) at all times for the full duration of the Contract, as described in C3.6.1 (for CIDB document format). The successful tenderer shall provide the Engineer with a complete breakdown of this tendered sum.

This sum will be paid to the Contractor in equal monthly amounts subject to proper/substantial compliance."

2) COMPLIANCE WITH ENVIRONMENTAL MANAGEMENT PLAN AND REGULATIONS PRODUCED BY EMPLOYER ……Unit: sum

This sum will be paid to the Contractor in equal monthly amounts subject to proper/substantial compliance.

"SDA 8.10 COMMUNITY LIASON AND COMMUNITY RELATIONS Unit: month

a) A total amount of R 6000.00 is to be paid to the community liaison officer for the duration of the construction of this project.

Add this new clause:

"4.23 Community participation"

Community participation consists of engagement of Project Steering Committees (PSC).

A PSC will be established for the project, by the Ward Councillor.

The functions of the PSC will be to:

- Assist in monitoring the project.
- Ensure that the community provide assistance to the contractor to ensure that he can execute the contract in accordance with the specifications and within time.
- Encourage the community to participate in the Labour Intensive construction.
- Identify skills, skilled personnel and suppliers in the towns.

The PSC will not have the power to:

- Give any instructions to the contractor, except through the engineer.
- Become involved in the daily operations of the contractor or interfere with the contract works.

b) A monthly meeting will be held with the PSC to discuss relevant matters. The site agent and resident engineer will attend the meetings. The contractor will have to report on progress, deviations from the programme, financial matters community related aspects, general problems and co-operation at the meeting. The PSC members will not receive any remuneration for attending, and they must provide their own transport."

c) Payment will be R350.00 per person per sitting.

This sum will be paid to the Contractor in equal monthly amounts subject to proper/substantial compliance."

"SDA 8.11 Training of Targeted Labour

a) The contractor shall provide all the necessary on-the-job training to targeted labour to enable such labour to master the basic work techniques required to undertake the work in accordance with the requirements of the contract in a manner that does not compromise worker health and safety.

b) The cost of the formal training of targeted labour will be funded by the provincial office of the Department of Labour. This training should take place as close to the project site as practically possible. The contractor, must access this training by informing the relevant provincial office of the Department of Labour in writing, within 14 days of being awarded the contract, of the likely number of persons that will undergo training and when such training is required. The employer must be furnished with a copy of this request.

c) The contractor shall be responsible for scheduling the training of workers and shall take all reasonable steps to ensure that each beneficiary is provided with a minimum of six (6) days of formal training if he/she is employed for 3 months or less and a minimum of ten (10) days if he she is employed for 4 months or more.

d) The training will take place within the first two months of commencement of the works.

e) The contractors shall do nothing to dissuade targeted labour from participating in the above mentioned training programmes.

f) An allowance equal to 100% of the task rate or daily rate shall be paid by the contractor to workers who attend formal training, in terms of d) above.

g) Proof of compliance with the requirements of a) to f) above must be provided by the Contractor to the Employer prior to submission of the final payment certificate.

(i)	Technical Training	Prov. Sum
(ii)	HIV/AIDS	Prov. Sum
(iii)	Handling cost and profit in respect subitem B12.04(i) and (ii)	

SDAB EMPLOYER'S AGENT'S OFFICE (SANS 1200 AB)

SDAB3 MATERIALS

SDAB3.1 NAMEBOARDS

Notwithstanding the provision of Sub-clause 3.1, one name board shall be erected and the board shall comply with the format and size to be provided by the Employer's Agent.

This name board shall be erected and maintained at the main service road and entrance to the Site at the main road.

The Contractor shall not erect any signs, notices or advertisements on or adjacent to the Site of Works other than the project nameboard specified herein without the written approval of the Employer's Agent. The Contractor may, when applicable, permit each of his/her Sub-contractors to display one signboard of less than 2 m^2 in size at the Contractor's camp or Site office.

All nameboards must be installed prior to the contractor commence on site.

All nameboards and signboards shall be removed by the end of the Defects Liability Period.

SDAB3.2 OFFICE BUILDING

One office complete with furnishings as specified, must be provided by the Contractor for the Employer's Agent.

Although ski-cabins or similar structures will be acceptable as offices even if they might not comply with the requirements specified for floor area and ceiling height, the use of such structures will be subject to the approval of the Employer's Agent.

The Contractor shall be required to consult with the Employer's Agent prior to the supply and erection of the office.

SDAB3.3 CARPORTS

A carport to provide for two motor vehicles shall be erected adjacent to the Employer's Agent's office for exclusive use. The carport shall have side cladding and shall be constructed in such a way as to shelter the parked vehicles from the prevailing winds, sun and driven rain.

SDAB3.4 ABLUTION AND LATRINE FACILITIES

The Contractor shall, in addition to catering for his/her own staff, provide ablution and latrine facilities adjacent to the Employer's Agent's office for the exclusive use of the Employer's Agent and his/her staff. The facilities shall consist of a shower, hand washbasin and a water born latrine.

The facility shall be clean and maintained in a hygienic condition for the duration of the Contract.

SDAB3.5 HEATING AND COOLING FACILITIES (Sub-clause 3.2(j))

The Contractor shall supply and install in the offices specified under SDAB3.2 an air-conditioning unit with cooling and heating capacity of at least 2 500 k/cal.

SDAB3.6 REFRESHMENTS FOR THE EMPLOYER'S AGENT AND HIS/HER STAFF

Tea and/or coffee shall be provided by the Contractor for Employer's Agent, and the Employer's Agent's staff, at reasonable intervals throughout any working day for the duration of the Construction period.

SDAB4 PLANT

SDAB4.1 TELEPHONE AND FAX (Sub-clauses 4.1 and 5.4)

In terms of Sub-clause 4.1, the Employer's Agent allowed a PC sum of R 1,900 per month for the duration of the Contract to defray costs associated with cellular telephone expenses.

The Contractor shall arrange the provision of the Employer's Agent's on site communication system. All costs and accounts shall be payable by the Contractor for the duration of the construction period.

A WIFI facility with 10 GB per month data shall be provided in the Employer's Agent's Office and the cost of this shall be payable by the Contractor. The Contractor shall be required to bear the cost of transmissions and consumables such as paper, maintenance etc.

Upon completion of the Works the ownership of the WIFI facility shall revert to the Employer.

SDAB4.2 SURVEY EQUIPMENT

The Contractor shall provide the following survey equipment on the Site from the commencement to the completion of the Works:

(a) 1 No. Tachometer capable of reading to 20 seconds of arc with tripod; 1 No. Employer's Agent's automatic level with tripod and staff;

(b) 1 x Tachometer staffs with staff bubble;

(c) 1 x levelling staffs graduated in 5 mm intervals with staff bubble;

(d) 6 No. Ranging rods;

(e) 1 No. 3 m pocket tape

(f) 1 No. 30 m Fibreglass measuring tape;

(g) 1 No. 100 mm steel measuring tape; and

(h) All steel pegs, shovels, picks, etc. which the Employer's Agent's Representative may require for the duration of the Contract.

The instruments may, by arrangement, be shared between the Contractor and the Employer's Agent's Representative.

The Contractor shall maintain the equipment in good working order and keep it clean throughout the contract period. The Contractor shall keep the equipment continuously insured against any loss, damage, or breakage and the Contractor shall indemnify the Employer's Agent and the Employer against any claims in this regard. Upon completion of the Works, the ownership of the equipment shall revert to the Contractor.

SDAB4.3 FIRST-AID KIT AND PROTECTIVE CLOTHING

The Contractor shall provide and maintain, in compliance with the OHS Act and regulations (including the construction regulations 2003), on the Site of Works two first-aid kits to deal with unforeseen accidents and snakebite which may occur during the normal on Site operations.

The Contractor shall provide two sets of safety helmets, safety footwear and rubber boots for the exclusive use of the Employer's Agent and his/her staff.

SDAB5 CONSTRUCTION

SDAB5.1 NAMEBOARDS

Delete the words "on completion of the contract," and substitute it with:

"....by the end of the defects liability period, or at such other earlier time as the Employer's Agent may instruct or approve."

SDAB5.2 SERVICES FOR OFFICE AND ABLUTIONS

The Contractor shall provide, at his/her own cost, a constant supply of potable water and electric power to the Employer's Agent's office and ablutions facility.

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Two survey assistants shall be allocated to the Employer's Agent by the Contractor. The assistants shall be able to read and write either Afrikaans or English and shall be available to the Employer's Agents as assistant's at all reasonable times during the construction period.

SDAB8 MEASUREMENT AND PAYMENT

SDAB8.2.2 Employer's Agent's Office ..... Unit : Sum (Fixed Charge and Time Related Item)

The tendered sum for an office shall include all costs for the installation and maintenance and removal of carports (SDAB3.3), ablutions and latrine (SDAB3.4), heating and cooling facilities (SDAB3.5), refreshments (SDAB3.6), the installation and maintenance of computer facilities (SDAB 4.4), the provision of a first-aid kit and protective clothing (SDAB4.3), and services (SDAB5.2).

SDAB8.2.3 Employer's Agent's WIFI ..... Unit : Sum (Fixed Charge and Time Related Item)

The tendered sum for Employer's Agent's wifi shall include all costs for the installation and maintenance (SDAB 4.1) for the duration of the Contract. The Contractor will be required to bear all costs relating to telephone calls, data use and printing.

SDAB8.2.4 Survey Equipment and Assistants ..... Unit : Sum (Fixed Charge and Time related item)

The tendered sum shall include all costs for the supply and maintenance of the survey equipment (SDAB4.2) and the employment of assistants for the Employer's Agent (SDAB5.5).

SDAB8.2.5 Digital Camera..... Unit : Sum (Prime Cost Item)

The tender sum shall include all costs for the supply, service and maintenance of the camera as specified in SDAB4.5.

SDAB8.2.6 Name Board .....Unit : ProvSum (Fixed Charge and Time related item)

The actual cost to the Tenderer shall include all costs for the supply, maintenance and removal of two nameboards (SDAB3.1) from the provisional sum allowed by the Employer's Agent.

SDC SITE CLEARANCE

SDC 3 MATERIALS

SDC 3.1 DISPOSAL OF MATERIAL

ADD THE FOLLOWING:

"The Contractor shall obtain his own dumping sites for the disposal of material and all transport costs shall be included in the rates tendered for site clearance."

No overhaul will be paid for any spoil material and the Contractor shall allow for all haulage costs in his tendered rates.

SDC 5 CONSTRUCTION

SDC 5.1 AREAS TO BE CLEARED AND GRUBBED

ADD THE FOLLOWING:

"Pipeline routes shall be cleared to a distance of 1,5 m on both sides of the pipeline centre line. Route pegs or markers shall not be destroyed or damaged during clearing operations."

SDC 5.2 CUTTING OF TREES

SDC 5.2.3 Preservation of trees

SDC 5.2.3.2 Individual trees

REPLACE THE LAST SENTENCE WITH THE FOLLOWING:

"An amount of R1 500, 00 will be deducted from moneys due to the Contractor as a penalty for every tree that is damaged or removed unnecessarily."

SDC 5.3 CLEARING

Clearing shall include the loading, removal and disposal of garbage as directed by the Employer's Agent.

SDC 5.5 RECLEARING OF VEGETATION

ADD THE FOLLOWING:

"When areas have to be recleared on the written instructions of the Engineer, such reclearing shall be carried out at the Contractor's own cost and the Contractor is therefore advised not to clear the areas too soon.

SDC 5.10 DEMOLITION OF CONCRETE

The Contractor is to ensure that forces caused by the demolition process do not induce stress on the remaining parts of the structures or on other existing structures that may cause cracking. Use is to be made of suitable

energy absorbing materials during the demolition process. The structures/sections of structures to be demolished are indicated on the drawings. The strength of the existing reinforced concrete is to be expected to be in excess of 30 MPa.

The Contractor may only proceed to cut reinforcing upon written instruction of the Employer's Agent.

The Contractor is to submit a proposed work method and planning schedule for each type of demolition to the Employer's Agent for approval before work commences.

The following types of structures are to be demolished:

- Mass concrete
- Rectangular openings of various sizes in reinforced concrete walls with varying depths – typically the existing sand filter floors.
- Bulk reinforced concrete demolition such as a plinths, sections of structures or complete structures
- The breaking of concrete shall be to lines as indicated on the drawings.

The following methods of demolition will **not** be permitted:

- The use of thermal lancing
- The use of any explosion method
- The use of poisonous chemicals

The following methods of demolition shall be considered **as acceptable**:

- Diamond impregnated wire or blade sawing
- Jack hammers
- Wood peckers or nibblers
- Hydro cutting
- Air cutting
- Any other method as indicated by the Employer's Agent

SDC 5.11 DEMOLITION OF BUILDING WORK

The Contractor is to ensure that the demolition process does not induce stresses on the existing structure that may cause cracking of the concrete. Use is to be made of energy absorbing materials under the demolition area to protect existing concrete surfaces. The building work to be demolished is indicated on the drawings. All material to be stored in a designated store and no materials shall be taken off site without consent from the Employer's Agent or Employer.

SDC 8 MEASUREMENT AND PAYMENT

SDC 8.2 PAYMENT

SDC 8.2.1 Clear and grub

REPLACE THE FIRST LINE WITH THE FOLLOWING:

"The area designated by the Engineer to be cleared and grubbed will be measured in square metre to the nearest square metre"

ADD THE FOLLOWING:

"The rate tendered for clearing and grubbing shall cover the cost of disposal and the total haulage cost of the material off the site as directed in SDC 3.1 and the protection of erf pegs"

ADD THE FOLLOWING ITEMS IN SUBCLAUSE 8.2:

"SDC 8.2.11 Take down and re-erect existing fences Unit: m

The rate shall cover the cost of taking down the fences, coiling wire, sorting, stacking and guarding all materials, the cost of loading, transporting and off-loading such materials, the cost of re-erecting the fence in its original position using the dismantled material, the cost of temporary bracing of the fencing sections not taken down and the cost of appurtenant materials that may be required to restore the fence to its original condition before dismantling.

SDD EARTHWORKS

SDD 2 INTERPRETATIONS

SDD 2.1 SUPPORTING SPECIFICATIONS

REPLACE SUBCLAUSE 2.1.2 *WITH THE FOLLOWING:*

"SDD 2.1.2 Any of the other SABS 1200 specifications may form part of the Contract documents."

SDD 2.3 DEFINITIONS

REPLACE THE WORD AND THE DEFINITION FOR "Borrow" *WITH THE FOLLOWING:*

"**Borrow material**: Material, other than material obtained from excavations required for the works, obtained from sources such as borrow pits or the authorised widening of excavations. 'Borrow' shall have a corresponding meaning."

REPLACE THE DEFINITION FOR "Specified density" *WITH THE FOLLOWING:*

"**Specified density**: The specified dry density expressed as a percentage of modified AASHTO dry density."

REPLACE THE DEFINITION FOR "Stockpile" *WITH THE FOLLOWING:*

"**Stockpile** (verb): The process of selecting and, when necessary, loading, transporting and off-loading material in a designated area for later use for a specific purpose"

ADD THE FOLLOWING DEFINITIONS:

"**Commercial source**: A source of material provided by the Contractor, not the Employer, and including any borrow pit, provided by the Contractor

Fill: An embankment or terrace constructed of material obtained from excavations or borrow pits. In roads it includes the earthworks up to the underside of the selected subgrade level.

Fill (material): Material used for the construction of an embankment or terrace

Roadbed: The natural in situ material on which the fill or, in the absence of fill, the pavement layers are constructed"

Bulk Excavation: “Excavation to the underside of the lowest construction layer in roadways will be considered as bulk excavation”

SDD 3 MATERIALS

SDD 3.1 CLASSIFICATION FOR EXCAVATION PURPOSES

SDD 3.1.1 Method of classifying

ADD THE FOLLOWING:

"The classification of material other than 'soft excavation' shall be agreed upon before excavation may commence.

The Contractor shall immediately inform the Engineer if and when the nature of the material being excavated changes to such an extent that a new classification is warranted for further excavation. Failure on the part of the Contractor to advise the Engineer in good time shall entitle the Engineer to reclassify, at his discretion, such excavated material."
"For trench excavation that is required to be carried out using labour intensive methods, the excavation of material will, for the purpose of measurement and payment, be classified as described above."

SDD 3.2.3 Material suitable for backfill or fill against structures

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"Material used for backfill behind structures shall generally be the material excavated, subject to the following conditions:

(a) The material shall not contain an excessive number of stones retained on a 50 mm sieve;

(b) The material shall not contain large clay lumps that do not break up under the action of the compaction equipment; and

(c) The liquid limit of the material shall not exceed 40, neither shall the PI exceed 18."

SDD 3.3 SELECTION

ADD THE FOLLOWING SUBCLAUSE:

"SDD 3.3.3 Selection in borrow pits and excavations

Approval of a borrow area for a certain purpose does not necessarily mean that all the material in that area is suitable for the specified purpose. What it does mean is that the borrow area contains some suitable material. The onus shall rest on the Contractor to ensure that only material that is indeed suitable is removed and used for the specified purpose.

When the Contractor has to select excavated material for a specific purpose, the above provisions relating to borrow areas shall apply *mutatis mutandis* to excavations.

The Contractor shall not waste or contaminate material that has been selected for a specific purpose."

SDD 4 PLANT

SDD 4.4 DETECTORS

REPLACE THE CONTENTS OF SUBCLAUSE 4.4 WITH THE FOLLOWING:

"The Contractor shall, for the purposes of detecting and locating underground services in accordance with the provisions of subclause 5.4 of SABS 1200 A and subclause 5.1.2 of SABS 1200 D, at his own cost, provide and use detecting equipment which is suitable for the detection of underground cables and pipes."

SDD 5 CONSTRUCTION

SDD 5.1 PRECAUTIONS

SDD 5.1.1 Safety

SDD 5.1.1.1 Barricading and lighting

REPLACE "Machinery and Occupational Safety Act, 1983 (Act 6 of 1983)" *WITH* "Occupational Health and Safety Act, 1993 (Act 85 of 1993)".

SDD 5.1.1.2 Safeguarding of excavations

REPLACE "Machinery and Occupational Safety Act" *WITH* "Occupational Health and Safety Act, 1993 (Act 85 of 1993)".

SDD 5.1.1.3 Explosives

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"The use of explosives is prohibited on this project."

SDD 5.1.2 Existing services

SDD 5.1.2.2 Detection, location and exposure

REPLACE THE CONTENTS OF SUBCLAUSE 5.1.2.2 WITH THE FOLLOWING:

"The exposure by the Contractor of underground services, as required in terms of subclause 5.4 of SABS 1200 A (as amended) shall be carried out by careful hand excavation at such positions and to such dimensions as are agreed to by the Engineer.

Unless otherwise instructed or agreed by the Engineer, no service shall be left exposed after its exact position has been determined and all excavations carried out for the purposes of exposing underground services shall be promptly backfilled and compacted to the following densities:

(a) In roadways: 93% Mod AASHTO density; and

(b) In all other areas: 90% Mod AASHTO density.

Where hand excavations to expose underground services have to be carried out in roadways, the Contractor shall reinstate the road layerworks in accordance with the provisions of subclause 5.9 of SABS 1200 DB.

Payment in respect of exposing the services by means of hand excavation as described above will be made in accordance with subclause SDD 8.3.8.1.

SDD 5.1.2.2 Protection of cables

REPLACE SUBCLAUSE 5.1.2.3 WITH THE FOLLOWING:

"5.1.2.3 Protection during construction

Further to the requirements of subclause 5.4.2 of SABS 1200 A (as amended), major excavating equipment and other plant shall not be operated dangerously close to known services. Where necessary, excavation in close proximity to known services shall be carefully carried out with suitable hand tools, excluding picks wherever their use could damage the services. No additional payment will apply to such more difficult work.

Should any service not being a known service be discovered or encountered during the course of the Contract, the Contractor shall, in addition to complying with the requirements of subclause 5.4.2 of SABS 1200 A (as amended), immediately notify the Engineer thereof and implement such measures as will prevent damage of such service or, if it was damaged in the course of discovery, will prevent and minimise the occurrence of any further damage occurring."

SDD 5.1.2.4 Negligence

DELETE SUBCLAUSE 5.1.2.4.

SDD 5.1.3 Stormwater and groundwater

ADD THE FOLLOWING:

"The Contractor shall, where applicable and at the earliest practicable opportunity, install the permanent drainage specified or shown on the Drawings and shall at his own cost provide the temporary drainage required to protect the works."

SDD 5.1.5 Reinstatement and maintenance of roads

ADD THE FOLLOWING:
"Where crossings have been made, the roads shall be reinstated in accordance with the details specified in subclause 5.9 of SABS 1200 DB."

SDD 5.1.6 Road traffic control

DELETE THE SECOND SENTENCE OF SUBCLAUSE 5.1.6.

SDD 5.2 METHODS AND PROCEDURES

SDD 5.2.2 Excavation

SDD 5.2.2.1 Excavation for general earthworks and for structures

ADD THE FOLLOWING TO PARAGRAPH (b):

"When the nature of the material precludes the above procedure, additional excavations shall be carried out to provide working space for the erection of formwork. The tendered rate for item 8.3.5 will be deemed to include the cost of a working width of 600 mm, but the Contractor may excavate a greater working width at no additional cost to the Employer."

REPLACE THE FIRST SENTENCE OF PARAGRAPH (e) WITH THE FOLLOWING:

"Where excavations have been carried below the authorised levels, the Contractor shall backfill such excavations to the correct level with approved gravel compacted to 90% of modified AASHTO density or to the density of the surrounding material, whichever is the higher density.

Where excavations for structures have been carried out in hard material, the Engineer may direct that over-excavation be backfilled with weak concrete if there is a danger of settlement or differential settlement of the foundations.

Where the sides of excavations against which concrete is to be cast have been over-excavated or have collapsed partially, the Contractor shall retrim the excavations if necessary and, unless other remedial measures are agreed to by the Engineer, shall cast the concrete for the structure, including the additional concrete that may be required as a result of the over-excavation or partial collapse. The cost of the additional concrete or remedial measures shall be for the Contractor's account."

SDD 5.2.2.3 Disposal

REPLACE THE SECOND SENTENCE WITH THE FOLLOWING:

"The Contractor shall provide all necessary spoil sites for the spoiling of all surplus and unsuitable materials and shall make the necessary arrangements with the owner of the site where the material is disposed of, and pay all charges and levies as may be applicable for the use of such spoil sites.

Every spoil site provided by the Contractor shall be approved by the local authority in whose area it is located, and the spoiling shall comply with the applicable statutory and municipal regulations as well as the requirements of the owner of the spoil site.

Payment to the Contractor in respect of locating and making arrangements for suitable spoil sites and spoiling material at the such sites will be made in accordance with the provisions of subclause SDD 8.3.15."

ADD THE FOLLOWING SUBCLAUSE IN SUBCLAUSE 5.2.2:

SDD 5.2.2.4 Selection and stockpiling

Approval or designation of the material in a particular borrow pit or excavation for a particular purpose does not imply that all the material in the borrow pit or excavation is suitable for the particular purpose to which the said approval or designation relates, nor that all material in the borrow pit or source should be used for the particular purpose. The Contractor shall select suitable material from that borrow pit or source, discard unsuitable material and reserve material for other purposes as necessary.

The Contractor shall organise and carry out his operations in such a manner as will prevent the contamination of suitable embankment and backfill material with unsuitable materials. Any excavated material which becomes, in the Engineer's opinion, unsuitable for use in embankments or backfill as a result of contamination, shall be disposed of in a manner acceptable to the Engineer and shall be replaced by the Contractor with materials acceptable to the Engineer, all at the Contractor's cost.

When required, or when ordered by the Engineer, material shall be stockpiled for later use. The additional costs for stockpiling material shall be paid to the Contractor in accordance with the provisions of subclause SDD 8.3.14."

SDD 5.2.5 Transport for earthworks

ADD THE FOLLOWING NEW SUBCLAUSE TO CLAUSE 5.2.5:

SDD 5.2.5.3 Special cases relating to overhaul

When material is excavated and stockpiled on the Engineer's instructions before being reloaded and transported to its point of final use, free-haul shall apply twice, firstly from the point of excavation to stockpile and secondly from stockpile to the point of final use.

SDD 7 TESTING

SDD 7.2 TAKING AND TESTING OF SAMPLES

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"The Contractor shall arrange with the approved independent laboratory engaged by the Contractor in terms of C3.4.2.5 (b) subclause SD 8.2.1 of the Project Specifications to carry out sufficient tests on a regular basis as agreed between him and the Engineer to determine whether the degree of compaction, and, where applicable, the quality of materials used, comply with the Specifications and shall submit the results of these tests to the Engineer in a form approved by him.

The compaction requirements for fills shall be deemed complied with when at least 75% of the dry-density tests on any lot show values equal to or above the specified density and when no single value is more than five percentage points below the specified value."

SDD 8 MEASUREMENT AND PAYMENT

SDD 8.3 SCHEDULED ITEMS

SDD 8.3.1 Site preparation

REPLACE SUBCLAUSES 8.3.1.1 AND 8.3.1.2 WITH THE FOLLOWING:

"Where site preparation such as clearing, grubbing, the removal of large trees or the removal and stockpiling of topsoil is required, the provisions and scheduled items of SABS 1200 C shall apply."

SDD 8.3.2 Bulk excavation

REPLACE THE CONTENTS OF ITEM WITH THE FOLLOWING:

"(a) Excavate in all materials and use for embankment or backfill as ordered, from:

(1)	Necessary excavations	Unit: m³
(2)	Designated borrow pits	Unit: m³
(3)	Commercial sources	Unit: m³

The unit of measurement shall be the cubic metre measured in place in accordance with subclause 8.2 of SABS 1200 D.

Separate items will be scheduled for embankments and backfills for different parts of the works.

The tendered rates shall cover the cost of complying with all the precautions required in terms of subclause 5.1 of SABS 1200 D (as amended), in addition to the cost of excavating in all materials, basic selecting, loading, transporting within the applicable free-haul distance, off-loading, spreading or backfilling, watering, compacting, final grading, complying with the requirements for tolerances, providing for testing, finishing and tidying, all in accordance with the specifications.

In addition to the aforegoing, the tendered rate for subitem (b) shall further include for the costs of royalties (if applicable), whilst the tendered rate for subitem (c) shall also include for the costs of finding a source of suitable material, for making arrangements with the owner of the source, for procuring the material, for the payment of all requisite royalties, charges or damages, and for transporting the material to the site regardless of the distance involved. No payment will be made for the removal of overburden or stockpiling at the commercial source and no extra over payment shall apply for excavating in intermediate, hard or boulder material."

(b) Excavate in all materials and dispose Unit: m³

The unit of measurement shall be the cubic metre of material excavated, measured in place in accordance with subclause 8.2 of SABS 1200 D.

The tendered rates shall cover the cost of complying with all the precautions required in terms of subclause 5.1 of SABS 1200 D (as amended), in addition to the cost of excavating, basic selecting, loading, transporting within the applicable free-haul distance, off-loading at the spoil site, maintaining and finishing the spoil site, all in accordance with the specifications.

Extra over subitems SDD 8.3.2(a)(1), SDD 8.3.2(a)(2) and SDD 8.3.2(b) for:

(1)	Intermediate excavation	Unit: m³
(2)	Hard rock excavation	Unit: m³
(3)	Boulder excavation, Class A	Unit: m³
(4)	Boulder excavation, Class B	Unit: m³

The rate shall cover the additional cost of the operations enumerated in subclauses 8.3.2.(a) and 8.3.2.(b) above for any portion of the excavation that is classified as intermediate, hard rock, boulder excavation class A or boulder excavation class B as applicable."

SDD 8.3.4 Importing of materials

DELETE SUBITEM (a) OF 8.3.4.

SDD 8.3.6 Overhaul

ADD THE FOLLOWING:

"No overhaul shall apply to material from commercial sources or to material disposed of on sites provided by the Contractor or disposed of by other means employed by the Contractor."

SDD 8.3.8 Existing services

SDD 8.3.6 Location

REPLACE ITEM 8.3.8.1 WITH THE FOLLOWING:

"8.3.8.1 Hand excavation for locating and exposing existing services:

(a)	In roadways	Unit: m³
(b)	In all other areas	Unit: m³

The unit of measurement shall be the cubic metre of material excavated, measured in place according to the authorised or actual dimensions of the excavation, whichever is the lesser.

The tendered rates shall cover the cost of excavating in all materials by means of hand tools within authorised dimensions and at locations approved by the Engineer in accordance with the requirements of subclause SDA 5.4.1 for all precautionary measures necessary to protect the services from damage during excavation and backfilling, and for subsequent backfilling and compacting. Compaction of material in all areas except in roadways shall be to 90% of the modified AASHTO density.

The tendered rate for hand excavation in roadways shall include compensation for compacting excavated or selected backfill material to 93% of modified AASHTO density. Reinstating layerworks and surfacing shall be measured and paid for in terms of SABS 1200 DB.

The tendered rates shall also include for keeping excavations safe, for dealing with surface and subsurface water, for removing surplus excavated material from the site, for transporting all material within the free-haul distance,

and for supplying adequate supervision during both excavation and backfilling operations. Overhaul, if applicable, will be measured and paid for in terms of SABS 1200 DB."

SDD 8.3.10 Topsoiling

CHANGE THE UNIT TO "m³" *AND REPLACE THE CONTENTS OF THIS ITEM WITH THE FOLLOWING:*

"The unit of measurement shall be the cubic metre and the quantity shall be calculated from the authorised dimensions.

The tendered rate shall include loading of the topsoil from stockpiles, transporting it for the free-haul distance, and off-loading, spreading, shaping and lightly compacting the topsoil."

SDD 8.3.12 Road traffic signs and markings

REPLACE THE WORD "Separate" IN THE FIRST SENTENCE OF ITEM 8.3.12 WITH THE FOLLOWING:

"Where the Engineer requires the provision of road traffic signs and/or road markings and/or any other measures additional to those to be provided by the Contractor in accordance with subclause 5.1.6, separate …".

ADD THE FOLLOWING ITEMS IN SUBCLAUSE 8.3:

"**SDD 8.3.14 Extra over items PSD 8.3.2.(a)(1) and PSD 8.3.3 for temporary stockpiling**..... Unit: m³

The unit of measurement shall be the cubic metre of material from necessary excavations, temporarily stockpiled by the Contractor on the instructions of the Engineer, before being used in embankments or backfill. Measurements shall be taken in place in compacted embankment or backfill as the case may be.

The tendered rate shall include for the costs, additional to those provided for in PSD 8.3.2(a)(1) and PSD 8.3.3, of off-loading, forming and maintaining the stockpile for as long as is required, reloading and transporting within the applicable free-haul distance from the stockpile.

Payments to the Contractor under this item will only be made in respect of that material stockpiled on the instructions of the Engineer (which instruction shall state specifically that payments for such stockpiling will be paid for under this item) and no payments will be made to the Contractor under this item in respect of materials stockpiled by the Contractor on his own volition, nor for materials necessarily stockpiled by the Contractor in consequence of the sequence of operations adopted by him in the course of executing the works, whether such stockpiling was avoidable or otherwise.

SDD 8.3.15 Extra over items PSD 8.3.2(b) and PSD 8.3.3 for disposing of spoil material on a site provided by the Contractor.....Unit: m³

The unit of measurement shall be the cubic metre measured in accordance with subclause 8.2 of SANS 1200 D of surplus and/or unsuitable material disposed of, on the instruction of the Engineer,

at a spoil site or spoil sites provided by the Contractor.

The tendered rate shall include full compensation for the additional cost of providing a spoil site or other means of disposing of surplus spoil material, for transporting the material regardless of the distance involved, for acceptance charges for such material and for all other incidental costs to dispose of the spoil material.

SDD 8.3.16 **Retaining Wall Rock Face blocks** .....Unit: m²

The unit of measurement is the square meter of exposed face of Retaining Wall Rock Face blocks, placed in position as shown on the drawings. The height will be measured vertically and not on the slope of the blocks. With the following dimensions
W=350mm x L=400mm x H=225mm

The tendered rate shall include full compensation for procuring, furnishing, transporting, handling and placing all materials, including the granular material between the concrete blocks, and incidentals required to place the blocks in position."

SDDB EARTHWORKS (PIPE TRENCHES)

SDDB 3 MATERIALS

SDDB 3.5 BACKFILL MATERIALS

ADD THE FOLLOWING PARAGRAPHS TO SUBCLAUSE 3.5:

"(c) Cement-stabilized backfilling

Backfilling shall, where directed by the Engineer, be stabilized with 5% cement. The aggregate shall consist of approved soil or gravel containing stones not bigger than 38 mm and with a plasticity index not exceeding 10.

The soil or gravel shall be mixed with 5% cement and shall be compacted in layers of 100 mm thick to 90% of modified AASHTO density.

(d) Soilcrete backfilling

The aggregate for soilcrete shall be mixed with 5% cement and shall consist of approved soil or gravel containing stones not bigger than 38 mm and with a plasticity index not exceeding 10.

The soil or gravel shall be mixed in a concrete mixer with the cement and enough water to acquire a consistency that allows the mixture to be placed with vibrators to fill all voids between the pipe and the sides of the trench. Shuttering shall be used where necessary."

SDDB 3.7 SELECTION

REPLACE THE SECOND AND THIRD SENTENCES OF SUBCLAUSE 3.7 WITH THE FOLLOWING:

“The Contractor is required to use selective methods of excavation. The Contractor shall selectively remove and keep separate the sandy materials from unsuitable material and place it adjacent to the trench for reuse as backfill, selected fill, selected granular material or for other use as ordered by the Engineer.”

ADD THE FOLLOWING AT THE END OF SUBCLAUSE 3.7:

“Material which, in terms of Subclause 6.2 of SANS 1200 D or Subclause 6.1 of SANS 1200 LB, is too wet for immediate use in the trench (but which is otherwise suitable) will not be regarded as “unsuitable” material and, if so ordered by the Engineer, the Contractor shall spread such material in a suitable area until it has dried sufficient for later use. Should the material which is replaced in the trench become too wet again, due to the fact that the Contractor made insufficient provision for the handling and removal of groundwater in accordance with Subclause 5.5 of SANS 1200 A, the Contractor shall replace the material at his own cost with material which is, in the opinion of the Engineer, suitable.

When preparing his programme and construction methods, the Contractor shall make allowance for selective excavation and the handling and drying out of materials which is too wet for immediate use.”

SDDB 5 CONSTRUCTION

SDDB 5.1 PRECAUTIONS

SDDB 5.1.3 Accommodation of traffic and access to properties

*REPLACE THE SEMICOLON AND THE WORD "*and" *AT THE END OF SUBCLAUSE 5.1.3(a) WITH A FULL STOP AND REPLACE ITEM (b) WITH THE FOLLOWING:*

"(b) Where necessary to achieve compliance by the Contractor with his obligations to provide and maintain pedestrian and vehicular access to properties affected by the works, the Contractor shall construct and maintain to the satisfaction of the Engineer, such temporary access roads around, and/or steel or timber bridges over excavations in roads, pavements, entrances or accesses to properties.
Temporary pedestrian access bridges shall be at least 1,2 m wide and temporary access bridges for vehicles shall be at least 3,6 m wide. All temporary access bridges shall be fitted with handrails as well as protective mesh fencing on both sides.

On completion of the work, the Contractor shall dismantle and remove all such temporary constructions and reinstate these areas to their former condition.

Except only where the Engineer has included in the Schedule of Quantities, particular payment items specifically therefor, the Contractor will not be paid directly for the construction and maintenance of temporary access roads and/or the provision and maintenance of bridges as aforementioned, and the costs thereof shall be deemed included in the Contractor's tendered rates for excavation."

SDDB 5.1.5 Removal of existing pipelines

Where existing pipes have to be removed, they shall be carefully opened up by machine excavation to 300 mm above the pipes after which the whole pipe shall be fully exposed by means of hand excavation. The excavation width shall comply with subclause 8.2.3.

The pipes shall be removed from the trench in a manner approved by the Engineer, and brought to the surface for inspection by the Engineer.

Pipes that are declared suitable for reuse and pipes declared unfit for reuse shall be dealt with in an applicable manner described in the specifications, or on the Drawings or on the Engineer's instructions, as relevant."

SDDB 5.4 EXCAVATION

ADD THE FOLLOWING:

"Except where otherwise specified, trenches shall be of such a depth that the minimum cover over the pipes shall be 700 mm except at road-crossings where the minimum cover shall be 1 000 mm."

Should the Contractor detect areas where the cover is doubtful, he shall report this immediately in writing to the Engineer, before any pipes are laid, so that remedial steps can be taken.

The Contractor shall exert maximum caution in excavating alongside or near existing services, pipelines, buildings or structures. The Contractor shall use non-explosive methods for the excavation of hard rock in these cases and where instructed by the Engineer (see SDD 5.2.2.5)."

SDDB 5.6 BACKFILL

SDDB 5.6.3 Disposal of soft excavation material

REPLACE THE WORDS "unless otherwise required in the project specification." *AT THE END OF SUBCLAUSE 5.6.3 WITH:*

"… or to spoil in accordance with the requirements of subclause SDD 5.2.2.3, as instructed by the Engineer."

ADD THE FOLLOWING NEW SUBCLAUSES IN CLAUSE 5:

"SDDB 5.11 UNSTABLE TRENCH BOTTOM

The Engineer may, upon consideration of the condition of the trench bottom, particularly with regard to the properties of the soil materials, order the use of a crushed stone layer in order to provide a stable platform for placing of the pipe bedding and laying the pipe in certain sections of the trenches. The stone layer shall consist of 19 mm single-sized crushed stone, and shall have a specified thickness of 150 mm over the specified minimum base width.

Should the material in the trench bottom or the bedding material be of such a nature that it can penetrate the stone layer, the Engineer may instruct the Contractor to enclose the stone layer completely within a geotextile filter blanket (Kaymat U14 or equal approved), which shall have overlaps of at least 200 mm.

SDDB 5.12 DEPOSITING MATERIAL EXCAVATED FROM TRENCH

Unless otherwise ordered by the Engineer, all excavated material shall be kept within 5 m of the pipeline centreline. The toe of the bank of excavated material shall be trimmed well back from the edge of the trench so as to leave a minimum 0,6 m clearance between the toe of the bank and the edge of the trench. The Contractor shall keep this strip clear of excavated material at all times.

The Contractor shall take steps to avoid burying or contaminating topsoil which shall be set aside for replacing, as far as practical, on the surface from which it was excavated.

SDDB 5.13 CLEANING UP AS WORK PROCEEDS

The Contractor shall complete all backfilling, trimming, levelling and cleaning up of the Site as work proceeds. This work shall not lag by more than 1 km behind the pipelaying team."

SDDB 8 MEASUREMENT AND PAYMENT

ADD THE FOLLOWING TO SUBCLAUSE 8.1 AND AMMEND AS STATED:

"SDDB8.1 Basic principles

In Subclause 8.1.2(c), amend the last sentence to read:

The ground surface will be that existing after any bulk excavation has been carried out and before any embankment has been constructed, unless a portion of the embankment has to be constructed in order to achieve an acceptable cover over a pipe that is to be installed, in which case, measurement will be made from the level of embankment that produces an acceptable minimum cover over the pipe."

SDDB 8.3 SCHEDULED ITEMS

SDDB 8.3.2 Excavation

(a) Excavate in all materials, for trenches, backfill compact and dispose of surplus material

*REPLACE "*of 1,0 m" *IN THE FIRST SENTENCE OF 8.3.2(a) WITH:*

"as specified in the Schedule of Quantities."

(b) Extra over item (a) above for:

ADD THE FOLLOWING AT THE END OF THE EXISTING SUBITEM 2:

"No payments will be made under subitems (1) and (2) in respect of any materials measured and paid for under subitem 3 below."

AND ADD THE FOLLOWING NEW SUBITEMS TO SUBCLAUSE 8.3.2(b), AFTER NEW SUBITEM 2:

"(3) Hand excavation where ordered by the Engineer in:

(a) Soft material Unit: m³

(b) Intermediate material Unit: m³

(c) Hard material Unit: m³

The unit of measurement shall be the cubic metre of material, measured in place according to the authorised dimensions, which was excavated by hand on the specific prior written instructions of the Engineer; provided always that the Engineer's said instruction shall have stated that measurement and payment for such hand excavation will be in accordance with this item.
The tendered rate shall include full compensation for the additional cost, effort and time resulting from excavating in the respective materials using hand methods only.

The Engineer shall not be obliged to authorise payment under this item in respect of any hand excavation carried out (whether ordered in writing or otherwise), which hand excavation was in any case necessary to achieve compliance by the Contractor with his obligations under the Contract to

(i) utilise construction appropriate to the nature of the specific parts of the works; and/or

(ii) protect existing structures and/or services; and/or

(iii) comply with all prevailing legislation and regulations.

(4) Backfill stabilized with 5% cement where directed by the Engineer Unit: m³

The unit of measurement shall be the cubic metre of backfill material, measured in place after compaction according to the authorised dimensions, which was stabilized on the Engineer's instructions in accordance with subclause SDDB 3.5(c).

The tendered rate shall include full compensation for supplying the cement and for selecting, mixing, backfilling and compacting the stabilized material.

In the case of Road Construction, the material should be stabilised to 90% of modified AASHTO density.

(5) Soilcrete backfill where directed by the Engineer Unit: m³

The unit of measurement shall be the cubic metre of soilcrete placed on the Engineer's instructions in accordance with subclause SDDB 3.5(d), measured in place according to the authorised dimensions.

The tendered rate shall include full compensation for supplying the cement and for selecting, mixing and placing the soilcrete as well as for the cost of shuttering if required."

ADD THE FOLLOWING SUBITEMS IN 8.3.2 AFTER SUBITEM 8.3.2(c):

"(d) Excavate in all materials for stormwater inlet and outlet structures and for manholes, catchpits, valve chambers and the like,irrespective of depth, and backfill around structures: Unit: m³

The unit of measurement shall be the cubic metre of material excavated, measured in place according to the authorised dimensions, and excluding the volume of material excavated and paid for under subitem (a).

The tendered rate shall include for the costs of excavating in all materials, backfilling, compacting, trimming and tidying the final surface around the structure, disposing of surplus and unsuitable materials within the free-haul distance and, where applicable, selecting and keeping separate, excavated material suitable for use as backfill.

(e) Excavate open drains in all materials Unit: m³

The tendered rates shall include full compensation for excavating in all materials within the dimensions specified or authorised by the Engineer and to the specified lines and profiles, for the disposal of surplus and unsuitable excavated material where applicable, and in the case of item (d), for backfilling with suitable approved material compacted to 90% of modified AASHTO density around the structures.

(f) Extra over subitems (d) and (e) for excavating in:

(1) Intermediate material Unit: m³

(2) Hard rock material Unit: m³

Measurement and payment shall be in accordance with the provisions of 8.3.2(b) of SABS 1200 D (as amended)."

ADD THE FOLLOWING SUBCLAUSE AFTER SUBCLAUSE 8.3.2(c):

SDDB 8.3.3 Excavation ancillaries

SDDB 8.3.3.3 Compaction in road reserves

REPLACE THE HEADING OF THIS SUBITEM WITH THE FOLLOWING:

"SDDB 8.3.3.3 Compaction in road crossings"

REPLACE THE SENTENCE, "The volume will be measured as specified in 8.2.2, 8.2.3 and 8.3.3.1", *WITH THE FOLLOWING:*

"To determine the volume in the case of gravel roads, the depth will be measured from the underside of the gravel wearing course to the top of the fill blanket, and in the case of bitumen roads, from the underside of the subbase to the top of the fill blanket.

The rest of the trench shall be backfilled as specified in clauses 5.9.3, 5.9.4 and 5.9.5, as applicable, and payment will be made under item 8.3.6.1."

SDDB 8.3.3.4 Overhaul

REPLACE THE CONTENTS OF THIS ITEM WITH THE FOLLOWING:

"Measurement and payment shall be in accordance with subclause SDD 5.2.5."

SDDB 8.3.7 Accommodation of traffic

REPLACE THE HEADING AND CONTENTS OF ITEM 8.3.7 WITH THE FOLLOWING:

"8.3.7 Accommodation of traffic Unit: sum

The tendered sum shall, (except where particular items are scheduled to cover particular costs) include full compensation for compliance with the requirements of 5.1.3 of SANS 1200 DB (as amended), including the construction and maintenance of bypasses and the use of existing roads as bypasses during the construction period.

It shall also include full compensation for: the provision, maintenance and removal of all traffic control measures, including temporary traffic signs, road markings, lighting, barricading, flagmen and, where necessary, communications equipment to regulate traffic; for the construction of temporary drainage works; for the maintenance of drainage works; and for arrangements for moving and subsequently reinstating services for the purposes of accommodating traffic, attending to traffic problems and complying with the requirements of the Road Traffic Ordinance and the relevant local authorities.

The tendered lump sum shall not be adjusted in the event of any extension of time for completion being granted by the Engineer in accordance with Clause 5.12.1 (GCC 2025).

Payment shall be made in equal monthly instalments over the entire period allowed for completion, provided that where any extension of time for completion is granted, the amount which shall be payable under this item in any subsequent monthly payment certificate shall be the outstanding unpaid amount of the lump sum, divided by the number of months remaining until the due completion date of the Contract, as revised in accordance with the Conditions of Contract."

"SDDB 8.3.8 Crushed stone bedding layer and geotextile blanket

Where the use of a layer of crushed stone in the trench bottom has been authorized by the Engineer, it will be measured by volume calculated according to the length multiplied by the specified thickness and specified minimum base width.

The 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 layer of stone at least the specified thickness over at least the specified width and all related activities in order to produce a stable platform.

Where the Engineer has authorized the use of geotextile filter blanket, this will be measured by area as:

Area = 2 x (specified thickness + minimum base width) x net length.

The rate shall include the cost of supply, placing and losses as a result of overlaps and over-excavated trench widths."

SDG CONCRETE (STRUCTURAL). (SANS 1200 G)

SDG 2Interpretations I

SDG2.1 Definitions. (Subclause 2.3)

Under (a) add:

"Constructional joint: a joint required on account of constraints or convenience in the method of construction and that is not a movement, contraction or expansion joint."

SDG2.2 Exposure condition. (Subclause 2.4.1)

All concrete on the Works shall be as specified for "very severe" exposure condition.

SDG2.3 Strength concrete. (Subclause 2.4.2)

Grade 30 MPa/19 mm means strength concrete grade 30 MPa with 19 mm stone.

SDG2.4 Joints

Notwithstanding Subclause 2.4.3, "designated joints" will only be joints that are shown on the drawings. Any other joints that are required by the Contractor as a result of his construction constraints or for any other reason, whether approved by the Engineer or not, will not be considered to be designated joints as defined in Subclause 2.4.3, i.e. they will be considered to be "non-designated" joints.

SDG3 Materials

SDG3.1 Cement. (Subclause 3.2)

All cement used in the works shall be Portland cement CEM I of strength class 42,5 complying with SANS 50197-1.

SDG3.2 Storage. (Subclause 3.2.3)

Cement shall be used in the order in which it is received.

Unless approved by the Engineer, cement kept in storage for longer than 8 weeks shall not be used in the Works.

Any cement that contains lumps that cannot easily be crumbled to powder between the fingers, may not be used.

SDG3.3 Water. (Subclause 3.3)

Only potable quality water from an approved source may be used for mixing concrete. Water from a river or stream may however be used for curing.

SDG3.4 Aggregates. (Subclause 3.4)

The nominal stone size specified in the concrete grade (e.g. 30 MPa/19 mm) shall mean stone conforming to the grading specified in SANS 1083 for the nearest equivalent size, i.e. 19 mm means stone that complies with SANS 1083 for 19 mm size.

SDG3.5 Concrete using reactive aggregates. (Subclauses 3.2 and 3.4)

The Contractor shall provide the Engineer with sufficient data to enable him to assess the degree of alkali-aggregate reactivity of the aggregates to be used for concrete.

For each delivery of cement or precast concrete units the Contractor shall provide acceptable written evidence that the requirements of this clause are being met.

SDG3.6 Aggregates for grouting. (Subclause 3.4.1)

Notwithstanding the requirements of Subclause 3.4.1, the grading of the fine aggregate (sand) and coarse aggregate (stone or pea gravel) to be used for grouting shall conform to the gradings given in Tables 1 and 2 respectively, below.

TABLE 1 - SAND	
Test sieve nominal aperture size, mm	% Passing (by mass)
9,5	100
4,75	95 - 100
1,18	45 - 65
0,3	5 - 15
0,15	0 - 5

TABLE 2 - STONE OR PEA GRAVEL	
Test sieve nominal aperture size, mm	% Passing (by mass)
9,5	100
4,74	95 - 100
2,36	0 - 5

SDG3.7 Samples. (Subclause 3.4)

At least one month before commencement of concrete work the Contractor shall supply at his own cost representative samples to the Engineer of the aggregates he intends using, together with certificates from an approved laboratory indicating that the aggregates comply with the specifications. Approximately 50 kg of each sample of aggregate shall be supplied.

After approval these samples shall be taken as standard for the agreed aggregates to be used in the Works. If at any time during the course of the Contract the Engineer considers that there has been any deviation from the approved standard the Contractor shall submit further tested samples of material to the Engineer for approval.

SDG3.8 Use of plums. (Subclause 3.4.2)

The use of plums will not be permitted.

SDG3.9 Granolithic screed

Granolithic screed shall consist of:

Cement	1 part by mass
Sand	1, 25 parts by mass
Coarse aggregate	2 parts by mass

The coarse aggregate shall consist of granite or other approved chips which shall pass a 10 mm sieve and be retained on a 5 mm sieve.

The cement/water ratio of the mix shall be at least 2,0.

SDG3.10 Admixtures. (Subclause 3.5.1)

The use of admixtures will be subject to the approval of the Engineer. The information listed in Subclause 3.5.1 shall be provided.

SDG3.11 Joint materials

SDG3.11.1 Waterstops

Waterstops shall be of approved manufacture and of the pattern, material and widths scheduled, specified and shown on the drawings.

Where indicated, PVC waterstops shall be Fosroc "Supercast" range or equal approved. They shall contain no reclaimed PVC. Externally placed waterstops shall be "Supercast Rearguard S" or equal approved.

All intersections between waterstops shall be prepared by mitering and welding/vulcanizing intersection pieces in the factory in accordance with the manufacturer's instructions and to the approval of the Engineer. Only straight lengths of waterstops may be field welded. Alternatively, factory manufactured injection moulded transition pieces may be used to ensure continuity of the profiles.

Joints in PVC shall be heated and pressure shall be applied using the appropriate jigs and tools.

Waterstops shall have eyelets to enable them to be attached firmly to the adjacent reinforcing and in the case of "Rearguard" type waterstops, they shall have cleats.

SDG3.11.2 Fillers

Fillers for movement joints shall be closed cell expanded cross-linked polyethylene with properties equivalent to products manufacturer by Sondor for this purpose. The filler shall have the following minimum densities:

a) Water retaining structures: 110kg/m³
b) All other applications: 35kg/m³

SDG3.11.3 Bondbreaker for contraction joints

The bondbreaker for contraction joints shall be lime wash.

SDG3.11.4 Sealants

The primer for the sealant shall be an approved primer fully compatible with the sealing compound specified below.

All elastomeric sealants shall comply with BS 4254, Type A1 and shall have a movement tolerance of 25%. Only approved materials shall be used.

Sealants shall be a one part medium modulus type based on hybrid silyl modified polyether "Nitoseal MS600" from Fosroc (or equal approved) and shall have been tested to ensure that they are non-toxic and do not impart any taste or odour to or otherwise taint the water.

SDG3.12 Precast paving slabs

The paving slabs shall comply with the requirements of SANS 541, shall be as scheduled and with patterned surface, or similar approved. Samples of the types which the Contractor proposes to use, shall be submitted for approval prior to construction.

SDG4 Plant

SDG4.1 Mixing plant and vibrators. (Subclauses 4.3 and 4.4)

Stand-by mixers and vibrators of adequate capacity and with an independent power unit shall be maintained on site for immediate use in the event of breakdown of the regular mixers or vibrators or failure of the power supply.

SDG4.2 Formwork ties. (Subclause 4.5.3)

The use of sleeves for formwork ties through the walls of water-retaining structures will not be permitted. Ties, when cast in, shall have some form of positive anchorage to prevent any rotation when loosening formwork.

SDG4.3 Formwork: chamfers and fillets

All exposed external angles in concrete work shall have 20 mm x 20 mm chamfers unless otherwise specified or ordered, but the top edge of a slab that is to receive an applied finish shall not be chamfered.

Internal corners in concrete work need not have fillets unless such fillets have been specified on the drawings or ordered by the Engineer.

SDG4.4 Water-bath

A temperature-controlled water-bath with a capacity to cure two hundred cubes shall be provided on site. The water-bath shall be located under cover.

SDG5 Construction

SDG5.1 Reinforcement

SDG5.1.1 Fixing. (Subclause 5.1.2)

Fixing of reinforcing bars by welding and heating of bars will not be permitted.

SDG5.1.2 Spacers

Spacers of approved design include approved plastic or other proprietary spacers, or purpose made precast mortar blocks.

Where mortar blocks are used they shall be properly shaped so as not to slip out of position and shall be made of the same mix as the mortar of the concrete in which they are to be placed. The mortar shall be well compacted by approved means into the moulds to result in blocks with a density of at least 2 300 kg/m^3 and which are free from honeycombing. The mortar blocks shall be cured in water for at least 7 days. Blocks which have not been

manufactured and cured strictly in accordance with these requirements or which are in any other way considered unsatisfactory by the Engineer, will be rejected and shall be removed from the Site.

SDG5.1.3 Cover. (Subclause 5.1.3)

In Subclause 5.1.3(a) amend the words "bar or stirrup" to read: "bar, secondary reinforcement, tie, stirrup, tying-wire knots or wire ends".

Add to Subclause 5.1.3: "Tying wire may not encroach on the specified minimum cover by more than a single strand thickness."

SDG5.2 Formwork

SDG5.2.1 Classification of finishes. (Subclause 5.2.1)
Formwork for formed concrete surfaces against which backfill will be placed shall be rough. Formwork for all other formed surfaces shall be smooth, except where otherwise specified.

SDG5.3 Concrete

SDG5.3.1 General. (Subclause 5.5.1.1)

The concrete mix design for strength concrete must be prepared in an approved laboratory and the results of actual test mixes must be submitted for approval together with 7-day and 28-day strength test results. Special attention is drawn to the fact that the concrete mix must provide a very dense and impervious concrete.

No concrete shall be cast until the mix designs have been approved by the Engineer. The Engineer may call for revised mix designs at any stage during the Contract.

Any mix for use in the wall or floor of a water-retaining structure shall have a water/cement ratio not exceeding 0,5, shall contain not less than 325 kg cement per cubic metre of concrete and the proportions of the various aggregates shall be such as to produce a density of at least 2 400 kg/m^3.

In order to facilitate increasing the workability of concrete in the fresh/plastic state, to ensure watertightness without increasing the water/cement ratio, the Engineer may approve the use of an additive.

The workability of concrete shall be assessed by means of the slump test. The slump shall be between 30 and 40 mm.

SDG5-3.2 Chloride content. (Subclause 5.5.1.4)

With reference to Table 4, efflorescence will not be acceptable on any exposed concrete surface.

SDG5.3.3 Durability. (Subclause 5.5.1.5)

The water/cement ratio shall be as specified in Table 5.

SDG5.3.4 Prescribed mix concrete. (Subclause 5.5.1.6)

Notwithstanding the requirements of Subclause 5.5.1.6, samples of aggregates will not be made available by the Engineer. The Contractor shall supply aggregates from commercial sources located by him, complying with the requirements of Subclause 3.4.1, for the production of prescribed mix concrete.

Unless otherwise directed by the Engineer in writing, prescribed mix concrete shall be mixed in the following proportions:

Grade	By mass			By volume		
	Cement	Sand	Stone	Cement	Sand+	Stone
30	1	2,2	2,9	1 bag$	0,08 m^3	0,09 m^3
25	1	2,5	3,2	1 bag$	0,09 m^3	0,11 m^3
20	1	2,9	3,6	1 bag	0,11 m^3	0,13 m^3
15	1	3,6	4,2	1 bag	0,14 m^3	0,15 m^3
10	1	4,5	5,0	1 bag	0,17 m^3	0,17 m^3

+ Assuming 5% moisture in sand
$ bag = 50 kg

SDG5.3.5 **Strength concrete**. (Subclause 5.5.1.7)

With the exception of mixes weaker than 15 MPa, all concrete for structural units/the Works shall be considered to be strength concrete in terms of Subclause 5.5.1.7.

Unless otherwise specified on the drawings or in the Bill of Quantities, all structural concrete shall be Grade 30 MPa.

SDG5.3.6 **Batching**. (Subclause 5.5.2)

Batching of strength concrete shall be by mass. Prescribed concrete may be batched by volume.

SDG5.3.7 **Ready-mixed concrete**. (Subclauses 5.5.3.2 and 7.3)

Concrete from a central concrete production facility other than on the construction site will be permitted and, apart from test results in terms of 7.3.1, 7.3.2 and/or 7.3.3, test results obtained by such a production facility as part of its quality control system will be accepted for evaluation in terms of Subclause 7.3.4, provided they are stored and cured on site.

SDG5.3.8 **Casting of concrete in excavation**. (Subclause 5.5.5)

Structural concrete shall not be cast directly against the side of any excavation without the use of formwork unless prior approval has been obtained in writing from the Engineer.

Concrete used in pipe trenches for encasement may be cast directly against the side of the excavation. Concrete for thrust/anchor blocks shall be cast directly against the side of the excavation.

SDG5.3.9 Hot weather conditions. (Subclause 5.5.9.2)

No placing of concrete shall take place if the ambient temperature exceeds 32°C, or is likely to rise to above 32°C during the casting period or within eight hours after casting is completed.

If concrete is to be cast during times of high ambient temperature or hot drying winds, the Contractor shall be responsible for taking the necessary steps to keep the placement temperature as low as possible. Such steps include the spraying of the coarse aggregate with water, the painting of silos with a reflecting aluminium paint, the insulation of tanks and pipelines, and the protection of concrete ingredients against the direct rays of the sun. The area of the pour shall be shaded before and during concreting and the concrete shall be shaded from the time of mixing until eight hours after placing.

Windbreaks shall be erected if necessary.

SDG5.3.10 Prevention and repair of plastic shrinkage cracks

The Contractor shall take whatever measures are necessary to prevent plastic shrinkage cracking in the concrete. Particularly on dry windy days or hot sunny days the Contractor shall make provision for fine spraying of the concrete surface with water within one hour of casting or covering of the concrete with black plastic sheeting. It may be necessary to change the aggregates or the concrete mix proportions.

If plastic shrinkage cracking occurs, the cracks shall be closed up by revibrating the concrete with a poker vibrator, within about three hours of casting. Once the cracks have been closed, the concrete shall be kept thoroughly wet, or covered with plastic sheeting for at least a further three hours.

SDG5.4 Construction joints. (Subclause 5.5.7)

SDG5.4.1 General

The edge of joints, exposed to view in the finished structure, shall be formed with suitable beads to provide a straight edge true to line and level.

All joints, other than expansion, contraction and other movement joints, shall be treated as follows:

As soon as practical, but not before 15 hours after placing, the construction joint surface shall be prepared to receive fresh concrete. This preparation, as specified in 5.5.7.3(a) to (d), shall be such as to remove all laitance or inert and strengthless material which may have formed and the specified chipping or sand blasting shall be such as to produce a roughened surface all over.

When concreting is interrupted concrete surfaces shall be protected from the sun as specified in Subclause 5.5.8(d) or by means of hessian kept damp until concreting is resumed.

All constructional joints (see SDG2-1) (both designated and non-designated, see SDG2-4), (i.e. all joints other than movement, contraction and expansion joints) shall be dealt with as specified in Subclause 5.5.7.3.

Unless construction joints between designated joints shown on the drawings are authorized by the Engineer in writing, concrete in the floor and wall shall be cast continuously between the designated joints shown on the drawings.

SDG5.4.2 Formed joints. (generally vertical or near vertical)

Formed joints will be considered to be designated joints as defined in Subclause 2.4.3. (The forming of a straight edge to a construction joint as specified in SDG5-4.1 does not constitute a formed joint).

Each joint shall be formed as shown on the drawings, complete with shear key rebates, waffle formwork, V--feature, waterstops, "Flexcell" or equal approved joint filler, dowel bars and their PVC tubes, etc. as indicated.

SDG5.4.3 Non-designated joints

Any non-designated joints shall be identical to designated joints, as shown on the drawings, which would be used in similar positions and perform the same function.

SDG5.4.4 Joints between footings or floors and walls or columns

Construction joints between foundations, footings or floors and walls, columns or piers connected to them, shall not be made flush with the supporting surface, but shall be made at a distance above the footing or floor shown as on the drawings or approved by the Engineer. The "kicker" shall be cast as an integral part of the foundation, footing or floor.

SDG5.5 Curing and protection. (Subclause 5.5.8)

SDG5.5.1 Horizontal surfaces

Horizontal and near horizontal surfaces shall be treated in accordance with Subclause 5.5.8.

Other surfaces of the concrete shall be treated with a curing compound complying with SDG5-5.3.

SDG5.5.2 Formed surfaces

In order to improve the effectiveness of the curing treatment, the specified minimum time for the removal of the formwork shall be four days.

SDG5.5.3 Curing compound

The use of membrane curing compounds will be allowed on vertical faces or steeply inclined faces (i.e. steeper than 45° to the horizontal) of cast in situ members of the structures subject to the Contractor producing sufficient, satisfactory cube crushing strength test results where the crushing strength of cubes which have been cured with the proposed curing membrane and left exposed to the elements are compared with those of an equal number of water cured cubes. The crushing strength of cubes cured with the proposed membrane shall be at least 85% of the crushing strength of the water cured cubes.

Before any membrane curing compound is used, each batch shall be tested on a trial surface to ensure that it forms a satisfactory membrane, and any compound which is unsatisfactory in the opinion of the Engineer, shall be rejected. Curing membranes will be disallowed if permanent discolouration of the concrete takes place. Surfaces where curing membranes are used shall be treated in such a manner that the final concrete texture and colour blends in with the rest of the concrete work. Furthermore, the Engineer shall, at his discretion, require the Contractor immediately to adopt an effective alternative means of curing any area of the structure to which a membrane has been applied which, in the opinion of the Engineer, is unsatisfactory. The curing compound used shall be to the approval of the Engineer. Wax based curing compounds will not be permitted.

The curing compound shall be applied immediately as formwork is progressively stripped or, in the case of unformed surfaces, when the concrete has taken its initial set. It shall preferably be applied by spraying and the rate of application shall be strictly in accordance with the manufacturer's recommendations. A method of monitoring the area to which curing compound has been applied and the application rate shall be as approved by the Engineer and rigidly applied by the Contractor.

Surfaces of joint rebates, where elastomeric sealant is to be applied, shall be protected from contamination by curing compound by the use of masking tape.

SDG5.6 Concrete surfaces. (Subclause 5.5.10)

SDG5.6.1 Screeded finish

After placing and compacting, the concrete on a top (unformed) surface shall be struck off with a template to the designated grades and tamped with a tamping board to compact the surface thoroughly and to bring mortar to the surface, leaving the surface slightly ridged but generally at the required elevation. No mortar shall be added, and noticeable surface irregularities caused by the displacement of coarse aggregate shall be made good by re-screeding after the interfering aggregate has been removed or tamped.

SDG5.6.2 Wood-floated finish. (Subclause 5.5.10.1)

Where wood-floating is ordered or scheduled, the surface shall first be given a finish as specified in SDG5-6.1 Subclause 5.5.10.1 and, after the concrete has hardened sufficiently, it shall be wood-floated, either by hand or machine, only sufficiently to produce a uniform surface free from screeding marks.

SDG5.6.3 Steel-floated finish

Where steel-floating is specified or scheduled, the surface shall be treated as specified in SDG5-6.1 except that, when the moisture film has disappeared and the concrete has hardened sufficiently to prevent laitance from being worked to the surface, the screeded surface shall be steel-trowelled under firm pressure to produce a dense, smooth, uniform surface free from trowel marks.

SDG5.6.4 Power-floated finish

Where power floating is specified or scheduled the surface shall be treated as specified in SDG5-6.1 except that when the moisture film has disappeared, and the concrete has hardened sufficiently to prevent laitance from being worked to the surface, the screeded surface shall be power floated to produce a dense, smooth and uniform surface free of all trowel marks. In corners and areas of restricted access the concrete surface shall be finished by steel floating in accordance in SDG5-6.3.

The timing of power-floating is critical to its success. Power-floating shall not commence until the concrete can support the weight of a man without indentation and until the moisture sheen has disappeared. Thus several hours will have to elapse after concreting has been completed before this operation can commence. Night work may therefore be required.

The main objective of power floating the mortar skim on the no-fines underdrainage layer is to achieve a plane, smooth surface. This need not be dense.

SDG5.6.5 Broom-swept finish

Where broom-swept finish is specified, the surface shall be treated as specified in SDG5-6.2 and thereafter swept transversely (to the direction of the roadway paving) with a stiff bristle broom to produce an approved non-skid finish.

SDG5.6.5 Granolithic screeds

SDG5.6.5.1 General

Before placing any granolithic screeds the base concrete shall be chipped to expose the aggregate over 100% of the area to be screeded and soaked with water for at least 24 hours.

The base concrete shall be thoroughly cleaned by scrubbing and all standing water removed after soaking. A 1:2 cement/sand grout shall then be brushed into the prepared surface followed by the granolithic screed before the grout sets. The granolithic screed shall be of the driest feasible consistency with a slump not exceeding 50 mm and shall be formed true to profile and shape as required and shown on drawings. Before placing granolithic screed against an adjacent band of granolithic screed the edge of the latter shall be prepared by chipping back to firm material, wire brushing and brushing with grout as for the base concrete.

Granolithic screed shall be compacted to remove all air and shall be screeded and finished with a steel trowel to Degree of Accuracy 1.

The trowelling shall be carried out in the following stages:-

a) First - as soon as the granolithic screed has been compacted and screeded.

b) Second - after 2 hours to close the surface and remove laitance.

c) Third - after a further 4 hours.

The time intervals are estimated as appropriate to normal temperature conditions and shall be varied by the Contractor to ensure a smooth dense finish.

Granolithic screed shall be cured as specified in Subclause 5-5.8(b) but shall additionally be protected from direct sunlight and drying winds as it is being placed.

All screeding necessary to accommodate mechanical equipment shall be done under the equipment supplier's supervision and in strict accordance with his instructions. It shall be commenced as soon as the equipment supplier gives notice on completion of erection and shall be finished expeditiously.
The Contractor shall make good any damage to the mechanical equipment resulting from his personnel not following the supplier's instructions. Any spillage on the equipment shall be cleaned off immediately.

SDG5.7 Watertight concrete. (Subclause 5.5.11)

The reservoir floor and walls shall be considered to be watertight concrete and Subclause 5.5.11 shall apply.

SDG5.8 Defects. (Subclause 5.5.14)

All defects shall be repaired as soon as possible after the formwork has been removed and the Engineer has inspected the concrete. A statement of the method to be used for each repair shall be submitted to the Engineer for his approval before any work is carried out. The Engineer may prohibit the further placing of concrete in the particular area concerned until he is satisfied that the repair has been satisfactorily executed.

SDG5.9 Casting in and grouting of equipment, structural steel columns and door frames

For equipment or items supplied by others, the Contractor will be supplied with all holding-down bolts and other details necessary for the construction of holding-down pockets or the fixing of bolts, including templates. For items supplied by the Contractor, the Contractor will be responsible for providing the same (see also SDH5-5.1).

The Contractor shall cast in the holding-down bolts (whether supplied by others or under this Contract), as ordered. No bolts shall be actually cast into the concrete until set up by the Contractor and approved by the Engineer.

After the erection, alignment and leveling of equipment or items supplied by others (eg. mechanical equipment) or by the Contractor (eg. structural steelwork), the Contractor shall grout up the baseplates solidly with "5 star" non-shrink grout, mixed and placed in accordance with the manufacturer's instructions.

SDG5.10 Casting pipes and specials in concrete

Where the pipe or special is supplied by others the Contractor shall provide a box-out in the wall and cast the unit in at a later stage. When constructing such box-outs reinforcement shall not be cut but shall run through the opening. Reinforcement shall be cut and/or bent out at a later stage to suit the item being cast in. After installation of the item the remaining reinforcement shall be bent back in position.

Where entry holes for pipes/specials have been provided in the walls, the Contractor shall be responsible for the concreting in of such pipes/specials regardless of whether or not these have been supplied by himself.

Before commencing the positioning in holes of any pipes/specials the Contractor shall:

a) remove all formwork and boxing remaining in the holes;

b) make any alterations required to the position and shape of the holes and cut reinforcement to suit the item, as directed by the Engineer; and

c) thoroughly scabble the sides of the holes so as to obtain a satisfactory bond surface for the new concrete and treat the surface as specified in Subclause 5.5.7.3.

Immediately prior to concreting being carried out by the placing of mortar and concrete around the pipes, the surface of the existing concrete shall be saturated with water. All surplus water shall be removed and the surface covered with a layer, approximately 12 mm thick, of mortar made of the same mix as the concrete in which the pipes/specials are to be placed.

The concrete ingredients shall be mixed and placed as dry as possible to obtain a dense, waterproof concrete. The concrete shall be carefully worked around the puddle flange, if any, and the pipe barrel or body of the special, and shall be vibrated in layers so as to obviate a falling away from pipe/special surfaces of the concrete already placed. The whole shall, when set, form a dense, homogeneous, and waterproof mass.

SDG7 Testing

SDG7.1 Frequency of sampling. (Subclause 7.1.2)

One sample shall consist of three concrete test cubes.

For each sample taken the position in the structure shall be recorded where the batch represented by that sample is placed.

Sampling of concrete of a particular grade shall be as specified in Subclause 7.1.2 with the following frequency of sampling referred to in Subclause 7.1.2.2 being amended to read as follows:

"A minimum of 4 samples per day of each grade of concrete placed or 6 samples for pours in excess of 10 m^3 shall be taken."

PSG 7.2 Trial panel

At least two weeks before commencing with his casting programme for the wall panels, the Contractor shall cast a trial panel for the approval of the Engineer. If the method of casting produces finishes as specified to approval of the Engineer the Contractor will be permitted to proceed with his casting programme but should the finishes not be to specification the Contractor shall revise his method and/or use alternative materials and cast a further trial panel until satisfactory finishes to the approval of the Engineer are produced.

SDG7.3 Watertightness test

The watertightness of the water retaining structures shall be tested as follows:

The structure shall be filled with clean water and shall be allowed to remain filled for a period of seven days during which time any loss of water which may occur shall be made up by filling the structure to top water level. At the beginning of the test, the water level shall be recorded and the structure shall be left undisturbed for a period of not less than seven days. The structure shall be considered watertight if the drop in level, excluding losses due to evaporation, does not exceed 10 mm in 7 days and no leakage or dampness is apparent.

The evaporation shall be measured by means of the drop in water level due to the evaporation of water in three flat dishes left floating in the structure.

In the event of any leakage or dampness being evident at any stage of the filling or testing or in the event of the Engineer considering the final degree of watertightness to be unsatisfactory, the Contractor when ordered by the Engineer shall discontinue such filling or testing and shall, at his own expense, take approved steps immediately to rectify the leakage and to make the work thoroughly sound to the complete satisfaction of the Engineer. All such work of RETICULATION shall be continued assiduously until a satisfactory test is obtained, which shall prove to the Engineer that watertightness has been obtained.
If required by the Engineer, the structure shall be retested before the expiry of the Defects Liability Period.

The Works will not be certified complete until the structure has been proved by testing to be watertight to the satisfaction of the Engineer.

SDG8 Measurement and payment

SDG8.1 Reinforcement. (Subclauses 8.1.2.2 and 8.1.2.3)

Notwithstanding the method of measuring and paying for reinforcement specified in Subclauses 8.1.2.2 and 8.1.2.3, reinforcement will be measured and paid for as scheduled.

SDG8-2 **Concrete**. (Subclause 8.1.3.3)

The rates for concrete shall also cover:

a) the cost of meeting the requirements of SDG3.6,

b) the cost of the preparation of design mixes by an approved laboratory and submission for approval by the Engineer (see SDG5.3.1),

c) the cost of non-designated joints (see SDG2.4),

d) screeded finish of unformed surface as specified in SDG5.6.1, and

e) wood-floated finish to exposed surfaces as specified in SDG5.6.2.

SDG8.3 **Joints**. (Subclause 8.5)

Only designated joints as shown on the drawings will be measured for payment according to the length of each type of joint constructed (see SDG2.4). The rate shall cover the cost of all materials, labour and plant required to construct each type of joint specified on the drawings, including the cost of all shuttering, treatment of the joint as specified in Subclause 5.5.7.3, the provision of chamfers as specified where concrete is exposed, as well as testing and repairing where necessary.

Non-designated joints will not be measured for payment.

SDG8.4 Formwork

SDG8.4.1 Edges of blinding layer

No separate payment will be made for formwork to the edge of the blinding layer. The rates tendered for concrete to the blinding layer shall cover the cost of such formwork.

SDG8.4.2 Kickers

Formwork to the edges of kickers will be measured as plane (or circular) vertical (not as narrow widths).

SDG8.5 Unformed surface finishes (Subclause 8.4.4)

The rates for unformed surface finishes shall cover the cost of providing the respective surface finish as specified in SDG5-6.

SDG8.6 Holding down bolts

Fixing of holding down bolts will be measured by number. The rate shall cover the cost of all things necessary to ensure that the bolts are effectively and rigidly held in position during casting, complete with sleeved pockets, all as detailed on the drawings.

SDG8.7 Items cast in concrete

The casting in of Items cast in concrete will be measured by number separately for each type of item.

Notwithstanding Subclause 8.2.6, the rate shall cover the cost of fixing in position and casting in the item as construction proceeds, irrespective of whether the Contractor chooses to fix the item in the formwork and cast it in directly or to box out a hole and grout the item in subsequently.

The supply and delivery of the items will be measured and paid separately.

SDG8.8 Grouting

Grouting of base plates and equipment bases will be measured by the volume of grout used.

The rate shall cover the cost of the supply and floating in of grout under the plates to ensure solid and complete filling of the gap.

SDG8.9 Special floor finish

Special floor finish will be measured by area. The rate shall cover the cost of the supply and application of the specified material, complete as specified by the manufacturer and to the approval of the Engineer. Repairs to unsatisfactory work will not be paid for.

SDG8.10 Precast paving slabs

Precast paving slabs will be measured by the area paved.

The rate shall cover the cost of compacting the area, application of weed-killer, supplying, laying and bedding the slabs, grouting the joints and filling any gaps, all as specified.

PSG 8.11 Trial panel

The casting of a trial panel will be measured for payment as a lump sum.

The sum shall cover the cost of casting the trial panel in accordance with the requirements of SDG7.3.

SDG8.12 Watertightness test

The watertightness test will be paid by a lump sum separately for each structure.

The sum shall cover the cost of all labour, equipment and materials to carry out the tests, as specified in SDG7.3, to rectify faults and to achieve a test result to the satisfaction of the Engineer.

The sum shall include for all water required over and above that required for one filling of the water retaining structure.

SDG 8 MEASUREMENT AND PAYMENT

SDG 8.1 MEASUREMENT AND RATES

SDG 8.1.1 Formwork

ADD THE FOLLOWING PARAGRAPHS:

"8.1.1.7 For construction joints at kickers, all additional costs for formwork to edges up to 300 mm high will be deemed to be included in the rates tendered for vertical formwork to sides of walls and will not be measured separately in narrow widths.

8.1.1.8 No formwork will be measured to edges of blinding layers under structures, and the cost thereof (if needed) will be deemed to be included in the rates tendered for concrete in blinding layers.

8.1.1.9 Back-shuttering or formwork to top revealed surfaces of sloping or conical formwork will only be measured to surfaces of over 40° and up to 85° to the horizontal.

8.1.1.10 Formwork to horizontal surfaces in pump stations, valve chambers, manholes or sumps can either be removed through the manhole cover opening or the Contractor may use permanent formwork at his own cost as no claims in this regard will be considered."

SDG 8.1.2 Reinforcement

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"The unit of measurement for steel bars shall be the ton of reinforcement in place, in accordance

with the Drawings or as authorised by the Engineer.

The unit of measurement for welded steel fabric shall be the kilogram of fabric reinforcement in place, and the quantity shall be calculated from the net area covered by the mesh, excluding overlaps.

Clips, ties, separators, stools and other steel used for positioning reinforcement will not be measured, unless these are shown on the bending schedules.

The tendered rate shall include full compensation for the supply, delivery, cutting, bending, welding, placing and fixing of the steel reinforcement, including all tying wire, stools, supports and waste."

SDG 8.1.3 **Concrete**

Delete ", or the plan size of the excavation where additional excavation is provided to facilitate erection of forms" from the second line of paragraph 8.1.3.1(c).

SDG 8.4 **SCHEDULED CONCRETE ITEMS**

SDG 8.4.3 **Strength concrete**

ADD THE FOLLOWING AFTER THE LAST SENTENCE:

"In the case of structural floor screeds, the unit of measurement shall be the square metre and the average thickness and proportions will be stated."

REPLACE "Unit: m³" *WITH* "Unit: m³, m²"

SDG 8.4.4 **Unformed surface finishes**

(b) Steel-floated finishes

ADD THE FOLLOWING SUBITEM:

"(i) Extra over subitem (b) for special finishing tolerances to top of outside ringwalls as specified ..... Unit: m²

The quoted rate shall include full compensation for the additional cost of finishing the ringwalls to closer tolerances as specified on the drawings and in clause PSG 6.2.3 (i)."

REPLACE ITEM 8.4.5 WITH THE FOLLOWING:

"SDG 8.4.5 **Extra over subitems 8.4.2 and 8.4.3 for aggregate of dolomitic origin in concrete mixes**

(a) Coarse aggregate in:

(i) (Class of concrete stated) ..... Unit: m³
(ii) Etc for other classes of concrete

(b) Fine aggregate in:

(i) (Class of concrete stated) ..... Unit: m³

(ii) Etc for other classes of concrete

The unit of measurement shall be the cubic metre of concrete containing the dolomitic aggregate.

The tendered rates shall include full compensation for any additional expense for using aggregate of dolomitic origin."

SDG 8.5 JOINTS

REPLACE "Unit: m" *with* "Unit: m or m²".

ADD THE FOLLOWING ITEMS:

"SDG 8.9 MISCELLANEOUS WORK OTHER THAN METALWORK ..... Unit: as scheduled

Separate items will be scheduled for each type of miscellaneous work.

The tendered rates shall include full compensation for providing all labour, materials and equipment required to carry out the work, for all preparatory work, for constructing the work scheduled in a workmanlike manner and for finishing off and cleaning up when the work has been completed.

SDH STRUCTURAL STEELWORK (SANS 1200 H)

SDH1 STRUCTURAL STEEL

All structural steelwork will be to SANS 1421:1998 Grade 300 WA.

SDH5 CONSTRUCTIONS

SDH5.1.2 SHOP DRAWINGS

The Contractor is to provide the Employer's Agent with shop drawings at least 4 weeks before he/she wishes to commence fabrication. Design drawings and calculations will be available to the Contractor on request after the Contract Commencement date.

The drawings shall be compiled in the official language of the Contract. Approved drawings shall from an integral part of the Contract documents. Drawings not accepted and sign by a professional Employer's Agent, shall not be used by the Contractor on the site of Works for construction purposes or the manufacturing of any member.

The Contractor shall submit completed drawings in accordance with this specification and shall not be entitled to claim for delays resulting for incomplete submittals that may lead to the rejection thereof. The Employer's Agent shall require a period of at least 21 working days for the reviewing of the submittals.

The following submission items are considered to be essential and shall from part of the shop drawing submittals:-

(a) A complete materials list clearly indicting the quantities of each member,

(b) Detail of each member showing the overall dimensions, drilling requirements and nett weight,

(c) Connection details for purlins fixing, bracing, sag rods and all members.

SDL MEDIUM-PRESSURE PIPELINES

SDL 3 MATERIAL

SDL 3.1 GENERAL

ADD THE FOLLOWING PARAGRAPHS TO SUBCLAUSE 3.1:

"Each type of pipe delivered to the Site shall be of a standard length corresponding to the standard lengths offered by the pipe manufacturer in his catalogue, with a maximum permissible variation in length of ± 2%.

A pipe that is shorter or longer than the defined standard will be rejected by the Engineer, except when such non-standard lengths are required in terms of the Contract and have been specifically manufactured or cut as such by the pipe manufacturer or supplier.

SDL 3.1.1 Storage of couplings and fittings and stacking

The Contractor shall provide adequate storage facilities for pipes, couplings and specials to conform to the following:

(a) Couplings and specials

Until required for use, the rubber rings shall be stored in a cool, dark place, away from grease, oil or harmful chemicals. If rubber rings have been tied, they shall be separated a few days before they are required for use in order to eliminate minor impressions which the ties may have caused.

(b) Stacking of pipes and specials

Pipes and specials may be strung out alongside the position installed. The pipes shall be stored off the ground to prevent damage to them. When stacking is necessary, the Contractor shall make the necessary arrangements for stacking areas and shall stack as recommended by the manufacturer.

(c) Valves

All valves shall be stored under cover and shall be stacked off the ground in a manner which will prevent the ingress of dirt and ensure that the valves faces are not damaged."

SDL 3.4 STEEL PIPES, FITTINGS AND SPECIALS

SDL 3.4.2 Pipes of nominal bore up to 150 mm

ADD THE FOLLOWING TO SUBCLAUSE 3.4.2:

Where flanges are required they shall comply with SANS 1123 table 1000 unless otherwise indicated on the Drawings."

SDL 3.4.4 Fittings and Specials

ADD THE FOLLOWING TO SUBCLAUSE 3.4.4:

"The dimensions of the steel specials and fittings shall comply strictly with the details shown on the drawings. All specials shall be suitable for a minimum working pressure of 1,0 MPa.

Standard specials such as tees, flange adaptors, reducers, etc. for PVC-u pipelines shall be fabricated from cast iron (CI). Unless shown on the drawings, all bends shall be PVC-u."

SDL 3.7 OTHER TYPES OF PIPES

SDL 3.7.1 PVC-u pipes

ADD THE FOLLOWING:

"Pipes for watermains shall be PVC-u Class 9 pipes complying with the requirements of SANS 966 Part 1 unless otherwise indicated on the Drawings."

SDL 3.8.2 FLEXIBLE COUPLINGS

ADD THE FOLLOWING AT THE BEGINNING OF SUBCLAUSE 3.8.2:

"Where flexibility is required on pipelines as shown on the drawings, "Klamflex" couplings and "Klamflex" flange adaptor couplings have been specified. Corrosion protection shall be in accordance with the requirements of clause 3.9.4

In certain instances, "slip-on" couplings may be required. These couplings shall only be used when instructed by the Engineer in writing or where the use of such couplings is shown on the drawings. Where the Contractor elects to use "slip-on" couplings for convenience, he shall allow for the cost of such couplings in the rates tendered for pipework.

These couplings shall conform to the following, as applicable:"

ADD THE FOLLOWING NEW SUBCLAUSE AFTER SUBCLAUSE 3.11:

"SDL 3.12 MARKING OF ITEMS

All items delivered on Site shall be clearly marked showing the following:

(a) Nominal diameter,

(b) Class of pipe,

(c) Date of manufacture, and

(d) Reference number as shown in the Schedule of Quantities."

SDL 5 CONSTRUCTION

SDL 5.1 LAYING

SDL 5.1.3 KEEPING PIPELINES CLEAN

ADD THE FOLLOWING AT THE END OF SUBCLAUSE 5.1.3:

"All pipes and specials strung out above ground along the line of the trench shall have both ends closed by means of an adequately fixed plastic cap or other approved material, supplied by the Contractor, in order to prevent the ingress of foreign material.

Unless otherwise directed by the Engineer, the Contractor shall, when filling the pipeline with water for the first time, use suitable pipe pigs driven by a flush of water to aid the cleaning of all sections of the pipeline. If necessary, the pig shall be passed through a section more than once. If necessary, the Contractor shall install special temporary fittings in the pipeline for the insertion and recovery of the pigs. Such temporary fittings shall be removed after the pipeline has been cleaned to the satisfaction of the Engineer. The Contractor shall satisfy the Engineer that every pig inserted into the pipeline is recovered after use."

SDL 5.1.4 Depth and Cover

ADD THE FOLLOWING:

"Water mains shall be laid so that the minimum cover to the top of the pipe barrel from finished surface level is 1,0 m under roads and 900mm elsewhere."

ADD THE FOLLOWING NEW SUBCLAUSES TO SUBCLAUSE 5.1:

"SDL 5.1.5 Alignment

Horizontal and vertical angular deviations at flexible couplings shall be limited to a maximum of 3° for pipelines up to and including 300 mm diameter.

SDL 5.1.6 Minimum clearance between pipelines

The minimum clearances at crossings between the barrels of proposed pipelines or between existing and proposed pipelines shall be 5000 mm. The Contractor shall inform the Engineer should he find that this minimum clearance cannot be achieved."

SDL 5.2 JOINTING METHODS

ADD THE FOLLOWING SUBCLAUSE AFTER SUBCLAUSE 5.2.4:

"SDL 5.2.5 Protection of Buried Joints

The Contractor shall protect all buried joints with nuts and bolts against corrosion by wrapping them with a petrolatum mastic and "Denso" tape or equal approved, in accordance with the manufacturer's instructions.

After application, the petrolatum mastic shall be free from voids and not less than 10mm thick. The wrapped joint shall then be enclosed in a non-degradable polyethylene sheeting of not less than 250 micron thickness securely held in place with plastic cable ties."

SDL 5.6 Valve and Hydrant Chambers

SDL 5.6.1 General

REPLACE THE WORDS "drawing L-1" *IN THE SECOND LINE WITH* "the Drawings".

ADD THE FOLLOWING PARAGRAPH AT THE END OF SUBCLAUSE 5.6.1:

"The concrete in the valve chambers shall be Grade 25 MPa. The minimum cover to all steel shall be 40 mm.

Where no reinforcement is shown, allow 120 kg/m³ of concrete."

SDL 5.6.2 Construction of chambers

REPLACE THE WORDS "drawing L-1, L-2 and L-3" *IN THE FOURTH LINE WITH* "the Drawings".

ADD THE FOLLOWING SUBCLAUSES AFTER SUBCLAUSE 5.10:

"Notwithstanding the requirements of Subclause 5.10, the Contractor shall disinfect the pipelines before testing and before connecting into the reticulation."

ADD THE FOLLOWING SUBCLAUSES AFTER SUBCLAUSE 5.10:

"SDL 5.11 CONNECTION INTO EXISTING MAIN

Before commencing the excavation of pipe trenches in the vicinity of a proposed connection, the contractor shall excavate for, expose, survey and record the position and level of the connection point on the existing water main and shall determine all specials required.

The Contractor shall be responsible, through the Engineer, for liaison with the Municipality to arrange for turning off the water in order to carry out the connection.

The Contractor may cut into the existing water main (where applicable) only after he has received a written instruction from the Engineer to do so. No connection will be allowed on a Friday or after 12:00 on any day.

Before the connection is made, the new pipes must be laid to within 2 m of the connecting point, and must be temporarily blanked off, anchored, sterilized and tested. All specials required must be available on site.

The connection to existing pipes shall include the breaking out of anchor blocks (if necessary), and removal of existing pipe fittings and couplings.

SDL 5.12 REPLACEMENT OF EXISTING VALVE AND PIPE

Before commencing the excavation of pipe trenches in the vicinity of the proposed replacement, the contractor shall excavate for, expose, survey and record the position and level of the existing watermain and shall confirm all specials required.

The Contractor shall be responsible, through the Engineer, for liaison with the Municipality to arrange for turning off the water in order to carry out the connection.

The Contractor may cut into the existing watermain (where applicable) only after he has received a written instruction from the Engineer to do so. No connection will be allowed on a Friday or after 16h00 on any day.

All specials required must be available on site.

The replacement of the existing valve and pipe shall include the breaking out of anchor blocks (if necessary), and removal of existing pipe fittings and couplings.

SDL 5.13 PROTECTION OF BURIED JOINTS

The Contractor shall protect all joints with nuts and bolts against corrosion by wrapping them with “Denso” tape or equal approved, in accordance with the manufacturer’s instructions.

SDL 7 TESTING

REPLACE THE CONTENTS OF SUBCLAUSE 7.3.1.3 WITH THE FOLLOWING:

“Over and above other tests specified, all pipelines shall be hydraulically tested. The pipelines shall be fitted with all valves, fittings and couplings required to complete the section before testing will be permitted. The Contractor shall construct temporary thrust blocks or provide plugs and blank flanges where required for testing at no extra cost to the Employer. The field test pressure shall be 1,5 times the working pressure measured at the lowest point on the section to be tested but not less than 30 m or 1,25 times the working pressure, whichever is the most, at any other point on the section tested. Before any tests are carried out the test pressures and test points shall be confirmed with the Engineer. The Contractor shall provide all equipment and fittings or specials required for the pressure testing of the pipeline.”

SDL 8 MEASUREMENT AND PAYMENT

SDL 8.2 SCHEDULED ITEMS

SDL 8.2.1 Supply, Lay, and Bed Pipes Complete with Couplings

ADD THE FOLLOWING TO SUBCLAUSE 8.2.1:

"The Contractor will be allowed to claim the following percentages for interim payment purposes as the various activities are completed:

Stage of Completion	Percentage Applicable
Pipes laid and bedded in trench	85.00%
Pipes tested successfully, cleaned and disinfected.	100.00%

Note that the percentage applicable is given in the above table as a cumulative figure.

SDL 8.2.2 Extra-over 8.2.1 for the Supplying, Laying, and Bedding of Specials Complete with Couplings

ADD THE FOLLOWING TO SUBCLAUSE 8.2.2:

"Specials will be measured by number. The tendered rate for supply and delivery to Site shall cover the manufacture, transport, handling and fixing into position of the specials (including jointing materials as appropriate) and all alterations required to formwork and grouting in where applicable."

The cost of marking (see SDL 3.12) will also be held to be included in the price for supplying of the item"

SDL 8.2.3 Extra-over 8.2.1 for the Supplying, Fixing, and Bedding of Valves

REPLACE SUBCLAUSE 8.2.3 WITH THE FOLLOWING:

"Refer to Specification LK Clause 8 for the measurement and payment of valves."

SDL 8.2.11 Anchor/Thrust blocks and pedestals

ADD THE FOLLOWING TO SUBCLAUSE 8.2.11(a):

"The rates for the thrust blocks shall cover the cost of excavation and backfill, concrete, formwork, and steel reinforcement (including 120 kg high tensile steel per cubic metre of concrete where the amount of steel is not indicated on the drawings) as well as labour, etc., to complete the thrust block as shown on the drawings in addition to the operations and materials specified in this subclause."

SDL 8.2.15 Valve and Hydrant Chambers, etc.

ADD THE FOLLOWING TO SUBCLAUSE 8.2.13:

"The rates for valve chambers and other pipeline structures shall cover the cost specified for thrust blocks and for all other necessary materials, such as air vents, access covers and access ladders to complete the chamber as detailed on the drawings (including 120 kg high tensile steel per cubic metre of concrete where the amount of steel is not indicated on the drawings).

SDLB BEDDING (PIPES)

SDLB 3 MATERIALS

SDLB 3.1 SELECTED GRANULAR MATERIAL

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"Selected granular material shall have a PI not exceeding 6 and shall be free from sharp-edged particles exceeding 19 mm."

SDLB 3.2 SELECTED FILL MATERIAL

ADD THE FOLLOWING:

"Selected fill material used for bedding shall, where indicated on the Drawings be stabilized with 5% cement as specified under subclause SDDB 3.5(c)."

SDLB 3.3 BEDDING

ADD THE FOLLOWING:

"PVC-U and HDPE pipes are deemed to be flexible pipes for the purposes of this subclause.

"Where structures are to be built over pipework, where shown on the drawings, or where ordered by the Engineer, the bedding cradle specified shall be stabilized with 5% cement as specified under subclause SDDB 3.5(c)."

SDLB 3.4 SELECTION

SDLB 3.4.1 Suitable material available from trench excavation

REPLACE THE WORDS "(but is not required)" *IN THE FIFTH LINE WITH THE WORDS* "(at his own cost)".

SDLB 8 MEASUREMENT AND PAYMENT

SDLB 8.1 PRINCIPLES

SDLB 8.1.3 Volume of bedding materials

ADD THE FOLLOWING SENTENCE TO SUBCLAUSE 8.1.3:

"Note that the outside diameters of the pipe shall be taken as "D" on all drawings where not specifically shown. Overbreak shall not be applicable for the measurement of the bedding material and selected fill material. The volume of bedding material will be measured net, excluding the volume occupied by the pipe."

SDLB 8.1.5 Disposal of displaced material

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"Material displaced by the pipeline and by imported material from sources other than trench excavation, shall be disposed of at an approved site furnished by the Contractor. No haulage is payable for such material."

SDLB 8.1.6 Free-haul

DELETE THE WORDS "of 0,5 km" *IN THE FIRST LINE OF THIS SUBCLAUSE.*

SDLB 8.2 SCHEDULED ITEMS

SDLB 8.2.1 Provision of Bedding from Trench Excavation

DELETE THE WORDS "from within 0,5 km," *AND* "within a freehaul distance of 0,5 km" *IN THE FIRST SENTENCE OF SUBCLAUSE 8.1.6.*

REFER TO SDD 5.2.5 Transport for earthworks.

SDLB 8.2.2 Supply only of bedding by importation

SDLB 8.2.2.2 From borrow pits

DELETE THE WORDS "within a freehaul distance of 0,5 km" *IN THE LAST SENTENCE OF SUBCLAUSE 8.2.2.2.*

REFER TO SDD 5.2.5 Transport for earthworks.

***OR** IN THE CASE OF **ROAD CONSTRUCTION**; DELETE THE WORDS IN BRACKETS IN THE FIRST FOUR LINES AND ADD THE FOLLOWING:*

"The opening up of borrow pits and the removal of overburden are paid for under item 8.3.4 of SABS 1200 D."

ADD THE FOLLOWING SUBCLAUSE TO CLAUSE 8:

"SDLB 8.2.6 Extra over items 8.2.1 and 8.2.2 for bedding stabilized with 5% cement

Unit: m³

The tendered rate shall include full compensation for selecting, mixing, backfilling and compacting the stabilized material to 90% of modified AASHTO dry density."

SDLD SEWERS

SDLD 3 MATERIALS

SDLD 3.5 MANHOLES, CHAMBERS, ETC

SDLD 3.5.2 Precast concrete sections

ADD THE FOLLOWING:

"Sectional spun-concrete cylinders shall be manufactured from dolomitic aggregate."

SDLD 5 CONSTRUCTION

SDLD 5.9 CONNECTING SEWERS

SDLD 5.9.1 Location and details

DELETE THE FOLLOWING FROM THE FIRST PARAGRAPH:

"or required in terms of the Project Specifications."

DELETE THE SECOND PARAGRAPH.

SDLD 8 MEASUREMENT AND PAYMENT

SDLD 8.2 SCHEDULED ITEMS

SDLD 8.2.11 Connection to existing sewer at

REPLACE THIS ITEM WITH THE FOLLOWING:

"SDLD 8.2.11 Connection to existing sewer manhole Unit: Sum

The tendered sum shall include full compensation for excavation, making an opening in the existing manhole, installing new pipes in the new opening, breaking out and modifying the channelisation inside the manhole to suit the new pipe layout, ensuring the watertightness of the new connection, supplying all the necessary materials, removing surplus material and debris, all labour and equipment required to make the connection, and liaison with the local authorities."

ADD THE FOLLOWING ITEM:

"SDLD 8.2.13 Breaking into existing sewer and building a new manhole Unit: No.

The tendered rate shall include full compensation for excavation, building a new manhole over the sewer, breaking into the existing sewer, building the channelisation under wet conditions, ensuring the watertightness of the new connection, supplying all the necessary materials, removing surplus material, all labour and equipment required to make the connection, and liaison with the local authorities."

SDLK VALVE INSTALLATIONS (SPEC LK)

SDLK 3 MATERIALS – THE VALVES

SDLK 3.1 Gate valve or resilient seal valve

SDLK 3.1.1 General

ADD THE FOLLOWING TO SUBCLAUSE 3.1.1:

"The resilient seal valve gates shall be completely rubber or neoprene sheathed (not with rubber stirrups only) to provide a resilient seal. The sheath shall be pinhole free.

The gate valve spindle shall be either EN56B grade or other approved stainless steel and shall operate in a spindle nut of appropriate non-corrodible material. The design of the stuffing box shall be such that the "O-rings" can be replaced while the valve is in service without having to remove the valve dome.

Should there be any danger of the main valve shaft shearing due to the high gearing of the valves, fail safe shear pins shall be fitted to the gearbox."

SDLK 3.14 Protection against corrosion

ADD THE FOLLOWING NEW SUBCLAUSE TO SUBCLAUSE 3.14:

"**SDLK 3.14.4 Repair of corrosion protection**

All damage to the coating (if any) caused by the transport and handling of the valves shall be repaired by the Contractor in accordance with the above specification, prior to the installation of the valves. Any damage to the coating caused by the installation of the valves shall be repaired in accordance with the paint manufacturer's specifications. The grinding down of the damaged area to Sa2½ and the feathering of the edges are an acceptable alternative to re-blast cleaning."

SDLK 8 MEASUREMENT AND PAYMENT

SDLK 8.2 SCHEDULED ITEMS

SDLK 8.2.1 Supply and deliver valve

ADD THE FOLLOWING TO SUBCLAUSE 8.2.1:

"The rates tendered for all valves shall cover the cost of the supply and delivery to Site of the valves, complete with handwheels or extension spindle and support bracket (as billed), corrosion protection as specified in Subclause 3.14 and the necessary testing and commissioning specified in Clause 7, together with packaging and marking."

SDLK 8.2.2 Install, bed and field-test small valve (of nominal bore of up to 300 mm)

ADD THE FOLLOWING TO SUBCLAUSE 8.2.2:

"No separate payment will be made for the repairs to paintwork in the event of damage to the valves."

SDME SUBBASE

SDME 3 MATERIALS

SDME 3.2 PHYSICAL PROPERTIES

SDME 3.2.1 Subbase material

REPLACE THE CONTENTS OF PARAGRAPH (a) WITH THE FOLLOWING:

"(a) The maximum particle dimension of the gravel shall not exceed 63 mm."

REPLACE THE CONTENTS OF PARAGRAPH (d) WITH THE FOLLOWING:

"(b) The CBR at specified density shall be 45 for unstabilized material as well as for stabilized material prior to stabilization."

DELETE PARAGRAPH (e).

SDME 3.2.2 Gravel shoulder and gravel wearing course material

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"The material used for gravel shoulders and gravel wearing course shall comply with the following:

(a) The PI shall not be less than 6 and not more than (3 x GM) + 10.

(b) The maximum particle dimension of the gravel shall not exceed 40 mm.

(c) The CBR shall be greater than 15 at 93% of modified AASHTO density."

SDME 5 CONSTRUCTION

SDME 5.2 EXCAVATION

SDME 5.2.2 Borrow pits

INSERT THE WORDS "designated by the Engineer and" BETWEEN THE WORDS "pits" AND "established" IN THE FIRST LINE.

ADD THE FOLLOWING SUBCLAUSES:

"SDME 5.8 WEED-KILLER

The subbase layer shall be treated before compaction by applying and mixing in granular HYVAR X or TENOC X weed-killer in accordance with the manufacturer's instructions. An approved equivalent may be used.

SDME 5.9 INSECTICIDE

An insecticide approved by the Engineer shall be applied strictly in accordance with the manufacturer's instructions over the total area of the subbase. The instructions indicate whether the poison is to be applied before or after compaction of the layer."

SDME 5 CONSTRUCTION

SDME 5.2 EXCAVATION

SDME 5.2.2 Borrow pits

SDME 8.3.3 Construct the subbase course/shoulders/gravel wearing course with material from commercial sources or designated borrow areas

ADD THE FOLLOWING PARAGRAPH:

"This item shall also apply to the construction of subbase course/shoulders/gravel wearing course with material from borrow pits selected by the Contractor."

"SDME 8.3.9 Treatment of subbase with:

(a) Weed-killer Unit: m²

(b) Insecticide Unit: m²

The tendered rates shall include full compensation for supplying, spreading and mixing-in or applying the poison.

Only areas that were treated on the written instructions of the Engineer will be measured for payment."

SDMF BASE

SDMF MEASUREMENT AND PAYMENT

SDMF SCHEDULED ITEMS

Placing and compaction of a base

Placing: Before construction of the base is commenced the Contractor shall ensure that the underlying layer on which the base is to be constructed complies with the requirements of the specifications covering that layer.

Where a nominal thickness exceeding 150 mm has been specified, the base shall be constructed in approximately equal layers of thickness not exceeding 150 mm each.

Gravel:

basis is commenced the Contractor shall be dumped on the

Compaction: The base shall be compacted throughout to at least the following density:

- In case the natural gravels, graded crushed stone, and graded crushed stone with fines: 98 % of modified AASHTO maximum density;
- In case of stabilized gravels: 97 % of modified AASHTO maximum density.

ADD THE FOLLOWING:

"The tendered rate shall also include full compensation for cutting units to fit edge restraints, 20mm sand bedding and for the removal of waste material from the Site."

SDMJ SEGMENTED PAVING

SDMJ 8 MEASUREMENT AND PAYMENT

SDMJ 8.2 SCHEDULED ITEMS

SDMJ 8.2.2 Construction of paving complete

ADD THE FOLLOWING:

"The tendered rate shall also include full compensation for cutting units to fit edge restraints, 20mm sand bedding and for the removal of waste material from the Site."

SDMK KERBING AND CHANNELLING

SDMK 3 MATERIALS

SDMK 3.1 CONCRETE

ADD THE FOLLOWING:

"The Contractor shall timeously submit the concrete mix design for cast-in-situ kerbing to the Engineer for approval and no kerbing shall be placed before the mix design has been approved."

SDMK 5 CONSTRUCTION

SDMK 5.11 TRANSITION SECTIONS AND INLET AND OUTLET STRUCTURES

DELETE THE WORDS "and with the requirements of the Project Specification" IN THE SECOND PARAGRAPH.

SDMK 7 TESTING

SDMK 7.2 CAST-IN-SITU AND EXTRUDED KERBING AND CHANNELLING

SDMK 7.2.1 General tests

DELETE THIS SUBCLAUSE.

SDMK 7.2.2 Alternative tests

REPLACE THE HEADING AND CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"SDMK 7.2.2 Tests

The Contractor shall carry out a minimum of three cube crushing tests per 1 000 m of kerbing placed. The cost of such tests shall be deemed included in the rates tendered for kerbing.

One cube crushing test shall consist of a set of six cubes made with concrete taken from the mixer, the kerbing machine or from any part of the work as ordered.

If, after 28 days in an approved laboratory, after three cubes of any set of six cubes have been tested, the average crushing strength is found to be more than 3 MPa below the specified strength, the kerbing represented by the cubes will be rejected.

The Contractor may apply for resubmission of the rejected section on the basis of cores drilled from this section and tested for the estimated actual crushing strength in accordance with SABS method 865 (excluding Appendix A). The cost of drilling and testing the cores is for the Contractor's account, regardless of the outcome of the tests on the cores. The number of cores required will be determined by the Engineer and the criterion for rejection or acceptance of the section represented by the cores shall be as specified above for cubes."

SDMK 7.3 RESPONSIBILITY FOR THE COST OF TESTING

DELETE THIS SUBCLAUSE.

SDMK 8 MEASUREMENT AND PAYMENT

The tendered rate shall include full compensation for the excavation, removal and disposing off site. Filling and levelling where kerbs where removed.

C3.7 PARTICULAR SPECIFICATION

PA FENCING

CONTENTS

PA 01 SCOPE
PA 02 TYPE OF FENCE
PA 03 MATERIALS
PA 04 CLEARING FENCE LINE
PA 05 INSTALLING POSTS AND STANDARDS
PA 06 INSTALLING WIRE
PA 09 CLOSING OPENINGS UNDER FENCES
PA 10 INSTALLING GATES
PA 11 GENERAL REQUIREMENTS AND TOLERANCES
PA 12 MEASUREMENT AND PAYMENT

PA 01 SCOPE

This is a Particular Specification and covers the erection of new fences.

PA 02 TYPE OF FENCE

The fence around the facility in Dordrecht and Indwe shall be high razor mesh fence and shall be erected in accordance with the dimensions shown on drawings.

PA 03 MATERIALS

PA 03.1 POSTS, STAYS AND STANDARDS

Posts and stays shall be of the type and size indicated on the Drawings and as per manufacture's specification. Posts shall include gate posts, straining posts and corner posts.

PA 03.2 BOLTS FOR STAYS

Bolts shall be as per the Manufacturer's specification

PA 03.5 GATES

Gates shall be complete in every respect, and shall include hinges, washers, bolts and the locking mechanism shown on the Drawings.

PA 03.6 CONCRETE

Concrete used for fencing shall comply with the requirements of SANS 1200 G.

PA 04 CLEARING FENCE LINE

Strip clearing for the fence shall be carried out in accordance with SANS 1200 C and will be measured and paid for under Section 1200 C of the Schedule of Quantities.

PA 09 CLOSING OPENINGS UNDER FENCES

At ditches, streams, drainage channels or other hollows where the fence cannot follow the general ground contour, the Contractor shall close the opening under the fence by means of horizontal barbed wires 150 mm apart and stretched between additional straining posts as shown on the Drawings. The opening shall be covered with strips of diamond mesh, 1 000 mm wide, fixed to the barbed wires.

In the case of larger streams, the opening below the lower fencing wire shall be closed by means of loose-hanging wire nets as shown on the Drawings. These nets shall be erected at streams only on the instructions of the Engineer.

PA 10 INSTALLING GATES

Gates shall be installed at the positions indicated on the Drawings or pointed out on Site.

PA 11 GENERAL REQUIREMENTS AND TOLERANCES

The completed fences shall be plumb, taut, true to line and to the ground contour, and with all posts, standards and stays firmly set.

The height of the lower fencing wire above the ground at posts and standards shall not vary by more than 25 mm from that shown on the Drawings. Other fencing wires shall not vary by more than 10 mm from their prescribed relative vertical positions.

Anchoring of a fence to structures shall be done as shown on the Drawings.

The Contractor shall, on completion of each section of fence, remove all cut-offs and other loose wire or mesh so as to leave the fence with a neat and finished appearance.

PA 12 MEASUREMENT AND PAYMENT

PA.01 Supply and erection of new fencing material including:

(01) 2.5m high razor mesh .....Unit: m

PA.02 New gates:

(01) Single leaf (size and type indicated) ..... Unit: No.

(02) Swing gate (size and type indicated) ..... Unit: No.

(03) Diamond Wire mesh swing gate (size and type indicated) ..... Unit: No.

The unit of measurement shall be the number of new gates erected. A pair of gates shall be measured as one.

The tendered rate shall include full compensation for gate posts, hinges, bolts, concrete, locking mechanism and straining wire, and for the erection of the gates complete as specified and as shown on the Drawings. It shall not include compensation for any fencing wire or mesh used on the gate.

PD BUILDING WORK

CONTENTS

PD 01 SCOPE
PD 02 BRICKWORK, PLASTER WORK AND FLOOR SCREEDS
PD 03 DOORS AND WINDOWS
PD 04 GLAZING
PD 05 CARPENTRY AND JOINERY
PD 06 ROOF SHEETING AND ACCESSORIES
PD 07 ELECTRICAL WORK
PD 08 PLUMBING
PD 09 PAINTING
PD 10 MEASUREMENT AND PAYMENT

PD 01 SCOPE

This is a Particular Specification and covers the various construction activities associated with the erection of buildings which form part of this Contract.

Building work shall be carried out in accordance with the National Building Regulations, SANS 10400, the applicable clauses of the SABS Standardized Specifications and the information contained in this Specification.

Work appurtenant to the erection of buildings such as earthworks, concrete work, structural steelwork, etc shall be carried out as specified in the appropriate Standardized Specifications and will be measured and paid for under those Specifications.

PD 02 BRICKWORK, PLASTER WORK AND FLOOR SCREEDS

PD 02.1 MATERIALS

(a) Bricks

Bricks shall comply with SANS 227 and shall be of the class scheduled or shown on the Drawings.

Satisfactory proof of the load-bearing capacity of the bricks offered shall be submitted before deliveries are made to the Site.

Air bricks shall be well-burnt terracotta and shall be free from cracks and blemishes and lined with copper mosquito gauze.

Three samples of each type of brick shall be submitted to the Engineer for approval. All subsequent deliveries shall be of a standard equal to or better than that of the approved samples.

(b) Cement

Cement shall comply with the requirements of SANS 50196 and shall be stored under cover. The use of Portland blast-furnace cement (PBFC) which complies with the requirements of SANS 50196 will only be allowed if approved by the Engineer.

(c) Aggregate

Fine aggregate shall consist of natural sand, or crushed rock or gravel, and shall be hard, clean and free from adherent coatings or other deleterious matter. Sand for plaster and mortar shall comply with the requirements of SANS 1090, whereas the aggregates for normal and granolithic floor screeds shall comply with the requirements of BS 1199 and BS 1201 respectively.

(d) Water

Water shall be clean and free from clay, silt, oil, acid, alkali, organic or other matter which would impair the required strength and durability of the mortar, plaster or floor screed.

(e) Wall ties

Wall ties shall be of the galvanized, crimped, single-wire type, 3,5 mm in diameter, and shall comply with the requirements of SANS 28.

(f) Damp-proof sheeting

Damp-proof sheeting shall comply with SANS 248, type FV for fibre felt, or SANS 952, type B for embossed polyethylene sheeting.

PD 02.2 CONSTRUCTION OF BRICKWORK

(a) Cement mortar

Cement mortar shall, unless otherwise specified, consist of one part Portland cement to four parts sand (1:4) by volume for normal brickwork and one part Portland cement to three parts sand (1:3) by volume for reinforced brickwork. The ingredients for cement mortar shall be measured in proper gauge boxes on a boarded platform and thoroughly mixed. Alternatively, mixing may be by means of an approved mechanical batch mixer. Only when the dry ingredients have been thoroughly mixed and a mixture of uniform colour has been obtained may the water be added in sufficient quantity to obtain mortar with the required consistency.

Cement mortar shall be used within two hours of adding water to the mix and shall not be used after two hours or if it has begun to set. Mortar shall be turned over frequently to prevent it from setting until it is used.

(b) Brickwork

Dimensions of all the brickwork shall be set out and built as shown on the Drawings. Bricks shall be kept wet before laying and the top of brickwork shall be wetted before any further bricks are laid. Bricks shall be well buttered with mortar before being laid and all joints shall be thoroughly flushed up as the work proceeds. All joints to face brickwork shall be neatly made and key-drawn with a 6 mm key.

Brickwork shall be carried up in a uniform manner with no portion being raised more than 1 m above an adjacent portion. All perpends, quoins, etc, shall be kept strictly true and square and the whole properly bonded together.

Brickwork shall be built in stretcher bond or english bond as shown on the Drawings, and bats shall not be used except where required for the bond. All joints shall be 10 mm wide and four courses shall measure 340 mm.

Brickwork for cavity walls and solid walls built in stretcher bond shall be tied with wall ties placed not more than one metre apart in every third course, and shall be staggered vertically. At openings, the ties shall be positioned not more than 300 mm apart along the periphery of the opening and 150 mm from the opening.

Face brickwork shall be kept perfectly clean and rubbing down of the brickwork shall not be allowed. Scaffold boards shall be turned back during heavy rain to avoid splashing. Soiled brickwork shall be cleaned at the Contractor's expense, and the cleaning method shall be approved by the Engineer.

(c) Reinforced brickwork

Brickwork over door and window openings shall be reinforced with steel rods, welded or expanded mesh, etc. Reinforcement shall be placed in each course of brickwork for a minimum of four (4) courses or as shown on the Drawings. Reinforced brickwork shall continue at least 300 mm on each side of the openings.

Brick lintels shall be built upon rigid temporary supports left in position for not less than seven (7) days after brick-laying. Prestressed concrete lintels may be used where approved by the Engineer.

(d) Key for plaster

Joints of all brickwork receiving plaster shall be raked out, or the brick surfaces shall otherwise be prepared with an acrylic slurry or any other approved bonding agent.

(e) Damp-proofing

A damp-proof course shall be laid over the full width of all the walls at a minimum height of 150 mm above the final ground level or wherever else it may be required, and it shall be lapped for at least 150 mm at angles and joints. A damp-proof course shall also be laid and stepped up under all external sills.

(f) General

Rough and fair cutting shall be performed as required, and the brickwork shall be fitted around any steel work. Face brickwork shall be carefully cut and fitted to suit fittings.

Chases shall be left or formed for edges of concrete floors, staircases, etc. Chases shall also be provided wherever they may be required for pipes, conduits, switch boxes, distribution boards, and the like. Joints shall be raked out for flashings.

PD 02.3 PLASTER WORK

(a) Plaster coats

A plastered finish shall consist of a single coat, comprising one application of a 1:6 cement sand mixture with a wood or steel-float finish.

(b) Thickness

The total thickness of the plaster finish shall be 13 mm minimum and 20 mm maximum.

(c) Workmanship

All plaster work shall be finished smooth and ready to receive paint. Plaster shall be flush with the faces of all switch and plug boxes, the interiors of which shall be kept free from plaster. Plastered surfaces shall be plumb and jambs and reveals shall be formed square.

The plasterer shall cut out and make good all cracks, blisters and other defects and leave the plaster work, on completion, in a state which is acceptable to the Engineer.

PD 02.4 FLOOR SCREEDS

Floor screeds shall have a mix proportion by mass consisting of one (1) part Portland cement and three (3) parts (1:3) fine aggregate. A minimum amount of water is to be used, but it shall be sufficient to allow adequate compaction.

Screeds shall be laid on clean hardened bases in panels not exceeding 14 m² and shall be steel-trowelled to a true and smooth finish. In monolithic construction, the panels shall not exceed 30 m². Joints in screeds shall coincide as nearly as possible with joints in the bases. The thickness of screeds shall be as shown on the drawings or as directed by the Engineer.

The entire screed surface shall be free from loose or raised particles of aggregate, trowel marks or any irregularities, humps or depressions exceeding 5 mm when measured from a 3 m long straight edge.

Screeds shall be cured for three (3) to seven (7) days as may be directed by the Engineer, and shall be protected from damage.

No moisture-sensitive floor finish shall be laid on screeds unless a reliable moisture test shows that the screed is sufficiently dry to receive the covering.

PD 02.5 Structural Concrete

Only ordinary Portland cement shall be used.

Coarse aggregate maximum size: 19 mm
28-day cube strength: 30 MPa.

A plasticizer approved by the Engineer shall be used to reduce the water content of the mix to an absolute workable minimum.

The mix design shall be submitted to the Engineer for approval.

PD 03 DOORS AND WINDOWS

PD 03.1 MATERIALS

(a) General

All steel and iron work shall be delivered clean and free from rust, pitting or other defects. Shop primings shall be applied before delivery and shall consist of a coat of red oxide paint, or any other approved anti-rust paint on all surfaces.

Unless otherwise specified, all materials shall conform at least to the appropriate SABS or BS standards where such standards apply to ironmongery, or steel, cast iron and any other related materials.

(b) Pressed-steel door frames

Pressed-steel door frames shall comply with SANS 1129 and shall be manufactured from 1,6 mm thick mild-steel sheeting, pressed to the required shapes, properly mitred, welded and reinforced, with all welding neatly cleaned off.

Frames shall be of the widths required to suit the thickness of the walls into which they are built and shall be fitted with suitable tie bars and braces at the bottom. Three lugs to be built into the brickwork shall be provided on each jamb.

Rebates in frames and transoms for doors shall be of the widths required to suit the thicknesses of the doors and shall be fitted with a pair of approved steel butt hinges set flush into recesses in the frames. 4,5 mm thick reinforcing plates shall be welded to the backs of the frames at hinge positions.

Heads of frames over double doors shall be drilled where required to form keeps for bolts and shall be fitted with one rubber buffer for each leaf of the door.

Frames for single doors shall be fitted with approved chromium striking plates and an adjustable striking-plate keeper boxed in at the back of the frame by a welded-on sheet-metal box. The frames shall be fitted with a minimum of two rubber buffers.

Frames shall be protected against twisting and damage during transit and erection.

(c) Pressed-steel doors

Pressed-steel doors shall be manufactured from 1,6 mm thick steel plate. The doors shall be of standard design, pressed to shape with 40 mm reveals all round. The doors shall be strengthened with full-length vertical V-shaped or other approved sectional strengthening ribs projecting to the outer face. Two horizontal stiffening rails shall also be welded to the inner face of the doors.

A door shall be hung on a pair of 100 mm long steel butt hinges with loose pins. The leaves of the hinges shall be welded to both the door and the door frame, and a 1,6 mm thick steel plate shall be welded to the inner face of the door to protect the lock.

One leaf of double doors shall be fitted at the top and bottom with approved 150 mm cast brass barrel bolts in an approved manner and the other leaf shall be fitted with a lock, the striking plate of which shall be fixed to the first leaf.

Where indicated on the drawings, doors shall be fitted with louvred ventilation grills of approved design, backed with insect and vermin-proof gauze screening.

(d) Steel window frames

All steel window frames shall comply with SANS 727 and shall be of the types and sizes shown on the Drawings.

Standard industrial types of steel window frame 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 and properly jointed at all angles, and the opening portion shall fit properly on all faces and shall open and close freely.
Glazing bars shall be continuous with jointed intersections, the ends being neatly tenoned into the frame and securely welded in position.

Frames shall be fitted with standard fixing lugs.

Opening sections shall open as indicated on the drawings, and shall be fitted with steel hinges with brass pins. Pivots shall be fitted with bronze ring centres.

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.

Composite windows shall preferably be delivered to the Site fully assembled, complete with mullions and transoms.

(e) Door-locks and handles

All door-locks shall comply with the requirements of SANS 4 and shall be of approved manufacture and pattern. All locks shall be supplied with two keys. Keys 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 locks in any one building may have the same key.

External doors shall be fitted with four-lever heavy-duty mortice locks, which shall be master-keyed.

All locks shall be properly installed and, after completion, striker plates shall be adjusted and the locks serviced.

Door-handles shall be of cast zinc of approved manufacture and pattern.

(f) Miscellaneous fittings

All retaining devices for doors and windows as well as fittings such as coat hooks, retaining hooks, etc shall be of solid brass. All fittings shall be secured by screws or set screws of the same material and finish as the fitting.

Fittings to be fixed to plastered walls, masonry or floors shall be fixed direct by means of patent plastic or fibre plugs fitted into drilled holes.

Door stops shall be provided at every door and shall be 40 mm diameter rubber stops.

PD 03.2 INSTALLATION OF DOORS AND WINDOWS

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 has been completed.

Fittings shall be either removed, or wrapped and protected from damage, until all rough trades have been completed.

PD 04 GLAZING

PD 04.1 MATERIALS

(a) Glass

Glass shall comply with the requirements of CKS 55. The quality of all window glass shall be such that surface deterioration will not develop after glazing.

All glass shall be free from bubbles, waviness, scratches, stains or other imperfections.

Unless otherwise specified, sheet glass for glazing shall be flat-drawn clear glass of ordinary glazing quality and of the thicknesses indicated below:

For panes not exceeding 0,75 m² in area	3 mm
For panes exceeding 0,75 m² but not exceeding 1,5 m² in area	4 mm

(b) Putty

All putty shall comply with the requirements of SANS 680.

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, and any broken glass shall also be so replaced and putty so repainted.

PD 04.2 GLAZING

Glass shall be cut in panes to suit all glazed openings with sufficient clearance all round to prevent cracking by expansion, contraction or vibration.

In all cases the glass shall be well bedded and back-puttied and installed as specified in SABS Code of Practice 0137.

All putty shall be carefully trimmed, cleaned off and neatly finished off straight with smooth surfaces and sharp mitres. A paint primer shall be applied as soon as the putty has dried out sufficiently to prevent shrinkage cracks from forming.

The entire glazing operation shall be cleaned before the premises are handed over for occupation.

PD 05 CARPENTRY AND JOINERY

PD 05.1 GENERAL

(a) Materials

All timber used for structural purposes shall be of merchantable grade and shall comply with the requirements of SANS 1783. Structural timber shall be carefully selected and of the best quality, free from large or dead knots, shakes, waney edges or other defects. Purlins and brandering shall comply with the requirements of SANS 1783. Finger-jointed structural timber shall comply with the requirements of SANS 10096 and laminated timber with the requirements of SANS 1460.

Hardwoods and softwoods for joinery shall comply with SANS 1099 and SANS 1783 respectively and suitable species shall be used for the various purposes.

Unless otherwise specified, all materials shall conform to the appropriate SABS or BS Specification where such standards exist for nails, screws, bolts, adhesives, etc.

(b) Preservative treatment

All structural timber shall be given a preservative treatment suitable for the duty for which the timber is intended in accordance with SANS 10005, and no untreated timber shall be used. The preservative treatment shall not impair the final finish. The timber shall be impregnated throughout. When surface coating is specified, the compounds applied on the surfaces of the timber shall form an unbroken film.

(c) Priming

The jointing surfaces of all joints exposed to the weather and built-in portions of frames shall be thickly primed except where adhesives are specified.

Carpentry and joinery items which are prepared for painting by the manufacturer, shall be knotted and primed before being 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.

PD 05.2 CARPENTRY WORK

(a) Scope of work

Carpentry work shall be carried out in a manner consistent with good workmanship and in compliance with the Drawings.

The carpenter shall perform all cutting away and making good in attendance upon all other trades and he shall provide and maintain temporary coverings required for the protection of any finished work that might be damaged if left unprotected during the progress of the work.

(b) Dimensions

Unwrought timber shall be as sawn and shall be to the dimensions and within the tolerances specified in the relevant SABS Standard Specifications mentioned in subclause PD 05.1(a).

(c) Jointing

Unless otherwise specified, all joints shall be secured by means of a suitable type and a sufficient No. of approved connectors. All joints shall be carefully made in such a way that they will not impair the strength and stiffness of the beams or members.

(d) Timber roof construction

The plates, joists, rafters, purlins, brandering and other pieces used for the construction of the roof and trusses shall be of the dimensions, spacing and construction as shown on the Drawings.

All the joints in the framework shall be of the most appropriate type, accurately formed and adequately secured with fasteners as specified.

PD 05.3 JOINERY WORK

(a) Scope of work

Joinery work shall consist of the manufacture, delivery to the Site, and fixing in the buildings, of all joinery shown on the Drawings.

Except where a special finish is specified, the Contractor shall have all stairs, landings, doors, shelves and other joinery work cleaned and scrubbed down and shall leave all his work in a good order to the satisfaction of the Engineer.

(b) Dimensions

All wrought timber shall be sawn, planed, drilled or otherwise machined or worked to the correct sizes and shapes shown on the Drawings.

Reasonable tolerances shall be provided at all connections between joinery works and the building structure to compensate adequately for any irregularities, settlements or any other movements.

(c) Manufacture

The joiner shall perform all the necessary mortising, tenoning, grooving, matching, tonguing, housing, rebating and all the other works necessary for correct jointing. He shall also provide all metal plates, screws, nails and other fixings that may be necessary for doing the specified joinery work properly.

(d) Joints

Where joints are not specifically indicated, they shall be the recognised forms of joints for each position. The joints shall be so made as to comply with Part 2 of BS 1186.

(e) Doors and frames

Door frames, linings, panel doors, framed, ledged and braced doors, flush doors, sliding doors, etc shall be supplied or made by the joiner and shall be installed, fitted or hung as detailed on the Drawings.

All timber shall be wrought and prepared for oiling, staining, varnishing or painting.

(f) Skirtings, cornices, etc

Skirtings, cornices, etc shall not be installed until after the wall coverings have been applied, the flooring laid and ceilings installed, unless otherwise specified.

(g) In-situ joinery

In-situ joinery work shall not be executed until after all floor, wall and ceiling surfaces have been formed or constructed, unless otherwise instructed.

(h) Ceilings

Ceilings shall consist of plaster board or fibre-cement panels as shown on the Drawings and shall be nailed to the brandering or suspended from the roof structure. The panels shall be separated by exposed tees and insulated with a 50 mm thick fibreglass wool blanket where shown on the Drawings.

PD 06 ROOF SHEETING AND ACCESSORIES

Roof sheeting and accessories shall comply with and will be measured and paid for under SANS 1200 HC.

PD 07 ELECTRICAL WORK

The electrical wiring of buildings shall be carried out by registered and licensed electricians in accordance with the requirements of SANS 10142-1 and the regulations of the Employer.

The electrician shall work in close co-operation with the Contractor to ensure that all conduits, switchboards, plug boxes and switch boxes are installed in their correct position.

The work shall be carried out in accordance with the Drawings and to the satisfaction of the Engineer and the local authority.

PD 08 PLUMBING

PD 08.1 MATERIALS

(a) General

All materials shall be of the best quality and shall be approved by the Engineer before installation. Cracked, chipped, dented or faulty items or materials shall be replaced at the Contractor's expense. Glazed ceramic sanitary ware shall comply with the requirements of SANS 497 and all other materials shall comply with the standards as specified, scheduled or shown on the Drawings.

(b) Water closet (WC) suites

WC suites shall consist of a white glazed vitreous china closet with an S or P trap and seat lugs, a 14 litre low-level matching flat-bottomed flushing cistern placed and fixed on the closet, or a suspended enamelled cast-iron cistern with the flush pipe connected to the flushing rim of the closet with rubber cone joints, and a solid heavy-duty plastic seat with cover, hinges and buffers.

(c) Urinals

Urinals shall be of the type detailed or scheduled, of white glazed vitreous china, wall mounted, with an automatic or a manual flushing system, and chromium-plated fittings.

(d) Wash-hand-basins

Wash-hand-basins shall be of white glazed vitreous china or enamelled cast iron, wall mounted on a pair of cast-iron brackets, and fitted with chromium-plated fittings consisting of two taps, outlet and chain, and supplied with a plug and an anti-siphon trap.

(e) Sinks

Sinks shall comply with the requirements of SANS 242 and shall be complete with cabinet, chromium-plated outlet, anti-siphon trap, plug, chain and two bib taps or one mixer tap, all as detailed or as scheduled.

(f) Pipes and tubing

Cast-iron and steel pipes used in plumbing work shall comply with the requirements of SANS 746 and SANS 10062 respectively. Copper tubing shall comply with the requirements of SANS 460 and malleable cast-iron fittings with SANS 14.

PD 08.2 CONSTRUCTION

Plumbing shall be carried out strictly in accordance with the Drawings and with the National Building Regulations, with specific reference to Government Notice R1875 dated 31 August 1979.

Steel pipes and their malleable cast-iron fittings shall be joined with red lead and hemp, lead pipes shall have wiped soldered joints, and cast-iron pipes shall be joined by caulking with hemp and metallic lead.

Soil pipes from WCs shall have an internal diameter of at least 100 mm and shall be fitted with a pan connector and an access bend (or an access junction where a vent pipe is used), and carried through walls and into the ground for connection to the sewer. Vent pipes shall be fitted with approved balloon gratings.

Waste pipes from basins and sinks shall have an internal diameter of at least 32 mm and shall discharge into gulleys. Bends for waste pipes shall incorporate cleaning eyes.

Cisterns, basins and sinks shall be connected to the pipe system with 12 mm diameter copper service pipes, and chromium-plated stopcocks shall be installed for isolation and maintenance purposes.

PD 09 PAINTING

PD 09.1 GENERAL

No paint shall be applied to any surface containing traces of dust, grit, grease, oil, loose rust, millscale or corrosion products of any kind or to any surface that is not free from moisture. Where necessary, surfaces shall be thoroughly washed to remove all traces of soluble salts and/or corrosive air-borne contaminants prior to painting, and the surfaces shall be dried and painted immediately thereafter.

Welding shall be completed in so far as it is possible before painting commences, but in cases where welding can be done only at a later stage, no paint shall be applied to within 75 mm of the proposed weld position unless

otherwise specified. Welds and adjacent parent metal shall be abrasive blasted and/or ground and all contaminants such as flux shall be removed prior to painting.

Surfaces of members which are to rest on concrete or other floors or which will be otherwise inaccessible after erection shall receive the full paint system prior to erection.

Damaged paint areas on metal surfaces shall be cleaned, rust spots removed where applicable and the surrounding paint which is still intact shall be feathered for a distance of 20 mm beyond the damaged area. Spot priming and repair shall consist of all the coats previously applied and shall overlap the damaged area.

Damaged galvanised areas shall be cleaned and any rust spots and any flakes of the coating surrounding the damaged area removed. The coating shall then be restored by zinc spraying or soldering, or painting with a zinc-rich paint, as may be approved by the Engineer.
Where the shop coat is allowed to age for a few months before the final painting is done, light sanding or rubbing with steel wool or scrubbing with clean water using a bristle brush shall be carried out.

Steel to be embedded in concrete shall not be painted below 50 mm from the final level of the concrete.

Each priming coat and each undercoat of paint shall be inspected and approved by the Engineer before any subsequent undercoat or finishing coat is applied.

All finishing colours shall be as shown on the Drawings, or as directed by the Engineer.

PD 09.2 MATERIALS

Paints shall comply with the requirements of the appropriate Specifications below:

(a) Primers

SANS 678	:	For wood
SANS 679	:	Zinc chromate for steel
SANS 996	:	Etch-wash primer for metals
SANS 912	:	Calcium plumbate for galvanized iron

(b) Undercoats

SANS 681	:	For all undercoats

(c) Finishing coats

SANS 515	:	For interior use, flat and egg-shell finish
SANS 630	:	For interior and exterior use, high-gloss enamel
SANS 1586	:	For interior use, emulsion paint
SANS 801	:	For interior and exterior use, epoxy-tar paint
SANS 887	:	For interior use, glossy and egg-shell varnish

The Contractor shall furnish the Engineer with the following information and details regarding the paints and decorative materials for the painting system he proposes to use, for written approval:

(i) The name of the manufacturer and trade name

(ii) The brand, type or grade of paint and the appropriate SABS Specification

(iii) Manufacturer's data sheets, colour references, instructions for use, including surface preparation, sealers, primers, undercoats, finishing coats, coat thicknesses and curing periods, which shall all be considered as being part of these Specifications if approved by the Engineer

(iv) Safeguards to protect the applied paint from damage until the work is accepted by the Engineer

(v) The shelf or pot life of materials, if applicable

(vi) An undertaking that the proposed paint system is suitable for its intended use and that the various coats of paint are compatible with one another

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 nature and quality or from another manufacturer may be used instead of those approved, unless written permission to do so has been obtained from the Engineer.

All materials shall be brought onto the Site in containers sealed by the manufacturer. Paints of a different quality, type, brand or colour shall not be mixed, or thinned and shall not be adulterated in any way, but shall be used as supplied by the manufacturer. Any mixing or tinting required shall be carried out by the manufacturer.

Tinting of paint on the Site by the Contractor will only be allowed with the written permission of the manufacturer and the Engineer.

PD 09.3 INSPECTION AND PRELIMINARY WORK

Before commencing paintwork, the Contractor shall carefully inspect the surfaces to be painted to satisfy himself that the surfaces are in a satisfactory or acceptable condition to receive the paint system specified.

All metal fittings and fastenings shall be removed where applicable before the preparatory processes are commenced. On completion, the metal fittings and fastenings shall be cleaned and refitted in position.

PD 09.4 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.

Every coat of paint, irrespective of the 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 finish.

An approved water trap and air-regulating valve shall be furnished and installed on all equipment used in spray painting.

Before painting the interiors of buildings they shall be cleaned and the floors shall be washed and kept free from dust during the progress of the interior work.

The Contractor shall protect all nearby surfaces against disfigurement by spatters, splashes and smirches of paint or paint materials. The Contractor shall be responsible for any damage by paint or dirt caused by his operations to vehicles or property or injury to persons and he will be required to provide protective measures to prevent any such damage or injury and make good, where required, at his own expense.

If passing traffic creates dust which may harm or spoil the appearance of external painted surfaces, the Contractor shall sprinkle the adjacent areas with water, at his own cost, for a sufficient distance on each side of the location where painting is being done.

Undercoats shall be tinted by the manufacturer to distinguish between successive coats.

The final coats or finishing coats of paint shall be applied after all the other work in the vicinity has been completed.

The painter shall keep some of the final paint in reserve in the event of his having to make good any patching which may be required as a result of damage or unforeseen circumstances.

Upon completion, the Contractor shall, in the case of buildings, 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 solvents, thinners, wiping cloths, etc, shall be placed in tightly closed containers and properly disposed of.

PD 09.5 PAINTING OF PLASTER, CONCRETE OR BRICK SURFACES

(a) Surface preparation

Surfaces for painting shall be prepared by sandpapering, scraping or wire-brushing to remove loose material, dust, laitance, scum or other deleterious materials or high spots. Defective areas 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 an approved bonding agent before the filler is applied. All patches shall be rubbed down to an even surface. Surfaces shall be washed and allowed to dry.

Surfaces shall be treated with neutralising liquid for walls, and if the surface is coarse or textured, either one full coat of pigmented wall sealer or one full filler coat shall be applied in addition to the neutralising liquid.

(b) Paint application

Prior to the emulsion paint being applied, the surface shall be sealed with an approved clear sealer and primed with an undercoat diluted to 50%. Emulsion paint (PVA or acrylic) shall then be applied in two finishing coats.

Egg-shell finish (alkyd oil-based), oil gloss paint or enamel gloss paint shall be applied as follows: one coat of universal undercoat shall be applied and it shall be followed by one coat of a mixture comprising 50% of the undercoat and 50% of the paint to be used for the finishing coat. A finishing coat of semi-gloss egg-shell, or oil gloss paint or enamel gloss paint shall then be applied.

PD 09.6 PAINTING OF WOODWORK

(a) Surface preparation

The surfaces shall be cleaned, sandpapered and rubbed down to a smooth, even face before painting. The moisture content of the timber shall not be more than 20% at the time when the first coat is applied. All cracks, shakes or scars shall be filled flush with a filler approved by the Engineer before painting. The surface shall then be washed with cleaner and allowed to dry.

(b) Primer application

One coat of an approved wood primer shall be applied.

After open-grained timber has 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.

(c) Paint application

One coat of universal undercoat shall be applied followed by one coat of a mixture of 50% of the undercoat and 50% of the paint to be used for the finishing coat. A finishing coat of oil gloss paint or enamel gloss paint or semi-gloss egg-shell (alkyd oil-based) paint shall then be applied.

(d) Varnish finish

Two coats of gloss varnish or egg-shell varnish shall be prepared, stopped and applied.

PD 09.7 PAINTING OF METAL SURFACES

(a) General

Wherever possible, all painting shall be done at the manufacturer's works, but where this is not feasible, the Engineer may permit the application of the undercoat and finishing coats to be carried out on the Site, in which case a prime coat shall be applied at the manufacturer's works prior to the members being despatched to the Works.

(b) Surface preparation

The preparation of metal surfaces shall comply with SABS Code of Practice 064 and shall receive the greatest care to ensure rust-free conditions prior to the paint system being applied.

All surfaces shall be prepared by removing loose paint, rust, plaster, scale, dust, dirt, grease, etc and by repairing or patching defective paint surfaces before painting or repainting. Damaged shop-primed surfaces shall be thoroughly cleaned of rust and patched with a prime coat.

(c) Paint application

(i) Iron and steel work

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. Zinc-chromate primer may be used where overpainting

will be completed within 30 days of priming. Metal-etch wash primers may be used under dry conditions where overpainting will be completed within 24 hours of priming. The dry-film thickness of the prime coat shall not be less than 0,300 mm.

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 with approved liquid stainers. The dry-film thickness shall not be less than 0,250 mm.

The two finishing coats shall either be of alkyd resin-based synthetic enamel, gloss or matt oil paint, or as specified elsewhere. The dry-film thickness shall not be less than 0,250 mm per coat.

When mating surfaces are brought together, both surfaces shall have been given the full treatment specified, but where this cannot be done, each surface shall be given a copious coating of primer and the surfaces drawn together while the paint is still wet.

The portion of structural steel members to be buried in soil, and all bases to a height of 500 mm shall be given two coats of an epoxy-tar primer instead of the zinc-chromate primer specified for other surfaces.

The surfaces of steel and cast-iron articles, such as floor gratings, grids and manhole covers, shall, after a thorough brushing to remove loose rust, be painted with two coats of epoxy-tar paint, each at least 0,230 mm thick.

(ii) Galvanized iron and steel

All traces of protective coating shall be removed with galvanized iron cleaner, and two coats of calcium plumbate 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.

(iii) 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 coats of enamel gloss paint shall then be applied. Where non-ferrous metals are not to be painted, the surfaces shall be cleaned, polished and two coats of lacquer applied.

PD 09.8 PAINTING OF FLOOR SCREEDS

Where chemicals could cause damage to floors, such floors shall be painted with an approved epoxy paint. The type of paint to be used will be shown on the Drawings and will depend on the types of chemical that are used.

The preparation of such floor screeds for painting and the subsequent application of paints shall be carried out strictly in accordance with the manufacturer's instructions.

PD 09.9 PAINT THICKNESS

Unless otherwise specified, all coats of paint, whether prime coat, undercoat or finishing coat, shall have a dry-film thickness of not less than 0,200 mm, irrespective of the method of application.

PD 09.10 INSPECTION

The Contractor shall provide the necessary equipment to establish whether the primers, undercoats and finishing coats have been applied to the correct thickness according to the correct applications. The Engineer may take samples of the paints during painting operations for testing and quality control.

PD 09.11 MISCELLANEUOS

The following are will be installed or similarly approved standard

Manufactured by "Union" 90 Degree aluminium butt hinge
100 x 75mm Ball Bearing stainless steel butt hinges - code
8352-100SS (3Pairs)
"Union" AL8052-150AS aluminium flush bolt
"Union" 766/1SS Euro profile lock case with stainless steel forend

Locks, etc

Manufactured by "Union"
3 Lever Upright Lock - Code 2252-76SS
34651LH Aluminium single or multitrack helping hand disabled facility indicator bolt with anodised silver finish
Cylinders "Union" 810NPMKD Euro profile double cylinder

Handles

Manufactured by "Union" Radius lever furniture - Code CZ692-24SC "TEAL" AL6T28-05AS aluminium lever handle on 220 x 28mm narrow stile backplate

Door Closers, Floor Springs, etc

"Union" 744P Heavy duty adjustable power arm overhead door closer

PD 10 MEASUREMENT AND PAYMENT

243.01 Brickwork:

(a) (Thickness, type and class indicated) Unit: m²

(b) Etc for other thicknesses, types and classes

The unit of measurement shall be the square metre of each type of brickwork built, calculated from the leading dimensions of the brickwork. Areas of pipes, etc built into brickwork shall not be included in the areas measured. At corners and intersections common to more than one brick wall, the areas shall be measured only once.

The tendered rates shall include full compensation for the construction of the brickwork complete as specified, including pointing, the building-in of conduits, beams, pipe sleeves, doors, windows, the raking-out of joints, damp-proof course, as specified, etc.

243.02 Plaster work:

(a) (Thickness of plaster and finish indicated) Unit: m²

(b) Etc for other thicknesses and finishes

The unit of measurement shall be the square metre of each type of coat completed as specified.

The tendered rates shall include full compensation for the construction of the plaster work, including supplying all materials, mixing, applying, finishing, forming reveals, joints, narrow widths, rounded angles, V-joints, etc complete as specified.

243.03 Brickwork reinforcement:

(a) (Description and width indicated) Unit: m

The unit of measurement shall be the metre of brickwork reinforcement, as specified, on floors, areas shown on the Drawings or as designated by the Engineer/Architect.

The tendered rates shall include full compensation for supplying of all for the placing, cutting, joining of all brickwork reinforcement and all other associated costs, as specified

243.04 Prestressed fabricated lintels:

(a) (Description and lengths indicated) Unit: m

The unit of measurement shall be the metre of lintels, as specified, on brickwork shown on the Drawings or as designated by the Engineer/Architect.

The tendered rates shall include full compensation for supplying of all for the placing, cutting, joining of all material and all other associated costs, as specified

243.05 Turning pieces:

(a) (Description indicated) Unit: m

The unit of measurement shall be the metre of lintels, as specified, on brickwork shown on the Drawings or as designated by the Engineer/Architect.

The tendered rates shall include full compensation for supplying of all for the placing, cutting, joining of all material and all other associated costs, as specified

243.06 Brickwork Sundries:

(a) (Description indicated) Unit: m

The unit of measurement shall be the metre of each type of coat completed as specified.

The tendered rates shall include full compensation for supplying of all for the placing, cutting, joining of all brickwork and all other associated costs, as specified

243.07 Galvanised hoop iron cramps, ties, etc:

(a) (Description and length indicated) Unit: No.

The unit of measurement shall be the number of galvanised hoop iron cramps, ties, etc installed complete as specified.

The tendered rates shall include full compensation for supplying of all for the placing, cutting, joining of all material and all other associated costs, as specified

243.08 Expansion Joint:

(a) (Description) Unit: m.

The unit of measurement shall be the metre of each type of joint completed as specified.

The tendered rates shall include full compensation for supplying of all for the placing, cutting, joining of all material and all other associated costs, as specified on the drawings.

243.09 Brickwork:

(a) (Description, type and pitch indicated) Unit: m².

The unit of measurement shall be the square metre of each type of facebrick built, calculated from the leading dimensions of the brickwork.

The tendered rates shall include full compensation for the construction of the brickwork complete as specified, including pointing, the building-in of conduits, beams, pipe sleeves, doors, windows, the raking-out of joints, damp-proof course, as specified, etc.

243.10 Roof Coverings:

(a) (Thickness of plaster and finish indicated) Unit: m²

(b) Etc for other materials for roofing

The unit of measurement shall be the square metre of each type of roof covering, calculated from the leading dimensions of the buildings.

The tendered rates shall include full compensation for supplying all materials and manufacturing, cutting, wasting, jointing and installing the timber as shown on the Drawings

243.11 Roof and Wall Insulation:

(a) (Description indicated) Unit: m²

(b) Etc for other materials for roofing

The unit of measurement shall be the square metre of each type of roof and wall insulation, calculated from the leading dimensions of the buildings.

The tendered rates shall include full compensation for supplying all materials and manufacturing, cutting, wasting, jointing and installing the timber as shown on the Drawings

243.12 Roof Construction:

(a) (Thickness of plaster and finish indicated) Unit: No.

(b) Etc for other materials for roofing

The unit of measurement shall be the number. of each type of roof, calculated from the leading dimensions of the buildings.

The tendered rates shall include full compensation for supplying all materials and manufacturing, cutting, wasting, jointing and installing the roof as shown on the Drawings.

243.13 Doors:

(a) (Type and size indicated) Unit: No.

(b) Etc for other types and sizes

The unit of measurement shall be the number of doors installed complete as specified.

The tendered rates shall include full compensation for manufacturing and installing specified doors, and frames complete with retaining devices, door stops, stays and any other work necessary to complete the work as specified or as shown on the Drawings.

243.14 Fittings:

(a) (Type and size indicated) Unit: No.

(b) Etc for other types

The unit of measurement shall be the number of fittings installed complete as specified.

The tendered rate for windows shall also include full compensation for supply, fitting and provision of padlock for each locker unit.

243.15 Benches:

(a) (Description indicated) Unit: m

The unit of measurement shall be the metre of benches completed as specified

The tendered rate for benches shall also include full compensation for supply, fitting and application of SABS protection coating.

243.16 Ceilings:

(a) Plaster-board ceiling (type and thickness indicated):

(i) Fixed ceiling Unit: m²

(ii) Suspended ceiling Unit: m²

(b) Fibre-cement ceiling (thickness indicated):

(i) Fixed ceiling Unit: m²

(ii) Suspended ceiling Unit: m²

The unit of measurement shall be the square metre of fixed or suspended ceiling installed complete as scheduled.

The tendered rates shall also include full compensation for the construction of the ceilings, including the exposed tees, insulation blanket and brandering as specified, as well as the suspension system where applicable.

243.17 Floor Covering:

(a) (Description and thickness indicated) Unit: m²

(b) Etc for other types

The unit of measurement shall be the square metre of floor screed laid, as specified, on floors, steps or areas shown on the Drawings or as designated by the Engineer.

The tendered rates shall include full compensation for constructing the floor covering, including supplying all materials, mixing, laying, finishing, and forming nosings, reedings, skirtings, etc.

243.18 Bathroom Fittings:

(a) (Type indicated) Unit: No.

(b) Etc for other types

The unit of measurement shall be the number of fittings installed complete as specified.

The tendered rate for bathroom fitting shall also include full compensation for supply, fitting, plumbing fittings and all other installation associated costs.

243.19 Push Plates and Kicking Plates

(a) (Type indicated) Unit: No.

(b) Etc for other types

The unit of measurement shall be the number of fittings installed complete as specified.

The tendered rate for bathroom fitting shall also include full compensation for supply, push plates and kicking plates and all other installation associated costs.

243.20 Door Furniture:

(a) (Type indicated) Unit: No.

(b) Etc for other types

The unit of measurement shall be the number of fittings installed complete as specified.

The tendered rate for door furniture shall also include full compensation for supply, installation with door stops and all other installation associated costs.

243.21 Windows:

(a) (Type and size indicated) Unit: No.

(b) Etc for other types and sizes

The unit of measurement shall be the number of doors and windows installed complete as specified.

The tendered rate for windows shall also include full compensation for paintwork, glazing, window sills as specified, and damp-proof sheeting.

243.22 Tiling:

(a) (Description and thickness indicated) Unit: m²

(b) Etc for other types

The unit of measurement shall be the square metre of floor screed laid, as specified, on floors, steps or areas shown on the Drawings or as designated by the Engineer.

The tendered rates shall include full compensation for constructing the floor screeds, including supplying all materials, mixing, laying, finishing, and forming nosings, reedings, skirtings, etc.

243.23 Sanitary Fittings:

(a) (Type indicated) Unit: No.

(b) Etc for other types

The unit of measurement shall be the number of fittings installed complete as specified.

The tendered rate for bathroom fitting shall also include full compensation for supply, fitting, plumbing fittings and all other installation associated costs.

243.24 Taps Valves:

(a) (Type indicated) Unit: No.

(b) Etc for other types

The unit of measurement shall be the number of fittings installed complete as specified.

The tendered rate for taps, valves fitting shall also include full compensation for supply, fitting, plumbing fittings and all other installation associated costs.

243.25 Fire Appliances:

(a) (Type indicated) Unit: No.

The unit of measurement shall be the number of appliances installed complete as specified.

The tendered rate for taps, valves fitting shall also include full compensation for supply, fitting, plumbing fittings and all other installation associated costs.

243.26 Mirrors:

(a) (Type indicated) Unit: No.

The unit of measurement shall be the number. of fittings installed complete as specified.

The tendered rate for mirrors shall also include full compensation for supply, door furniture and all other installation associated costs.

243.27 Paintwork:

(a) (Description and application areas indicated) Unit: m^2

The unit of measurement shall be the square metre of each type of paintwork, calculated from the leading dimensions of the buildings.

The tendered sums shall include full compensation for the supply of all materials, for transport, storage, all equipment and labour, all temporary work and safety precautions, replacement of defective work, protection of completed work and clean-up after completion

243.28 Structural Concrete:

(a) Foundation (Mass Concrete) Unit: m^3.

(b) Reinforced Concrete Unit: m^3.

(c) Floor Slabs (plastic float finish) Unit: m^3.

(d) Roof Slabs (plastic float finish) Unit: m^3.

The tendered rates shall include full compensation excavation, and backfilling, for blinding layers, erecting and dismantling formwork, concrete, steel reinforcement (including 120kg high tensile steel per cubic meter of concrete where the amount of steel is not indicated on the drawings) as well as labour etc., to complete the concrete work as shown on the drawings in addition to the operations and materials specified in this clause.

243.29 Miscellaneous work:

(b) Plumbing Unit: No.

(b) Ironmongery Unit: No.

The tendered rates shall include full compensation for the supply of all materials, for transport, storage, all equipment and labour, all temporary work and safety precautions, replacement of defective work, protection of completed work and clean-up after completion.

ELECTRICAL WORKS

SECTION 1: GENERAL SPECIFICATION

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1.1 REGULATIONS, FACTORIES ACT AND BY-LAWS

The work shall be carried out strictly in accordance with:

(a) the latest issue of "SANS 10142 : Code of Practice for the Wiring of Premises" hereafter called the "Wiring Code".

(b) the "Occupational Health and Safety Act" of 1993 as amended to date and hereafter called the "Act".

(c) the By-Laws and any special requirements of the local Supply Authority.

(d) the local Fire Office Regulations.

In addition, the work is to be of high standard and to the satisfaction of the Engineer.

1.2 NOTICES AND FEES

The Contractor shall give all notices required by and pay all necessary fees, including any inspection fees, which may be due to the local Supply Authority.

At submittal of the official account, the net amount plus 5% handling cost of the fee charged by the Supply Authority for connection of the installation to the supply mains, will be refunded to the Contractor by the Employer.

1.3 SCHEDULE OF FITTINGS

In all instances where schedules of light, socket outlet and power points are attached or included on the drawings, these schedules are to be regarded as forming part of the specifications.

1.4 QUALITY OF MATERIALS

Only materials of first-class quality shall be used and all materials shall be subject to the approval of the Employer and/or representative.

Wherever applicable the material is to comply with the relevant South African Bureau of Standards specifications, or to British Standard Specifications, where no SABS specifications exist.

Materials wherever possible, must be regional Manufacture.

1.5 CONDUIT AND ACCESSORIES

Unless otherwise stated under Section two of this Specification and except where other methods of installation are specified for certain circuits, the installation shall be secured in conduit throughout. Open wiring will not be allowed in roof spaces.

For light and socket outlet circuits, the conduit used shall have an external diameter of 20 mm. In all other instances the size of conduit shall be in accordance with the "Wiring Code" for the specified number and size of conductors, unless otherwise directed in the schedules or indicated on the drawings.

Except where agreed to, or otherwise specified or indicated on the drawings, all conduit to points shall be run via the ceiling slab or roof space.

Whether conduit shall be galvanized or black enamelled is specified under Section 2 of this Specification. However, in damp situations and where exposed to weather, the conduit, accessories and fittings shall be galvanized in all cases.

Mechanical and electrical continuity must be maintained throughout the installation, but conduit shall not be relied upon alone for earth continuity.

Conduit and conduit fittings must be thoroughly inspected for defects before installation, and all sharp edges and burrs removed.

Running joints are to be avoided as far as possible and conduit is to be set to the required angles; normal bends will not be acceptable except as may be permitted in larger diameters.

All conduit fittings except couplings shall be of the inspection type. Where cast metal conduit accessories are used, these shall be of malleable iron. Zinc base fittings will not be allowed.

Bushes shall be of brass only.

Bushes and locknuts are to be used where conduit enters switch boxes. Draw boxes are to be provided in accordance with the "Wiring Code: and wherever necessary to facilitate easy wiring.

As an alternative to the screwed conduit type of installation, as specified above, unscrewed conduit with Cheney type conduit fittings will also be acceptable to the Employer. The use of this alternative system is, however, subject to the following conditions: -

(a) The unscrewed conduit shall be manufactured of mild steel having a minimum thickness of 0,9 mm (20 gauge) and shall be in accordance with SANS 10142. Conduit manufactured of lighter gauge material, i.e. 0,7 mm (22 gauge) will not be permitted.

(b) Bending and setting of unscrewed conduits must be done with special benders and apparatus manufactured for this purpose and which are obtainable from the suppliers of the Cheney system. Damage to the conduit resulting from the use of incorrect bending apparatus or methods, must on indication by the Employer's inspectorate staff, be completely removed and rectified and any wiring already drawn into such damaged conduits must also be completely renewed at the Contractor's expense.

(c) Tenderers must ensure that general approval of the proposed conduit system to be used is obtained from the local electricity supply authority prior to the submission of their tender. Under no circumstances will consideration be given by the Employer to any claim submitted by the Contractor which may result from a lack of knowledge in regard to the supply authority's requirements.

(d) Conduit and accessories used for flame-proof installations and for suspension of lightning fittings as well as all load bearing conduit shall in all instances be of the screwed type.

1.6 CONDUIT IN ROOF SPACES

Conduit in roof spaces shall be installed parallel or at right angles to the roof members and shall be secured at intervals not exceeding 1,5 m by means of saddles screwed to the roof timbers.

Nails or crampets will not be allowed.

Under flat roofs, in false ceilings or where there is less than 0,9m of clearance, or should the ceilings be insulated with glass wool or other insulating material, the conduit shall be installed in such a manner as to allow for all wiring to be executed from below the ceilings.

Conduit runs from distribution boards shall, where possible, terminate in fabricated sheet steel draw boxes installed directly above or in close proximity to the boards.

1.7 SURFACE MOUNTED CONDUIT

Wherever possible, the conduit installation is to be concealed in the building work; however, where unavoidable or otherwise specified under Section 2 of this Specification, conduits installed on the surface must be plumbed or levelled and only straight lengths shall be used.

The use of inspection bends is to be avoided and instead the conduit shall be set uniformly and inspection couplings used where necessary.

No threads will be permitted to show when the conduit installation is complete, except where running couplings have been employed.

Running couplings are only to be used where unavoidable, and shall be fitted with a sliced coupling as a locknut.

Conduit is to be run on approved spacer saddles rigidly secured to the walls.

Alternatively, fittings, tees, boxes, couplings etc. are to be cut into the surface to allow the conduit to fit flush against the surface. Conduit is to be bedded into any wall irregularities to avoid gaps between the surface and conduit.

Crossing of conduits is to be avoided, however, should it be necessary, purpose-made boxes are to be provided at the junction. The finish of the boxes and positioning shall be in keeping with the general layout.

Where several conduits are installed side by side, they shall be evenly spaced and grouped under one purpose-made saddle.

Distribution boards, draw boxes, industrial switches and socket outlets etc., shall be neatly recessed into the surface to avoid double sets.

In situations where there are no ceilings the conduits are to be run along the wall plates and tie beams.

Only approved plugging materials such as aluminium inserts, fibre plugs, plastic plugs, etc., and round-head screws shall be used for fixing saddles, switches, socket outlets etc., to walls. Wood plugs and plugging in joints in brick walls are not acceptable.

1.8 CONDUIT IN CONCRETE SLABS

In order not to delay building operations the Contractor must ensure that all conduits and other electrical equipment which are to be cast in the concrete columns and slabs are installed in good time.

The Contractor shall have a representative in attendance at all times when the casting of concrete takes place.

Draw boxes, expansion joint boxes and round conduit boxes are to be provided where necessary. Sharp bends of any nature will not be allowed in concrete slabs.

Ceiling boxes shall consist of the standard type box with extension ring (50 mm deep).
Draw and/or inspection boxes shall be grouped under one common cover plate, and must preferably be installed in passages or male lavatories.

All boxes, etc., are to be securely fixed to the shuttering to prevent displacement when concrete is cast. The conduit shall be supported and secured at regular intervals and installed as close as possible and to the neutral axis of concrete slabs and/or beams.

Before any concrete slab is cast, all conduit droppers to switchboards shall be neatly spaced and rigidly fixed.

1.9 FLEXIBLE CONNECTIONS FOR CONNECTIONS TO STOVES, MACHINES ETC.

Flexible tubing connections shall be of the plastic sheathed galvanized steel type.

Other types may only be used subject to the prior approval of the Employer's site Electrical Representative.

Connectors for coupling onto the flexible tubing shall be of the gland or screw-in types, manufactured of either brass or cadium or zinc plated mild steel, and the connectors after having been fixed onto the tubing, shall be durable and mechanically sound.

NOTE : Aluminium and zinc alloy connectors will not be acceptable.

1.10 WIRING

Except where otherwise specified in Section 2 of the Specification, wiring shall be carried out in conduit throughout. Only one circuit per conduit shall be permitted.

No wiring shall be drawn into conduit until the conduit installation has been completed and all conduit ends provided with bushes. All conduit to be clear of moisture and debris before wiring is commenced.

Unless otherwise directed in Section 2 of the Specification or indicated on the drawings, all wiring for lighting circuits is to be carried out with 2,5mm² conductors with a 1,5mm² earth conductors and for the socket outlet circuits the wiring shall consist of 4,0mm² conductors with a 2,5mm² earth conductors. In all other instances the number and size of cables drawn into any conduit shall be as specified or shown on the drawings. Sizes and numbers of cables not specified must be determined in accordance with the "Wiring Code".

The loop-in system shall be followed throughout, and no joints of any description will be permitted.

The wiring shall be done in PVC insulated 600/1000 V grade cable to SANS 10142.

Where cable ends connect onto switches, fittings, etc., the end strands must be soldered or neatly and tightly twisted together and firmly secured. Cutting away of wire strands of any cable will not be allowed.

1.11 SWITCHES AND SOCKET OUTLETS

All switches and switch-socket outlet combination units shall conform to the Employer's Quality Specifications.

None other than 16 A 3-pin sockets are to be used, unless other special purpose types are distinctly specified or shown on the drawings.

All light switches shall be installed at 1400mm above finished floor level and 450mm for all socket outlets unless otherwise stated in the Schedule of socket outlet points. Special power points shall also be installed as directed in the schedules which form part of this Specification, or alternatively the heights of outlet points may be indicated on the drawings.

1.12 SWITCHGEAR

Switchgear, which includes circuit breakers, iron-clad switches, interlocked switch-socket outlet units, contactors, time switches, etc., is to be in accordance with the Employer's Quality Specifications and shall be equal and similar in quality to such brands as may be specified. All switches shall be Heineman (CBI), Merlin Gerin or other approved brand.

For uniform appearance of switchboards, only one approved make of each of the different classes of switchgear shall be used throughout the installations.

Unless otherwise specified elsewhere in this document the minimum fault level of all switches shall be 5KA

1.13 LOW VOLTAGE DISTRIBUTION BOARDS, SWITCHBOARDS AND CONTROL PANELS SWITCHGEAR

1.13.1 GENERAL

This specification provides for the design, manufacture, delivery, installation, testing and commissioning of low and medium voltage distribution boards for voltages up to 660V AC and 500V DC.

Low voltage distribution boards, switchboards and control panels shall be provided and installed as indicated on the drawings and as specified in the specification and schedules.

Distribution and switchboards offered must comply with these specifications, the drawings and schedules and shall comply with the relevant parts of SABS 1180 (Electrical Distribution Boards).

As it is not intended to penalise a Sub-Contractor on account of distribution boards offered, it is essential that the costs of all distribution boards be indicated in the Schedules in order to facilitate the determination of costs of alternatives.

The Sub-Contractor shall note the dimensions of the rooms or openings in which the panels will be mounted and also the dimensions of the access routes and doors. Panels shall be so constructed that they may be taken through the doors after doors have been placed in position.

The Sub-Contractor shall level, fix all distribution boards to the satisfaction of the Engineer.

The Sub-Contractor shall note sizes and positions of cable trenches and vertical shafts and shall include in his tender all supporting steel work to straddle trenches and vertical shafts to support distribution boards securely.

1.13.2 STANDARDS AND PROTECTION

Equipment shall be in accordance with the applicable SABS specifications and Codes and with this Specification.

Selection of materials, finishes, equipment, etc shall also be based on the conditions where the boards and equipment are to the installed, e.g. corrosive, hot, wet, damp, dusty, etc.

Boards, equipment and materials which are exposed to sunlight shall be coated with a UV resistant surface finish.

1.13.3 CONSTRUCTION AND FINISHES

1.13.3.1General

The type of board (i.e. flush, surface, floor standing) and position is described in detail in the drawings and/or in the Schedules of Particulars.

Boards shall be constructed as indicated on the relevant general arrangement drawings, if applicable.

All boards shall be installed at the specified height, with the top edge of the tray not exceeding 2000mm above finished floor level. Distribution boards shall be supplied with doors with latch locks. The face plates must be supplied with two din locks and 50mm2 pad locks with two keys.

Lifting eyes shall be provided on large boards and shall be manufactured in modular sections so that they may be easily transported and then assembled in position on site.

Cables and conduit entry to be as indicated on drawings or as required by their locations.

Glanding and terminating cubicles and busbar chambers are to have screwed or bolted covers. Quick release covers will not be acceptable.

The gauge of the metal shall be suitable for the size of board and construction employed. Suitable bracing shall be employed to ensure adequate stiffness of panels, etc.

Barriers running the full height and depth of each board shall be provided between adjacent panels.
1.13.3.2Gland Plates for Cables

A suitable gland plate shall be provided in the cable glanding compartment of each tier of the board.

Gland plates shall be bolted down in sections not wider than 600mm and have a minimum thickness of 3mm. Any gland plate shall be removable without interfering with the adjoining gland plates.

Gland plates shall be a minimum of 400mm from cable terminals.

Where cable gland plates are drilled or punched on site for cable entry, the gland plates shall be straightened if deformed during these operations.

Gland plates must be positioned to suit cable entry and termination.

A cabling through or duct shall be provided from the glanding compartment to each cubicle or piece of equipment to allow for the running of the cables, both power and control.

All wiring, connections, instruments and other equipment shall be mounted inside the board and not on the outside, unless otherwise specified. Wood or artificial wood products shall not be used inside switchboards as mounting for terminals or partitions. Sidanyo, Delaron, or equal not less than 6mm thick, or other materials as prescribed or approved by the Engineer shall be used.

Space for 30% future expansion on MCCB's and CFS units and 50% future expansion on contactors, time switches and isolators shall be allowed on all boards in addition to any spare accommodation indicated on the diagrams unless otherwise specified.

1.13.3.3 Free standing Boards

Free standing boards shall be of the free-standing pedestal type with or without doors as specified and shall be so designed as to enable the boards to be extended without undue difficulty.

Boards shall comply with BS 5486: 1977 (Factory Built Assemblies of Low Voltage Switchgear).

The boards shall be constructed of minimum 1,6mm sheet steel suitably stiffened and reinforced by a 2mm sheet metal framework and shall be complete with all equipment, internal wiring and labelling.

1.13.3.4 Flush and Surface mounted Boards

Both flush and surface mounted boards shall consist of an architrave frame which shall carry the chassis for equipment, panel and door and a bonding tray onto which the architrave frame shall be secured.

Distribution boards shall comply with SABS 1180: Part I and II as applicable.

Bonding trays for flush mounted boards shall be designed to be built into the wall, shall have expanded metal spot welded to the rear and sufficient metal straps on the sides and shall be strong enough to carry the weight of the wall above it.

The tray shall be galvanised.

1.13.3.5 Weatherproof Construction

Weatherproof construction shall be effected by double turn construction of the architraves with flanged doors and bolt on panels.

1.13.3.6 Extendibility

The boards shall be extendible and have an initial spare cubicle capacity of 10% or as specified on the drawings.

1.13.3.7 Standby Power Section

The section of a board accommodating circuits on a standby supply shall be mechanically and electrically separated from the normal section.

All panels associated with the standby section shall be clearly labelled and identified, and shall be painted as specified on the drawings.

Sufficient removable panels shall be provided to afford access to all equipment for maintenance, service and replacement purposes.

The back panels where specified shall be of similar construction to the front panels.

1.13.3.8 Clearances

Sufficient space shall be left inside panels for incoming and outgoing cable connections and for interconnections and control wiring, taking into account the sizes and quantities of cables and wires involved.

Equipment on boards may be installed butting. Undue cramping of equipment and wiring shall, however, not be permitted and the following minimum clearances must be maintained:

- Clearance of not less than 75mm between sides, top and bottom of architrave and any equipment mounted on the chassis.

- Clearance of not less than 75mm between rows of equipment (measured between terminals).

1.13.3.9Doors

Doors shall be provided as required and prescribed. Where doors of sheet steel finished in the colour specified are required, they shall be manufactured of the same gauge material as the remainder of the panels.

Doors shall be suitably braced to ensure stiffness and shall have smooth, flat finish.

Door hinges shall be heavy duty and shall be constructed to permit easy removal of doors. Piano hinges are not acceptable.

Where hinges are used they shall preferably be concealed. If a surface mounted hinge is used it shall be chromium plated. Provision shall be made for adjustment of hinges to facilitate lining up of distorted doors.

Locks shall be 'Union' type and shall have master key facilities for the entire installation and separate key facilities for each board. Two individual keys shall be provided with each board and four master keys shall be provided for the entire installation.

Doors shall be fitted with approved handles and spring-loaded catches without locks where specified.

Doors shall be fitted with approved handles and square key locks where specified.

1.13.3.10 Removable panels

Panels of sheet steel, finished in the colour specified, shall be suitably finished, with machine-punched slots to allow for flush mounting of equipment.

1.13.3.11 Dust and Vermin Proofing

All boards shall be completely vermin proofed.

No holes other than those required for cable or conduit entry shall be allowed. Should extra holes be required for temporary installations, these holes shall be suitably blocked off on the removal of these temporary installations.

Where doors or removable covers are situated and are required to be dustproofed, they shall be dustproofed by means of a minimum 10mm thick non-perishable gasket, resistant to deterioration from heat, chemicals and moisture and capable of being compressed to half its original thickness.

- Where doors are flush fitting, gaskets shall be glued to the fixed flange.

- In the case of projecting doors, gaskets shall be glued to the door and not the associated framework.

- Similarly suitable gaskets shall be used wherever push-buttons, indicator lights, isolator handles, etc. pass through a door or panel.

Switchgear shall be vermin proof both in the service and isolated positions.

1.13.3.12 Ventilation

Boards fitted with heat generating equipment shall be arranged to prevent heat building up to a temperature which could damage any of the equipment or cabling on the board.

1.13.3.13 Painting and Protection

The paint finish of the boards on the interior and exterior shall be of a high quality and shall be suitable for exterior use.

1.13.3.14 Labelling

All statutory safety warning notices shall be in both English and IsXhosa.

All boards shall be labelled as shown on the drawings and approved.

Black letters on white background shall be used for all normal labels and red letters on white or yellow background for danger notices.

The main isolating switch or switches shall be clearly labelled in accordance with the regulations.

Size and origin of supply cables and busbars shall be clearly labelled on all boards.

All grouped single, double and three pole circuit breakers on distribution boards shall be properly labelled, indicating number of circuits controlled.

All equipment situated inside the board, e.g. contactors, relays, fuses, timers and time switches shall be clearly marked, indicating function, circuit controlled and fuse rating.

The board designation label shall be fitted at the top centre of the board. Individual labels are to be fitted to each compartment door and corresponding fixed portion of rear panel (if accessible).

All circuit labels shall be the same size for boards or similar equipment supplied under this Contract.

Labels shall be white/black/white composition engraved traffolite secured by self tapping screws or channelling.

Letter size: Main label 20 mm, other labels 6 mm.

Labels on power cables shall be attached with approved type plastic adjustable clips.

The labels for power cables shall be provided with holes for the clips to pass through for fastening. Each power cable label shall be fastened with at least two clips.

A legend card, covered by removable 2mm thick transparent acrylic plastic ("PERSPEX") or equivalent panel, shall be installed on the inside of the door of the boards or cubicles and circuits shall be designated on this card.

Accessories

Any special door keys (in duplicate), special tools, slinging eye bolts and foundation bolts, shall be supplied with each board.

1.13.4 WIRING AND EQUIPMENT REQUIREMENTS

1.13.4.1 General

Switchgear, control gear, motor control gear, etc shall be positioned and installed as indicated on the relevant drawings or as approved.

The gear shall be installed so that it is positioned squarely on its supporting steelwork, i.e. "lined up" in both the vertical and horizontal planes.

All auxiliaries (relays, timers, etc) shall be mounted in the same cubicle as their associated motor starter.

All motor ammeters shall have a suitable overload scale to cater for motor starting currents. The motor full load value shall be indicated by a red line on the scale.

Each main incomer shall be equipped with ammeters, voltmeters and selector switches as specified on the drawings.

All equipment contained within the switchboards shall be designed to operate continuously at its maximum specified rating under the stated service and atmosphere conditions.

1.13.4.2 Interchangeability of Equipment

Similar and equivalent equipment and auxiliary equipment shall be identical and interchangeable in all respects. It shall be possible to replace any equipment with any similar and equivalent equipment under this Contract.

Where any specific type and make of equipment is used, the whole of this Contract shall be carried out with that specific make and type of equipment to ensure uniformity of appearance and complete interchangeability.

1.13.4.3 Busbars

Busbars shall be installed in all boards and may be installed either horizontally or vertically and in main boards shall be run in a separate compartment, isolated from the rest of the board.

All terminations onto busbars and interconnections shall be bolted with cadmium plated high tensile bolts, washers, spring washers and nuts.

Spacing of busbars shall be calculated in accordance with SABS 784 as amended in relevant SANS specifications, bur shall not be less than 50mm.

Busbars shall be mounted on substantial porcelain or other approved insulators. Bare conductors must be so spaced that with all clamps, lugs and lead offs in position, the spacing between any conductor and earth shall not be less than 40mm.

Connections to the busbars must be effected by means of the correct clamps or lugs with soldered connections or with connections crimped with the correct equipment.

Busbars shall each be identified by means of 100mm long painted (or other approved) phase colouring bands spaced not more than 300mm apart.

The following colours shall be used:

Number of Phases	Phase Colour	Neutral Colour	Earth Colour	Special Purpose Colour
1	Red	Black	Green/Yellow	Orange
3	Red, White, Blue	Black	Green/Yellow	Orange

Where busbars are mounted horizontally the longer dimension shall be in the vertical plane. The busbars shall be designed to withstand the mechanical and thermal stresses of any possible short circuit that could occur at that point in the system.

Rating of busbars shall not exceed 1.55m A/mm2 for copper and 1,0A/mm2 for aluminium.

A solid copper earth bar with sufficient ways for all the earth conductors and 50% spare space shall be provided in an easily accessible position near the cable gland tray.

Where small leads are connected directly onto the busbars. such as voltmeters, fuses, etc, they shall be provided with a 20 ampere fuse mounted at the busbar and a 2 ampere fuse at the item of equipment.

Busbar chambers and droppers shall be segregated from each other. Also busbars shall be completely screened from any other compartment by removable bolted covers. Furthermore, the busbar supports shall divide the busbar chamber into discrete sections.

All busbar contact surfaces shall be tinned.

All bracing and other insulating material shall be non hydroscopic.

Droppers from the busbars to the terminals of fuses or isolators must be of adequate section for the maximum rating of the isolator irrespective of the circuit rating. Colour coding will be as for main busbars. All droppers shall be fully insulated.

1.13.4.4Wiring

All internal wiring to the boards shall be carried out in PVC insulated to SABS 150 having a minimum of 7 strands per conductor, 660/1000 volt graded and colour coded to BS 158.

All terminals used shall be in accordance with the relevant clause of this specification.

All wiring shall be neatly grouped and laced. Wiring shall not be run at random but shall follow board construction features as far as is possible.

Only wires of the same phase shall be grouped or bunched together.

No excessive bunching of wiring, which will impair the current carrying capacity will be accepted.

All wiring is to be kept free and away from any exposed terminals or other uninsulated current carrying parts.

No joints will be allowed in internal wiring, and all connections to busbars or earth bars shall be made with tinned copper cable lugs soldered or crimped to the ends of the conductors and bolted to busbars by means of cadmium plated high tensile steel bolts and nuts provided with spring washers.

Connections to terminals shall suit the connectors used, but in any case terminal clamp screws shall not bear directly on the conductor.

Crimp lugs or ferrules shall be used on all conductors exceeding 10mm2.

Wiring of any one cubicle shall not run through other cubicles unless the wiring is run in conduit or ducting.

Wires shall be clearly marked at all termination points in accordance with the numbering of the wiring diagram, by means of numbered ferrules, or other approved method.

When the board main switch is switched off, no live incoming or other wiring shall be accessible. The incoming terminals must be screened. Where connections are taken from the incoming side of the main switch, they shall be covered by a screen marked "isolate Feeder before Removing Screen". If any circuits are energised from other sources, clear warning notices to that effect shall be fined and such terminals shall be clearly marked.

Control circuit wiring shall be run in PVC trunking where feasible and elsewhere in a strapped harness with sufficient slack at panel doors. PVC trunking with slotted sides shall be used.

Where control circuits are interlocked for sequence control the interlocking circuits shall be made through auxiliary contacts on the circuit isolator to prevent live feed back in panels that are isolated.

1.13.4.5Earthing

All boards shall be fitted with earth bars.

Free standing boards shall be fitted with a continuous full length earth busbar.

All sections of the board and all equipment on it shall be earthed.

Hinged doors having electrical equipment mounted on them shall be earthed to the board by means of a flexible earth strap.

1.13.4.6Terminals

Terminal assemblies shall consist of a metal mounting rail onto which terminal modules are fixed.

For cables up to and including 10mm2, clamp type terminals may be provided, but the type where the clamp screws bear directly on the conductor will not be accepted.

For conductors exceeding 10mm2, terminal modules suitable for crimping lugs or ferrules shall be used.

Terminal modules shall have rigid insulating barriers between poles to provide an adequate creepage path for use at 440V between adjacent poles for 380V application.

The terminals of the modules shall be large enough to accommodate the cable sizes specified.

All terminals shall be clearly marked in accordance with the working drawings and wiring diagrams and as approved.

Additional spare terminals shall also be provided as specified or indicated on the drawings for the purpose of looping additional remote circuits, with a minimum of 20%.

1.13.4.7Workshop Drawings

Workshop drawings indicating the following shall be approved by the Engineer before manufacture commences:
Boards General

(a) Front, side and back elevations of the boards
(b) Typical sections through the boards
(c) Construction details
(d) Dimensions and construction details of board
(e) Colour of board sections
(f) Placing of switchgear on boards
(g) Detail and position of legend card holder
(h) Details and position of schematic drawing holder
(i) Wording, position, size and colours of name strips and notices
(j) Assembly and holding down details of each board
(k) Full schematic wiring diagrams showing terminal wire and component numbers and circuit designations.

<u>Busbars</u>

(a) Current rating

(b) Fault current rating

(c) Positions and spacings of busbars and access to busbars

(d) Dimensions of busbars

(e) Details, positions and spacing of supports

(f) Type of material of busbars and supports

(g) Busbar identification

<u>Switchgear</u>

(a) Minimum fault capacity of switchgear

(b) Type and manufacture of switchgear used

(c) Current and voltage transformer ratio and V A ratings

As Built Drawings and Manuals

1. Instruction manual shall be complete with all relevant drawings to enable the switchgear, relays and other equipment to be dismantled and serviced, including:

(a) Descriptive pamphlets for each contactor, switch, isolator, fuse, fuse switch, timer, relay etc installed.

(b) Names and addresses of suppliers and manufacturers of the equipment installed.

(c) Type test data for equipment installed.

One print of the drawing relevant to a board shall be placed in a plastic holder in the board or, where specified, mounted framed behind glass on a wall near the board.

1.13.4.8 Installation and Erection

The boards shall be properly fixed to the floors or supporting steelwork.

The Sub-Contractor shall note sizes and positions of cable trenches and vertical shafts and shall include in his tender all supporting steelwork to straddle trenches and vertical shafts to support boards securely.

Steelwork supporting the switchgear shall be installed and positioned as indicated on the relevant drawings or as approved. The steelwork shall be painted as specified before the gear is installed. No gear shall be installed until the steelwork has been formally inspected and approved by the Engineer.

The prices for the erection of distribution boards shall include the making off and terminating of all cables and wires unless these are separately indicated for pricing.

The boards shall be properly earthed to the substation and/or building earthing system.

When aluminium core cables are used, suitable tinned copper or aluminium lugs with Densal paste shall be used for the terminations.

The costs for the supply and delivery of the erection tools, materials, equipment and consumables shall form part of the price for the erection of the boards.

All board finishes shall be made good to the satisfaction of the Engineer before final handover.

1.13.4.9 Inspections, Tests and Commissioning

Each board and its components shall be subjected at the Manufacturer's works to the routine tests, called for in the appropriate SABS and BS Specifications and this Specification.

The following tests shall be performed on all circuits:

(a) Full operational tests of opening and closing each circuit breaker and the contactor from their respective protection relays and control devices inclusive of sequence controls where required.

(b) Pressure tests between phases and between phases and earth.

(c) Primary injection test of all protective relays.

(d) Secondary injection test of motor overload devices.

(e) Pressure test of all secondary wiring at 2kV for one minute.

(f) Polarity tests of current.

1.14 WORKMANSHIP AND STAFF

All artisans employed on the service must be in possession of a Wireman's Certificate of Registration. Apprentices and Improvers, not in possession of this Certificate cannot be employed on the service without the prior approval of the Employer.

The workmanship shall be of the highest grade and to the satisfaction of the Employer and/or his representative.

All inferior work shall, on indication by the Employer's Inspecting Officers, immediately be removed and rectified by and at the expense of the Electrical Contractor.

1.15 EARTHING OF INSTALLATION

The type of main earthing must be as required by the supply authority, if other than the Employer, and in any event as directed by the Employer's Representative, who may require additional earthing to meet test standards.

Installations shall be effectively earthed in accordance with the "Wiring Code" and to the requirements of the supply authority.

All hot and cold water and waste pipes are to be effectively bonded by means of 12,5mm x 1,60mm solid or perforated copper tape (not wire), clamped by means of brass bolts and nuts. The tape is to be fixed to walls by means of rounded brass screws at intervals not exceeding 150mm.

1.16 MOUNTING AND POSITIONING OF LIGHT FITTINGS

The Electrical Contractor is to note that in the case of board and acoustic tile ceilings, i.e. as opposed to concrete slabs, close co-operation with the Building Contractor is necessary to ensure that as far as possible the light fittings are symmetrically positioned with regard to the ceiling pattern.

The layout of the fittings as indicated on the drawings must be adhered to as far as possible, but the exact positions must be confirmed with the Employer’s Representative.

Fluorescent fittings installed against concrete ceilings shall be screwed to the outlet boxes and in addition 2 x 6 mm expansion or other approved type fixing bolts are to be provided. The bolts are to be 3/4 of the length of the fittings apart.

Fluorescent fittings to be mounted on board ceilings shall be secured by means of two 40 mm x No. 10 round head screws and washers. The fittings shall also be bonded to the circuit conduit by means of locknuts and brass bushes. The fixing screws are to be placed 3/4 of the length of the fitting apart.

In addition to the above, an earth conductor is to be taken from the earthing terminal on all fluorescent fittings and solidly bonded onto the conduit installation.

Incandescent fittings are to be screwed directly to outlet boxes in concrete slabs. Against board ceilings the fittings shall be secured to the brandering or joints by means of two 40 mm x No. 8 round head screws.

Before any light luminaires are ordered by the Contractor, the makes and types of these luminaires must be approved by the Employer.

1.17 VARIATIONS IN EXTENT OF CONTRACT

The Employer reserves the right to instruct the Contractor to carry out variations to the contract or in accordance with the prices quoted by the Contractor in the Price Schedule for Variations or Bill of Quantities, whichever is applicable.

For variations not provided for in the Price Schedule, or Bill of Quantities, the Employer may call on the Contractor to submit a separate written quotation.

Labour and material shall be based on items in the price schedule of the Contract, and no payment will be made for the transport of labour and material to and from the service.

The Employer, however, reserves the right to execute any alterations or additions that may be necessary with its own staff.

ELECTRICAL WORKS

SECTION 2: SUPPLEMENTARY SPECIFICATION

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2.1 GENERAL

The installation shall be suitable for operation in Dordrecht and Indwe, with a maximum atmospheric temperature of about 40□C and a minimum temperature of about -10□C and an altitude of about 1500M above sea level.

2.2 SUPPLY

The construction comprises of; sports field, change rooms and a guard house and will be supplied from a new 100kVA transformer.

The contractor will be required to install all cabling and switch gear from the transformer to the above facilities.

2.3 SCOPE OF WORKS

The scope of the electrical works covers the supply, delivery, off-loading, storage, installation, commissioning, testing, handing over and free maintenance for the period stated in the tender document of all specified equipment and materials for the electrical installations as required for the additions stated above.

The onus is on the tenderer to ascertain any local conditions or peculiarities which might affect the contract, and which are not shown on the drawings.

The scope of works is summarized as follows:-

a) Lighting, power and distribution thereof in all new buildings as per drawings.
b) Supply and installation of all Low Voltage main cabling between kiosks and to various DB points in all buildings as shown on drawings.
c) Supply and installation of all kiosks for the LV reticulations system.
d) Provision of lighting protection installation in all new facilities as per layout drawings and according to the specification.

2.4 NATURE OF CONTRACT

This contract shall form part of the main contract, and the Electrical Contractor shall enter into a contract with the main contractor.

2.5 CABLES

This clause covers the supply, delivery, installation and connection of all low-tension cables as specified in the schedules and as indicated on the drawings.

2.5.1 GENERAL

The storage, transport, handling and laying of underground cables shall be done according to approved and accepted methods. The contractor shall ensure that he has sufficient and suitable equipment as well as adequate labour at his disposal, thereby preventing damage to the cables at all times.

Provisional lengths of cables only are indicated in the Schedule for Cables for the purpose of tendering. The onus is however, on the contractor to measure the actual lengths of cable required before ordering. All measurements are only to be done after any possible alterations to cable routes or positions of substations etc., have been made by the Engineer. Reasonable allowances have been made to the provisional lengths in the Schedule for Cables for joints, cable ends, circuits etc. but payments shall only be made for actual lengths of cable installed. Excess cable shall not be considered for take-over.

2.5.2 INSTALLATION OF CABLES

Cables must be layed in servitude positions as indicated on the drawings and cable trenches within the electricity servitude shall be 750mm deep for low tension cables. Trenches shall be 300mm wide for single or double cables.

In the event more than two cables are laid in one trench, the trench shall be proportionately increased in width over the whole length of the trench so that the cables are spaced not less than 150mm apart. The bottom and sides of the trenches shall be even and free from any object that may damage the cable.

The contractor shall provide and supply all materials necessary to cover trenches so that no injury to the public is caused. Further, all precautions are to be made to prevent damage and subsidence to buildings, roads, sewerage or any other property on the site.

Cables may not be covered before inspection by the Consulting Engineer and/or Works Inspector for approval failing which the Contractor may be required to open the trenches at a later time for inspection at own costs. Cable drums are to be adequately supported on adequate jacks or on drum trailers when cables are being rolled off, thereby reducing any possible twisting, tension or other damage being inflicted upon the cable.

Cables trenched in hard or soft rock are to be laid on a 150mm thick layer of soil and then covered with another 150mm thick layer of soil before the trench is completely filled. (The above-mentioned soil is to be of approved sand or soft soil).

Each cable end must be connected by way of the earth continuity conductor and/or cable armouring, (where applicable), local earth bar, other earth wires, switch gear etc.

The cables must be laid following the routes indicated on the drawings and the servitude dimensions are to be strictly adhered to. Where necessary, revised routes shall be determined on site in conjunction with the Engineer/Representative.

At each indicated position where cables pass below buildings, streets, pitch fibre pipes or rigid PVC pipe sleeves will be supplied through which the cables can be installed. The sleeves will be unbroken and will extend from sidewalk to sidewalk and will also extend past each curb.

Where cable routes and other services cross over (e.g. Post Office cables) the cable is to be protected and laid to the satisfaction of the other service. A 50mm thick concrete block shall however extend 300mm on either side of the cables.

The contractor shall give special attention to cables being pulled through pipes and channels to prevent such cables from being stretched, twisted or scoured. All such pipes and channels shall be properly sealed in an approved manner after all cables have been installed.

Approved cast iron recessed in concrete cable markers or other approved **cable markers** are to be installed above ground level at points of entry into buildings, at changes of direction, at cable joints and on straight runs at intervals not exceeding 50m or where shown on the relevant drawings. An engraved (not stamp) stainless steel plate reading 'ELECTRIC CABLE' and an arrow indicating direction of the cable route shall be grouted into the top. Exact positions of cable markers shall be confirmed on site. The cable marker shall be installed in the centre of the cable trench. Where excavations are done in the vicinity of existing cables or where existing cables are to be exposed only labourers may be used who are competent and familiar with this type of work.

Such excavations may only be done with the use of hand tools and only shovels may be used within 300mm of the existing cables.

Backfilling of the trenches shall be done in layers of 150mm and each layer shall be thoroughly compacted before the following layer is filled in.

In order to protect the cable the contractor shall install a 150mm wide standard plastic warning tape. The marker tape shall be approximately 300mm above the cable and shall run the full length of the cable. The words 'DANGER – CABLE UNDER' or a similar warning symbol shall appear on the tape at least at 1000m intervals throughout the entire length. An additional 50mm layer of ground shall be placed over the tape before the final backfilling is thrown in.

2.5.3 CABLE JOINTS AND CABLE ENDS

The number of cable joints must be kept to a minimum and these shall only be permitted if the length of the cable is longer than that provided on a new drum. All joints and the termination of the ends of underground cables shall be done by competent cable jointers in terms of approved and accepted practice. Joints and ends must be done in strict accordance with the manufacturer's requirements and specification. In all instances where joints are carried out, a hole of sufficient size must be made in order that the joint can be properly made.

The ground beneath the cable joints must be firmly compacted and leveled to prevent sagging of the joints.

If cut cables cannot immediately be terminated, the cable ends must immediately be sealed off.

In all cases ends of PVC low tension cables must be finished off with approved cable glands specifically designed for this purpose.

2.5.4 TESTING OF CABLES

Following completion of the installation of the cables for each section, the insulation resistance shall be tested with an approved "meggar" type instrument. This test shall performed at a terminal voltage of 625 V for LT cables. The results of the test shall be witnessed by, and be to the satisfaction of the Engineer/Representative and the representative of the Client.

The tenderer shall also test and ensure that, at all points where cables are connected, the phase colours and phase rotations are correct. This Test shall be done with an approved phase rotation meter and shall be witnessed by, and be to the satisfaction of the Engineer/Representative.

2.5.5 DRAWINGS

The contractor shall complete "as built" drawing after the installation to indicate the exact positions of the cable routes, joints etc. These details are to be indicated on a site plan.

All important and necessary dimensions shall also be clearly indicated on the drawing so that the drawing may, in future, be used to locate the positions of the cables, joints etc. The drawing must be handed over to the Engineer/Representative for approval as soon as the cables have been installed.

2.5.6 LT CABLES

The tenderer shall install the LT cable systems as indicated on the drawings and schedules.
All LT cables shall be of the multi-core PVC SWA PVC type with stranded copper conductors in accordance with SANS 150/1957 as amended.

2.5.7 SUPPLY CABLES

Low voltage Distribution Cables

The details of the low voltage distribution system are provided on the plans and in the schedules. All low voltage cables shall be supplied with armoured sealed copper conductors, PVC insulated steel wire armoured and PVC sheathed.

The supply cables from the Main Distribution Kiosk shall be installed in a trench in the ground and 75/110 mm sleeves and connected via bottom entry tails to the sub-distribution board located in the other classrooms and toilets, as shown on the respective drawings.

All low voltage cables terminations in distribution boards shall be terminated with "Pratley" glands and holes for glands shall be cut with whole saws of the correct size to allow for proper lightening of the gland on the switch board frames.

Although cables have been specified and lengths included in the schedule, it should be noted that all cable sizes are subject to change and no cables shall be ordered without the approval of the Engineer.

2.6 CABLE LENGTHS

For tender purposes the cable lengths shall be as indicated in the schedule of cables. The contractor must measure the cable lengths on site after all routes have been approved by the Engineer/Representative before the cables are ordered, and the contract price shall be adjusted to the actual cable lengths.

2.7 FIXING OF CABLES

Where cables run along walls, ceilings, etc., they shall be secured on cable trays, or as specifically specified. In all cases expanding type fixing systems shall be used for fixing the equipment to the walls and on no account will wood plugs, etc., be accepted. Whilst setting out the positions of the cable supports the contractor shall bear in mind the importance attached to the minimum bending radius of the cables.

Cable trays shall be 200mm wide and shall be manufactured from perforated rolled steel with a minimum thickness of 1,2mm.

The trays shall have an upstand of at least 19mm on either side and shall be hot dip galvanized to SANS 787. Trays shall be installed with all the required bends, T-junctions etc.

2.8 CABLE SLEEVES

The contractor shall be responsible for the supply, delivery and installation of all the sleeves as indicated on the drawings, and as given in the schedule for sleeves.
90□ Bends will not be permitted this shall be overcome by the use of two 45□ slow bends.

2.9 LOW VOLTAGE DISTRIBUTION BOARDS

The scope of this portion of the works will be the supply, delivery, off-loading, possible storage, placing into position, erecting, testing and commissioning of all low voltage boards required for the project. All boards have been detailed on the attached drawings and tenderers should price in accordance with the requirements. Before

any board is manufactured, the *Sub-Contractor* shall obtain approval from the *Engineer* to proceed with manufacture of that particular board.

Supply and install the distribution boards in the position shown on the drawings.

One spare 25mm dia. and three spare 20mm dia. Conduits must be supplied from all distribution boards to roof spaces.

Three sets of factory drawings on all distribution boards must be submitted for inspection before manufacture of the distribution boards commence.

Distribution boards of the new buildings must be wall mounted and must have doors, which must be Padlockable.

The current capacity of busbars may not exceed 1,6 A/mm².

Openings into distribution boards must tie up with the installation.

The distribution boards must be placed in such a way that the Builder can build them into the walls where applicable. Special provision must be made that the distribution board tray is not damaged while being built in.

All distribution boards must be installed level.

Apparatus and requirements by the Supply Authority are not indicated on the distribution board diagrams and schedules. It is expected of the Electrical Contractor to install all such apparatus, accessories and systems as may be required by the Supply Authority, as part of the electrical contract price.

A neutral bar associated with each bank of MCB's must be positioned below each bank of MCB's and must be wired in the same sequence as the MCB's. Not more than one conductor per connector will be accepted.

Only hydraulic-magnetic operated MCB's must be used if the new micro ranges are not used and shall be of Heineman (CBI), Merlin Gerin or other approved type..

All circuit breakers must have a minimum fault current rating of 5 kA including the distribution main.

Busbar stubs must be provided where more than one conductor terminates on equipment.

Earth conductors must be fastened with two screws and shoes to earth bars.

In all cases, boards must be large enough or supplied with suitable ventilation louvers to ensure that the temperature within the board under full load conditions, does not exceed the maximum temperature allowed so as to ensure correct tripping of all breakers and correct operation of all equipment in the board.

2.10 SURFACE INSTALLATION

Surface conduit installations will only be permitted in the ceiling spaces and in all cases conduits are to be suitably fixed to the roof structures.

2.11 WIRING

All wiring to outlet points shall be by means of PVC insulated conductors in conduit or channels. Only one circuit per conduit will be permitted. In all cases bare earth wire shall be installed with all circuits and connected to metal boxes to ensure earth continuity.

2.12 SOCKET OUTLETS

All socket outlets shall be of the 3-pin 16 A 220V/250V outlets from Crabtree or other approved type with shuttered live and neutral sockets operated by the earth socket.

All the circuits for socket outlets shall be supplied with 2.5mm² PVC insulated stranded copper wire and 2,5mm² bare copper earth wire.

Type A (Normal)

Socket outlets shall be flush type 3-pin 16 A 220V/250V single phase single socket with a switch for mounting in a 100 x 100 x 50mm galvanized box and must be in accordance with SANS specification 1514 Part 1 of 1990 as amended.

Type B (Normal)

Socket outlets shall be flush type 3-pin 16 A 220V/250V single phase double sockets with a switch for mounting in a 100 x 100 x 50mm galvanized box and must be in accordance with SANS specification 1514 Part 1 of 1990 as amended.

Type C (Normal)

Socket outlets shall be 3-pin 16 A 220V/250V single phase single sockets with a switch for mounting in power skirting and must be in accordance to SABS specification 1514 Part 1 of 1990 as amended

Type D (Non-Standard)

Socket outlets shall be of the non-standard, single socket type as supplied by Crabtree or other approved type with red base and with a flat earth pin in the 12 o'clock position for mounting in power skirting and must be in accordance to SANS specification 1514 Part 1 of 1990 as amended. The coverplates shall be high grade red baked enamel paint.

Type E (Non-Standard)

Socket outlets shall be of the non-standard single socket type as supplied by Crabtree or other approved type with red base and with a flat earthpin in the 12 o'clock position for mounting in a 100 x 100 x 50mm galvanised box and must be in accordance to SABS specification 1514 Part 1 of 1990, as amended. The coverplates shall be high grade red baked enamel paint. This shall be single phase double socket type outlet.

TYPE F (Non-Standard)

Socket outlets shall be of the non-standard double socket type as supplied by Grabtree or other approved type with red base and flat earthpins in the 1200k position for mounting in 100 x 100x 50mm galvanised box and must be according to SANS 1514 part 1 of 1990 as amended.

2.13 SWITCHES

All switches shall be of the 16 A 220V/250V rating from Crabtree or other approved type and shall be installed 1400mm above finished floor level.

2.14 COVER PLATES

All cover plates shall be manufactured of metal with high grade ivory/white baked enamel paint and emergency outlet points shall be finished with red baked enamel paint on cover plates and the cover plates on the power skirting shall match the colour of the power skirting. These shall comply to the SANS 1084 requirements as amended from time to time.

2.15 HOSE-PROOF SWITCHES & SOCKET OUTLETS

All hose-proof switches and sockets as indicated on the drawings must comply to the SANS requirements and standards. The switch box must be manufactured from cast iron or aluminium or fibre glass material with the necessary amount of screwed inlet points. The 16 A switch and/or socket must be mounted on the inside of a recessed wall box with a slide or hinged front cover for single or double outlet points.

2.16 LIGHT LUMINAIRES

The contractor shall allow for the supply, delivery and installation of all light luminaires as specified, and indicated on the drawings and in the schedules.

N.B. All fluorescent luminaires shall comply with SANS 1119 as amended and shall bear the mark of the SANS and be fitted with telescopic lamp holders.

Luminaires fed from emergency power outlet points shall have red indication of emergency power supply.
Tenderers shall allow for all luminaires listed in the Schedules and shown on the drawings.
Reference must be made to the Schedule of Luminaires for a detail description of the light fittings.

When the term “similar” or “equivalent” is not used in the specification, Tenderers shall have no choice but shall install the specific Luminaires as specified.

All luminaries shall be complete with lamps, indicator lamps, ballasts, chokes, control gear and all other accessories required to make the luminaries fully operative.

All luminaries shall be equipped with an earth terminal and shall be properly earthed.

The Contractor shall be responsible for the purchasing, taking delivery, storing, installation, aiming, adjustment, testing and commissioning of all luminaries specified including all necessary mounting accessories, bracket, poles, stirrups, base plates, etc. and including any necessary excavation and backfilling.

The internal wiring shall consist of flexible stranded copper conductors of not less than 0.5mm² with suitable heat-resisting insulation to SANS 529. A terminal block shall be fitted to each luminaire.

Luminaires shall not cause radio or television interference in accordance with Posts and Telecommunications requirements.

Luminaires shall be designed to prevent excessive temperatures and components and materials shall be selected so that they are not adversely affected by the operating temperature. All components whether used for installation or fitting of the luminaires shall be corrosion resistant.

The voltage rating and lamp wattage shall be clearly and indelibly marked on control gear. Ballasts shall be power factor corrected to at least 0,85 lagging and shall have a minimum circuit efficiency of 0,85. Capacitors shall comply with SANS 1250: 1979. Starters shall comply with NS 3772 as amended.

The control gear must be electronic Class A2 or if electromagnetic, then starters must be mounted inside the luminaire. The lamp cover shall be fastened with vandal proof screws and no starter holes must be visible on the body of the luminaire. Noise level reports, prepared by an accredited laboratory, shall be submitted for approval to the Engineer on request.

The wattage and type of lamp suitable for use in the luminaire shall be clearly marked on the base of the luminaire close to the lamp holder. For incandescent luminaries, the maximum wattage of the lamp shall apply.

The contractor shall submit details of the luminaires, including photometric data, to the Engineer for approval on request.

The contractor is to note that in the case of board and acoustic tile ceilings, i.e. as opposed to concrete slabs, close co-operation with the Building Contractor is necessary to ensure that as far as possible, the luminaires are symmetrically positioned with regard to the ceiling pattern.

Where luminaries are mounted on ceilings consisting of panes, care has to be taken that the work is performed symmetrically. Conduit work above false ceilings shall be fully coordinated in level, plan and sequence of installation with the Building and Ceilings Contractor, the Air Conditioning Contractor and any other Contractor installing services in the false ceilings.

Fluorescent fittings installed against concrete shall be screwed to the outlet boxes and in addition 2 x 6.35 mm expansion or other approved type fixing bolts are to be provided. The bolts are to be spaced $^3/_4$ of the length of the fitting part.

Fluorescent fittings to be mounted on board ceilings shall be secured on brandering (additional to that used for ceiling construction if necessary) using two wood screws with round heads of a size that will provide secure fixing. The fittings shall also be bonded to the circuit conduit by means of locknuts and brass bushes. The fixing screws are to be placed ¾ of the length of the fitting apart.

Incandescent fittings are to be screwed directly to outlet boxes in concrete slabs. Against board ceilings, the fittings shall be secured to the brandering or joints by means of Mo 38, 1mm x 4,88mm round head screws.

Luminaires narrower than 225mm shall be fixed at the outlet point and at two further positions. Luminaires wider than 225mm shall have four fixings exclusive of the outlet point.
Conduits shall be screwed directly into all weatherproof luminaries and other outside lights.No outlet boxes are permitted. The conduit shall be installed in such a way that it falls from the wall to the luminaries at an angle.

The bases of all luminaries shall be installed after the first coat of paint has been applied. The luminaries shall then be left until the painting has been finished, after which the Contractor shall complete the installation and adjusting of the luminaries.

All luminaires shall be fixed and suspended in accordance with the manufacturer's requirements and as specified.

Incandescent lamp luminaires shall be rated IP54 V better in compliance with SANS 1222 as amended and shall be fully corrosion resistant.

Incandescent lamps shall comply with SANS 56.

2.17 SPECIAL PURPOSE POINTS

All special purpose points shall be wired according to the schedules. Solid conduit shall be used and where necessary, ended off with "Kopex" or other approved flexible tubing. Special precautions shall be taken to ensure good earth continuity throughout the whole installation and connection of electrical equipment.

2.17.1 GEYSER INSTALLATION

The supply, installation and plumbing work shall be the responsibility of the Main Contractor.

The electrical contractor must electrically connect all water heaters as specified and listed in the Schedule of Power Points.

The Conduit from the switch board to the water heaters shall terminate in a draw box with a 30 Amp double pole isolator within 1m of the water heater terminals. The connection from the draw box shall be PVC insulated flexible conduit earth resisting conductors and a separate earth conductor.

The flexible conduit must not be longer than 600mm.
Each water heater shall be connected to a separate circuit with 4mm² PVC insulated conductors and 1 x 2,5mm² earth conductor in a 20mm diameter conduit.

The electrical contractor must liaise with the plumbing contractor with regard to the method of mounting the water heater, water inlet and outlet, drainage valve as well as the electrical connection.

2.17.2 AIR-CONDITION INSTALLATION

The Conduit from the switch board to the air conditioner units shall terminate in a draw box with a 30 Amp double or four pole isolator within 1m of the out door unit. The connection from the draw box shall be PVC insulated flexible conduit earth resisting conductors and a separate earth conductor.

Each of the units shall be connected to a separate circuit with 4mm² PVC insulated conductors and 1 x 2,5mm² earth conductor in a 20mm diameter conduit.

2.17.3 STOVE

Supply and install stove outlet point which shall be wired with 4 x 6 mm^2 PVC covered conductors plus 1 x 4 mm^2 earth conductor in a 25 mm diameter conduit and end in a 60A three pole isolator 1200 mm AFFL. From the isolator the stove shall be fully coupled with a 25 mm diameter PVC encased flexible “KOPEX” tube.

2.18 FLEXIBLE CONDUIT

"Kopex" or other approved flexible tubing will be used to connect moveable appliances complete with approved connectors, etc. Earth conductors as specified shall be installed together with PVC conductors in flexible tubing to ensure earth continuity.

2.19 TELEPHONES

2.19.1 GENERAL

The new installation consists of telephone outlet points by means of 25mm conduits to the draw boxes, which in turn are connected to the Telkom distribution boards.

2.19.2 TELKOM DISTRIBUTION BOARDS AND DRAW BOXES

Under this contract distribution boards and draw boxes must be supplied and installed where shown on the drawings and as per schedule of telephone outletpoints.

2.19.3 DISTRIBUTION AND OUTLETS

All telephone conduits and draw boxes must be supplied and installed as shown.

The installation of the conduits must be done in such a way that telephone cables must be easily drawn in and all bends must be such that cables with a minimum bending radius of 65mm may easily be drawn in. All conduits must terminate in bushes and must be furnished with draw wires. All outlet boxes must be galvanized flush mounted boxes with dimensions of 100 x 100mm x 50mm deep with coverplates, installed 500mm above floor level unless indicated to the contrary in the schedules of telephone outletpoints.

2.20 EARTHING

The contractor shall be responsible for the effective earthing of the LT system as well as for the earthing of all non-current carrying metal parts of equipment. This shall be done to the satisfaction of the Engineer/Representative.

2.20.1 EARTHING OF DISTRIBUTION BOARDS

2.20.2 EARTH CONDUCTORS

As is evident from the schedules of cables a separate copper earth conductor shall be installed with each length of LT cable.

This conductor is to be connected to the distribution boards at the earth bar as stated in the Clause above.

2.21 EXPANSION JOINTS

At building expansion joints, all the conduits must be provided with conduit expansion joints with a positive earth wire connection.

2.22 CONDUIT

The general requirements regarding the conduit installation shall be as set out in this document. It should be noted that it is a specific requirement of this contract that all conduits used shall be PVC type.

2.23 INSPECTION ON SITE

As much information as possible has been given, but in view of the nature of this service, tenderers are advised to visit the site and thoroughly acquaint themselves with the nature and extent of the work to be done. Tenderers

shall make allowance for items obviously intended and necessary for the proper completion of the work, although not specifically mentioned. The tenderers must liaise with the electrical engineer to visit the site and acquaint themselves with the nature and extent of the installation of the new equipment.

2.24 TESTING OF THE INSTALLATION

After completion of the installation, the contractor shall perform such acceptance tests as may be prescribed by the Engineer/Representative at the time and as required by the supply authority.

The necessary test equipment must be made available by the contractor for this purpose.

2.25 CERTIFICATE OF COMPLIANCE OF THE ELECTRICAL INSTALLATION

Before any inspection or handover of the electrical installation or part thereof takes place the electrical contractor will present a Certificate of Compliance of the electrical installation or part of the installation to be handed over as defined in the regulations of the Occupational Health and Safety Act of 1993 of Republic of South Africa as amended.

2.26 LIGHTNING PROTECTION AND EARTHING

This item covers the extension of a complete lightning conductor system and shall comply in all aspects with the requirements set in the SANS Users' Code 03 of 1985 (as amended).

IT IS A SPECIFIC REQUIREMENT OF THIS CONTRACT THAT THIS PART OF THE INSTALLATION SHALL BE DONE BY SPECIALISTS WHO ARE CONVERSANT WITH THIS TYPE OF WORK.

2.26.1 GENERAL

The terms Contract, Works, Works or Installation shall mean the Sub-contract works as specified in this contract.

The Sub-contractor shall carry out the complete sub-contract works as indicated in and in accordance with the specification and drawings and shall provide and install all items necessary for the proper functioning of the installation, even though such items may not specifically be referred to in the specification and drawings.

The terminology in this section has the same meaning as in SANS 03 (as amended).

All materials and equipment used in the installation shall be of recent design and manufacture and of the best quality available and shall, wherever possible, carry the latest mark of the South African Bureau of Standards.

The Electrical Sub-Contractor shall make allowance for all scaffolding which he may require for the execution of his work.

2.26.2 DRAWINGS

2.26.2.1 Contract Drawings

The drawings accompanying this specification are as stipulated in part hereof. The working drawings of the Building Contract shall, however, consist of:

(a) The electrical drawings

(b) The Architect's drawings
(c) The Structural Engineer's drawings, as applicable
(d) The Engineer's drawings of other disciplines, as applicable
(e) The drawings of other service installations that are relevant for co-ordination and installation purposes.
(f) The installation drawings of other sub-contractors, where applicable.

All drawings and layouts shall be regarded as diagrammatic and all positions and dimensions shown on drawings shall be verified on site. The Sub-contractor shall check with the Builder before putting work in hand on any section of the work, that he is in possession of the latest drawings and should any discrepancy be found between the Sub-contractor's drawings as issued by the Engineer and those in possession of the Builder, the matter shall be referred to the Engineer for clarification. No extra costs will be allowed for alterations or making good resulting from lack of verification.

2.26.2.2 Shop Drawings for Approval

A complete set of all shop drawings shall be submitted to the Engineer for approval and to demonstrate compliance with the sub-contract specification.

These drawings shall indicate the complete design of the proposed installation, including the method and materials employed in effecting earth terminations, down conductor systems, air terminations, etc.

Approval of shop drawings by the Engineer does not relieve the Sub-contractor of his responsibility for compliance with the specification, nor does it relieve him of his responsibility for errors or omissions in shop drawings.

2.26.3 SITE SURVEY

The Tenderer shall survey the premises at his cost prior to submitting his tender to establish, in particular, the soil resistivity and, in general, any other prevailing conditions so as to include in his tender for the entire installation.

2.26.4 TESTS AND INSPECTIONS

(a) The Sub-contractor shall arrange for all necessary installation tests and inspections required.

(b) The Sub-contractor shall attend with the Engineer all site/equipment inspections and tests and shall advise the Engineer in good time of the proposed completion of works in order that these may be inspected prior to installation. All tests and inspections by the Engineer shall be to his satisfaction.

(c) A permanent testing point shall be provided between each down conductor and its associated earth conductor, consisting of a recessed 100 x 100mm conduit box and coverplate engraved "Lightning Protection Test Point".

(d) The following test records shall be submitted to the Engineer:

(i) Earth resistance at each test point, duly recorded on as-built drawings.
(ii) Earth continuity of each trench.

(iii) Earth resistance of main substation earth bar and clean earth bar also recorded on as-built drawings.
(iv) Final test certificate.

2.26.5 COMPONENTS

2.26.5.1 Conductors

Where conductors are required, they shall comply with the requirements as prescribed herein after.

The conductors shall consist of 35mm PVC bare Copper stranded conductors from the earth electrode to the test link and shall be protected from subterranean level to the test link by way of a 25mm diameter PVC conduit which shall be built into the wall as per detail drawing accompanying this specification.

The test link shall be connected to abovementioned conductor in a surface mounted 100 x 50 x 50mm box with a blind coverplate 2500mm above ground level.

2.26.5.2 Earthing Electrodes

Earthing electrodes shall be of the expandable vertical 16mm diameter copper bar type consisting of copper (for soft ground only) or copper covered steel or phosphor bronze. Where use is made of the copper covered steel bars the two metals shall be provided with an interlocking crystal connection between the metals in order to prevent moisture penetration. Where it is necessary to connect two metals together, a non-ferriferous, corrosion proof connecting piece shall be used to prevent moisture penetration in the joint.

Earthing electrodes shall be installed in positions as indicated on the drawings and shall be at least 1200mm long.

All trenching, drilling, blasting and backfilling, etc. will be by the Sub-contractor at his cost. Due care shall be taken to ensure that no clashes occur in respect of other external services. Should the Tenderer wish to exclude this item for any reason, this shall be specifically stated in his Tender, including the exact extent of works to be effected by others. The Sub-contractor shall still be responsible for the co-ordination in respect of other external services.

The Sub-contractor shall allow for the painting of all air termination conductors fixed to the roof and the applicable colour to match the respective roof finish.

2.26.5.3 Alternative Conductor Material

Although this document in various places refers to aluminium or alloy conductors, the tenderer is at liberty to use alternative conductor material however, in all cases the cross-sectional area of the alternative conductors shall not be smaller than the specified values. Also the prescriptions regarding connections to non-similar material shall be adjusted accordingly.

2.27 Photo-electric Units

External lighting for each of the buildings shall be separately controlled by photo-electric daylight control units. All photo-electric units shall be fully in accordance with the NRS 025.

A contactor operated by the photo-electric units shall be used for all lighting circuits. In addition a by-pass switch shall be installed to allow the switching on of the lights at anytime.

Positions of the photo-electric units shall be selected and finalized on site by the successful tenderer and shall be so as to avoid interference from external lighting sources such as traffic lighting, area lighting etc. Positions shall also be so as to avoid unnecessary activation at day time.

1.28 HIGH MAST LIGHT (FUTURE INSTALLATION)

2.28.1 GENERAL

This item is for the supply, delivery, erection and commissioning of area lighting systems. The masts will be be installed at positions indicated on drawings and to be confirmed on the site after tender award and in coordination with the Civil Engineer.

2.28.2 LIGHT LUMINAIRES

The luminaires shall be a wide beam flood light with a 1000W Meta Hallide lamp specifically suitable for 30m high mast sports field lighting, such as supplied by Beka, the Projectolux 1KW complete with the lamp and integral control equipment. The luminaire shall conform to SANS60598-2-5.

The contractor shall submit a statement from the manufacturer that the luminaire offered is ideally suited for this application and a sample of the luminaire to be used shall be submitted for written approval from the Engineer.

Three (3) of these luminaries are to be installed per light mast. The installation shall be to the supplier's specification with respect to mounting angle. The intention being that each mast shall cover a quarter of the sports filed.

The Contractor shall obtain the aiming / mounting angle from the manufacturer.

The final installation and mounting of the luminaries are to be executed in the presence of the Engineer and to his satisfaction.

2.28.3 FOUNDATION

The mast is to be mounted on a steel reinforced concrete foundation shall supplied and erected by the contractor as per the mast supplier's design drawings. The mast foundation shall contain a 100mm diameter cable sleeve. This sleeve shall allow cable access from 1m below ground level to within the mast through the mast base plate.

It is important to take the positioning of the luminaire and access door into account when positioning the concrete foundation.

The design and the dimensions of the concrete foundation depend on the type of mast, mast height, wind velocity, number and type of luminaries and the soil conditions.

Design drawings for the foundation are to be obtained from the mast manufacturer timeously and submitted to the Engineer for approval. The design parameters shall be submitted with the foundation design, including the name and contact details of the designer who takes full responsibility for the design. Such a certificate to be submitted by the foundation designer before the foundation drawings will be considered for approval.

The construction of the foundation shall be in accordance with accepted constructed practice. Note that the foundation design must take in to account the soil type, pressure and formation. The contractor is thus responsible for soil tests and to ensure that the foundation is adequate. The designer of the foundation shall specify that the specific soil conditions have been taken into consideration.

Notwithstanding the Engineer's approval, the responsibility for the erection of the foundation and its operating performance lies solely with the construction. Should the Engineer decide to call in the services of an expert to certify the foundations, this cost shall be for the Contractor's account.

A standard concrete cube sample is to be taken when the foundation is laid for testing. It is recommended that the concrete mixture reaches a strength of 40 mPa in 28 days.

A mechanical vibrating tool shall be used to ensure that no air pockets are formed during the casting of the foundation.

The foundation shall reach a height of 400mm above ground level.

No mast shall be erected until the result of the cubes is approved by the Engineer.

No mast shall be erected within 21 days of the foundation being laid.

2.28.4 FOUNDATION BOLTS

Foundation bolts and a baseplate for the correct positioning of the mast are to be supplied with the mast. The bolts shall be finished using the hot-dip galvanizing process.

Each foundation bolt shall be provided with two nuts and two flats washers, with the base plate resting on the lower washer and nut. The upper washer and nut shall keep the mast in the position, while the lower nuts facilitate levelling of the mast.

M39 Bolts, or as specified by the manufacturer, are to be used. The quality and pitch circle diameter (PCD) shall be determined by the size and the loading of the mast.

THE MAST

2.28.5 Only galvanized octagonal and tapered mast as supplied by Lighting Structures or Structa Technologies or Sectional Poles will be accepted.

The Mast shall be 30m in length as per the quantities of the Bill. It shall be manufactured in shorter sections from high tensile steel with a minimum thickness of 4mm.

Each section is to be cut, pressed and welded together using continuous full strength staggered butt-weld, to form a 12-sided, continuously tapering shaft. Site slip-joints are to be used to fit the sections together on site so that no additional welding on site is required.

The mast, when fully equipped with trailing cable(s), raising and lowering equipment and all the luminaries, must be designed in accordance with SANS0225 to withstand a wind velocity appropriate to the site, with a mean return period of 50 years and terrain category 2 class B. The deflection of the mast top shall not exceed 2.5% of the mast height when subjected to two thirds of the maximum wind velocity. The mast shall not be erected without a letter of approval from the manufacturer.

After erection the mast shall be straight and vertical to the Engineer's satisfaction. The maximum out-of-plumb that will be allowed is 1%, i.e. 400mm.

2.28.5.1 Mast finish

The mast and ancillary equipment shall be hot-dipped galvanized to SANS 121 1501461.

2.28.5.2 Base plate and gussets

The size and material thickness of the base plate and gusset shall be dependant on the height of the mast and the number and type of luminaries installed on the luminaire ring. Holes are to be provided for passage of the foundation bolts.

The material used shall be carefully inspected for laminations and other inclusions while it is being flame-cut. An ultra-sonic crack analyses on the base plate is required. The base plate shall be welded to the base section of the mast.

Gussets are required to disperse the high stress concentrations between the bottom of the mast and the base plate

2.28.5.3 Raising and Lowering Accessories

The raising and lowering accessories must, in complete safety, facilitate the raising and lowering of the top half of the mast equipment with luminaire cluster for maintenance purposes by means of sting and polyester ropes

2.28.6 MAST DISTRIBUTION BOARD

A totally enclosed fibreglass power distribution board shall be mounted in an easily accessible position in the base compartment of the mast. The board shall be provided with a front cover plate with only the operating toggles of isolator and circuit breakers protruding. The Distribution Board shall be accessible by slightly tilting the top half of the mast. A 100mm safety clip must be provided for this purpose.

The board shall be supplied by the supplier of the mast and shall not be self equipped by the Contractor. The distribution board shall be equipped as follows:

(a) One 5-pin three phase, neutral and earth socket outlet for connection for the supply cable to the luminaries protected by the circuit breakers (see (c) below). The socket shall be mounted, facing upwards.

(b) One 20 A triple pole (5kA) curve 1 (orange handle) main circuit breaker.

(c) Three 10A (5kA) single pole, curve 1 (orange handle) moulded case circuit breakers for the luminaries.

(d) One three pole contactor switched by as isolator switch.

(e) One 5A (5 kA) single pole circuit breaker for supply to the contactor.

(f) One 6 way neutral bar

(g) One 6 way earth bar.

(h) Space for three additional single pole circuit breakers.

(i) 4 x Surge arresters.

A 12mm diameter earthing terminal shall be welded to the mast structure adjacent to the distribution board. Incoming cables are to be earthed to this stud.

2.28.7 CABLES AND CABLE CONNECTIONS

A 4mm 5 core (separate earth/neutral) flexible neoprene mains supply trailing cable shall be provided; one end of the cable shall be terminated in a 5 pin plug, with the matching socket outlet on the electrical board installed at the base of the mast; the other end of the cable shall be terminated in a terminal block installed in a weatherproof aluminium junction box on the luminaire head ring. The 5-pin plug shall be mounted, facing upwards to ensure that the plug is not damaged should the lights be lowered with the cable still plugged in. The junction box shall be fitted with earth and neutral bars and the required number and size of cable glands.

2.28.8 SURGE ARRESTORS

The tenderer must allow for the supply and installation of four (4) heavy duty 250 V surge arrestors, which shall be installed in the distribution board and connection to the DB earthing via 35mm²stranded copper. This item includes any miscellaneous material required for the complete installation of the surge arrestors.

2.28.9 EARTHING

Prior to the installation of the foundation two earth electrodes shall be installed. These electrodes shall be driven into the ground vertically to a minimum depth of 1500mm below the bottom of the foundation excavation, 2m from the mast on opposite sides.

These electrodes are to be connected by a 70mm² BCEW running along the bottom perimeter of the foundation excavation (securely bonded to the foundation steel reinforcing) and through the foundation into the mast centre.

The earth conductor shall be connected to the mast foot and the distribution board. The Engineer shall inspect the earthing installation prior to the concrete being cast. After installation of the earth conductor and spikes the earth resistance shall be measured which shall not exceed 10 0hm.

The earth resistance measurement shall be done in the presence of the Engineer.

2.28.10 COMMISSIONING AND TESTING

Over and above the supply and erection of the complete the tenderer shall also allow for the testing and commissioning of all installed equipment.

These tests include among others the necessary light level and earthing tests.

Under no circumstances will a mast be accepted which is not completely straight.

2.29 MAINTENANCE REQUIREMENTS

The free maintenance period of 12 months from handover is as detailed in the contract conditions and contract preliminaries.

2.30 LOAD BALANCING

The tenderers attention is drawn to the fact that it is imperative that the load should be evenly distributed over the three phases. Although the distribution boards may be factory wired, the onus is still on the Electrical Sub-Contractor to ensure that this requirement is met.

2.31 ITEMS FOR APPROVAL

Where this specification refers to a specific brand name or "similar and equivalent" or "Other approved type" and alternative equipment is offered in lieu of that specified, then written approval must be obtained from the Engineer before such equipment is installed.

The right is reserved to reject any equipment which does not, in the opinion of the Engineer, conform to specification or which is of an inferior grade. Should such equipment be rejected, the Electrical Sub-Contractor shall at his own expense provide for alternative equipment and tenderers are thus warned to ensure that all equipment offered is in strict accordance with the requirements of this specification.

In certain cases the Electrical Sub-Contractor may be required to submit samples and where necessary, tests will be performed to establish the quality of the material offered.

2.32 CONTRACT ADMINISTRATION, COMPLETION, TESTING AND COM-MISSIONING

2.32.1 QUALITY CONTROL DURING THE EXECUTION OF THE CONTRACT

Day by day inspections of the Works shall be carried out by the Electrical Sub-Contractor or his authorised representative to ensure that all work is executed in accordance with the drawings, specifications and regulations. These inspections will be monitored by the Engineer.

If the quality of the installation suffers due to a lack of supervision, then the Engineer will appoint a site agent to ensure that a high standard of workmanship is maintained. The full cost of such a step shall be for the Electrical Sub-Contractor account.

2.32.2 STANDARD OF WORKMANSHIP

All installation work in this contract is to be executed by qualified electricians and cable jointers in accordance with modern techniques. The Engineer shall have the right to reject any work which does not meet with his approval or which is not in accordance with standard practice.

2.32.3 MAINTENANCE OF AS-BUILT DRAWINGS

During execution of the contract the Electrical Sub-Contractor shall update the drawings daily with all the relevant information.

At the end of the contract and prior to handover being accepted, the Electrical Sub-Contractor shall prepare as-built drawings of the installation. These drawings shall be a set of the latest drawings issued by the Engineer on which the Electrical Sub-Contractor shall highlight all changes. The Electrical Sub-Contractor shall take great care to ensure that all underground services are shown in the correct places.

The Electrical Sub-Contractor shall also issue three (3) sets of any other drawings, wiring diagrams, service and instruction manuals for equipment supplied by him and these will have to be acceptable to the Engineer prior to handover being approved.

2.32.4 PRELIMINARY TESTING OF MAJOR EQUIPMENT

All items of major equipment are, where feasible, to be factory tested prior to delivery to site, and results of such tests, in a format to be agreed in advance, are to be produced before the equipment is delivered.

All such tests are to be in accordance with the relevant codes of practice, and with any other requirements as set out in this document.

2.32.5 COMPLETION OF INSTALLATION

Before the commencement of any test or commissioning procedures, the Electrical Sub-Contractor is to ensure that all nuts and bolts are securely fastened, and that paintwork on all items supplied has been touched up where damage has occurred.

2.32.6 INSPECTION AND TESTING

On completion of the entire installation or any particular section thereof, as may be decided by the Engineer, tests shall be carried out in full accordance with the current edition of the "Code of Practice for the Wiring of Premises", in the presence of the Engineer.

The Electrical Sub-Contractor should note that, where applicable, at least the following tests must be carried out: -
Insulation test.
Continuity test
Loop Line Earth Impedance test
Polarity test
Earth Leakage Circuit Breaker test
Earth termination test.
Any further tests as deemed necessary by the Engineer.

All instrumentation necessary for testing shall be provided by the Electrical Sub-Contractor.

The results of the above tests must be clearly recorded, signed and handed to the Engineer together with a Certificate of Compliance and any other form or forms as required by the Client.

2.32.7 DOCUMENTATION

The following documentation is required and shall be provided by the Electrical Sub-Contractor:-

* Set of schematic wiring and function diagrams.

* Operating and maintenance instructions on equipment.

* Guarantees ceded to the Client.
* Test reports and certificates.

Once the Engineer has inspected the complete installation and satisfied himself that all testing has been completed and the contract is complete in all respects, will he issue a letter to the Client stating that first delivery has been taken. Once the retention period has expired, the installation shall be inspected for final delivery.

2.32.8 LABELING

All switchgear and equipment installed in the switchboards, plus isolator boxes, cables, socket outlets, switch, etc., shall be clearly labelled as indicated elsewhere in this specification and schedules.

2.32.9 TRAINING OF INSTITUTIONAL STAFF

Where applicable, allowance is to be made by the Electrical Sub-Contractor for the training of Institutional Staff in the setting up and operation of the various items of equipment supplied under the contract, such as the alarm system.

2.32.10 TESTING AND COMMISSIONING DOCUMENTATION

On completion of the testing and commissioning, the following documents shall be compiled and presented to the Engineer.

(a) A Certificate of Compliance and other form/s as required by the Engineer.

(b) Drawings of the installation marked up "As Built" as described elsewhere.

(c) Completed set of test and commissioning sheets.

ELECTRICAL WORKS

SECTION 3: SCHEDULES

CONTENTS

3.1 GENERAL
3.2 SCHEDULE OF CABLES
3.3 SCHEDULE OF LIGHT FITTINGS
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3.6 SCHEDULE OF LIGHT CIRCUITS
3.7 SCHEDULE SOCKET OUTLET POINTS
3.8 SCHEDULE SPECIAL POWER POINTS

3.1 GENERAL

This section of the specification forms part of and must be read in conjunction with the general and supplementary specification, as well as the drawings.

3.2 SCHEDULE OF CABLES

3.2.1 NORMAL POWER

This is an installation reticulated from the new 100kVA transformer to the main kiosk and to the buildings' sub-kiosks.

From	To	Cable Size and Type	Length
100kVA Transformer	Kiosk 1	1 x 35mm^2 x 4 core PVC/PVC/SWA copper conductor cable + 25mm^2 bare Cu earth wire	50
Kiosk 1	Kiosk 2	1 x 25mm^2 x 4 core PVC/PVC/SWA Cu cable plus 1 + 16mm^2 bare Cu earth wire	120
Kiosk 1	DB - 2 (Guard House)	1 x 6mm^2 x 4 core PVC/PVC/SWA copper conductor + 4mm^2 bare copper earth wire	30
Kiosk 2	DB – 1 (Change Rooms)	1 x 16mm^2 x 4 core PVC/PVC/SWA copper conductor + 10mm^2 bare copper earth wire	40
Kiosk 1	HM Lights	Future Installation	-
Kiosk 2	HM Lights	Future Installation	-

3.1 SCHEDULE OF LIGHT FITTINGS

The light fittings and accessories are to be according to the quality specifications and shall be approved by the Engineer.

Type	Description
F1	1 x 28W T5 1200mm single open channel surface fluorescent luminaire or other approved
F2	2 x 28W T5 1200mm double open channel surface fluorescent luminaire or other approved

Type	Description
F4	3 x 36W T5 600mm tubes with single parabolic louvers or other approved
B	Surface mount fittings with 2 x 18w PL18 lamps and double ballasts and clear diffuser similar to BEKA type 52218.
D	8W LED Downlighter (Frosted Glass) 80mm complete with driver and cordset
DE	8W LED Downlighter (Frosted Glass) 80mm with battery back-up complete with driver and cordset
B4	1000W Metal Hallide wide beam Projectolux flood light fitting as supplied by Beka complete with lamp and control gear.

3.2 SUMMARY OF KIOSKS AND DISTRIBUTION BOARDS

The colour of the distribution boards and LV distribution kiosks shall be painted in "Avocado green" colour C37 of SANS 1091-1975.

Indicated is the probable fault level rating (kA) of the busbars. Refer to the Summary of Switchgear for the minimum fault level rating of specified equipment.

3.4.1. From 100kVA Transformer

Boards	Type	Panel	Fault Level kA
Main Kiosk 1	Floor mounted with doors	Normal Power	10
Kiosk 2	Floor mounted with doors	Normal Power	10

3.5 SCHEDULE OF DISTRIBUTION BOARDS AND KIOSKS

3.5.1 Main Kiosk 1

This is the new outdoor weatherproofed kiosk. The indicated fault current rating (kA) is the minimum value that the switchgear must comply with for connecting the busbar of the distribution board.

Normal Power

Main switch	:	1 x 100A 10KA three phase isolator
Supply to kiosk 2	:	1 x 20A 10kA three phase circuit breaker
Supply to DB-2	:	1 x 40A 10kA three phase circuit breaker
Spare (HM.1)	:	1 x 40A 10kA three phase circuit breaker
Spare (HM.2)	:	1 x 40A 10kA three phase circuit breaker
Spare	:	1 x 30A 10kA three phase circuit breaker
Spare	:	1 x 30A 10kA three phase circuit breaker

3.5.2 KIOSK 2

This is a new outdoor weather proof kiosk. The indicated fault current rating (kA) is the minimum value that the switchgear must comply with for connecting to the busbars of the distribution board.

Normal Power

Main switch	:	1 x 80A 10kA three phase isolator
Supply to DB - 1	:	1 x 60A 5kA three phase circuit breaker
Supply to Borehole	:	1 x 30A 5kA three phase circuit breaker
Spare (HM.3)	:	1 x 40A 10kA three phase circuit breaker
Spare (HM.4)	:	1 x 40A 10kA three phase circuit breaker
Spare	:	1 x 30A 10kA three phase circuit breaker
Spare	:	1 x 30A 10kA double pole circuit breaker

3.5.3 Distribution Board DB – 1 (Change Rooms)

A new flush mount DB complete with doors and equipment as detailed

Normal Power

Main switch : 1 x 60A three phase isolator, 5KA

Lights : 6 x 10A single phase 5kA circuit breaker
Spare : 1 x 10A single phase 5kA circuit breaker

Plugs : 1 x 60A,30mA earth leakage relays
: 3 x 20A, single phase, 5KA circuit breakers
Spare : 1 x 20A single phase 5kA circuit breaker

Special Power points : 4 x 20A, double pole 5KA circuit breakers (Hand Dryers)
Special Power points : 1 x 30A, double pole 5KA circuit breakers (Geyser)
Spare : 1 x 20A double pole 5kA circuit breaker
Spare : 1 x 30A double pole 5kA circuit breaker

3.5.4 Distribution Board DB – 2 (Guard House)

A new flush mount DB with doors Equipment as detailed below:

Normal Power

Main switch : 1 x 40A 3phase, 5KA isolator

Lights : 2 x 10A single phase 5kA circuit breaker
Spare : 1 x 10A single phase 5kA circuit breaker

Plugs : 1 x 60A, 30mA earth leakage relays
: 1 x 20A single phase, 5KA circuit breakers
Spare : 1 x 20A single phase, 5KA circuit breakers

3.6 SCHEDULE OF LIGHT CIRCUITS

3.6.1 CHANGE ROOMS: DB-1

Circuit No.	Fitting No.	Type of Fitting	Quan-tity	Load Each (W)	Load Total (W)	Switches	Luminaire Mounting
L1	1 - 4	F2	4	56	224	4 x1Lx1W	In Ceiling
L2	1 – 10	D	10	10	100	1 x 1Lx1W	In ceiling
L3	1 – 10	D	10	10	100	1 x1Lx1W	In ceiling
L4	1 - 6	D	6	10	60	1 x 1L x 1W	In ceiling
L5	1 2 - 7	D D	1 6	10	70	1 x 1L x 1W	In ceiling

Circuit No.	Fitting No.	Type of Fitting	Quan-tity	Load Each (W)	Load Total (W)	Switches	Luminaire Mounting
L6	1 - 8	B	8	36	288	Day night switch	Against wall 2000mm above floor level.

3.6.2 GUARD HOUSE: DB-2

Circuit No.	Fitting No.	Type of Fitting	Quan-tity	Load Each (W)	Load Total (W)	Switches	Luminaire Mounting
L1	1	F2	1	56	56	1 x 1L x 1W	In Ceiling
L2	1 - 4	B	4	36	144	Day night switch	Against wall 2000mm above floor level.

3.7 SCHEDULE OF SOCKET OUTLET POINTS

3.7.1 CHANGE ROOMS: DB-1

Circuit No.	Socket Outlet No.	Type of Socket Outlet	Quantity	Load Each (W)	Load Total (W)	Mounting
P1	1- 4	A	4	500	2000	In wall 300mm AFFL
P2	1 – 2 3	A B	2 1	500 1000	2000	In wall 300mm AFFL
P3	1 - 4	A	1	500	1500	In wall 300mm AFFL

3.7.2 GUARD HOUSE: DB-2

Circuit No.	Socket Outlet No.	Type of Socket Outlet	Quantity	Load Each (W)	Load Total (W)	Mounting
P1	1 - 2	A	2	500	1000	In wall 300mm AFFL

ELECTRICAL WORKS – SOLAR PANEL SYSTEM

SECTION 4: SPECIFICATION

CONTENTS

4.1 GENERAL
4.2 SUPPLY
4.3 SCOPE OF WORK
4.4 SUPPLY CONNECTION
4.5 CABLE RETICULATION
4.6 LOAD BALANCING

4.1 GENERAL

This section of the specification forms part of and must be read in conjunction with the general and supplementary specification, as well as the drawings

4.2 SUPPLY

The construction comprises of; guard house, change rooms, ablution facility and storage facility and will be supplied from a new solar panel system.

The contractor will be required to install all cabling and switch gear from the solar panels to the above facilities.

4.3 SCOPE OF WORKS

The scope of the solar panel system works covers the supply, delivery, off-loading, storage, installation, commissioning, testing, handing over and free maintenance for the period stated in the tender document of all specified equipment and materials for the electrical installations as required for the additions stated above.

The onus is on the tenderer to ascertain any local conditions or peculiarities which might affect the contract, and which are not shown on the drawings.

The scope of works is summarized as follows:-

a) Lighting, power and distribution thereof in all new buildings as per drawings.
b) Supply and installation of all charger controller.
c) Supply and installation of batteries.
d) Supply and installation of Inverters.
e) Supply and installation of Switchgear
f) Supply and installation of Glowing Bulbs.
g) Supply connection primarily consisting of a cable feed, typically a four (4) core armoured copper cable and earth wire, from the appropriate supply points.
h) Lighting installation consisting of luminaires for exterior lighting.
I) Earthing and bonding as prescribed by the IEC 6254.
J) Provision of lighting protection installation in all new facilities as per layout drawings and according to the specification.

4.4 SUPPLY CONNECTION

- Electricity for the transfer station will be from the solar panels that will be installed on site. The solar panels will transfer power generated from the sun to the charger controller.
- An MC4 connector will connect charger controller and the battery cables as the batteries will get power from the charger controller. The battery will store solar power generated during the day and discharges it at night.
- An invertor will be installed on the building which will convert the Direct Current (DC) to Alternating Current (AC) as electrical appliances use power in the form of AC.
- Cables from the invertor will be connected to the switches which uses AC.

4.5 CABLE RETICULATION

- Single-conductor Photovoltaic (PV) will be used for internal and external installation to connect solar cells to the invertors or main DC cables.

4.5 LOAD BALANCING

The electrical load estimate for the project is calculated as per the following table:
Table 1: Load Calculation for Dordrecht

Item	Location	Load	KW
1	Guard House	6.112	kW
2	Storage Room	0.187	kW
3	Change Rooms	0.2	kW
4	Ablution Facility	0.2	kW
5	Flood Lighting	0.08	kW
6	Borehole Pump	0.005	kW
Estimated Total Load/Day		**6.7835**	**kW**

Table 2: Load Calculation for Indwe

Item	Location	Load	KW
1	Guard House	6.112	kW
2	Storage Room	0.187	kW
3	Change Rooms	0.2	kW
4	Ablution Facility	0.2	kW
5	Flood Lighting	0.08	kW
6	Material Recovery Facility	7.8	kW
Estimated Total Load/Day		**14.579**	**kW**

PART C5 SITE INFORMATION

C5.1 SITE INFORMATION

1 NATURE OF GROUND AND SUBSOIL CONDITIONS

Details of the ground condition shall be provided to the appointed Contractor

PART C5 DRAWINGS

LIST OF DRAWINGS PREPARED BY THE EMPLOYER

The following is the list of drawings prepared by the Employer and applicable to this Contract:

DRAWING NO.	**DESCRIPTION**
Issued separately	
INDWE:	
1096A- CIV-DRG-100	: LAYOUT: LOCALITY PLAN AND LIST OF DRAWINGS
1096A -CIV-DRG-101	: LAYOUT: SITE
1096A -CIV-DRG-102	: LAYOUT: ROAD
1096A -CIV-DRG-200	: LAYOUT: WATER
1096A -CIV-DRG-201	: TYPICAL: WATER DETAILS
1096A -CIV-DRG-202	: DETAIL: PIPE BEDDING
1096A -CIV-DRG-203	: DETAIL: BOREHOLE PUMP HOUSE CONNECTION
1096A -CIV-DRG-204	: LAYOUT: TYPICAL TANK STAND
1096A -CIV-DRG-400	: DETAIL: ROAD CROSSING DETAIL
1096A -CIV-DRG-401	:DETAIL: ROAD PAVING DETAIL
1096A -STR-DRG-103	: MATERIAL RECOVERING FACILITY SURFACE BED LAYOUT

Note: Although, elsewhere in the Contract Document, drawings are referred to by their generic numbers only, the alphabetic suffix (if any) to a drawing number as given in this List of Drawings denotes the revision of the drawing that is applicable to this document.

DORDRECHT:

1096B- CIV-DRG-100	: LAYOUT: LOCALITY PLAN AND LIST OF DRAWINGS
1096B -CIV-DRG-101	: LAYOUT: SITE
1096B-CIV-DRG-101A	: LAYOUT : SITE
1096B-CIV-DRG-102	: LAYOUT : CH0-CH567
1096B-CIV-DRG-103	: LAYOUT : CH0-CH567(PROFILE)
1096B -CIV-DRG-104	: DETAIL: NAME BOARD
1096B -CIV-DRG-105	: DETAIL: SITE NAME BOARD
1096B -CIV-DRG-200	: LAYOUT: WATER
1096B -CIV-DRG-201	: TYPICAL: WATER DETAILS
1096B -CIV-DRG-202	: DETAIL: PIPE BEDDING
1096B -CIV-DRG-203	: DETAIL: BOREHOLE PUMP HOUSE CONNECTION
1096A -CIV-DRG-204	: LAYOUT: TYPICAL TANK STAND
1096B-CIV-DRG-400	: DETAIL: ROAD CROSSING
1096B-CIV-DRG-401	: DETAIL: DRAIN AND ROAD PAVING
1096B-CIV-DRG-402	: DETAIL: CULVERT
1096B-CIV-DRG-403	: DETAIL: BELMOUTH AND STREET SIGNS
1096B-CIV-DRG-404	: DETAIL: STREET SIGNS
1096B -ARC-DRG-101	: LAYOUT: ABLUTIONS
1096B -ARC-DRG-102	: LAYOUT: GUARD HOUSE
1096B -ARC-DRG-103	: LAYOUT: RECYCLABLE STORAGE AREA
1096B -ARC-DRG-104	: LAYOUT: STORAGE FACILITY
1096B -ARC-DRG-105	: LAYOUT: CHANGING ROOM
1096B -ARC-DRG-106	: DETAIL: WINDOW AND DOOR SCHEDULE

Note: Although, elsewhere in the Contract Document, drawings are referred to by their generic numbers only, the alphabetic suffix (if any) to a drawing number as given in this List of Drawings denotes the revision of the drawing that is applicable to this document.

PART C6 APPENDICES

Appendix A	:	Occupational Health and Safety Specification and Baseline Risk Assessment
Appendix B	:	Contractor's and Supplier's Specification
Appendix C	:	Tender Drawings

APPENDIX A

OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION AND BASELINE RISK ASSESSMENT

APPENDIX A
CONTRACTOR' S AND SUPPLIER'S SPECIFICATION

APPENDIX C
TENDER DRAWINGS

Project Specific OHS Specifications

CONSTRUCTION OF MATERIAL RECOVERY FACILITY INDWE AND DODRECHT

Prepared by
SBK SAFETY GROUP

Presented by
EMALAHLENI MUNICIPALITY

Further Information
admin@sbksafety.co.za

Scope of application	***Indwe Construction-Emalahleni (****Construction of a landfill site****)***	
Related references	***SBK001-IND2025-PSHS***- *_Contractor H&S Evaluation, Selection and Monitoring, Occupational Health & Safety Act 85 of 1993.*	
Author / Department	*Pr CHSA Kabelo Newton Ncube*	
	Safety Consultant Sivuyile Booi Klaas	
Signature date	08/06/2026	

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PROJECT SPECIFIC OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

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

DEFINITIONS

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

Client: Eastern Cape Department of Health

Construction Health and Safety Agent:
A competent person appointed by the Client to carry out the duties of the Client in respect of Occupational Health and Safety on the Project in terms of Regulation 5 sub regs (5) and / or (6)

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

Hazard: Source of exposure to danger

Hazard Identification and Risk Assessment (HIRA) and Risk Control:
Means a documented plan, which identifies hazards, assesses the risks and details the control measures and safe working procedures which are to be used to mitigate and control the occurrence of hazards and risks during construction or operation phases.

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

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

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

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

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

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

Site: Means the area in the possession of the Principal Contractor for the construction of the works. Where there is no demarcated boundary it will include all adjacent areas, which are reasonably required for the activities for the Principal Contractor and approved for such use by the Designer.

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

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

KEY REFERENCES

Occupational Health and Safety Act No. 85 of 1993 and Regulations (as amended)
Compensation for Injury and Occupational Diseases Act No. 100 of 1993 (as amended)
The GCC 3rd Edition 2015
Construction Specifications & Standards 6.0 for Southern Africa. Hans Wegelin 6th Edition 2010
SANS Code 10400
SANS10085
Compensation for Injury and Occupational Diseases Act No. 100 of 1993 (as amended)
Risk Adjusted Strategy Regulation- issued by the Department of Cooperative Governance
Asbestos Regulations 2001 – as amended in 2003.

SCOPE OF WORK:

The scope of work includes the construction and commissioning of a municipal landfill facility, including but not limited to:

1. Site establishment, setting out, and temporary facilities.
2. Site clearance, grubbing, and bulk earthworks.
3. Excavation and construction of landfill cells.
4. Installation of landfill liner and leachate collection systems.
5. Construction of storm water management infrastructure, including drainage channels and retention ponds.
6. Construction of access roads, internal roads, and parking areas.
7. Installation of perimeter fencing, gates, and security infrastructure.
8. Construction of weighbridge facilities, gatehouse, and administration buildings.
9. Installation of water supply, electrical, and lighting systems.
10. Construction of landfill gas management infrastructure.
11. Environmental protection measures and rehabilitation works.
12. Testing, commissioning, and handover of the completed landfill facility.
13.
14. All works shall be carried out in accordance with approved designs, environmental authorizations, applicable South African legislation, and relevant SANS standards.

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(See detailed scope of works in the main tender document.)

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

This Project Specific Health and Safety Specification (PSHSS) has been developed for the **construction of material recovery facility indwe and dodrecht**. The purpose of this specification is to ensure that the Client and all parties entering into formal agreements with the Client, including Agents, Professional Service Consultants, Principal Contractors, Contractors, and Subcontractors, achieve and maintain an acceptable level of Occupational Health and Safety (OHS) performance throughout the execution of the project.

The PSHSS serves as a performance-based specification that outlines the minimum health and safety requirements to be implemented during the construction of the landfill facility. The works will involve activities such as site clearance, bulk earthworks, excavation of landfill cells, installation of liner systems, construction of leachate and stormwater management infrastructure, road construction, installation of fencing, and the construction of ancillary facilities, all of which present significant occupational health, safety, and environmental risks.

No advice, approval of documents, review of risk assessments, or any other communication from the Client shall be construed as relieving the Principal Contractor of any obligations, responsibilities, or liabilities imposed by the Occupational Health and Safety Act (Act 85 of 1993) and its Regulations. The Principal Contractor shall remain fully responsible and accountable for ensuring compliance with all applicable legal requirements and for achieving the required health and safety performance standards on the project.

A Mandatory Agreement in terms of Section 37(2) of the Occupational Health and Safety Act shall be concluded between the Client and the Principal Contractor prior to the commencement of any construction activities on site.

This PSHSS highlights project-specific health and safety requirements that shall be implemented in addition to the minimum statutory requirements. The specification may be amended during the project should additional hazards, risks, environmental concerns, or operational requirements be identified during the construction phase. Any new legislation, standards, guidelines, or requirements promulgated by the relevant authorities during the contract period shall automatically become applicable to the project.

Nothing contained in this PSHSS shall be interpreted as limiting or reducing the responsibilities of the Principal Contractor, Contractors, or Subcontractors as prescribed by the Occupational Health and Safety Act, Construction Regulations, National Environmental Management Act, National Environmental Management: Waste Act, and any other applicable legislation.

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

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

This specification must be read in conjunction with the OHSA, Regulations (as amended) and any other standards relating to work being done and ensure compliance thereto.
The information relative to the scope of the project, the works etc, are detailed in the tender and are to be considered when developing the H&S plan and associated documentation. The summary of risks is included in Section 2 of the PSHSS.

The OHSA S.37.2 Mandatory Agreement must be fully completed by the PC, supplied by the Client. These documents shall be deemed to form part of the returnable Contract Documents.

No work may commence without written approval of the H&S plan by the Client/ Client Agent, or the responsible person in Eastern Cape Department of Health as well as the acknowledgement of Notification for Construction Works from the local Department of Employment and Labour.

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

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

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

3. Requirements at Tender Stage

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

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

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The PC shall ensure adequate information is submitted as supporting documentation with his completed Tender. Such information will be assessed against the criteria listed and a score provided to the Bid Award Committee (BAC) for consideration. Failure to provide such information could render the tender application non-responsive.

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

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

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

The CHS Officer is to be included in production planning sessions/meetings to ensure that the appropriate risk assessments, safe work procedures and communication required are available and completed timeously.

2. GENERAL REQUIREMENTS

2.1. Summary of Risks identified during Design.

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

The design risks and the management thereof should be included in the Principal Contractors (PC) risk assessments. Where there are other Contractors appointed to do work, the PC is to ensure that Contractors include such information in their risk assessments.

The summary is to be developed following the completion of the Baseline risk assessment, and to include the residual risks as they apply to the project. The items noted are for information only and must be expanded on as required by the project.

- *Weather-Related;*
- *Equipment and Machinery;*
- *Chemical and Environmental;*
- *Traffic and Site Access;*
- *Subsurface Utility Conflicts;*

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- *Wildlife and Insects;*
- *Material Handling and Lifting;*
- *Personal Protective Equipment (PPE);*
- *Communication Hazards;*
- *Inadequate Training;*
- *Client and Public Relations;*
- *Infection Prevention Control;*
- *Patient and Visitor Awareness;*
- *Emergency Response Coordination;*
- *Patient Privacy and Confidentiality;*
- *Noise and Disturbance;*
- *Clinic-Specific Protocols;*
- *Emergency Medical Services (EMS) Access;*
- *Communication with Facility Staff;*
- *Biological Risks;*
- *Risk to the Environment including dust management;*
- *Unknown and existing services;*
- *Electrical Equipment;*
- *High Pressure Equipment;*
- *Working at Heights;*
- *Scaffolding*
- *Excavations*
- *Concrete Work*
- *Hazardous Chemical Substances*
- *Ergonomics*
- *Lifting Equipment*
- *Traffic Accommodation*
- *Demolishing*
- *Waste Management*
- *Exposure to Sewerage*

3. OCCUPATIONAL HEALTH & SAFETY MANAGEMENT

3.1. Structure and Organization of H&S Responsibilities

3.1.1. Notification of Commencement of Construction Work

The Contractor must acquire a “Notification of construction work” from the Department of Employment and Labour.

Work may not commence without the “Notification to do Construction Work” form being completed by the contractor and acknowledgement received from the local Department of Employment and Labour. This includes, inter alia, the Contractor’s Health and safety Plan as accepted by the Client.

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

3.1.2. HEALTH AND SAFETY PLAN FRAMEWORK

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

The current legislative requirements, SANS codes, SANS 10400 and any other standards that may guide practice are to be taken into consideration. The following aspects must be addressed in the H&S Plan, as they have been identified in section 2, as playing a role in reducing the overall risk of a particular activity, or section of the project. The Client/ Client Agent may from time-to-time request additions or systems as they relate to the works or legislative requirements at the time.

The PC is to prepare a site layout drawing to indicate at least the following:

- The positions of site offices of all Contractors, toilets, drinking water and worker rest areas;
- Indicate the positions of emergency personnel and equipment (fire, first aiders, first aid posts);
- Protection of plant and pedestrians, indicate parking, and
- Storage areas (materials and equipment, waste etc.)
- Access and egress to site for deliveries and intended temporary traffic management,
- Emergency assembly point

Such layouts are to be updated regularly throughout the project.

3.2. Appointment of Competent Site Personnel

The CEO (OHSA S16.1) of the PC will take overall responsibility for the appointment of competent site staff for the duration of the project. Should the CEO not be personally involved in the project, the H&S responsibilities are to be delegated to the Site Agent (OHSA 16.2). Knowledge and training in H&S is required, and certificates indicating H&S training as well as experience to be included in CVs.

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

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

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

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3.2.1. Construction Supervision

Competent Full-Time Construction Manager(s) (CR8.1) will be appointed to manage part or all of the works and have training and/or experience in the area of responsibility. All site supervisors must show evidence of appropriate training in H&S, and an understanding or training in areas of responsibility (i.e., risk assessments, method statements etc.).
Multiple competent Assistant Construction Manager(s) (CR8.2) may be appointed where justified by the scope and complexity of the works.

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

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

3.2.2. Construction Health and Safety Officer

The PC will employ at least one competent, full-time CHS Officer (CR8.5) for the duration of the contract. The CHS Officer's CV is to be submitted for approval by the Client/ Client Agent at time of tender. The PC is to ensure adequate resources are provided in order to undertake all responsibilities (i.e., mobile phone, computer and internet access, vehicle etc.) Qualifications shall include at least Grade 12, Diploma in H&S qualifications or similar, with exposure to civil engineering and building that is appropriate given the level of project complexity preferably in an OHS capacity. He should also have undergone training in the Act and Regulations. In the case of a contract where contractors are employed, the CHS Officer must have a competence to evaluate the Contractors Health and Safety plans.

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

This person may not hold any other position on the site staff.
The site supervisor may not act as the CHS Officer.
The CHS Officer/s will be held responsible for all H&S on the project.

- Senior site staff and supervision, Contractors are to follow systems, instructions etc. given by the CHS Officer at all times;
- No new workers or Contractors may commence work without approval or following the H&S plan as submitted, and
- No inductions of Contractor staff until the H&S documentation is approved by the CHS Officer.

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- The CHS Officer/s may not be removed or replaced without the approval of the Client/ Client Agent, nor may the site be left unattended for more than 1 day without adequate, competent cover.

A monthly report of all H&S activities and incidents is required by the end of the first week of each month, or at a date agreed to by the Client/ Client Agent and the CHS Officer. An example of the monthly report is attached as an Annexure C.

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

3.3. Health and Safety Representatives and H&S meetings

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

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

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

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

3.4. Appointment of Competent Contractors

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

The following minimum aspects are applicable to any Contractor appointed:

- The CHS Officer is to ensure a contractor's appointment and approval of H&S documentation at least seven (7) working days prior to commencing work.
- The contractor should take note of the required workload of the appointed CHSO in relation to the appointed SMME's.
- No Contractor may work under the PC's Compensation registration number. If required, the PC may assist SMMEs with their registration with the Compensation Commissioner. However, such Contractors will not be able to commence work until proof of registration or Letter of Good Standing has been received.
- No work may commence without Mandatary agreements between parties in place.

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The following aspects are applicable to Suppliers or short-term works (surveying, repairs, servicing, deliveries etc). Cognisance is to be taken of the level of risk involved and the CHS Officer is to ensure the level of H&S documentation is appropriate:

- Signed Mandatary agreements in place.
- Valid Letter of Good Standing
- Method statements and risk assessments
- Available information relative to:
    - Load testing and registers for cranes or lifting devices.
    - Medical certificates of fitness
    - Safety data sheets (SDSs)

Failure to provide written approval of H&S documentation will be considered a serious offense, and could result in aspects of, or all the activities being stopped, and penalties implemented.

4. GENERAL RISK MANAGEMENT

4.1. Health Risks and Medical Surveillance

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

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

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

Environmental monitoring results and risk assessments are to be made available to the occupational health professionals doing the medical surveillance. The use of occupational risk exposure profiling (OREPS) and job descriptions are to be used to determine specific exposures for management.

All workers are required to be in possession of a medical certificate of fitness issued by an Occupational Medical Practitioner prior to commencing work.
Medical surveillance will commence at pre-employment. All workers are required to be in possession of a medical certificate of fitness prior to commencing work. Annual medical surveillance is required (unless identified as being required more frequently), Arrangements for keeping medical records for the required time are to be noted. It is recommended that the PC has a medical surveillance plan. Full medical records are not to be placed in the H&S file. A procedure for managing the medical records which require safekeeping for prescribed periods are to be addressed. It should be noted that the time period for keeping medical records where asbestos is present is a period of 40 years. Given the potential health risks the following aspects are to be included in each medical surveillance intervention:

- Full medical, surgical and occupational history;

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- Full physical examination of all systems; and
- Referral if required for the management of identified health issues that may affect the worker.

Specific testing for existing conditions and limitations relative to exposure could include, but are not limited to:

- Audiometry (hearing tests); and
- Any other tests identified as relevant from chemical or specifically identified risks of exposure (lung function test).

No employee/ contract worker will be allowed on site without a valid medical certificate of fitness.

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

Workers exposed to body fluids, sewage or human waste must have vaccinations up to date i.e.: Hepatitis A and Hepatitis B vaccinations.

Failure to do so will be considered a serious offence.

5.1.1 General Environmental Conditions

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

5.1.2 Noise and Dust Control and Risk

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

Audiometric testing of all workers is noted as required in the medical surveillance programme for all permanent workers prior to work commencing. Temporary labour working in identified noise areas will require testing if the noise levels are indicated on plant or through processes as 85dB or greater. Audiometry records are to be available in the H&S file.
Suitable SANS approved hearing protective equipment shall be issued and worn by all employees exposed to noise. Where several items of construction plant are in operation at or near to each other, the noise zone for the combined plant should be established and suitable hearing protective equipment used within this zone.

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

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5.2 Emergency Procedures

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

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

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

- Appointment of a competent emergency response co-ordinator
  - Fire;
  - Public injury, Motor vehicle accidents;
  - Falls from heights;
  - Serious injury to workers (medical or work-related); and
  - Any other major risks identified during risk assessments.

Drills to be conducted bi-monthly for the below:

- Fire drill.
- Bomb threat.
- Fall from Heights Rescue procedures.

The emergency plan is to ensure the inclusion of local service providers where possible. Such arrangements should be made with these persons prior to the commencement of the project.
Local emergency telephone numbers must be displayed and made part of the emergency procedure.

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

1. First Aiders and First Aid Equipment

First aider shall be available and accessible on site at all times and be able to work when responding to any emergency on the project.

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

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

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

2. Fires and Emergency Management

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

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

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

Appointment of a competent emergency response co-ordinator and wardens;

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

The emergency plan is to ensure the inclusion of local service providers where possible. Such arrangements should be made with these persons prior to the commencement of the project.
The emergency plan is to include the risk of fire on site and related to any specific activities where gas, welding, cutting etc. occur.

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

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

3. Incident Management and Compensation Claims

All incidents and accidents are to be investigated. All serious incidents involving any form of disabling injury or fatality are to be reported as per the requirements of COIDA to the Designer (PA), Client/ Client Agent immediately. This shall be confirmed in writing following the incident.

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Full details are to be included in each site meeting or when the Client visits site. A summary of incidents is to be included in the monthly report.

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

3. Personal Protective Equipment (PPE) and Clothing

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

- Hard hats;
- Protective footwear;
- Dust Masks
- Hand Gloves
- Overalls that have company logo/ identification and reflective strips to ensure worker visibility.
- Eye protection (if required)
- Hearing protection (when required)
- Reflective jackets (no bibs)
- Harnesses (working on heights)
- Respiratory protection (minimum of FFP2), and
- Any other necessary PPE identified from SDSs and/or risk assessments.

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

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

Failure to comply will result in penalties being applied.

4. Occupational Health and Safety Signage

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

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

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

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

Signs shall be posted at areas of work on site indicating that a construction site is being entered and that persons should take note of H&S requirements.
Note should be taken that "omnibus" signs indicating that the entire site requires PPE should not be used. Any areas where PPE is mandatory must be separately signed.

The Principal Contractor must ensure that members of the public that need to access the facility will not be able to gain access to the construction area. It should be noted that the facility will be fully operational, and the construction area should be properly and securely barricaded at all times.

Failure to comply will result in penalties being applied.

5. Induction of Employees and Visitors, General H&S Training

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

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

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

6. Management of Plant and Equipment

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

Daily monitoring of all plant and equipment is required prior to commencing work. Full lists of hired and own plant are to be available at the Client/ Client Agent's audit.

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All daily inspection records are to be kept in the H&S file. Plant Hire and Haulage Contractors are to comply with the requirements where plant and equipment is brought onto site. Registers are not to be more than 1 week behind.

Only competent, fit plant operators are to be used and in possession of medical certificates of fitness. Any plant or slings used to lift plant or material require annual load testing by an AIA, and all certificates must have the testers LMI/E number. Operators are to be adequately trained and certified to operate mobile cranes or crane trucks. Certificates and registers are to be placed in the H&S file.
Movement of plant in closures and in confined working areas is to be closely monitored and managed by the supervisors. The blind spots of plant are to be taken into account and workers and Contractors protected accordingly.

Failure to do so will be considered a serious offence.

5.7 Working at Heights

The appointment Fall protection planner to be approved prior to appointment. A fall protection and rescue plan are to be available and submitted with the H&S plan. The Fall protection plan to be submitted for approval prior to working at heights. The fall protection plan must be appropriate for the project or project specific. Method statements, appropriate risk assessments, safe work procedures and training are to be available prior to work commencing.

Construction drawings shall be required for all temporary structures as they relate to the project. The drawings shall be accompanied by full calculations, design loads and any relevant test results as required by the SANS code and ensure adequate allowance for the development of appropriate documentation and training. All drawings are to be checked and signed by a competent structural engineer (registered with ECSA).

The focus for working at height shall include fall restraint systems where possible except during assembling or dismantling top components or where it is not deemed safe.
The relevant SANS codes are to be applied as they apply to the works and the project, such as:

- SANS 10085
- SANS 10333 (parts 1-3)

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

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- The public or users of buildings are to be protected at all times by way of hoarding, barricading or fencing;
- Notices to be posted;
- Restrictions or stoppage when weather conditions are deemed hazardous;
- Permit system for working at heights;
- Prevention of falling tools or equipment;
- Link to emergency plan regarding rescue.

All workers are to be in possession of valid certificates of fitness that extend for the duration of the works. Note the requirements in the section relating to medical surveillance.

Employees undertaking work at heights should have necessary competency for working at heights.

Registers and all relevant documentation are to be placed in the H&S file.

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

5.8 Auditing

Frequency of external auditing by the Client/ Client Agent will be conducted every 30 Days to ensure that the contractors conform to the requirements of the Construction Regulations. The site will be inspected, and the documentation audited relative to the activities and H&S plan. The CHS Officer of the PC must accompany the Client, or the Client/ Client Agent, on all audits and inspections.

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

Internal audits are to include site conditions as well as ensuring H&S files are appropriate, and compliant. Comprehensive audit reports are to be made available; the format of the audit reports is to be acceptable by the Client/ Client Agent.

The audit template will be adjusted from time to time relative to the activities on site. A similar process is to be used by the PC when auditing their Contractors on site. Compliance with legislative requirements and the systems provided by the PC to manage the H&S on site will be measured. Full compliance is required. Time limits for corrective actions will be set and must be adhered to.

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

5.9 Communication on Site

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All H&S communication during the project between the Client/ Client Agent and the PC will be done through the PA/Clerk of Works/Client and be in writing, including the issue and responses to non-conformances and H&S audit results.

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

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

Access

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

Welfare Facilities

Adequate toilets, clean, safe drinking water and decent shelter must be afforded workers at all times. Toilets will be within reasonable distance of workers, or placed with each working team in safe, with reasonable privacy. Existing facilities may not be shared with existing users of the facility. No substances containing Formaldehyde may be used in Chemical Toilets.

Ablution facilities are an essential facility that must be available for workers across a site. Facilities are a high-risk area and increased cleaning regimes are required to be introduced. A policy on how this will be done is required, that will cover both portable and permanent facilities. The following are considerations, that include, *inter alia*:

- Portable toilets to be provided at a 1:15 ratio but be sanitized daily as per Occupational Health and Safety Measures in Workplaces or more frequently.
- Where there are more than 15 employees on site, facilities should be provided for different sex e.g., female and make toilets to be provided.
- Cleaners to continually clean and have a formal cleaning regime.
- Hand washing facilities (soap and water, paper towel) to be available where possible, and if not, to provide hand sanitizer.
- Induction training to educate to ensure all users are hand washing correctly.
- Flush toilets preferably 1:15 unless increased cleaning regime present.
- Restrict the number of people using toilet facilities at any one time e.g., use a welfare attendant.
- Wash hands before and after using the facilities.
- Enhance the cleaning regimes for toilet facilities particularly door handles, locks and the toilet flush.
- Portable toilets should be avoided wherever possible, but where in use these should be cleaned and emptied more frequently.

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- Provide suitable and sufficient rubbish bins for hand towels with regular removal and disposal that need to be managed as hazardous waste.
- Introduce staggered start and finish times to reduce congestion and contact at all times.
- Consider increasing the number or size of facilities available on site if possible.

5.11 Discipline, Alcohol and Substance Abuse

All employees (management included) are to follow instructions given in the interest of H&S. Disciplinary action is to be imposed on those who do not follow such instructions or company rules or policies. Contractor to always follow facility safety rules (Refer to 5.20) not to interfere with facility activities.

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

These requirements are applicable to any employee of any organization providing services on site. Penalties may also be applied by the Client, OHS Agent or Engineer.

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

5.12 Electrical Equipment

In addition to the requirements of the Electrical Machinery Regulations and the General Machinery Regulations any electrical distribution board used for construction work shall be fitted with suitable earth leakage protection.
Contractor to provide a Certificate of Compliance for all temporal distribution boards.
Leads must be properly and firmly connected. Plugs and sockets shall be in good and safe condition.
All electrical apparatus, other than electrical hand tools, shall have a physical “lock out” system which will prevent any operation other than that authorized by a supervisor. A “lock out” sign shall be displayed when the apparatus is not in use.
Method statements and safe work procedures will be required for all work involving electrical apparatus.

1. Asbestos Management

There was no asbestos or asbestos containing material identified at **Indwe –Emalahleni Municipality**, however should such material be found, the contractor must inform the client immediately and compliance to the **Asbestos Abatement Regulations,2020** should be adhered to.

Any work on asbestos or asbestos containing material including safe removal, handling, transporting and disposing thereof must be done by a registered and approved asbestos contractor.

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The approved asbestos contractor is required to submit a methodology for removal of asbestos containing materials (To be approved by Client / Client representative before work commences).

The H&S plan provided by the PC is to include as much information as possible relative to the requirements relating to asbestos.

The contractor will be required to develop an asbestos workplan for approval by the client / client representative as well as approval of all general information required of Contractors.

Contractor to ensure that the removal of any asbestos containing material must be documented, and proof kept thereof in the Health and Safety File.

All asbestos and asbestos containing material removed on site will be disposed of at an accredited disposal site and disposal certificates must be obtained and kept on file.

Failure to do so will be considered a serious offence.

2. Demolition

Care is to be taken during demolition of walls; a stability survey should be carried out by a competent person. All rubble to be disposed on a regular basis and at a controlled refuse site.

Demolition plan to be submitted by the Principal Contractor for approval before any demolition commences. The demolition work is to be done under the supervision of a competent person.

The Contractor must at all times take into account that the Facility will be fully operational during the emergency repairs. Extra care to be taken at all times.

Failure to do so will be considered a serious offence.

3. Barricading and Hoarding

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

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

- **Security:** Increase the presence of security personnel in and around the construction site to monitor activities and respond promptly to any emergency

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- **Security Plan**: Develop a comprehensive security plan to address potential risks during construction. This should include measures to safeguard patients, staff, and sensitive information.

- **Temporary Barriers**: Install temporary barriers to maintain a level of security during the transition. This might include temporary fencing or barricades to restrict unauthorized access.

- **Access Control:** Implement strict access controls to ensure that only authorized personnel have entry to the construction site. Use identification badges and limit access points.

- **Communication**: Keep communication channels open between construction teams, facility staff, and security

- **Personnel**. Regular updates can help address concerns and mitigate potential issues.

- **Patient and Staff Safety**: Prioritize the safety of patients and staff by ensuring clear signage, safe pathways, and minimizing disruption to critical facility areas.

- **Emergency Response Plan**: Develop an emergency response plan specific to the construction project, outlining procedures for evacuations, medical emergencies, or security breaches.
- Collaboration with Authorities: Coordinate with local law enforcement and emergency services to ensure they are aware of the construction activities and can respond swiftly if needed.

- **Community Engagement**: Inform the surrounding community about the construction plans and potential disruptions, emphasizing efforts to maintain safety and security.

4. Traffic Management

The contractor to develop a comprehensive traffic management plan that includes:

- A site-specific traffic flow diagram.
- Identification of high-risk traffic areas or zones.
- Strategies to minimize disruptions to normal facility operations.
- Measures to control vehicle and pedestrian movement around the work area.
- Clear signage and demarcation of safe areas.
- Procedures for managing temporary road closures or detours.
- Provision for emergency vehicle access.
- Plans for managing deliveries and contractor vehicles.

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5. Temporary Works - Scaffolding, support work, formwork

Temporary works must be properly designed and signed off by a competent person. In these instances, a competent person is defined as a Professional Engineer or Professional Technologist (registered with ECSA) who has sufficient experience in the design of the type of temporary work in question to be able to assess the design. The appropriate competent persons are to be appointed to manage and monitor such works to the satisfaction of the Engineer and Client/ Client Agent. Records and registers are to be properly completed and kept in the H&S file. If temporary works are to be erected by a Contractor, this must be notified to the Designer/Client/ Client Agent. All necessary calculations and drawings of temporary works must be kept on site and available to the PA and CHSA.

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

5.18 Biological Hazards

Should construction workers be exposed to or get into contact with biological risk at **Indwe – Emalaleni Municipality** coordination between contractor and Facility infection control shall be implemented to address any concerns relating to biological hazards. All workers entering the construction site must undergo training on the identification and handling of biological hazards prior to commencing work. Contractors shall apply appropriate health and safety measures including PPE and hygiene protocols as per the regulations for hazardous biological agents.

The baseline site HIRA should continue to acknowledge Viral Hazardous Biological diseases outbreak as a general Hazard. Should there be an outbreak the HBA Regulations will apply, and this may require additional controls like HIRA, method statements that address transmission prevention planning, PPE and signage.

1. Excavations

A procedure for managing excavations is to be provided as an addendum to the H&S plan describing how excavations are to be managed specifically excavations deeper than 1.5m.

Excavation method statements are to be approved by the Designer and associated risk assessments are required. Designs by competent persons are required where ground conditions are deemed to require shoring.

A competent person is to be appointed for managing all excavations. A permit system is to be available and used for all excavations. All equipment and ground conditions to be checked daily, and prior to work commencing.

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

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

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

2. Safety Rules with respect to work to Health Care Facilities

- All persons on the premises shall obey the facilities' Health and Safety rules, procedures and practices.
- All work shall be carried out within normal working hours except certain essential works which may need to be carried out after hours or over weekends.
- Arrangements for such work to be agreed in advance between the Contractor and the facility.
- Emergency / Firefighting equipment belonging to the premises is not to be interfered with.
- Emergency Exits and Escape Routes, including Temporary Escapes Routes are not to be obstructed.
- No persons shall carry out or initiate an unsafe / unhygienic act or operation whilst on the premises.
- Workers are not to interfere with the duties of the Clinic, its staff, patients or visitors.
- The Contractor shall maintain good housekeeping standards in the areas being worked on throughout the duration of the contract.
- The health facility reserves the right to search any person entering or leaving the health facility premises.
- All workers must wear proper identification labels at all times – The Contractor will be asked to remove persons without identification from the premises.
- The Contractor will not be permitted to use any tools or equipment belonging to the health facility.
- The Contractor is to ensure that noise is kept to a minimum so as not to unduly interfere with the functioning of the adjacent facilities.
- The Contractor is to ensure that dust from the works is properly contained so as not to cause problems with the normal functioning of the facility activities.

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6. HEALTH AND SAFETY FILE

The documentation submitted and approved following the awarding of the contract will be used to form the H&S file. The H&S file is required to be laid out in a logical manner, and documentation filed within the file is to be easily accessible.
The following completed information shall be included (but not be limited to) as part of the index:

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

7. NON-CONFORMANCES

Should, at any time, the works, or part of the works, be stopped due to unsafe acts or non-compliance with the Clients or PCs H&S Plan; neither the PC nor any other Contractor shall have a claim for extension of time or any other compensation.
The following constitute examples of the types of non-conformances that will attract penalties:

Minor: **Penalty: R50/count**	**Medium:** **Penalty: R500/count and a non-conformance**	**Severe** **Penalty: R5000/count, a non-conformance and/or activity stoppage**
Non-use of PPE supplied	Toilets not supplied or regularly serviced; lack of drinking water	Contractors working without Health and Safety Plan approval

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

1. Failure to Comply with Provisions

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

(i) A penalty as shown in the Table above shall be deducted for each and every occurrence of non-compliance with any of the requirements of the PSHSS.

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

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ANNEXURE A

CLOSE OUT REQUIREMENTS

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

Health and Safety close out file requirements include:

a) Client H&S Specification

b) Principal Contractor's OHS Plan(s)

c) Principal Contractors Policies

d) Organograms

e) Legal Appointments

f) List of all employees employed on a permanent or contractual basis over the duration of the contract.

g) Notification of Construction Work with the Department of Employment and Labour of commencement of work

h) Letter of Good Standing

i) Full files for all Contractors as well as their close out report

- List of Contractors
- All employees employed on a permanent or contractual basis over the duration of the contract.
- Letters of Approval of Contractors
- Mandatary Agreements
- Letters of Good Standing
- Appointments

j) Incident Records

k) Non- Conformance records

l) Agent's Audits

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m) Method Statements

n) Risk assessments

o) Safe work procedures

p) Medical surveillance certificates of fitness. Medical records are to be kept according to the OH&S Act as amended.

q) All drawings for temporary structures (suspended beams/scaffolds etc.)

r) All operating manuals for any systems that require on-going maintenance.

s) Copies of test results, policies and procedures for environmental monitoring (silica, noise, dusts etc.)

Defect and Liability Period

The H&S files are to be kept 'live' for the defect and liability period by the Principal Contractor, including those of their Contractors. Any work required during the defect and liability period will require an assessment of the H&S file by the Client/ Client Agent prior to any work commencing.
A copy drawing records for the as-built are to be placed on file by the Designers once complete.

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ANNEXURE B

NON-CONFORMANCES

HEALTH AND SAFETY SITE INSPECTION NON-CONFORMANCE		
AGENT:	**PROJECT:**	
Consultant:	**Date and time:**	
Client	**Area:**	
Contractor:		
ASPECTS NOTED:	**COMMENTS:**	**COMPLETION REQUIRED BY (DATE):**
PHOTOGRAPHIC EVIDENCE (if available):		
1	2.	
OTHER:		
The following penalties are to be applied:		
Signature of Designer		
Signature of CHS Officer/Site Agent		
Signature: of Client/ Client Agent		

ANNEXURE C

CONTRACTORS MONTHLY HEALTH AND SAFETY REPORT

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

CONTRACT NUMBER:		**PROJECT NAME:**	**CONTRACT DETAILS:**
1	**GENERAL ACTIVITIES FOR THE MONTH** **(Detail each area of work)**		
2	**NUMBER OF WORKERS (permanent and local, contractors)**		
3	**TRAINING DONE (Supplier, no of people, type)**		
4	**INCIDENTS / ACCIDENT** **(List number and details, attach reports)**		
6	**NON-CONFORMANCES (Closed out or active)**		
7	**CONTRACTORS (list, approval status)**		
8	**AUDITS COMPLETED**		

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	(internal and external)	
9	**CRITICAL ISSUES**	
10	**GENERAL**	

Health and Safety Officer: _____**Signature:** _____

Date: _____

Construction Manager: _____**Signature:** _____

Date: _____

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Annexure A

Acknowledgement:

I,_____representing

_____ Principal Contractor have satisfied myself with the content of the Occupational Health and Safety Specification (OHSS) and shall ensure that the Principal Contractor and his / her personnel comply with all relevant obligations in respect thereof.

Signature of Principal Contractor: Date

_____ _____

Signature of Agent: Date:

_____ _____

Comments:

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GEOTECHNICAL SITE INVESTIGATION REPORT

FOR

THE PROPOSED TRANSFER STATION AND CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF), EMALAHLENI LOCAL MUNICIPALITY, EASTERN CAPE PROVINCE

FINAL REPORT

01st December, 2022

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Figure 4: Macro-climatic regions of Southern Africa

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DOCUMENT CONTROL

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Author signature		**Approver signature**	
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Title	Mr	**Title**	Mr

Abbreviations

AASHTO	American Association of Highway and Transport Officials
CBR	California Bearing Ratio
GM	Grading Modulus
LL	Liquid Limit
LS	Linear Shrinkage
MDD	Maximum Dry Density
NP	Non-Plastic
OMC	Optimum Moisture Content
PL	Plastic Limit
PI	Plasticity Index
SP	Slightly Plastic
TP	Test Pit
BNGL	Below Natural Ground Level

1. Introduction

On the 04th November 2022 Engineering Aces (Pty) Ltd appointed Geotechnical Engineering Laboratory (Pty) Ltd (GEL) to carry out the geotechnical site investigation for the proposed Indwe Transfer Station and Construction of Material Recovery Facility (MRF), Emalahleni Local Municipality in the Eastern Cape Province. The proposed Transfer Station will consist of

a) Construction of Material Recovery Facility;
b) Refurbishment of existing storage room;
c) Refurbishment of a guard house;
d) Construction of loading platform for 3 skip bins for offloading;
e) Construction of ablution facility;
f) Electrification of facility;
g) Installation of 2.5m high razor wrap fence;
h) Installation of a solar power;
i) Installation of sewer and water reticulation;
j) Upgrading access road;
k) Provision of transfer station equipment;
l) Upgrading of access road linking the site to the main road network.

2. Investigation Objectives

The objectives of the investigation are to:

1. Identify any potential geotechnical hazards;
2. Define the ground conditions and provide provisional site class designations;
3. Comment on possible shallow groundwater conditions;
4. Discuss suitability of on-site materials for general construction purposes;
5. Provide earthwork recommendations;
6. Provide foundation options;
7. Provide the geotechnical basis for planning and conceptual design-level purposes;
8. Discuss any shortcomings identified during this study with recommendations on the way forward.

The objectives are addressed in the relevant report sections.

3. Available information

The following available information was used in the assessment:

- 1:250 000-scale 3126 Queenstown geological sheets;
- Approximate site boundaries;
- Available Google-Earth satellite images;
- Detailed soil profile descriptions conducted for the purposes of this assessment;
- Soil profile photographs;
- Soil laboratory test results conducted specifically for the assessment;
- Site layout plan;
- Local knowledge of the area.

4. Site Description

4.1. Site Locality and Existing Services

Indwe
Indwe is situated some 110km North-East of Queenstown. The proposed Transfer Station is approximately 1.5 km South-East of town, along the Provincial Road R56.

The site is currently developed with small vandalised waste storage room, vandalised guard house, Offloading Concrete platforms and unregulated landfill.
The site is currently accessible through an all-weather gravel road branching from the tarred road R56 linking Indwe and Elliot. The existing gravel road is on poor condition that renders it difficult to use during rain seasons, there are some good areas where it is still intact but some areas especially where stormwater channels are lacking is a challenge.
There is no sewer and electrical service on. The identification of services falls outside the scope of the investigation. The planners and designers should refer to the detailed services report for planning and design purposes. Generally, the area slope towards the Southern direction at the slope of approximately less than 4%.

The approximate site coordinate is (Decimal degrees):

Lat: 31°28'42.39"S
Lon: 27°20'50.31"E

The site has an approximate surface area of ~0.45Ha.

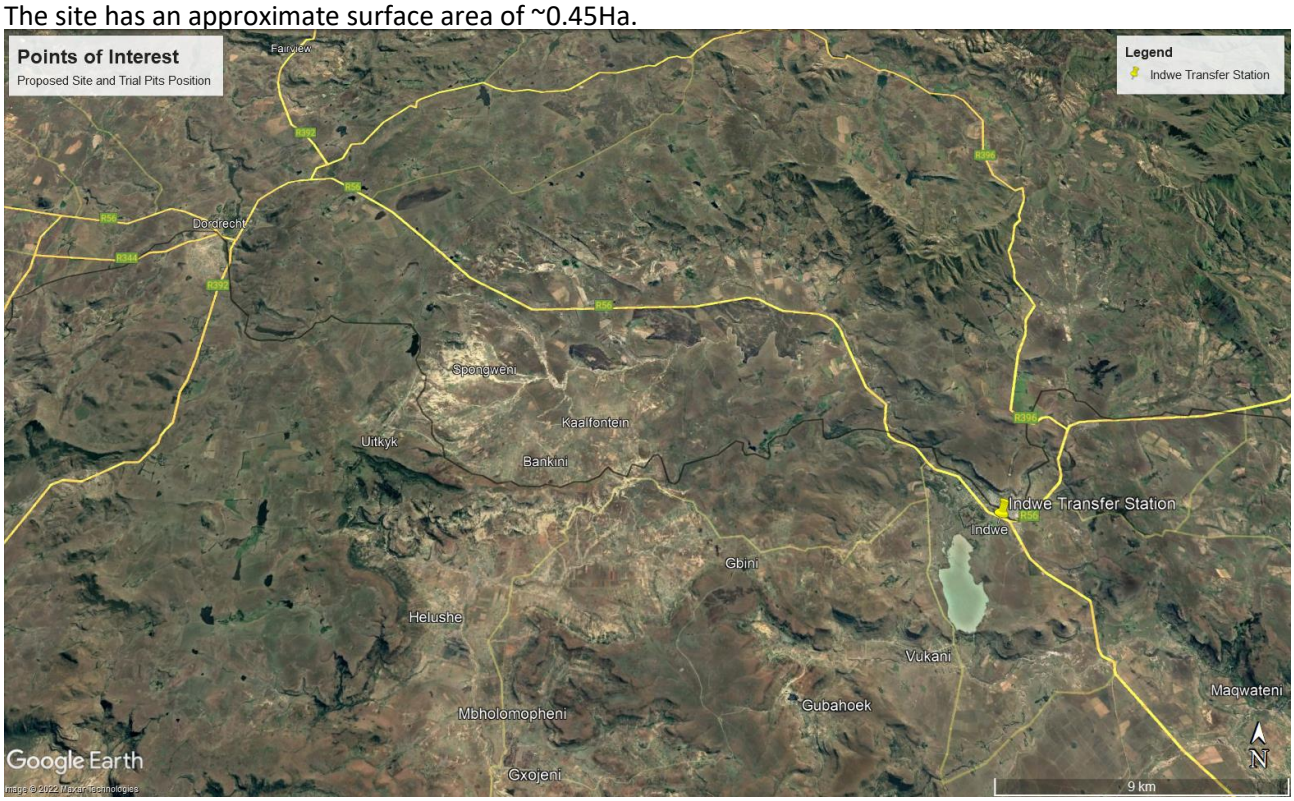

Figure 1: Locality Map of Indwe

Figure 2: Locality Map of Indwe Transfer Station and 4 Trial Pits

4.2. Site Vegetation and Climate

The surrounding of site is currently having sporadic natural thin grass. There were no trees recorded on the proposed Site.

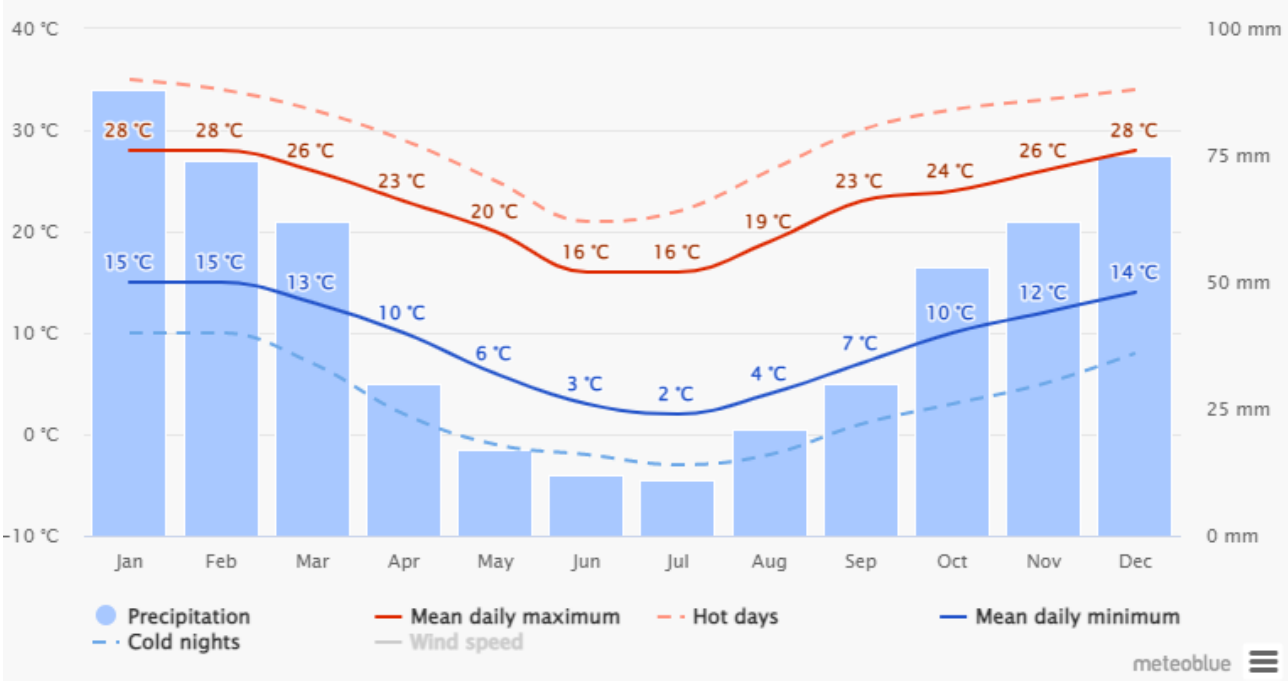

Figure 3: Graphs for average temperatures and precipitation in Indwe

The climate of Indwe: Indwe normally receives about 535mm of rain per year, with most rainfall occurring mainly during summer (December, January and February). The average rainfall values for Indwe per month; It receives the lowest rainfall (11 mm) in July and the highest (88 mm) in January. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Indwe range from 16°C in June and July to 28°C in December and January. The region is the coldest during July when the mercury drops below -3°C on average during the night.

The climate is an important parameter in determining the climatic N-value, which is a function of the rainfall and evaporation rate. The N-value is used to determine the predominant mode of weathering that can be expected in a region.

N=5 represents the boundary between physical and chemical weathering, meaning that for areas with an N-value of less than 5 chemical weathering will predominate, and for areas with an N-value greater than 5 physical weathering processes will be the most pronounced (Weinert, 1980).

The Weinert's N-value is calculated from the climatic data as follows:

$N = (12 \times E_j) / P_a$

Where;
E_j = Evaporation during January
P_a = annual precipitation

According to the contour map of climatic N-values for Southern Africa (Weinert, 1980), the expected N-values for the area of study is moderate and ranges between 2 and 5.

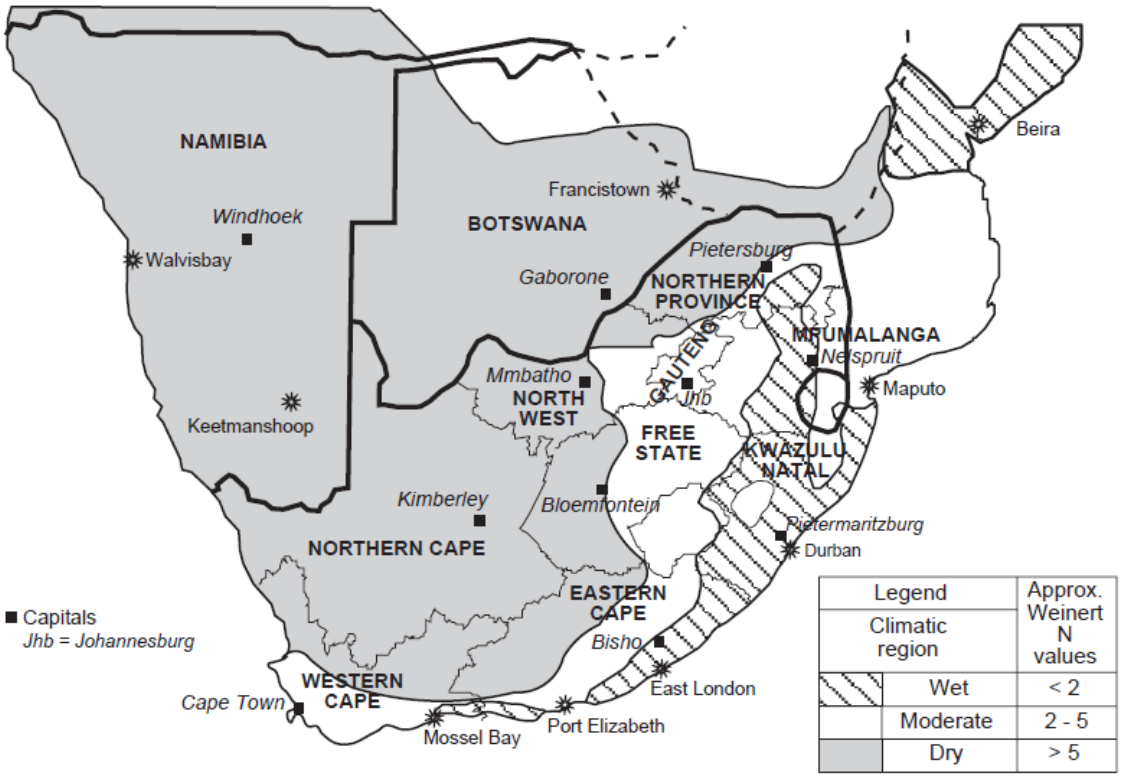

Figure 4: Macro-climatic regions of Southern Africa

The predominant form of weathering in the area are expected to be Chemical of nature, with shallow expected soil profiles. The weathering mode is however also influenced by the topography and nature of drainage.

5. Method of Site Investigation

The site investigation was carried out on the 21st November, 2022 and involved excavation of four (4) shallow soil evaluation test pits Hand Excavation to an approximate depth of 1.5m or refusal, whichever came first. The test pits were profiled using "Revised Guide to Soil Profiling for Civil Engineering Purposes in Southern Africa by Jennings JEB, Brink ABA and Williams AAB (1973)". Two to three representative soil samples were taken from each test pit and the following tests were carried out

- Sieve Analysis
- Atterberg Limits
- Mod AASHTO
- CBR

These tests were carried out mainly to classify the soils found on the project area and assess their suitability for use in road construction activities.

6. Site Geology

6.1. Regional Geology

Indwe

General geology of Indwe is shown on the Geological Map series of the Republic of South Africa Sheet No. 3126 (Queenstown), and scale 1:250,000. The area is regionally characterised by the sedimentary rocks of the Karoo Sequence. The Karoo Sequence in this region is characterised by Grey mudstone, Shale, gritty sandstone, occasional coal seams of Molteno Formation. The area has a presence of a heavy deposit of Alluvium sand.

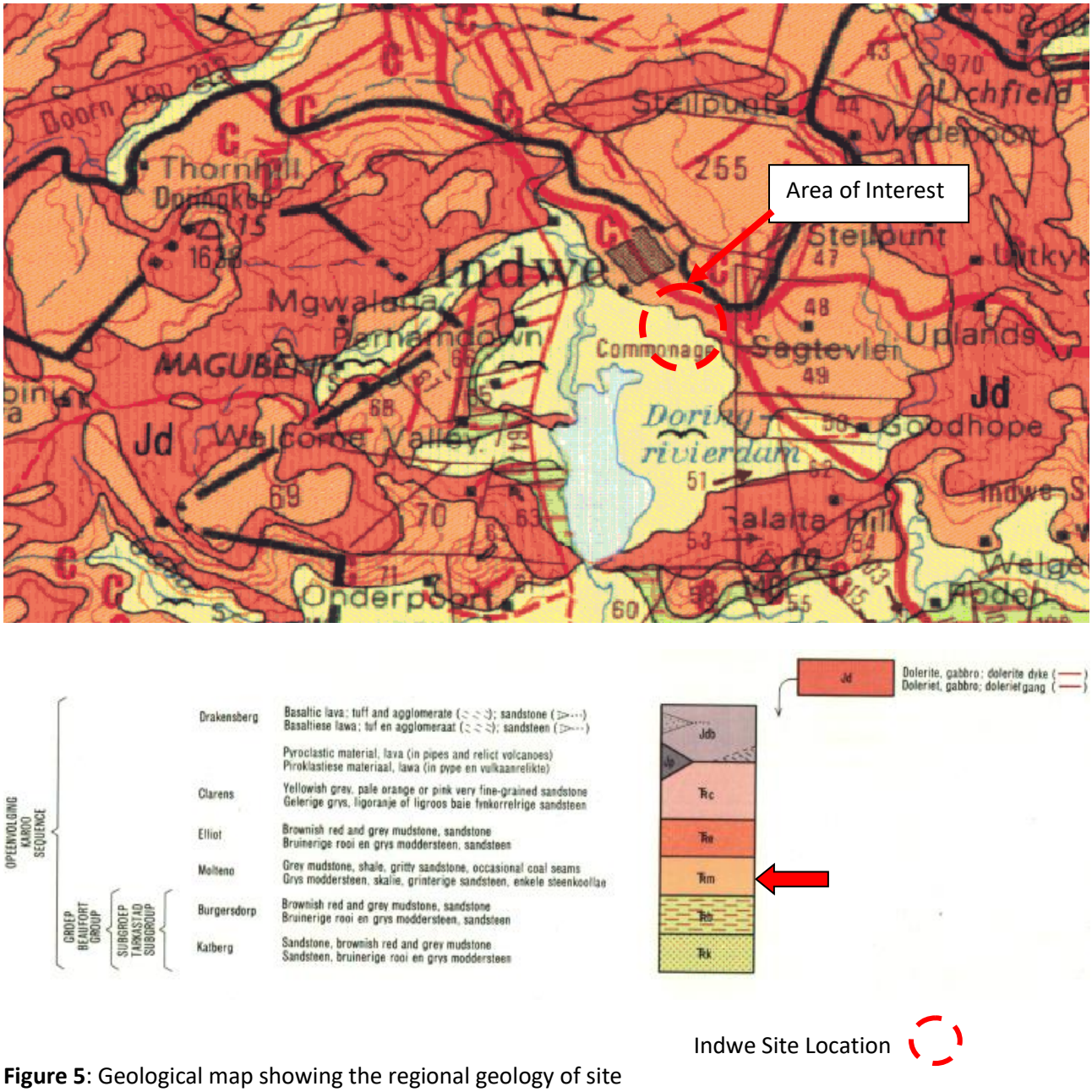

Figure 5: Geological map showing the regional geology of site

6.2. Local Geology

The local geology of the site may be interpreted from fieldwork results. The site is covered by transported soils (Alluvium sand) underlain by grey mudstone. The test pit profiling typically confirmed what is indicated on the geological sheet and revealed the following elements in the soil profile.

- **Transported Soils**: These are soils that have been transported by a natural agent (hill wash, etc) during relatively recent geological times and which have not undergone lithification into sedimentary rock or cementation into pedogenic material.
- **Residual soils**: Soils derived from the weathering of underlying sandstone and have not moved from the place of origin as with transported soils

6.3. Soil Profile

The soil layers found on these project sites are attached as ***Appendix A*** of this report and show the following soils

TP 807

31°28'41.70"S
27°20'50.70"E

0 – 200 mm	Moist, orange, loose sand
200 – 700 mm	Moist, light-grey, loose silty sand
700 – 1500 mm	Moist, grey, stiff, clayey silt

TP 808

31°28'43.30"S
27°20'50.70"E

0 – 250 mm	Slightly moist, light-brown, medium dense, silty sand
250 – 1600 mm	Moist, grey, loose sand

TP 809

31°28'43.00"S
27°20'49.20"E

0 – 300 mm	Dry, light-brown, medium dense, silty sand
300 – 1510 mm	Dry, grey, loose sand

TP 810

31°28'39.89"S
27°20'49.22"E

0 – 700 mm	Moist, light-brown, loose, silty sand.
700 – 1520 mm	Moist, grey, medium dense, sandy silt.

7. Groundwater Conditions

No groundwater encountered during site investigation.

8. Geotechnical Evaluation

The relevant engineering characteristics were evaluated visually during site investigation and soil profiling. This evaluation was also done from laboratory testing as discussed below.

8.1.Road Indicator Test Results

Road indicator test results i.e. Hydrometer Test, Sieve Analysis and Atterberg Limits test results are summarized in Table 8.1 below.

Table 8.1 Road Indicator Test Results

TP #	Depth (mm)	Sieve Analysis				Atterberg Limits					Hydrometer Test	
		% < 2.00 mm	% < 0.425 mm	% < 75 µm	GM	LL (%)	PL (%)	PI (%)	LS (%)	AASHTO Class	% Clay	Potential Heave
TP 807	700-1500	**95**	**94**	**65.2**	**0.5**	**19**	**14**	**5**	**4.3**	**A-4**	**23.7**	**LOW**
TP 808	250-1500	**99**	**96.6**	**42.2**	**0.6**			**NP**		**A-4**	**8.1**	**LOW**
TP 809	300-1500	**99**	**96.3**	**40.4**	**0.6**			**SP**		**A-4**	**10.1**	**LOW**
TP 810	700-1520	**97**	**96.3**	**55.2**	**0.5**			**SP**	**1**	**A-4**	**13.7**	**LOW**

The results in Table 8.1 indicate that

Soils from these project sites are classified as A-4 (Sandy Silt and Silts and Clays of Medium/Low compressibility), according to AASHTO classification system.

"The on-site soils mainly classify as class "**A-4**" soils as
per the AASHTO Classification System. Different classes represent the following soil types:

A-4→ **Silt-clay materials** (>35 % passing the 0.075 mm sieve), minimum of 36 % passing the 0.075 mm sieve, LL Max of 41, PI Max of 10, with significant constituent: **Silty Sands and clayey Silts**.

Note: Plasticity Index of A-7-5 subgroup is equal to or less than the Liquid Limit – 30.
Plasticity Index of A-7-6 subgroup is greater than LL – 30.

Hydrometer test was carried out and the following could be derived from the test results. According to Unified Soil Classification System (USCS), the soil from site classifies as **ML-CL, SM, ML**

ML → Fine-grained soils (more than 50 % passes the 0.075 mm sieve), silts and clays with Liquid Limit of 50% or less, inorganic Silts, very fine sands, rock four, silty or clayey fine sands, **inorganic Silts, very fine sands.**

CL → Fine-grained soils (more than 50 % passes the 0.075 mm sieve), silts and clays with Liquid Limit of 50% or less, inorganic clays of low to medium plasticity, **gravelly/sandy/silty/lean clays**.

SM → Coarse-grained soils (more than 50% retained on the 0.075 mm sieve), sands (50 % or more of course fraction retained on the 4.75 mm sieve), **sands with fines, silty sands, sand-silt mixtures.**

The UCS indicates that the project soils (**ML**) consist of fine-grained soils (more than 50% passes the 0.075 mm sieve), silts and clays with Liquid Limit of 50% or less, inorganic silts of low to medium plasticity.
These soils Inorganic silts/very fine sands/rock four/Silty or Clayey sands have medium compressibility when compacted, low to medium potential heave (**Compressible Soils),** with an expected range of top soil movement less than 10mm (silts and clays) as a result the sites are classified as **S/S1**

The USCS indicates that the project soils **(CL)** consist of Fine-grained soils (more than 50 % passes the 0.075 mm sieve), silts and clays with Liquid Limit of 50 % or less, inorganic clays of low to medium plasticity.
These soils gravelly/sandy/silty/lean clays have low to medium compressibility, low to medium potential heave **(Expansive Soils)** with an expected range of top soil movement between 7.5-15mm (Clayey silts) and as a result the sites are classified as **H1/H2**

The UCS indicates that the project soils (**SM**) consist of Course-grained soils (more than 50% retained on the 0.075 mm sieve), Sands with 50% or more of course fraction passes the 4.75 sieve, inorganic silts of low to medium plasticity.
These soils Silty sands, sand-silt mixtures have low compressibility when compacted, low potential heave (**Compressible and potentially collapsible Soils),** with an expected range of top soil movement between 5.0 - 10mm (silty sands and sandy gravels) as a result the sites are classified as **C1**

8.2. Compaction and CBR Test Results

CBR and Compaction tests were carried out on soil samples obtained from the test pits. The results are summarized in Table 8.2 below.

Table 8.2 Compaction and CBR Test Results

TP #	Depth (mm)	CBR @						COLTO Class
		100 %	98 %	97 %	95 %	93 %	90 %	
TP 807	700-1500	16.2	15.4	15.0	14.2	13.4	12.1	**UNCLASSIFIED**
TP 808	250-1500	30.6	26.1	23.8	19.3	14.8	8.0	**G7**
TP 809	300-1500	25.9	23.7	22.6	20.4	18.3	15	**UNCLASSIFIED**
TP 810	700-1520	27.8	25.6	24.5	22.3	20.2	16.9	**UNCLASSIFIED**

Test results in Table 8.2 indicate that soil from Project Site are Classified as G7 (TP 808) and the remaining Pits are Unclassified according to COLTO classification systems.

For highway construction the following can be used for provided for guideline suitability:

G8, G9 and >G9 material is generally deemed suitable for subgrade construction.
G6, G7, G8 and G9 material is generally deemed suitable for selected layer construction.
G5 and G6 material is generally deemed suitable for subbase construction.
G1, G2, G3, G4 material is generally deemed suitable for base construction.

According to COLTO unclassified materials are unsuitable for use as construction fill material.

8.3.Impact of geotechnical character on the site

The proposed Transfer in Indwe site is located on a alluvium Silty sands and partly grey mudstone. The material coming from this site range from good to "good to fair" when compacted.

The site is dominated by silty sand of various colour underlain by clayey silts/loose sand. In terms of US Classification System, the site has **ML-CL, SM, ML** soils material.

Material classifying as "**CL**" are generally fair to poor for use as subgrade and not suitable for use as subbase and base course in road construction. The material is expected to be practically impervious when compacted. The in-situ material may have a medium to high compressibility with a medium compressibility and fair shear strength when compacted. The material is expected to have a good stability as embankment material when compacted with a good workability rating and good to fair compaction characteristics.

Material classifying as "**SM**" are generally fair for use as subgrade, poor to fair for use as subbase and not suitable for base courses in roads. The material is expected to be fairly impervious when compacted. The in-situ material may have a medium in-situ compressibility with a low compressibility and good to fair shear strength when properly compacted. The material is expected to be reasonable stable as embankment material when compacted with good workability rating and good to fair compaction characteristics.

Material classifying as **ML** are generally fair to poor for use as subgrade, not suitable for use as subbase and not suitable for base courses in roads. The material is expected to be poor, impervious when compacted. The in-situ material may have a Medium compressibility when properly compacted. The material is expected to have poor stability when used as embankment material.

All materials from this project were excavated using a Hand Excavation and as such the excavation can be classified as soft to intermediate excavation as per SABS 1200 D-1988 (as amended 1990).

8.4.Compaction Characteristics

The upper transported topsoil and alluvial materials in general contains high percentages of silts and Silty sands. The compressibility and compaction ratings, based on the soil classifications are provided in **Appendix D**

Materials classifying as "**ML**" (the fine-grained soils) generally has good to poor compaction characteristics.
Materials classifying as "**CL**" (the fine-grained soils) generally has good to fair compaction characteristics.
Materials classifying as "**SM**" (the coarser grained soils) generally has good compaction characteristics.

8.5. Slope Stability and Erosion

No natural steep slopes exist, and natural slope instability cannot occur.

The slopes of the confined vertical inspection trenches were stable during the short period of investigation (+/- 6 hours) with no indications of bulging/toppling/ravelling. It should however be emphasised that instability can be expected in unconfined and confined conditions with an increase in moisture content as expected during the wet season. Any excavations should be inspected by a competent person. Any manned excavations should be inspected and approved by a competent person as per the health and safety regulations.

The general safety regulations (GSR13) which stated that no employer may require or permit any person to and no person shall, work in an excavation more than 1.5m deep and which has not been adequately shored or braced if there is a danger of the sides of the excavation have a potential for collapse, **no longer apply.**

Regulation 13(2)(b) state that no work in unbraced excavations will be allowed unless:

1. Battered to angle of repose or
2. In stable material, and
3. permission in writing by competent person and where uncertain,
4. professional assessment in writing.

A competent person (suitably qualified and experienced preferably geotechnical engineer or and/or engineering geologist) should inspect any excavations to be entered:

1. Daily, prior to each shift;
2. After every blasting operation;
3. After an unexpected fall of ground;
4. After substantial damage to any supports; and
5. After any rain event.

Permission to enter any excavation should be granted in writing by the competent person daily and before/after the events as listed above for each separate pipeline section or excavation. The above is essential in order to evaluate the safety of the excavation to ensure the safety of persons working and around the trenches/excavations. The inspections are to be recorded in a register kept on site and made available to an inspector, client, client's agent, contractor or employee on request.

The excavation work requirements as per the Construction Regulations should be implemented by the client/agent/principal contractor/contractor as stipulated in the regulations or as otherwise specified in writing by the responsible engineer.

The following batter angles can be considered for low height cut slopes (Less than 3 m deep cuts) for planning purposes (the angles should be confirmed by a competent person once excavation details are known).

- Permanent slope batter: 1V:2H to 1V:5H (Height and load dependant for slopes within the residuum. Batters more than 3m should be evaluated).
- Temporary slope batter: Maximum of 1V:2H (Height and load dependant. Batters more than 2m should be evaluated).

The upper soils are expected to have a high susceptibility to erosion once exposed and subject to concentrated water flow. Basic surface water management will be required to avoid concentrated water flow in order to limit excessive soil erosion.

Basic erosion control measures will be recommended. Measures may comprise of one or a combination of the following:

- Construction phasing to limit vast exposed areas that may result in high run-off and concentrated water flow;
- Surface water management to prevent high run-off rates and concentrated water flow;
- Temporary surface protection during construction;
- Permanent surface protection after construction for example grass establishment and/or paving;
- Physical improvement of the upper soils such as compaction in order to increase resistance to erosion;
- Subsurface drainage where expected seasonal perched water contacts are exposed by possible cuts/excavations.

Site water management will be recommended, especially if the construction phase is during the wet season, in order to avoid concentrated water flow that may result in severe erosion of the upper soil horizons and/or undercutting of structures.

9. Construction Material

9.1. Suitability for Use in Road Pavement Construction

The design of the road pavement will depend on the expected induced loads, volumes and overall pavement design with reference to type of materials, horizon thicknesses to be incorporated into the pavement and the drainage precautionary measures. The pavement engineer should thus evaluate the suitability of the materials taking into consideration the required parameters and pavement balance. The saturated CBR values are provided in the attached results.

Considering the low expected and assumed induced loads, the following expected performances are assigned to the different soil horizons present on site:

Topsoil: Not ideal due to presence of organic matter and roots. Can be considered if roots are removed.

alluvium: Considered an excellent source for mattress construction due to high percentages of sand and gravel.

9.2. Suitability for Use as Pipe Bedding and Backfill

The bedding and blanketing material can be evaluated by SANS or the more relaxed Department of Water Affairs (DWA) specifications. DWA developed a relaxed bedding specification especially for areas where materials with specifications as per SANS cannot be obtained. The specifications are summarized in **Table 9.1.**

Table 9.1: Relaxed Pipe Bedding Specifications (DWA)

Material Description	Percentage by Mass Passing Sieve Size (mm)				Atterberg Limits Shall Not Exceed (%)		
	9,5	4,75	0,425	0,002	LL*	PI*	LS*
Finely Graded A	100	100	80 - 100	0 - 45	30	15	5
Medium Graded B	100	80 - 100	60 - 80	0 - 40	35	18	7,5
Granular C	100	70 - 100	30 - 60	0 - 35	40	20	10

*Notes: * LL, PI and LS on material passing the 0,425mm sieve.*

Selective on-site materials (generally the topsoil) may be considered suitable for pipe bedding "Finely Graded A" as per the DWA relaxed specifications, providing that stones in excess of 10mm are sieved from especially the 75mm of material immediately surrounding the pipe.

10. Conclusions and Recommendations

Considering site visits and investigations, fieldwork and laboratory test results; it is concluded as follows

- Refusal was not encountered on all test pits.
- The site is dominated by silty sand of various colour underlain by clayey silts/loose sand. In terms of Unified Soil Classification System, the site has **ML-CL, SM, ML** soils material.

  ML Material generally has good to poor compaction characteristics.
  CL Material generally has good to fair compaction characteristics.
  SM Material generally has good compaction characteristics.

- For highway construction the following can be used for provided for guideline suitability:

  G8, G9 and >G9 material is generally deemed suitable for subgrade construction.
  G6, G7, G8 and G9 material is generally deemed suitable for selected layer construction.
  G5 and G6 material is generally deemed suitable for subbase construction.
  G1, G2, G3, G4 material is generally deemed suitable for base construction.

  According to COLTO **G7** classified materials are suitable for use as construction fill material and all unclassified Material are unsuitable for use as fill material

- **The groundwater movement of the site was not monitored during wet-season cycles and the degree of seasonal seepage are not known. Site water management is recommended, especially if the construction phase is during the wet season, in order to avoid concentrated water flow that may result in severe erosion of the upper soil horizons and/or undercutting of structures**

11. Way Forward

A competent person should inspect all open trenches, cuts and foundation excavations to identify conditions that may vary from the encountered conditions as discussed in this assessment. These inspections and modifications are generally termed the “Phase 2 assessment” or “Construction report”.

It is recommended that a competent person is present during material selection, placement and compaction.

Proper quality control measures should be implemented for the selection of road layer works and compaction. No load schedules or road specifications were available at the time of writing this report. The guidelines provided are generic of nature. The design engineer should ideally calculate the necessary or consult with the evaluator of this report if any high load or sensitive road layers, structures or foundations with high expected eccentricities are planned. These footings/structures should ideally be evaluated and optimised.

12. Report Provisions

While every effort was made during this assessment to identify the different geological materials, areas subject to a perched water table, hydrogeological conditions, areas of poor drainage and to estimate their distribution, it is impossible to guarantee that isolated zones of significantly different conditions have not been missed. Areas of poorer conditions are however not likely.

For this reason, this investigation has sought to highlight the significant issues regarding the influence of the proposed access road on the geological environment to provide prior warning to the Emalahleni Local Municipality and to suggest precautionary measures.

The report may only be distributed in its full context. Geotechnical Engineering Laboratory (Pty) Ltd. and/or any of its employees or sub-contractors will not be held liable for any damages caused due to misinterpretation of the findings and/or recommendations due to selective data presentation or distribution.

13. References

Jennings JEB, Brink ABA and Williams AAB (1973). Revised Guide to Soil Profiling for Civil Engineering Purposes in Southern Africa

Brink ABA and Bruin RMH (2002). Guidelines for Soil and Rock Logging in South Africa

Geological Map series of the Republic of South Africa Sheet No. 3126(Queenstown), and scale 1:250,000

SAICE JSD & ISE (1995). Code of Practice for Foundations and Superstructures for Single Storey Residential Buildings of Masonry Construction.

SABS 1200 D-1988 (as amended 1990). Standardized specification for Civil Engineering Construction. D : Earthworks.

Google Earth Map: 2021 AfrGIS (Pty) Ltd

Meteoblue: Average temperatures and precipitation. (1 December 2022)
(www.meteoblue.com/en/weather/historyclimate/climatemodelled/queenstown_south-africa_963516)

14. Appendices

Appendix A Soil Profile

Appendix B Photos

Appendix C Summary of Results

Appendix D Tables of General Information

ENGINEERING ACES - INDWE TRANSFER STATION

HOLE No. TP 807
Sheet 1 of 1

JOB NUMBER:

DS 807A	0.00 – 0,20	Moist, orange, loose sand
DS 807B	0,20 – 0,70	Moist, light-grey, loose silty sand
DS 807C	0,70 – 1,50	Moist, grey, stiff, clayey silt

NOTES
1) No refusal

2) No groundwater encountered

3) Disturbed sample DS 807A at 0,05 -- 0,15m

4) Disturbed sample DS 807B at 0,25 -- 0,70m

5) Disturbed sample DS 807C at 0,80 -- 1,45m

CONTRACTOR:	INCLINATION:	ELEVATION:
MACHINE:	DIAM:	X - COORD:
DRILLED BY	DATE: 21/11/2022	Y - COORD:
PROFILED BY: L. LERATO	DATE: 21/11/2022	

HOLE No. TP 807

TYPE SET BY: T J MOKALOBA
SETUP FILE: STANDARD. SET

ENGINEERING ACES - INDWE TRANSFER STATION

HOLE No. TP 808
Sheet 1 of 1

JOB NUMBER:

DS 808A	0.00 – 0,25	Slightly moist, light-brown, medium dense, silty sand
DS 808B	0,25 – 1,50	Moist, grey, loose sand

NOTES
1) No refusal

2) No groundwater encountered

3) Disturbed sample DS 808A at 0,00 -- 0,25m

4) Disturbed sample DS 808B at 0,35 -- 1,45m

CONTARACTOR:
MACHINE:
DRILLED BY:
PROFILED BY: L.LERATO

INCLINATION:
DIAM:
DATE: 21/11/2022
DATE: 21/11/2022

ELEVATION:
X - COORD:
Y - COORD:

HOLE No. TP 808

TYPE SET BY: T J MOKALOBA
SETUP FILE: STANDARD. SET

ENGINEERING ACES - INDWE TRANSFER STATION

HOLE No. TP 809
Sheet 1 of 1

JOB NUMBER:

DS 809A	0.00 – 0,30	Dry, light-brown, medium dense, silty sand
DS 809B	0,30 – 1,51	Dry, grey, loose sand

NOTES
1) No refusal

2) No groundwater encountered

3) Disturbed sample DS 809A at 0,05 -- 0,25m

4) Disturbed sample DS 809B at 0,40 -- 1,45m

CONTARACTOR:
MACHINE:
DRILLED BY:
PROFILED BY: L.LERATO

INCLINATION:
DIAM:
DATE: 21/11/2022
DATE: 21/11/2022

ELEVATION:
X - COORD:
Y - COORD:

HOLE No. TP 809

TYPE SET BY: T J MOKALOBA
SETUP FILE: STANDARD. SET

ENGINEERING ACES - INDWE TRANSFER STATION

HOLE No. TP 810
Sheet 1 of 1

JOB NUMBER:

DS 810A	0.00	Moist, light-brown, loose, silty sand.
	0,70	
DS 810B		Moist, grey, medium dense, sandy silt.
	1,52	

NOTES
1) No refusal

2) No groundwater encountered

3) Disturbed sample DS 810A at 0,05 -- 0,65m

4) Disturbed sample DS 810B at 0,80 -- 1,50m

CONTARACTOR:
MACHINE:
DRILLED BY:
PROFILED BY: L.LERATO

INCLINATION:
DIAM:
DATE: 21/11/2022
DATE: 21/11/2022

ELEVATION:
X - COORD:
Y - COORD:

HOLE No. TP 810

TYPE SET BY: T J MOKALOBA
SETUP FILE: STANDARD. SET

INDWE PHOTO PROFILE FOR 19/11/2022

TP 807

31°28'41.7" S

27°20'50.7" E

TP 808

31°28'43.3" S

27°20'50.7" E

TP 809

31°28'43.0" S

27°20'49.2" E

TP 810

31°28'39.7" S

27°20'49.3" E

OTHER PHOTOS FROM THE SITE

Existing building and waste material on site

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FORM M2.1 - REPORTING FORM FOR SOILS AND GRAVELS REV 4

Project Description

Project:	Indwe Transfer Station	**Client:**	Engineering Aces Consulting	**Date Reported:**	22/12/01
Date of Sampling	22/11/19	**Date Checked:**	22/12/01	**Reported by:**	LERATO
Report #:		**Checked by:**	R. MAKATENG		

Sample Description

ERF		-	-	-	-	-
Sample No.:		S22-1194	S22-1195	S22-1196	S22-1197	S22-1198
Location of Sampling		TP 807	TP 807	TP 807	TP 808	TP 808
Depth in mm		0-200	200-700	700-1500	0-250	250-1500
Weather Conditions		Partly Cloudy	Partly Cloudy	Partly cloudy	Partly cloudy	Partly cloudy
Material Description		orange sand	light grey silty sand	grey clayey silt	light brown silty sand	grey sand
Screen Analysis (% Passing) - SANS 3001 : GR 1						
75,0 mm						
63,0 mm						
50,0 mm						
37,5 mm		100,0				
28,0 mm		99,3				
20,0 mm		98,6			100	
14,0 mm		98,0	100,0	100,0	97,8	100,0
5,00 mm		93,5	99,6	97,5	94,7	99,6
2,00 mm		78,1	98,8	95,0	92,4	98,9
0,425 mm		59,3	97,2	94,0	88,1	96,6
0,075 mm		22,0	42,3	65,2	39,6	42,2
Soil Mortar Percentages - SANS 3001 : PR 5						
Coarse Sand	2.00-0.450mm	24,0	1,7	1,0	4,7	2,4
Coarse Fine Sand	0.450-0.250mm	16,6	10,3	9,0	20,2	17,7
Medium Fine Sand	0.250-0.150mm	24,9	28,0	18,8	29,3	31,2
Fine Fine Sand	0.150-0.075mm	6,3	17,2	2,5	3,0	6,1
Silt & Clay	<0.075mm	28,2	42,8	68,7	42,9	42,7
Atterberg Constants						
Grading modulus	SANS 3001 : PR 5	1,4	0,6	0,5	0,8	1
Liquid limit, %	SANS 3001 : GR 10		22	19	18	
Plastic Limit, %			19	14	16	
Plasticity Index, %		NP	3	5	2	NP
Linear Shrinkage,%			3,7	4,3	3	
AASHTO Class		**A-2-4**	**A-4**	**A-4**	**A-4**	**A-4**
MOD AASHTO - SANS 3001 : GR 30						
MDD (kg/m³)				1932		1940
OMC (%)				12,9		10,6
CBR - SANS 3001 : GR 40						
Mod. AASHTO						
Moulding Moisture Content (%)				12,8		10,4
Dry density (kg/m³)				1930		1996
% of Max Dry Density				99,9		103
100% MOD CBR				15,9		42,1
% swell				1,73		1,42
NRB						
Dry density (kg/m³)				1859		1880
% of Max Dry Density				96,2		96,9
95% MOD CBR				14,9		18,9
% swell				1,58		1,43
Proctor						
Dry density (kg/m³)				1799		1814
% of Max Dry Density				93,1		93,5
90% MOD CBR				13,4		15,9
% swell				1,72		1,45
CBR						
100% Mod AASHTO				16,2		30,6
98% Mod AASHTO				15,4		26,1
97% Mod AASHTO				15,0		23,8
95% Mod AASHTO				14,2		19,3
93% Mod AASHTO				13,4		14,8
90% Mod AASHTO				12,1		8,0
COLTO Classification				**UNCLASSIFIED**		**G7**

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FORM M2.1 - REPORTING FORM FOR SOILS AND GRAVELS REV 4

Project Description

Project: Indwe Transfer Station **Client:** Engineering Aces Consulting **Date Reported:** 22/12/01

Date of Sampling 22/11/19 **Date Checked:** 22/12/01 **Reported by:** LERATO

Report #: **Checked by:** R. MAKATENG

Sample Description						
ERF		-	-	-	-	
Sample No.:		S22-1199	S22-1200	S22-1201	S22-1202	
Location of Sampling		TP 809	TP 809	TP 810	TP 810	
Depth in mm		0-300	300-1511	0-700	700-1520	
Weather Conditions		Partly Cloudy	Partly Cloudy	Partly cloudy	Partly cloudy	
Material Description		light brown silty sand	grey sand	light brown silty sand	grey sandy silt	
Screen Analysis (% Passing) - SANS 3001 : GR 1						
75,0 mm						
63,0 mm						
50,0 mm						
37,5 mm						
28,0 mm						
20,0 mm		100,0				
14,0 mm		98,2	100,0	100,0	100,0	
5,00 mm		95,0	99,5	99,6	98,5	
2,00 mm		92,6	98,7	99,3	97,5	
0,425 mm		88,2	96,3	97,6	96,3	
0,075 mm		38,8	40,4	40,0	55,2	
Soil Mortar Percentages - SANS 3001 : PR 5						
Coarse Sand	2.00-0.450mm	4,8	2,4	1,7	1,2	
Coarse Fine Sand	0.450-0.250mm	20,4	18,7	21,9	11,5	
Medium Fine Sand	0.250-0.150mm	29,0	31,6	32,9	26,3	
Fine Fine Sand	0.150-0.075mm	3,9	6,3	3,1	4,4	
Silt & Clay	<0.075mm	41,9	40,9	40,3	56,6	
Atterberg Constants						
Grading modulus	SANS 3001 : PR 5	0,8	0,6	0,6	0,5	
Liquid limit, %	SANS 3001 : GR 10			20		
Plastic Limit, %				18		
Plasticity Index, %		NP	SP	2	SP	
Linear Shrinkage,%			0,8	3,3	1	
AASHTO Class		A-4	A-4	A-4	A-4	
MOD AASHTO - SANS 3001 : GR 30						
MDD (kg/m³)			1890		1917	
OMC (%)			9,2		11,7	
CBR - SANS 3001 : GR 40						
Mod. AASHTO						
Moulding Moisture Content (%)			9,2		11,5	
Dry density (kg/m³)			1889		1916	
% of Max Dry Density			99,9		100	
100% MOD CBR			27,9		29,8	
% swell			1		0,95	
NRB						
Dry density (kg/m³)			1827		1802	
% of Max Dry Density			96,7		94	
95% MOD CBR			17,3		19,2	
% swell			1,11		1,28	
Proctor						
Dry density (kg/m³)			1758		1727	
% of Max Dry Density			93		90,1	
90% MOD CBR			15,1		17	
% swell			1,13		1,15	
CBR						
100% Mod AASHTO			25,9		27,8	
98% Mod AASHTO			23,7		25,6	
97% Mod AASHTO			22,6		24,5	
95% Mod AASHTO			20,4		22,3	
93% Mod AASHTO			18,3		20,2	
90% Mod AASHTO			15		16,9	
COLTO Classification			UNCLASSIFIED		UNCLASSIFIED	

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PARTICLE SIZE ANALYSIS

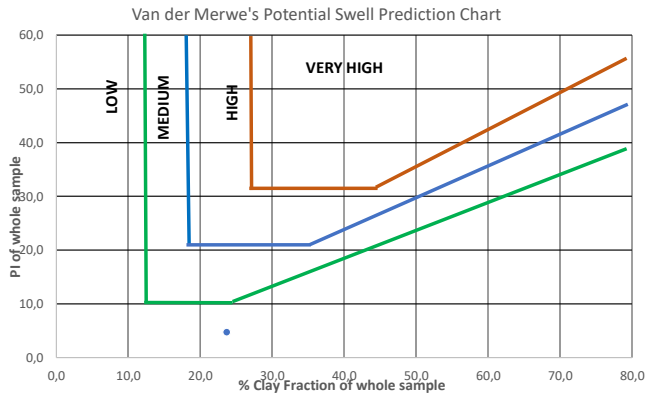
Date of Sampling:	2022/11/19
GEL Sample No.:	S22-1196
Depth (m):	700-1500
Position:	TP 807
Material Descrption:	grey clayey silt
Relative Density on <2mm **(SANS 5844)**	2,44
Organic Material:	-
Moisture (%) Dispersion (%):	-
SCREEN ANALYSIS (% PASSING) **(SANS 3001: GR1)**	
63 mm	100
50 mm	100
37,5 mm	100
28 mm	100
20 mm	100
14 mm	100
5 mm	97
2 mm	95
0,425 mm	94,0
0,075 mm	65,2
HYDROMETER ANALYSIS (% PASSING) **(SANS 3001: GR3)**	
0,056 mm	63,2
0,034 mm	47,4
0,015 mm	37,5
0,006 mm	33,6
0,002 mm	23,7

SOIL MORTAR PERCENTAGES(%) **(SANS 3001: PR5)**		
Coarse Sand	2,00-0,425mm	1,9
Coarse Fine Sand	0,425-0,250mm	9
Medium Fine Sand	0,250mm-0,150mm	18,8
Fine Fine Sand	0,150-0,075mm	2,5
Silt & Clay	<0,075mm	68,7

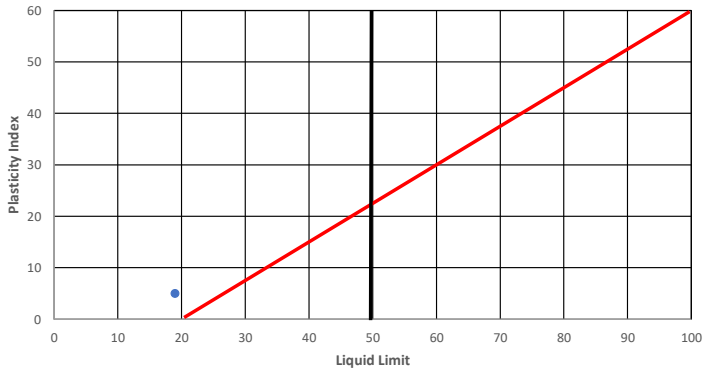
ATTERBERG LIMITS **(SANS 3001: GR10)**	
Liquid Limit (%)	19
Plasticity Index (%)	5
Linear Shrinkage (%)	4,3
Grading Modulus	0,5
AASHTO Classification	A-4
Unified Classification	ML-CL
COLTO Classification	-

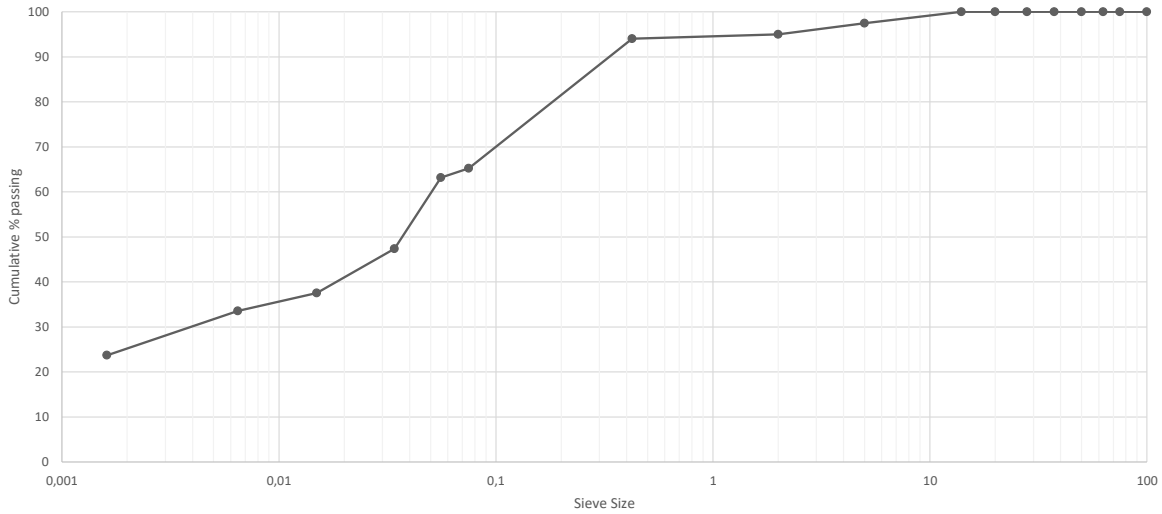
Client:	Engineering Aces Consulting
Project:	Indwe Tranfer Station
Date:	2022/12/02

POTENTIAL EXPANSIVENESS



PLASTICITY CHART





CLAY	SILT	SAND	GRAVEL

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PARTICLE SIZE ANALYSIS

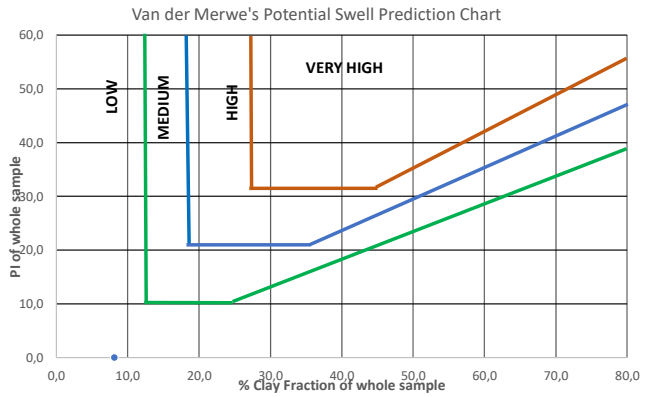
Date of Sampling:	2022/11/19
GEL Sample No.:	S22-1198
Depth (m):	250-1500
Position:	TP 808
Material Descrption:	grey sand
Relative Density on <2mm **(SANS 5844)**	2,43
Organic Material:	-
Moisture (%) Dispersion (%):	-
SCREEN ANALYSIS (% PASSING) **(SANS 3001: GR1)**	
63 mm	100
50 mm	100
37,5 mm	100
28 mm	100
20 mm	100
14 mm	100
5 mm	100
2 mm	99
0,425 mm	96,6
0,075 mm	42,2
HYDROMETER ANALYSIS (% PASSING) **(SANS 3001: GR3)**	
0,056 mm	35,6
0,033 mm	29,5
0,014 mm	21,4
0,006 mm	16,3
0,002 mm	8,1

SOIL MORTAR PERCENTAGES(%) **(SANS 3001: PR5)**		
Coarse Sand	2,00-0,425mm	2,4
Coarse Fine Sand	0,425-0,250mm	17,7
Medium Fine Sand	0,250mm-0,150mm	31,2
Fine Fine Sand	0,150-0,075mm	6,1
Silt & Clay	<0,075mm	42,7

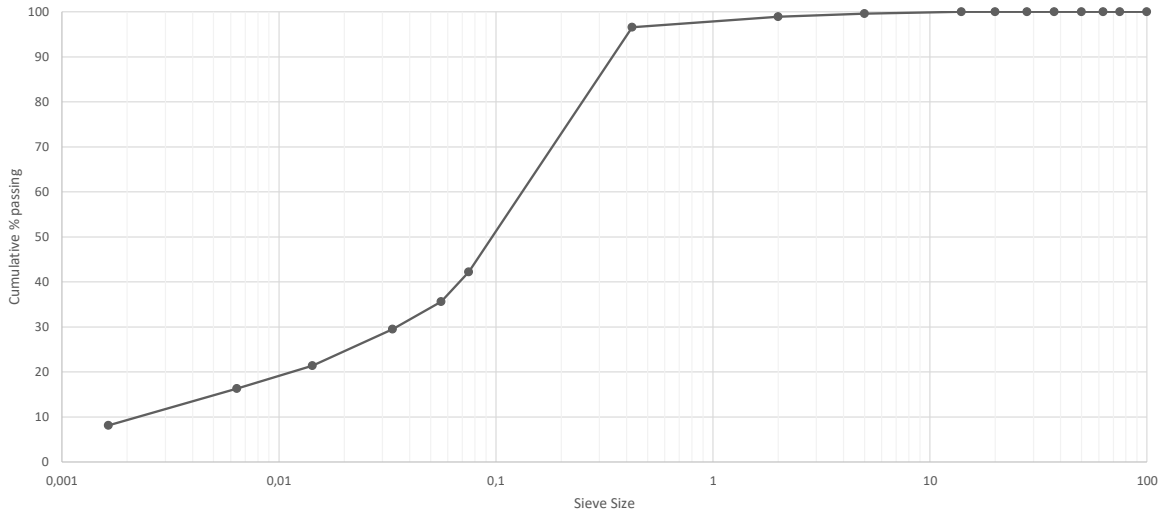
ATTERBERG LIMITS **(SANS 3001: GR10)**	
Liquid Limit (%)	-
Plasticity Index (%)	NP
Linear Shrinkage (%)	-
Grading Modulus	0,6
AASHTO Classification	A-4
Unified Classification	SM
COLTO Classification	-

Client:	Engineering Aces Consulting
Project:	Indwe Tranfer Station
Date:	2022/12/02

POTENTIAL EXPANSIVENESS



PLASTICITY CHART



CLAY	SILT	SAND	GRAVEL

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PARTICLE SIZE ANALYSIS

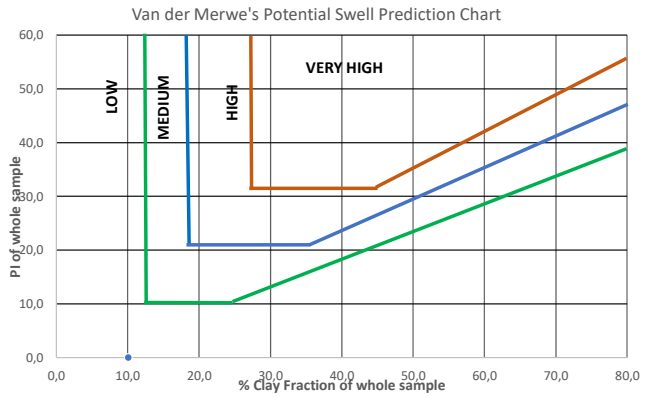
Date of Sampling:	2022/11/19
GEL Sample No.:	S22-1200
Depth (m):	300-1511
Position:	TP 809
Material Descrption:	grey sand
Relative Density on <2mm **(SANS 5844)**	2,56
Organic Material:	-
Moisture (%) Dispersion (%):	-
SCREEN ANALYSIS (% PASSING) **(SANS 3001: GR1)**	
63 mm	100
50 mm	100
37,5 mm	100
28 mm	100
20 mm	100
14 mm	100
5 mm	99
2 mm	99
0,425 mm	96,3
0,075 mm	40,4
HYDROMETER ANALYSIS (% PASSING) **(SANS 3001: GR3)**	
0,058 mm	38,7
0,034 mm	34,2
0,014 mm	24,3
0,006 mm	19,0
0,002 mm	10,1

SOIL MORTAR PERCENTAGES(%) **(SANS 3001: PR5)**		
Coarse Sand	2,00-0,425mm	2,4
Coarse Fine Sand	0,425-0,250mm	18,7
Medium Fine Sand	0,250mm-0,150mm	31,6
Fine Fine Sand	0,150-0,075mm	6,3
Silt & Clay	<0,075mm	40,9

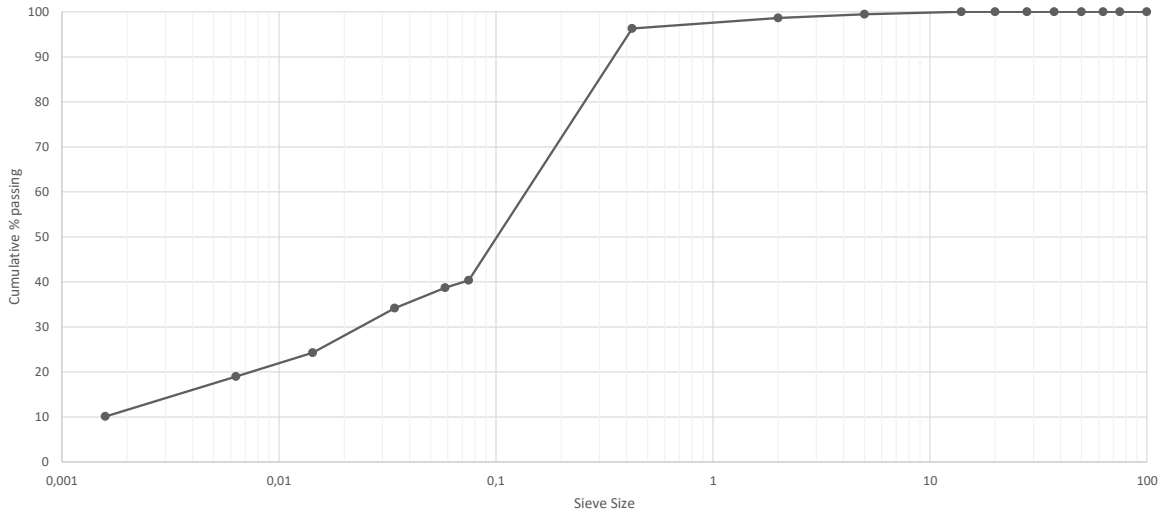
ATTERBERG LIMITS **(SANS 3001: GR10)**	
Liquid Limit (%)	-
Plasticity Index (%)	SP
Linear Shrinkage (%)	0,8
Grading Modulus	0,6
AASHTO Classification	A-4
Unified Classification	SM
COLTO Classification	-

Client:	Engineering Aces Consulting
Project:	Indwe Tranfer Station
Date:	2022/12/02

POTENTIAL EXPANSIVENESS



PLASTICITY CHART



CLAY	SILT	SAND	GRAVEL

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PARTICLE SIZE ANALYSIS

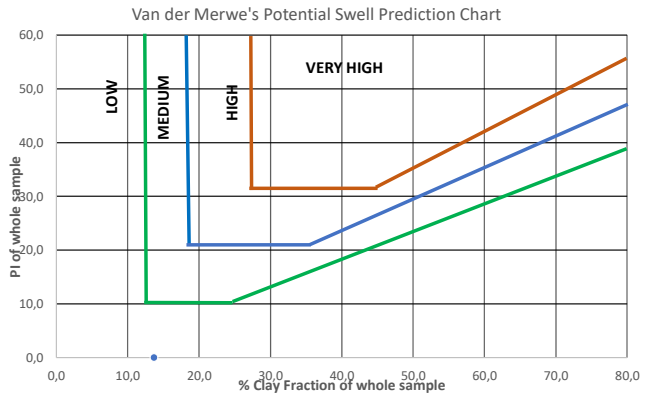
Date of Sampling:	2022/11/19
GEL Sample No.:	S22-1202
Depth (m):	700-1520
Position:	TP 810
Material Descrption:	grey sandy silt
Relative Density on <2mm **(SANS 5844)**	2,56
Organic Material:	-
Moisture (%) Dispersion (%):	-
SCREEN ANALYSIS (% PASSING) **(SANS 3001: GR1)**	
63 mm	100
50 mm	100
37,5 mm	100
28 mm	100
20 mm	100
14 mm	100
5 mm	99
2 mm	97
0,425 mm	96,3
0,075 mm	55,2
HYDROMETER ANALYSIS (% PASSING) **(SANS 3001: GR3)**	
0,058 mm	47,0
0,034 mm	39,2
0,014 mm	27,4
0,006 mm	21,6
0,002 mm	13,7

SOIL MORTAR PERCENTAGES(%) **(SANS 3001: PR5)**		
Coarse Sand	2,00-0,425mm	1,2
Coarse Fine Sand	0,425-0,250mm	11,5
Medium Fine Sand	0,250mm-0,150mm	26,3
Fine Fine Sand	0,150-0,075mm	4,4
Silt & Clay	<0,075mm	56,6

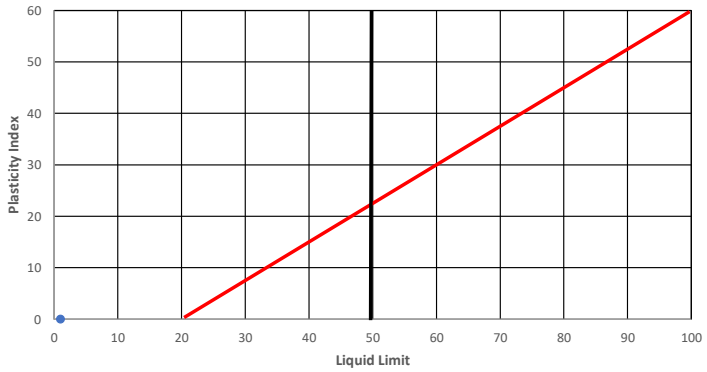
ATTERBERG LIMITS **(SANS 3001: GR10)**	
Liquid Limit (%)	-
Plasticity Index (%)	SP
Linear Shrinkage (%)	1
Grading Modulus	0,5
AASHTO Classification	A-4
Unified Classification	ML
COLTO Classification	-

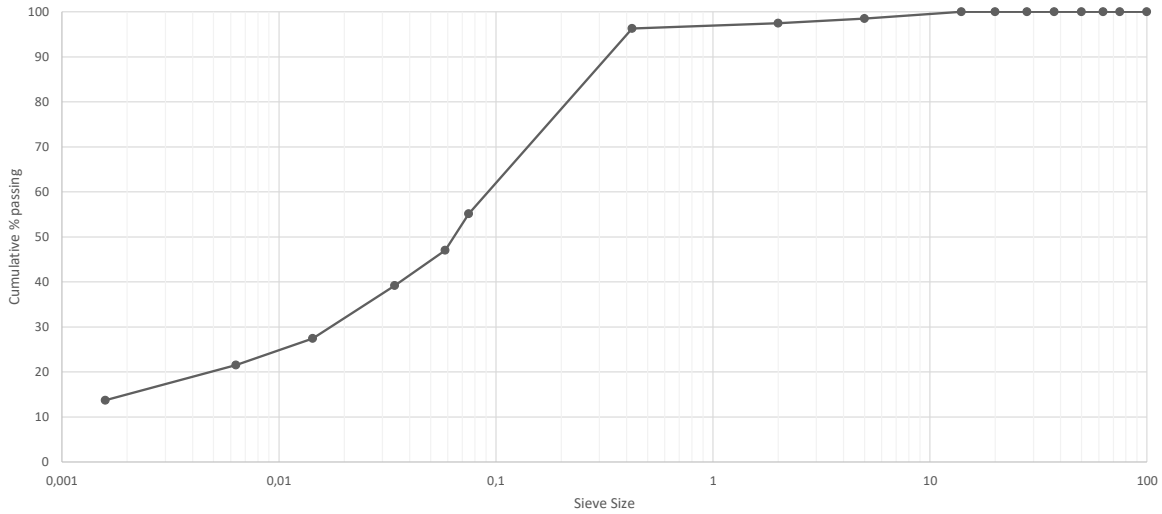
Client:	Engineering Aces Consulting
Project:	Indwe Tranfer Station
Date:	2022/12/02

POTENTIAL EXPANSIVENESS



PLASTICITY CHART





CLAY	SILT	SAND	GRAVEL

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Table D1: Unified Soil Classification System (from ASTM D 2487)

Major Divisions			Group Symbols	Typical Names
Course-Grained Soils More than 50% retained on the 0.075 mm (No. 200) sieve	**Gravels** 50% or more of course fraction retained on the 4.75 mm (No. 4) sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		Gravels (with Fines)	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Sands 50% or more of course fraction passes the 4.75 (No. 4) sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		Sands (with Fines)	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils More than 50% passes the 0.075 mm (No. 200) sieve		**Silts and Clays** Liquid Limit 50% or less	ML	Inorganic silts, very fine sands, rock four, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly/sandy/silty/lean clays
			OL	Organic silts and organic silty clays of low plasticity
		Silts and Clays Liquid Limit greater than 50%	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Inorganic clays or high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat, muck, and other highly organic soils

Prefix: G = Gravel, S = Sand, M = Silt, C = Clay, O = Organic

Suffix: W = Well Graded, P = Poorly Graded, M = Silty, L = Clay, LL < 50%, H = Clay, LL > 50%

Note: These definitions are Unified Soil Classification system definitions and are slightly different than those of AASHTO.

Table D2: AASHTO Soil Classification System (from AASHTO M 145 or ASTM D3282)

General Classification	Granular Materials (35% or less passing the 0.075 mm sieve)							Silt-Clay Materials (>35% passing the 0.075 mm sieve)			
Group Classification	A-1		A-3	A-2				A-4	A-5	A-6	A-7
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6
Sieve Analysis (% passing)											
2.00 mm (No. 10)	50 max	-	-	-	-	-	-	-	-	-	-
0.425 (No. 40)	30 max	50 max	51 min	-	-	-	-	-	-	-	-
0.075 (No. 200)	15 max	25 max	10 max	35 max	35 max	35 max	35 max	36 min	36 min	36 min	36 min
Characteristics of fraction passing 0.425 mm (No. 40)											
Liquid Limit	-		-	40 max	41 min	40 max	41 min	40 max	41 min	40 max	41 min
Plasticity Index	6 max		N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11 min*
Group index	0		0	0		4 max		8 max	12 max	16 max	20 max
Usual types of significant constituent materials	Stone fragments, gravel and sand		Fine sand	Silty or clayey gravel and sand				Silty soils		Clayey soils	
General rating as a subgrade	Excellent to Good							Fair to Poor			

* Plasticity index of A-7-5 subgroup is equal to or less than the LL - 30. Plasticity index of A-7-6 subgroup is greater than LL - 30

Table D3: Engineering suitability ratings based upon Unified Soil Classification groups

USCS group symbol	Typical description	Source of borrow			Resources	Suitability for:					
		Embankments		Fill	Clean sand / gravel	Road subgrade	Building foundations	Slope stability	Trenching/ tunneling	Septic tanks	Untreated roads
		Water retaining	None-water retaining								
GW	Well-graded gravels, gravel-sand mixtures, little or no fines.	Unsuitable	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Shoring	Good	Average
GP	Poorly graded gravels, gravel-sand mixtures, little or no fines.	Unsuitable	Average	Excellent	Good	Excellent	Excellent	Average	Shoring	Excellent	Unsuitable
GM	Silty gravels, poorly graded gravel-sand-silt mixtures.	Unsuitable	Average	Good	Average	Excellent	Excellent	Average	Shoring	Average	Average
GC	Clayey gravels, poorly graded gravel-sand-clay mixtures.	Suitable	Average	Good	Poor	Excellent	Excellent	Average	Good	Unsuitable	Excellent
SW	Well-graded sands, gravelly sands, little or no fines.	Unsuitable	Excellent	Excellent	Good	Good	Excellent	Average	Shoring	Good	Average
SP	Poorly graded sands, gravelly sands, little or no fines.	Unsuitable	Average	Good	Good	Good	Excellent	Excellent	Shoring	Good	Unsuitable
SM	Silty sands, poorly graded silt-sand mixtures.	Suitable (with compaction)	Average	Average	Average	Average	Good (density important)	Average	Mostly good, but shoring may be required	Poor	Poor
SC	Clayey sands, poorly graded sand-clay mixtures.	Suitable	Average	Average	Poor	Average	Good (density important)	Average	Good	Unsuitable	Good
ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity.	Unsuitable	Poor	Average	N/A	Average	Good (Liquifaction problem)	Average	Shoring	Average	Unsuitable
CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.	Suitable (erosion protection required)	Good	Average	N/A	Average	Average (Swell?)	Poor	Good	Unsuitable	Poor
OL	Organic silts and organic silt-clays of low plasticity	Unsuitable	Unsuitable	Poor	N/A	Average	Poor (Swell)	Good	Shoring	Poor	Unsuitable
MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic soils.	Unsuitable	Poor	Poor	N/A	Poor	Unsuitable (Swell?)	Unsuitable	Shoring	Average	Unsuitable
CH	Inorganic clays of high plasticity, fat clays, silty soils, elastic soils.	Suitable (erosion protection required)	Average	Unsuitable	N/A	Poor	Poor (Swell?)	Poor	Good	Unsuitable	Unsuitable
OH	Organic clays of medium to high plasticity.	Unsuitable	Unsuitable	Unsuitable	N/A	Unsuitable	Unsuitable (Swell?)	Average	Shoring	Unsuitable	Unsuitable
PT	Peat or other highly organic soils.	Unsuitable	Unsuitable	Unsuitable	N/A	Unsuitable	Unsuitable (Swell?)	Unsuitable	Shoring	Average	Unsuitable

Source: Finlayson (1982)

Note: These recommendations are based on the construction of earthworks with adequate access to compaction and engineering equipment. They are based solely on the USCS classification, which does not take account of the full effects of particle size, dispersion or the conditions under which soil conservation earthworks are constructed. This then in not a DLWC based set of recommendations for the construction of soil conservation earthworks.

Table D4: Typical material properties (Unified Soil Classification System)

Class:	Material description	Subgrade	Subbase	Base	Drainage when compacted	Compaction characteristics	Embankment material	Compressibility when compacted
GW	Well-graded gravel	Good to Excellent	Good	Fair to good	Excellent	Good	Reasonably stable	Low
GC	Clayey gravel (>12% fines)	Good	Fair	Poor to not suitable	Poor to practically impervious	Good to fair	Reasonably stable	Low
SM	Silty sand (sand with fines PI<4)	Fair to good	Fair to good	Poor to not suitable	Fair to practically impervious to impervious	Good	Reasonably stable	Low
SC	Clayey sand (>12% fines PI>7)	Fair	Poor	Not suitable	Poor, impervious when compacted	Good to fair	Reasonably stable	Low
CL	Silts and clays (LL<50 & PI>7)	Fair to poor	Not suitable	Not suitable	Practically impervious	Good to fair	Good stability	Medium
ML	Silts and clays (LL<50 & PI<4)	Fair to poor	Not suitable	Not suitable	Semi-pervious to impervious	Good to poor	Poor stability	Medium

Table D5: Residential Site Class Designations (SAICE, 1995)

Typical Founding Material	Character of Founding Material	Expected Range of Total Soil Movements (mm)	Assumed Differential Movement (% of total)	Site Class
Rock (excluding mud rocks which exhibit swelling to some depth)	Stable	NEGLIGIBLE	-	R
Fine-grained soils with moderate to very high plasticity (clays, silty clays, clayey silts and sandy clays)	Expansive Soils	< 7,5 7,5 – 15 15 – 30 > 30	50% 50% 50% 50%	H H1 H2 H3
Silty sands, sands, sandy and gravelly soils	Compressible and Potentially Collapsible Soils	< 5,0 5,0 – 10 > 10	75% 75% 75%	C C1 C2
Fine-grained soils (clayey silts and clayey sands of low plasticity), sands, sandy and gravelly soils	Compressible Soils	< 10 10 – 20 > 20	50% 50% 50%	S S1 S2
Contaminated soils Controlled fill Dolomitic areas Land fill Marshy areas Mine waste fill Mining subsidence Reclaimed areas Very soft silt/silty clays Uncontrolled fill	Variable	Variable		P

NOTES:

1. The classifications C, H, R and S are not intended for dolomitic area sites unless specific investigations are carried out to assess the stability (risk of sinkholes and doline formation) of the dolomites. Where this risk is found to be acceptable, the site shall be designated as Class P (dolomitic areas).
2. Site classes are based on the assumption that differential movements, experienced by single-storey residential buildings, expressed as a percentage of the total movements are equal to about 50% for soils that exhibit expansive or compressive characteristics and 75% for soils that exhibit both compressible and collapse characteristics. Where this assumption is incorrect or inappropriate, the total soil movements must be adjusted so that the resultant different movements implied by the table are equal to that which is expected in the field.
3. In some instances, it may be more appropriate to use a composite description to describe a site mote fully e.g. C1/H2 or S1 and/or H2. Composite Site Classes may lead to higher differential movements and result in design solutions appropriate to a higher range of differential movement e.g. a Class R/C1 site. Alternatively, a further site investigation may be necessary since the final design solution may depend on the location of the building on a particular site.
4. Where it is not possible to provide a single site designation and a composite description is inappropriate, sites may be given multiple descriptions to indicate the range of possible conditions e.g. H-H1-H2 or C1-C2.
5. Soft silts and clays usually exhibit high consolidation and low bearing characteristics. Structures founded on these horizons may experience high settlements and such sites should be designated as being Class S1 or S2 as relevant and appropriate.
6. Sites containing contaminated soils include those associated with reclaimed mine land, land down-slope of mine tailings and old land fills.
7. Where a site is designated as Class P, full particulars relating to the founding conditions on the site must be provided.
8. Where sites are designated as being Class P, the reason for such classification shall be placed in brackets immediately after the suffix – i.e. P(contaminated soils). Under certain circumstances, composite description may be more appropriate – e.g. P(dolomite areas)-C1.
9. Certain fills may contain contaminates which present a health risk. The nature of such fill should be evaluated and should be clearly demarcated as such.

Table D6: Residential Site Class Designations (SAICE, 1995)

Site Class	Estimated Total Settlement	Construction Type	Foundation Design and Building Procedures
S	<10 mm	Normal	- Normal construction (strip footing or slab-on-the-ground foundations) - Good site drainage
S1	10-20 mm	Modified normal	- Reinforced strip footings - Articulation joints at some internal and all external doors - Light reinforcement in masonry - Site drainage and service/plumbing precautions - Foundation pressure not to exceed 50 kPa
		Compaction of in situ soils below individual footings	- Remove in situ material below foundations to a depth and width of 1,5 times the foundation width or to a competent horizon and replace with material compacted to 93% MOD AASHTO density at –1% to +2% of optimum moisture content. - Normal construction with lightly reinforced strip foundations and light reinforcement in masonry.
		Deep strip foundations	- Normal construction with drainage requirements. - Founding on a competent horizon below the problem horizon
		Soil raft	- Remove in situ material to 1,0m beyond perimeter of building to a depth and width of 1,5 times the widest foundation or to a competent horizon and replace with material compacted to 93% MOD AASHTO density at –1% to +2% of optimum moisture content. - Normal construction with lightly reinforced strip footings and light reinforcement in masonry.
S2	>20 mm	Stiffened strip footings, stiffened or cellular raft	- Stiffened strip footing or stiffened or cellular raft with articulation joints or solid lightly reinforced masonry. - Bearing pressure not to exceed 50kPa. - Fabric reinforcement in floor slabs. - Site drainage and service/plumbing precautions.
		Deep strip foundations	- As for S1 but with fabric reinforcement in floor slabs
		Compaction of in-situ soils below individual footings	- As for S1.
		Piled or pier foundations	- Reinforced concrete ground beams or solid slabs on piled or pier foundations. - Ground slabs with fabric reinforcement. - Good site drainage.
		Soil raft	- As for S1.

Notes:

1. Differential settlement assumed to equal 50% of total settlement.
2. The relaxation of some of these requirements, e.g. the reduction or omission of steel or articulation joints, may result in a Category 2 level of expected damage.
3. Account must be taken on sloping site since differential fill heights may lead to greater differential settlements.
4. Settlements induced by loads imposed by deep filling beneath surface beds may necessitate the adoption of a construction type appropriate to a more severe site class.

Table D6: Residential Site Class Designations (SAICE, 1995)

Site Class	Estimated Total Settlement	Construction Type	Foundation Design and Building Procedures
C	<5 mm	Normal	- Normal construction (strip footing or slab-on-the-ground foundations) - Good site drainage
C1	5 – 10 mm	Modified normal	- Reinforced strip footings - Articulation joints at some internal and all external doors - Light reinforcement in masonry - Site drainage and service/plumbing precautions - Foundation pressure not to exceed 50 kPa
		Compaction of in situ soils below individual footings	- Remove in situ material below foundations to a depth and width of 1,5 times the foundation width or to a competent horizon and replace with material compacted to 93% MOD AASHTO density at –1% to +2% of optimum moisture content. - Normal construction with lightly reinforced strip foundations and light reinforcement in masonry.
		Deep strip foundations	- Normal construction with drainage requirements. - Founding on a competent horizon below the problem horizon
		Soil raft	- Remove in situ material to 1,0m beyond perimeter of building to a depth and width of 1,5 times the widest foundation or to a competent horizon and replace with material compacted to 93% MOD AASHTO density at –1% to +2% of optimum moisture content. - Normal construction with lightly reinforced strip footings and light reinforcement in masonry.
C2	>10 mm	Stiffened strip footings, stiffened or cellular raft	- Stiffened strip footing or stiffened or cellular raft with articulation joints or solid lightly reinforced masonry. - Bearing pressure not to exceed 50kPa. - Fabric reinforcement in floor slabs. - Site drainage and service/plumbing precautions.
		Deep strip foundations	- As for C1 but with fabric reinforcement in floor slabs
		Compaction of in situ soils below individual footings	- As for C1.
		Piled or pier foundations	- Reinforced concrete ground beams or solid slabs on piled or pier foundations. - Ground slabs with fabric reinforcement. - Good site drainage.
		Soil raft	- As for C1.

Notes:

1. Differential settlement assumed to equal 75% of total settlement
2. The relaxation of some of these requirements, e.g. the reduction or omission of steel or articulation joints, may result in a Category 2 level of expected damage.

Table D7: Foundation design, building procedures and precautionary measures for single-storey residential buildings founded on expansive soil horizons (SAICE, 1995)

Site Class	Estimated Total Heave	Construction Type	Foundation Design and Building Procedures
H	<7,5 mm	Normal	- Normal construction (strip footing or slab-on-the-ground foundations) - Good site drainage and service/plumbing precautions recommended.
H1	7,5 – 15 mm	Modified normal	- Lightly reinforced strip footings - Articulation joints at all internal/external doors - Light reinforcement in masonry - Site drainage and service/plumbing precautions
		Soil raft	- Remove in situ material to 1,0m beyond perimeter of the structure and replace with inert backfill, compacted to 93% MOD AASHTO density at –1% to +2% of optimum moisture content. - Normal construction with lightly reinforced strip footings and light reinforcement in masonry if residual movements are <7,5mm, or construction type appropriate to residual movements. - Site drainage and plumbing/service precautions.
H2	15-30 mm	Stiffened or cellular raft	- Stiffened or cellular raft with articulation joints or lightly reinforced masonry. - Site drainage and plumbing/service precautions.
		Piled construction	- Piled foundations with suspended floor slabs with or without ground beams. - Site drainage and plumbing/service precautions.
		Split construction	- Combination of reinforced brickwork/block work and full movement joints. - Suspended floors of fabric-reinforced ground slabs acting independently from the structure. - Site drainage and plumbing/service precautions.
		Soil raft	- As for H1.
H3	>30 mm	Stiffened or cellular raft	- As for H2.
		Piled construction	- As for H2.
		Soil raft	- As for H1.

Notes:

1. Differential movement assumed to equal 50% of total heave.
2. The relaxation of some of these requirements, e.g. the reduction or omission of steel or articulation joints, may result in a Category 2 level of expected damage.

CONTRACT NO. : XXX/X/XXX/XXXX

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

BOOK OF TENDER DRAWINGS

MAY 2026

see the RESULT

LIST OF DRAWINGS

1096A-CIV-DRG-100	:	LAYOUT: LOCALITY PLAN AND LIST OF DRAWINGS
1096A-CIV-DRG-101	:	LAYOUT : SITE
1096A-CIV-DRG-102	:	LAYOUT : ROAD
1096A-CIV-DRG-200	:	LAYOUT: WATER
1096A-CIV-DRG-201	:	TYPICAL: WATER DETAILS
1096A-CIV-DRG-202	:	DETAIL: BEDDING DETAILS
1096A-CIV-DRG-203	:	DETAIL: BOREHOLE PUMP HOUSE CONNECTION
1096A-CIV-DRG-204	:	LAYOUT : TYPICAL TANK STAND
1096A-CIV-DRG-400	:	DETAIL: ROAD CROSSING DETAIL
1096A-CIV-DRG-401	:	DETAIL: ROAD PAVING DETAIL
1096A-STR-DRG-103	:	MATERIAL RECOVERING FACILITY SURFACE BED LAYOUT

Drawing signed for approval held at Engineering Aces offices

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DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED:SS MNTAMBO	SCALE:	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
ECSA
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

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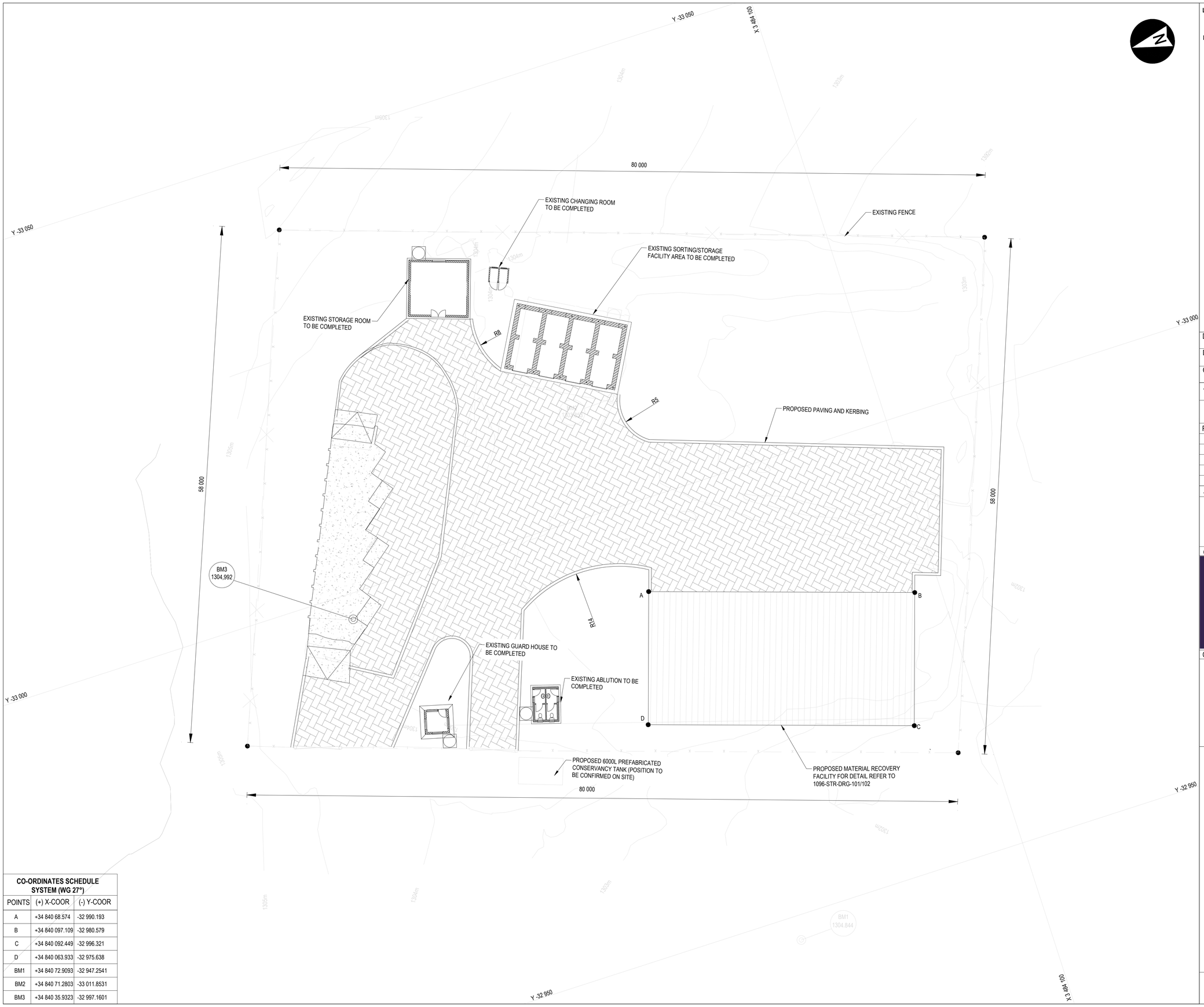
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN INDWE

LAYOUT:
LOCALITY PLAN AND LIST OF DRAWINGS

DRAWING NO.	REVISION
1096A-CIV-DRG-100	T0



CO-ORDINATES SCHEDULE SYSTEM (WG 27°)		
POINTS	(+) X-COOR	(-) Y-COOR
A	+34 840 68.574	-32 990.193
B	+34 840 097.109	-32 980.579
C	+34 840 092.449	-32 996.321
D	+34 840 063.933	-32 975.638
BM1	+34 840 72.9093	-32 947.2541
BM2	+34 840 71.2803	-33 011.8531
BM3	+34 840 35.9323	-32 997.1601

LEGEND:

—— x —— x —— PROPOSED FENCE

NOTES:

1. CO-ORDINATES BASED ON WG27
2. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH SANS 1200 STANDARDISED SPECIFICATIONS AND THE RELEVANT PROJECT SPECIFICATIONS
3. DPM: ONE LAYER OF 300 MICRON DPM WATERPROOF SHEETING BEARING SABS 952-1985 TYPE C.THE SHEETING SHALL BE LAID IN THE WIDEST PRACTICAL WIDTHS TO MINIMISE JOINTS AND SHALL BE TURNED UP, DRESSED TO WALLS, AND LAPPED WITH BRIKGRIP SABS DPC. ALL JOINTS SHALL BE SEALED WITH THE BLACK PRESSURE SENSITIVE TAPE APPLIED OVER THE LEADING EDGE OF THE JOINT, MIN LAP 150mm.

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DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED: SS MNTAMBO	SCALE: 1:200	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
ECSA
SIPHAMANDLA SYDWELL MNTAMBO
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CONSULTANT:

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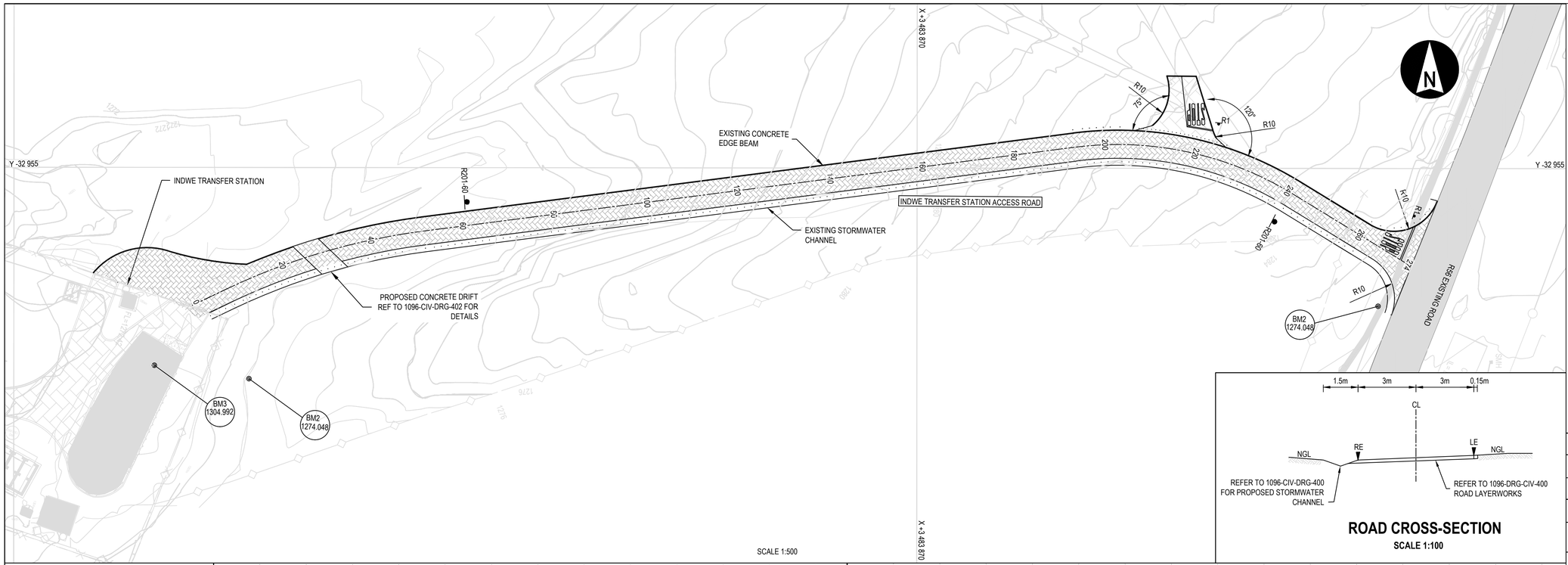
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN INDWE

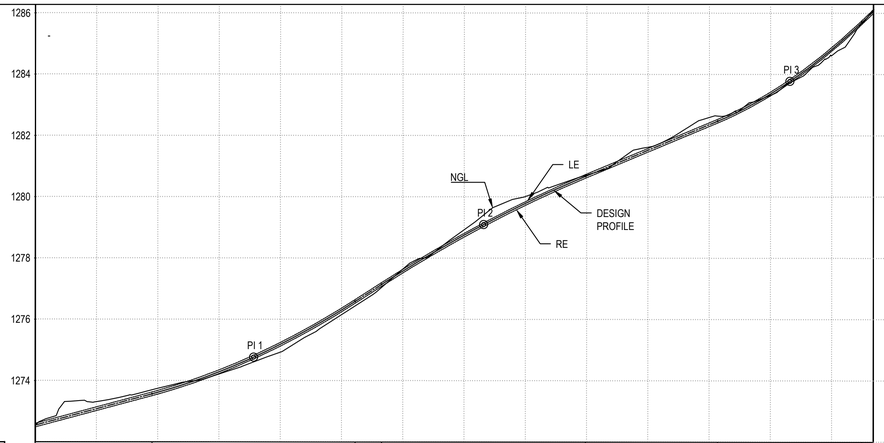
LAYOUT: SITE

DRAWING NO.	REVISION
1096A-CIV-DRG-101	T0



ROAD CROSS-SECTION

SCALE 1:100



INDWE TRANSFER STATION ACCESS ROAD
SCALE VERT 1:100
SCALE HOR 1:1000
DATUM : 1272 m

VERTICAL PROFILE GRADES		BVC 38.139	VCL=66.311m K=18	EVC 104.450	BVC 113.077	VCL=66.564m K=30	EVC 179.642	BVC 222.742	VCL=47.103m K=9	EVC 269.845					
		2.7%	71.294	1274.458	6.4%	146.359	1279.285	4.2%	246.294	1283.467	9.5%				
FINAL DESIGN ROAD LEVELS	LEFT EDGE (LE)	1272.544	1273.141	1273.679	1274.351	1275.248	1276.372	1277.640	1278.812	1279.848	1280.753	1281.590	1282.426	1283.433	1284.892	1286.064
	CENTRE LINE (CL)		1273.081	1273.619	1274.290	1275.186	1276.309	1277.582	1278.754	1279.791	1280.693	1281.530	1282.366	1283.372	1284.826	1286.064
	RIGHT EDGE (RE)		1273.021	1273.559	1274.231	1275.128	1276.252	1277.520	1278.692	1279.728	1280.633	1281.470	1282.306	1283.313	1284.772	1286.00
GROUND LEVELS ON CL			1273.311	1273.750	1274.216	1274.929	1276.156	1277.648	1278.931	1280.017	1280.718	1281.631	1282.600	1283.330	1284.627	1286.064
SUPERELEVATION	LEFT / RIGHT		+2% / -2%													
HORIZONTAL ALIGNMENT		DIRECTION 154° 33' 30"	BCC (0.008km)	R=140.491m I=163° 35' 10"	ECC (0.053km)	DIRECTION 172° 36' 50"					BCC (0.195km)	R=72.281m I=192° 00' 40"	ECC (0.243km)	DIRECTION 211° 24' 20"		
DISTANCE (km)		0.000	0.020	0.040	0.060	0.080	0.100	0.120	0.140	0.160	0.180	0.200	0.220	0.240	0.260	0.274
CUT / FILL			-0.230	-0.131	0.074	0.257	0.154	-0.067	-0.177	-0.227	-0.025	-0.102	-0.234	0.042	0.199	0.000

LEGEND:

PAVED ROAD

FENCE

BENCHMARKS — BM 1274.048

CONCRETE EDGE BEAM

NOTES:

1. ALL ROAD CONSTRUCTION TO BE IN ACCORDANCE WITH COTO STANDARDIZED SPECIFICATIONS AND THE RELEVANT PROJECT SPECIFICATIONS.
2. LEVELS TO BE CHECKED ON SITE BY THE CONTRACTOR AND THE ENGINEER BEFORE EXCAVATIONS START.
3. CONCRETE STRENGTH TO BE 25 Mpa.
4. ROAD CLASS 5(a)
5. ROAD SPEED 60km/h.
6. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
7. ALL CHAINAGES ARE IN m UNLESS STATED OTHERWISE.

Drawing signed for approval held at Engineering Aces offices

DRAWN: NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 202530237 6	
APPROVED: SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

1 01/04/2025 ROAD ALIGNMENT

PROFESSIONAL ENGINEERING TECHNOLOGIST
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026
ECSA
QR MOTUPI

CONSULTANT:

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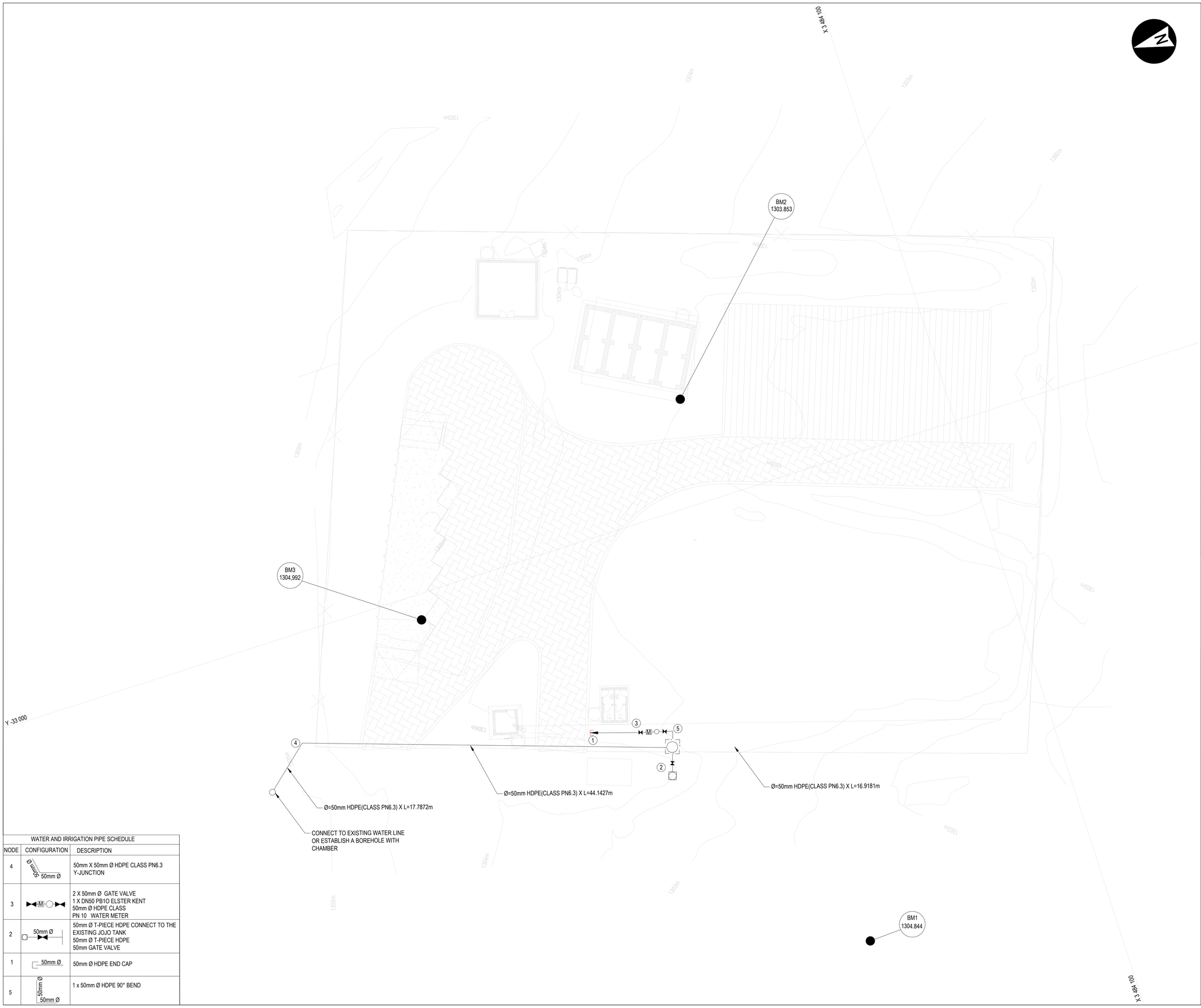
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN INDWE

LAYOUT:
INDWE TRANSFER STATION ACCESS ROAD
(CH 0 - CH 274)

DRAWING NO.	REVISION
1096A-CIV-DRG-102	T0



WATER AND IRRIGATION PIPE SCHEDULE

NODE	CONFIGURATION	DESCRIPTION
4	50mm Ø, 50mm Ø	50mm X 50mm Ø HDPE CLASS PN6.3 Y-JUNCTION
3	M	2 X 50mm Ø GATE VALVE 1 X DN50 PB1O ELSTER KENT 50mm Ø HDPE CLASS PN 10 WATER METER
2	50mm Ø	50mm Ø T-PIECE HDPE CONNECT TO THE EXISTING JOJO TANK 50mm Ø T-PIECE HDPE 50mm GATE VALVE
1	50mm Ø	50mm Ø HDPE END CAP
5	50mm Ø, 50mm Ø	1 x 50mm Ø HDPE 90° BEND

LEGEND:

- PROPOSED Ø 50mm WATER LINE
- GATE VALVE
- WATER METER

NOTES:

1. THE LATEST EDITION OF ANY STANDARD SPECIFICATION SHALL APPLY.
2. CONTRACTOR SHALL EXPOSE ALL EXISTING SERVICES TO BE CONNECTED TO PRIOR TO ANY WORK BEING DONE.
3. CONTRACTOR TO OBTAIN APPROVAL TO CONNECT WITH EXISTING INFRASTRUCTURE AND TO COMPLY WITH LOCAL AUTHORITY REGULATIONS
4. ALL EARTHWORKS AND SERVICES TO BE SET OUT BY A COMPETENT AND QUALIFIED SURVEYOR ACCORDING TO CO-ORDINATES ON PLANS.
5. EXCESS EXCAVATED MATERIAL SHALL BE SPOILED TO AN APPROVED SITE LOCATED BY THE CONTRACTOR.

Drawing signed for approval
held at Engineering Aces offices

DRAWN: K SETLHABI	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED: SS MNTAMBO	SCALE:1:200	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

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ECSA
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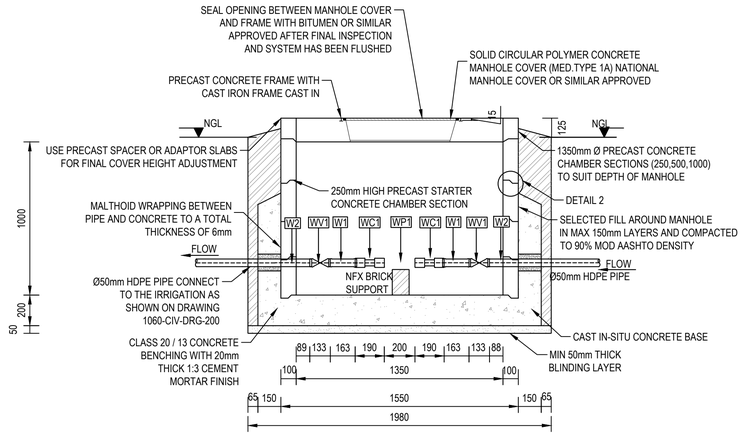
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN INDWE

LAYOUT: WATER

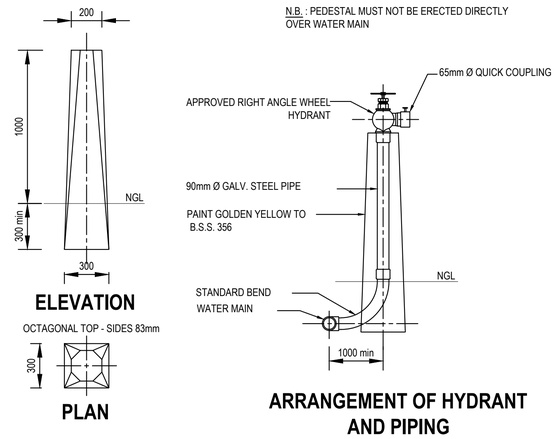
DRAWING NO.	REVISION
1096A-CIV-DRG-200	T0

FITTINGS AND SPECIALS

REF.	NO.	DESCRIPTION
W1	3	DN 50mm HDPE STRAIGHT MALE THREADED (LENGTH=165mm)
W2	2	DN 50mm HDPE STRAIGHT MALE THREADED CONNECT TO THE IRRIGATION SYSTEM
VALVES		
WV1	2	DN50mm BALL VALVE PVC THREADED
PUMP		
WP1	1	DN 50mm PROPOSED MULTISTAGE CENTRIFUGAL PRESSURE BOOSTING PUMP FOR DOMESTIC USE
COUPLING		
WC1	1	DN 50mm COUPLING COMPRESSION



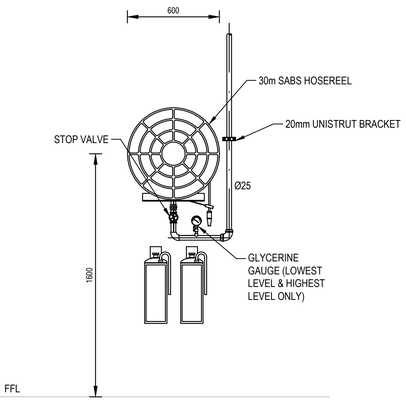
SECTION A
1:20



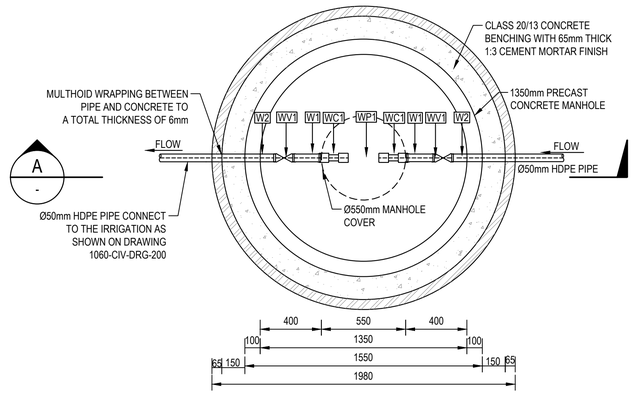
CONCRETE PEDESTAL

ARRANGEMENT OF HYDRANT AND PIPING

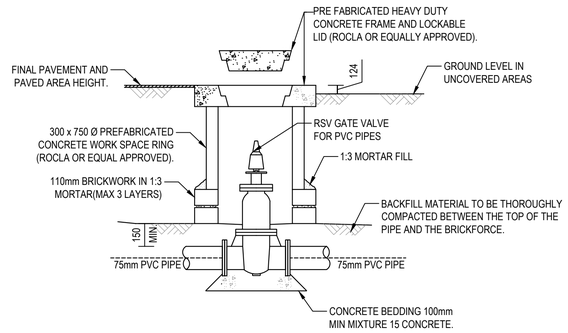
VALVE HYDRANT FOR HYDRANT STAND POST
NTS



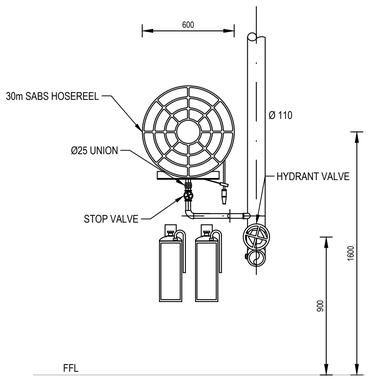
TYPICAL FIRE HOSE REEL DETAIL
SCALE : 1:20



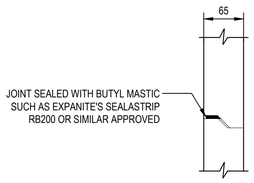
PLAN VIEW - JOJO TANK BOOSTER PUMP CHAMBER
SCALE 1 : 20



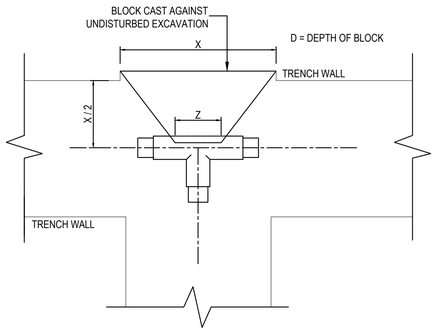
DETAIL - VALVE CHAMBER
1 : 10



TYPICAL FIRE HOSE REEL & HYDRANT DETAIL
SCALE :1:20

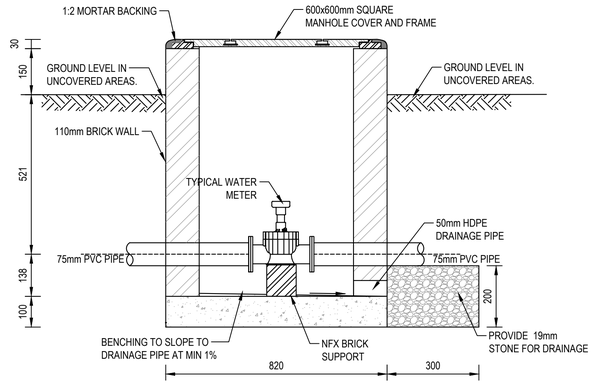


SHAFT / CHAMBER SEALING JOINT
DETAIL 2
1:5



THRUST BLOCK FOR TEES AND END CAPS
NTS

TABLE 1			
PIPE DIAMETER	X (mm)	DEPTH OF BLOCK	Z (mm)
200	1300	800	350
150	1000	600	275
100	630	400	200
75	500	300	150
50	325	200	100



DETAIL - WATER METER CHAMBER
SCALE 1 : 10

NOTES:

1. TABLE 1 TO BE USED WHEN ALLOWABLE BEARING PRESSURE IS 40KPa OR MORE AND TEST PRESSURE HEAD IN PIPELINE IS 195mm OR LESS.
2. ALL DIMENSIONS IN "mm" UNLESS WHERE OTHERWISE INDICATED.
3. THE GRADE FOR CONCRETE & STRENGTH @ 28 DAYS
   ROOF SLAB CLASS 25/19
   FLOOR SLAB CLASS 25/19

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DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr Tech Eng - 2025302376	
APPROVED: SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026
ECSA

CONSULTANT:
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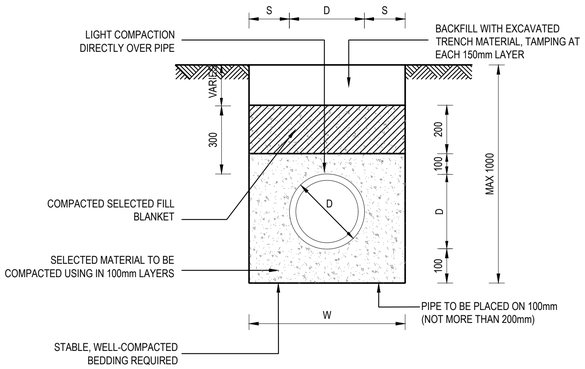
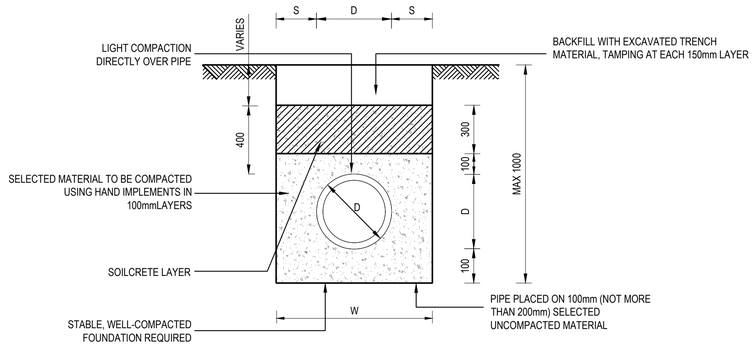
DETAIL:WATER

DRAWING NO.	REVISION
1096A-CIV-DRG-201	T0



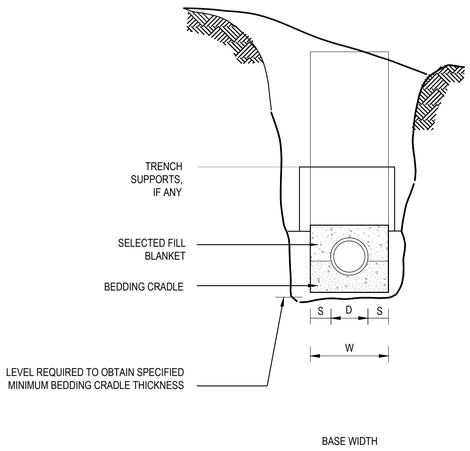
FLEXIBLE PIPES

1:100



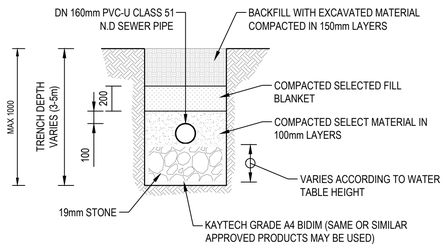
SOILCRETE LAYER

1:100



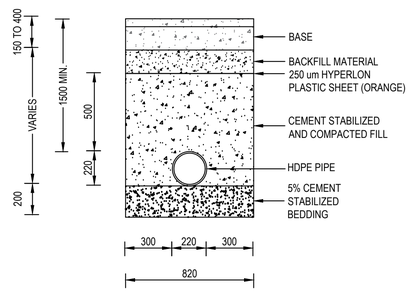
MEASUREMENT OF BEDDING

1:100



PIPE BACKFILL AND STONE BEDDING DETAILS TO ALL PIPES BEDDED WITHIN HIGH WATER TABLE

1:25



TYPICAL CROSS SECTION OF ROAD CROSSING

SCALE 1:20

NOTES :

1. SIDE ALLOWANCE FOR EXCAVATION IN ACCORDANCE WITH SANS 1200 DB
2. BACKFILL MATERIAL AS FOUND ON SITE. MATERIAL TO BE IN LAYERS OF 150mm COMPACTED TO 90% MOD AASHTO
3. ALL DIMENSIONS IN "MM" UNLESS OTHERWISE INDICATED
4. VALUES FOR S AND S1 TO BE SPECIFIED IN SANS 1200LB

Drawing signed for approval held at Engineering Aces offices

DRAWN: K SETLHABI	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED:SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
ECSA
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10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

engineering ACES
see the RESULT

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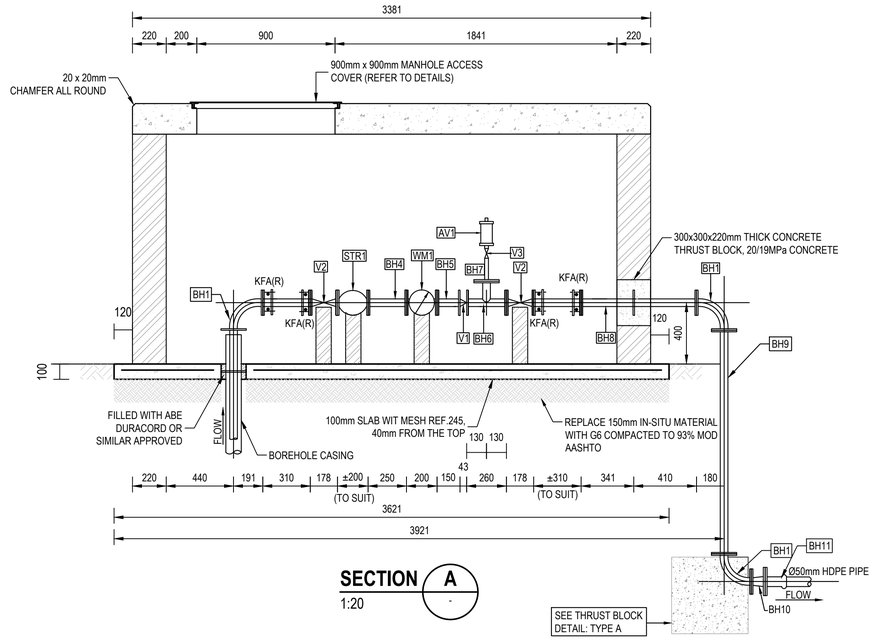
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN INDWE

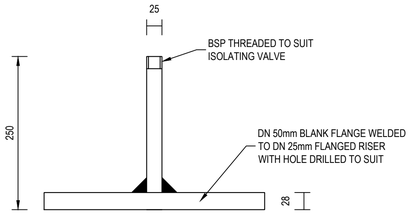
DETAILS:
PIPE BEDDING

DRAWING NO.	REVISION
1096A-CIV-DRG-202	T0

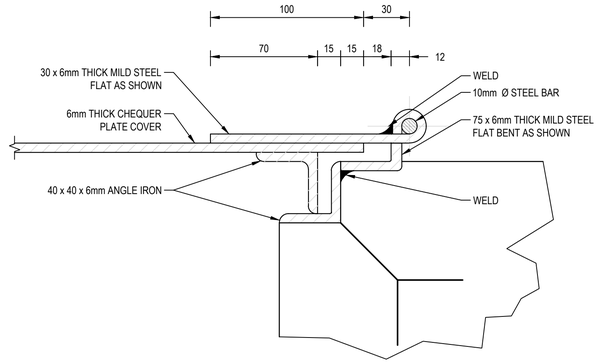
FITTINGS AND SPECIALS (PN 10)		
REF.	NO.	DESCRIPTION
BH1	3	DN 50mm x 90° MILD STEEL FLANGED MEDIUM RADIUS BEND
BH2	1	DN 20mm BRASS SAMPLING TAP
BH3	1	DN 50mm MILD STEEL FLANGED STRAIGHT PIECE (LENGTH=341mm)
BH4	1	DN 50mm MILD STEEL FLANGED STRAIGHT PIECE (LENGTH=250mm)
BH5	1	DN 50mm MILD STEEL FLANGED STRAIGHT PIECE (LENGTH=150mm)
BH6	1	DN 50mm MILD STEEL FLANGED EQUAL TEE
BH7	1	DN 25mm MILD STEEL STRAIGHT, ONE END OF STRAIGHT FLANGED TO SUIT DN 50mm FLANGE, OTHER END WITH MALE BSP THREADS TO SUIT DN 25mm ISOLATING VALVE
BH8	1	DN 50mm MILD STEEL FLANGED STRAIGHT PIECE (LENGTH=753mm)
BH9	1	DN 50mm MILD STEEL FLANGED STRAIGHT PIECE (LENGTH=1460mm)
BH10	1	DN 50 x 65mm MILD STEEL FLANGED REDUCER
BH11	1	DN 63 x 65mm PVC-u FLANGED ADAPTOR
		VALVES (PN 10)
V1	1	DN 50mm WAFER TYPE NON-RETURN VALVE
V2	1	DN 50mm RSV GATE VALVE
V3	1	DN 25mm ISOLATING VALVE (BSP FEMALE THREADED ENDS)
AV1	1	DN 25mm PN 10 BSP THREADED (FEMALE) "ARI" AIR VALVE
		WATER METER (PN 10)
WM1	1	DN 50mm WATER METER
		COUPLING (PN 10)
KFA(R)	2	DN 50mm KLAMFLEX FLANGED ADAPTOR (RESTRAINED)
		STRAINER (PN 10)
STR1	1	DN 50mm STRAINER



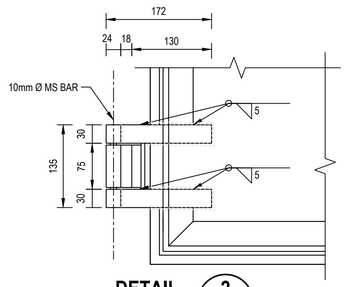
SECTION A
1:20



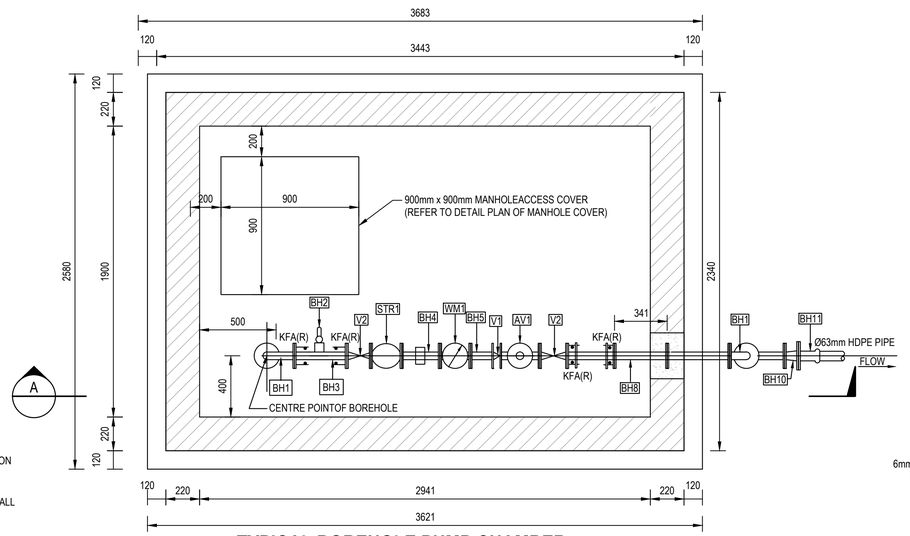
RISER DETAIL REF BH
1:5



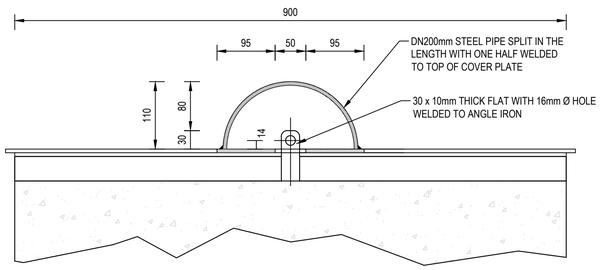
DETAIL 1
1:2



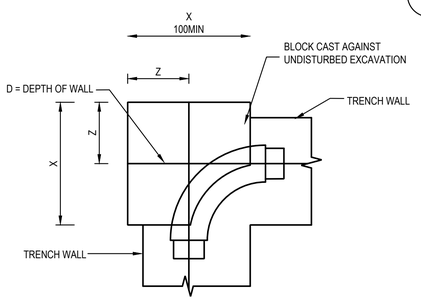
DETAIL 2
1:5



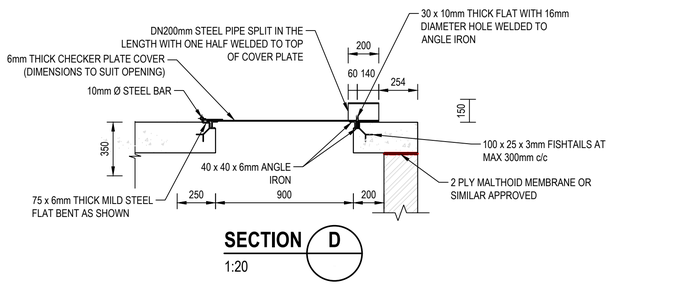
TYPICAL BOREHOLE PUMP CHAMBER
SCALE 1:20



SECTION E
1:5

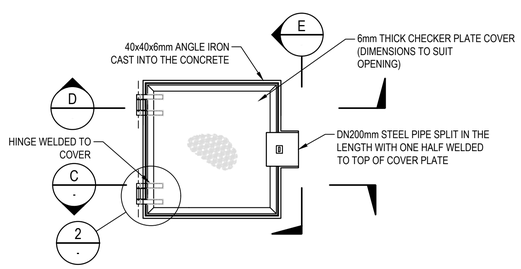


TYPE A: THRUST BLOCK FOR 90° BEND
1:100

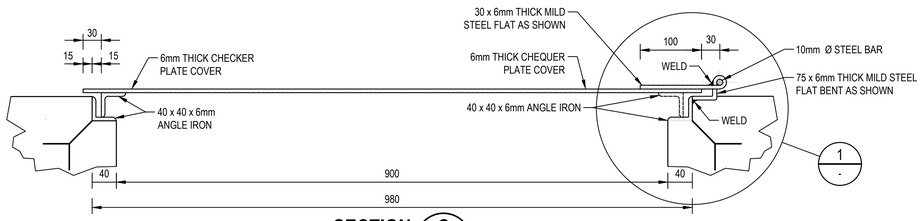


SECTION D
1:20

TABLE 1							
PIPE NOMINAL	DEPTH OF BLOCK	MAXIMUM TESTING PRESSURE					
		900 kPa		1350 kPa		1800 kPa	
(mm)	D (mm)	X (mm)	A (m²)	X (mm)	A (m²)	X (mm)	A (m²)
150	600	400	0,23	600	0,34	750	0,46
90&100	400	250	0,10	400	0,15	500	0,20
75	300	200	0,06	300	0,09	400	0,12
50	200	150	0,03	200	0,04	250	0,05



DETAIL PLAN OF MANHOLE COVER
1:20



SECTION C
1:5

NOTES (for TABLE 1):

1. TABLE 1 IS VALID FOR 100 kPa EARTH BEARING PRESSURE
2. X- DIMENSION MAY BE REDUCED FOR HIGHER EARTH BEARING PRESSURES
3. Z SHALL BE THE MINIMUM OF X/2 OR W/2
4. HALF OF THE DEPTH OF THE BLOCK SHALL BE BELOW THE PIPE AXIS
5. KEEP COUPLINGS AND FLANGES 25mm CLEAR FROM CONCRETE

Drawing signed for approval held at Engineering Aces offices

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DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED:SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
ECSA
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

engineering ACES
see the RESULT

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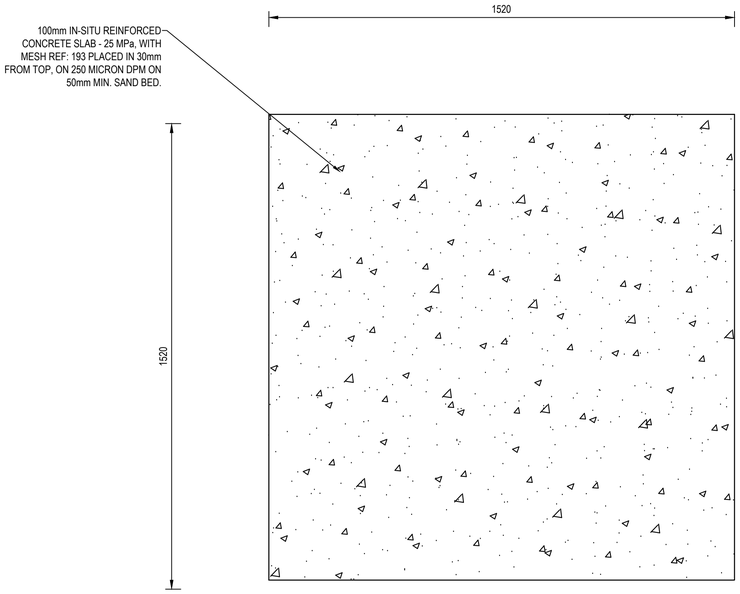
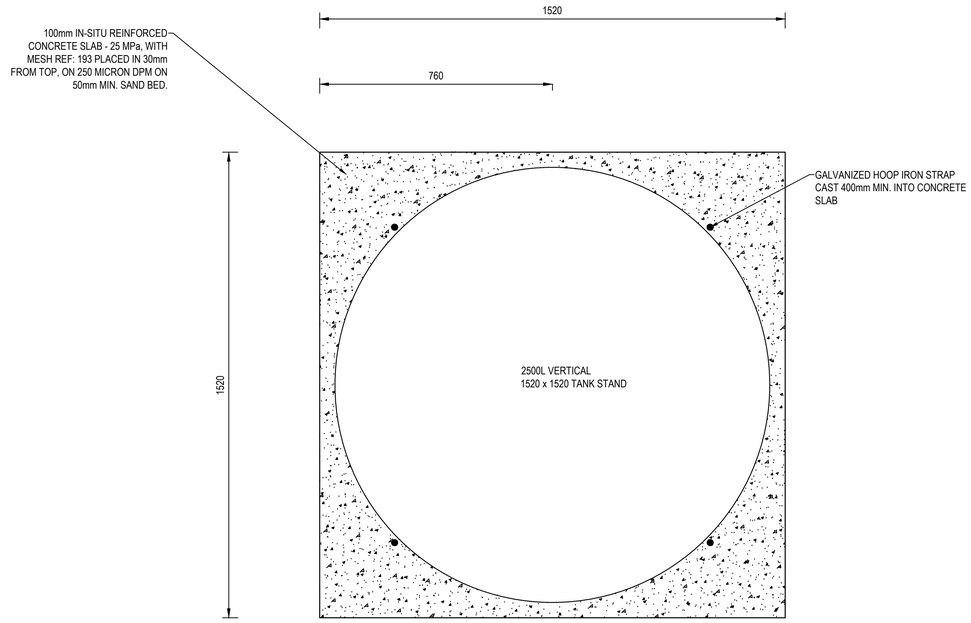
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN INDWE

DETAILS:
BOREHOLE PUMP CHAMBER

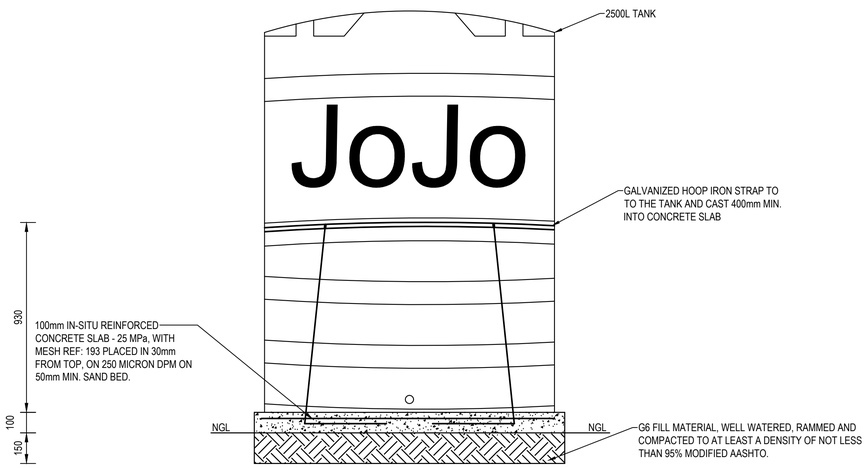
DRAWING NO.	REVISION
1096A-CIV-DRG-203	T0



FOUNDATION
1:10



SLAB LAYOUT
1:10



TYPICAL TANK - SECTION
1:15

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APPROVED:SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
ECSA
SIPHAMANDLA SYDWELL MNTAMBO
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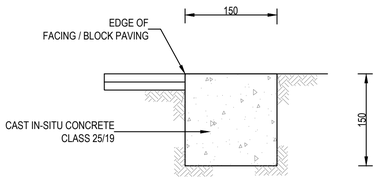
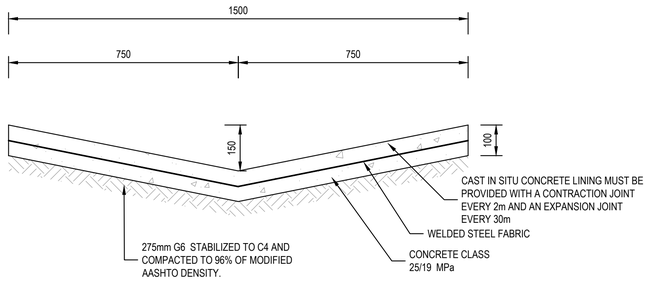
DETAIL:
TYPICAL TANK STAND

DRAWING NO.	REVISION
1096A-CIV-DRG-204	T0



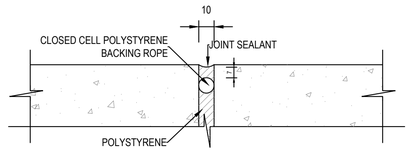
DETAIL OF EXISTING EDGE BEAM

SCALE 1:10



DETAIL 2: EXISTING STORMWATER CHANNEL

SCALE 1:8

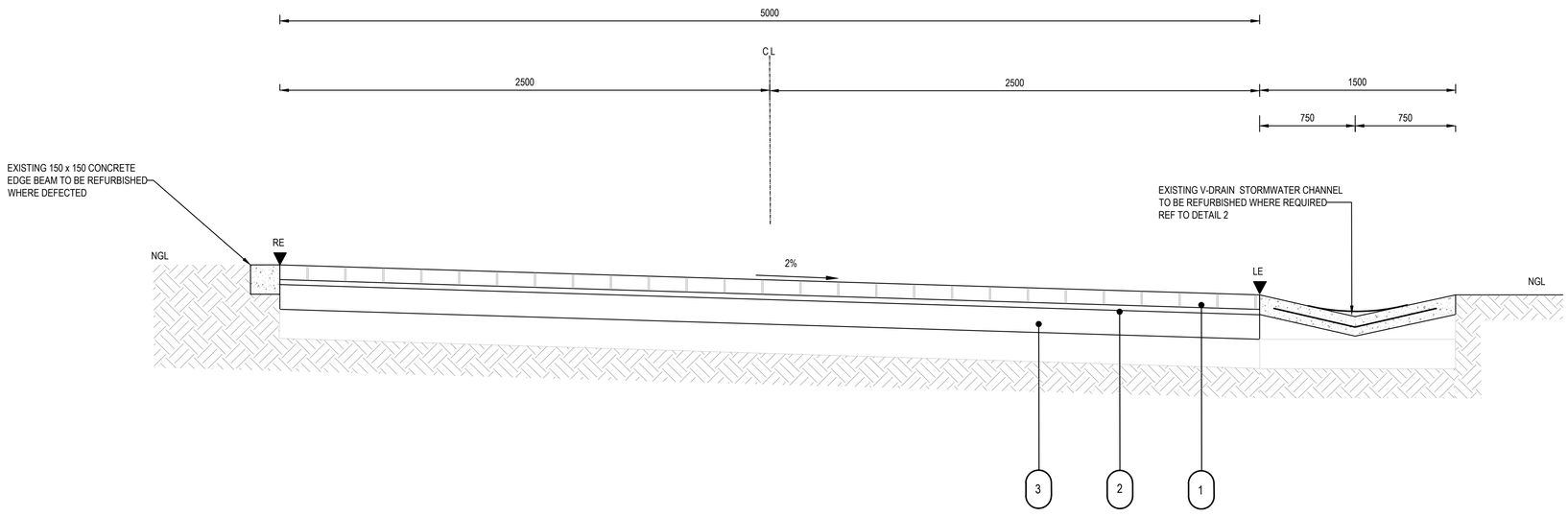


EXPANSION JOINT DETAIL FOR STORMWATER CHANNEL

SCALE 1:20

NOTES :

1. CONCRETE CHANNEL CASTING 2.5m LENGTHS
2. ENSURE THAT STEEL MESH IS PLACED AS SHOW



PROPOSED CROSS SECTION

N.T.S

PAVEMENT LAYERS	
1 PAVING	80mm 30 MPa, TYPE S-A BLOCK.
2 BEDDING SAND	20mm BEDDING SAND.
3 BASE	EXISTING STABILISED BASE TO BE TESTED AND REFURBISHED IF REQUIRED

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CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED:SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

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ECSA
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

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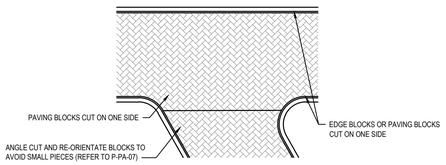
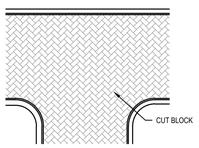
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN INDWE

DETAILS: ROAD CROSSING & STREET CROSS SECTION DETAIL

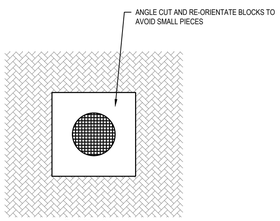
DRAWING NO.	REVISION
1096A-CIV-DRG-400	T0



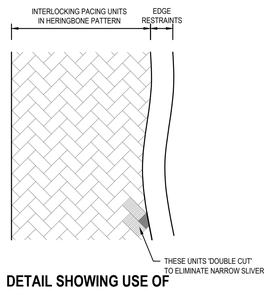
INTERSECTION LAID IN HERRINGBONE PATTERN
1:2



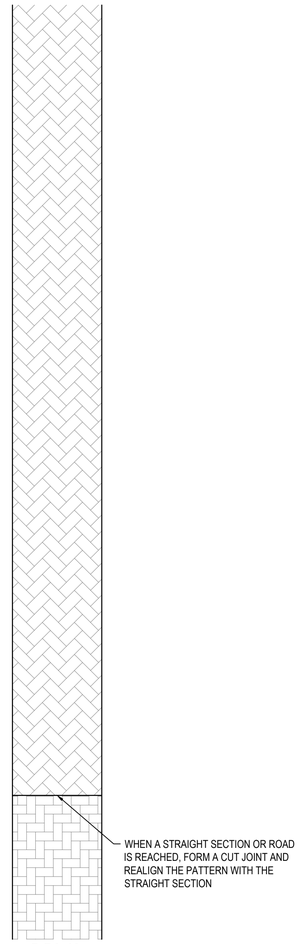
INTERSECTION LAID IN HERRINGBONE PATTERN
1:2



P-MH-01
1:2



DETAIL SHOWING USE OF EDGE BLOCK
1:2



P-PA-10
1:1

NOTES:

1. POSITION AND TYPE TO BE SPECIFIED BY THE ENGINEER.
2. ALL CONCRETE TO BE CLASS 29/19
3. CAST IN SITU CONCRETE LINING MUST BE PROVIDED WITH A CONTRACTION JOINT EVERY 2m AND AN EXPANSION JOINT EVERY 30m

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DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED: SS MNTAMBO L MTHEMBU	SCALE:	

AMENDMENTS

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T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

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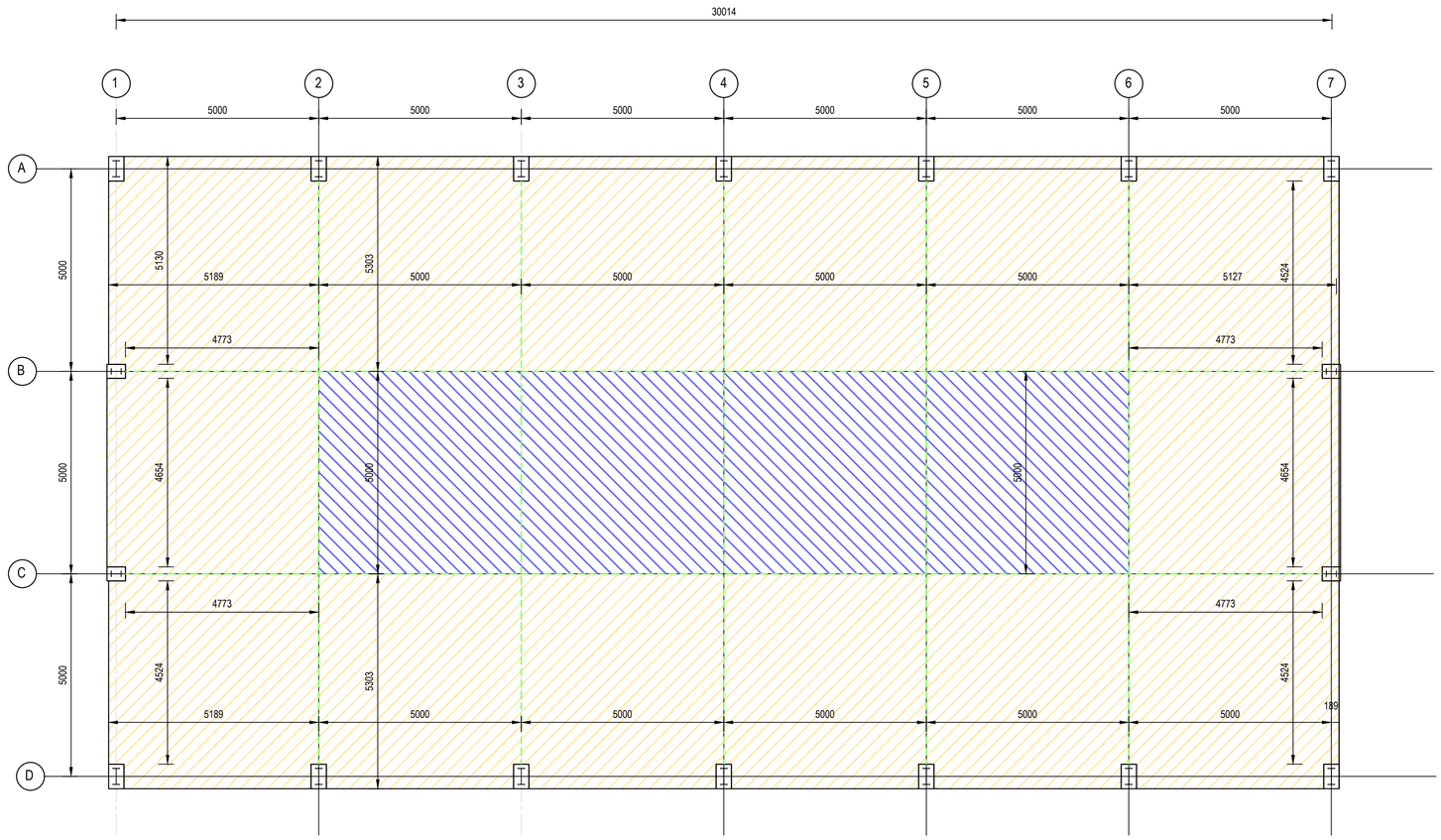
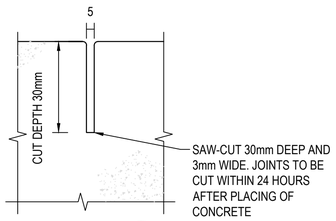
DETAILS: ROAD PAVING DETAIL

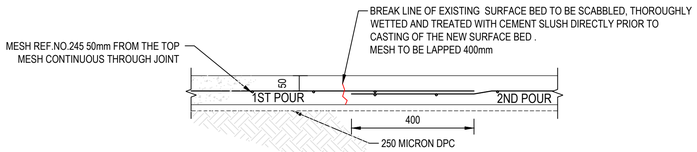
DRAWING NO.	REVISION
401	T0



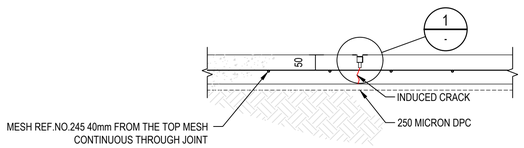
MATERIAL RECOVERY FACILITY SURFACE BED LAYOUT
1:75



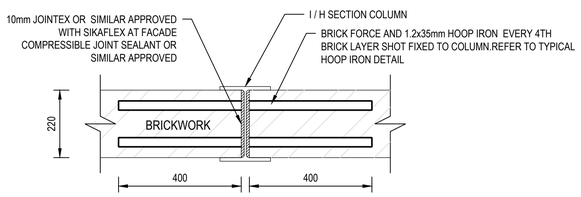
DETAIL 1
1:2



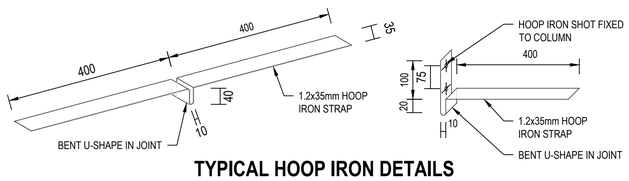
TYPICAL CONSTRUCTION JOINT
1:10



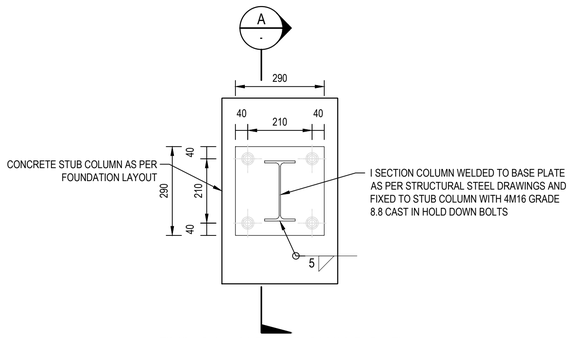
TYPICAL SAW-CUT JOINT
SCALE 1:10



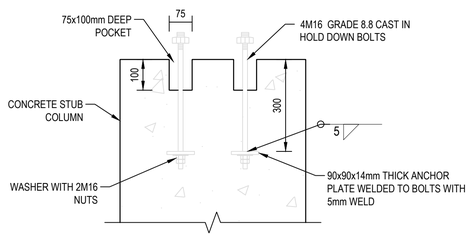
TYPICAL BRICKWORK TO STEEL COLUM DETAIL
1:10



TYPICAL HOOP IRON DETAILS
1:10



TYPICAL HOLD DOWN BOLT CONNECTION DETAIL
1:10



SECTION A
1:10

SURFACE BED LEGEND:

=10mm ISOLATION JOINT

=SAW CUT/CONSTRUCTION JOINT

EXISTING SURFACE BED

NEW 150mm THICK SURFACE BED REINFORCED WITH MESH REF.NO.245 40mm FROM THE TOP WITH A TOP LEVEL OF +0.170

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CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED: SS MNTAMBO	SCALE:	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

ECSA
PROFESSIONAL ENGINEERING TECHNOLOGIST
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10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

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REFURBISHMENT OF THE EXISTING TRANSFER STATION IN INDWE

MATERIAL RECOVERING FACILITY SHED FOUNDATION LAYOUT

DRAWING NO.	REVISION
1096A-STR-DRG-103	T0

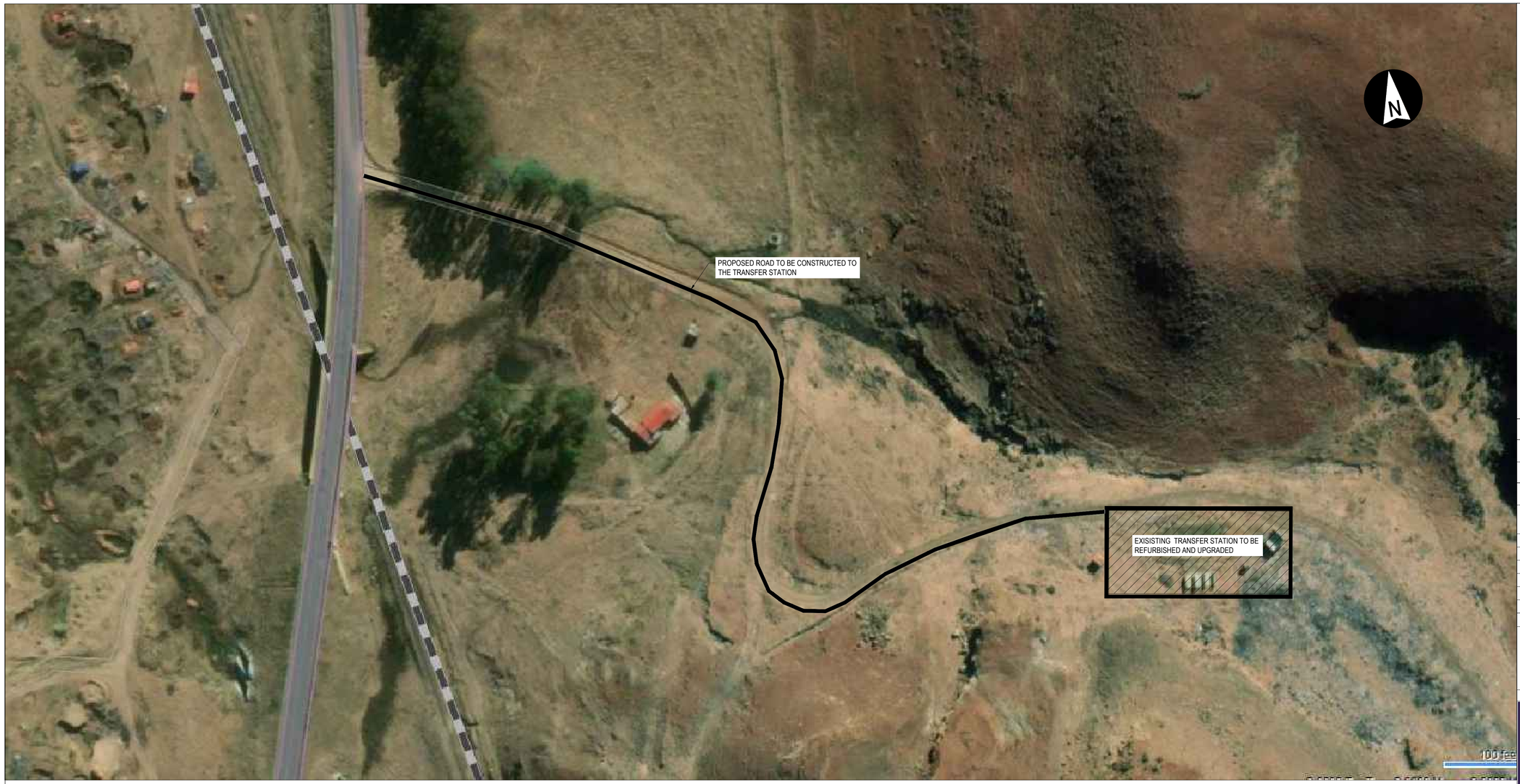
CONTRACT NO. : XXX/X/XX/XXXXX

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

BOOK OF TENDER DRAWINGS

MAY 2026

see the RESULT



LIST OF DRAWINGS

1096B-CIV-DRG-100	:	LAYOUT: LOCALITY PLAN AND LIST OF DRAWINGS
1096B-CIV-DRG-101	:	LAYOUT : SITE
1096B-CIV-DRG-101A	:	LAYOUT : SITE
1096B-CIV-DRG-102	:	LAYOUT : CH0-CH567
1096B-CIV-DRG-103	:	LAYOUT : CH0-CH567(PROFILE)
1096B-CIV-DRG-104	:	DETAIL : NAME BOARD
1096B-CIV-DRG-105	:	DETAIL : SITE NAME BOARD
1096B-CIV-DRG-200	:	LAYOUT: WATER
1096B-CIV-DRG-201	:	TYPICAL: WATER DETAILS
1096B-CIV-DRG-202	:	DETAIL: PIPE BEDDING
1096B-CIV-DRG-203	:	DETAIL: BOREHOLE PUMP HOUSE CONNECTION
1096B-CIV-DRG-204	:	LAYOUT: TYPICAL TANK STAND
1096B-CIV-DRG-400	:	DETAIL: ROAD CROSSING
1096B-CIV-DRG-401	:	DETAIL: DRAIN AND ROAD PAVING
1096B-CIV-DRG-402	:	DETAIL: CULVERT
1096B-CIV-DRG-403	:	DETAIL: BELMOUTH AND STREET SIGNS
1096B-CIV-DRG-404	:	DETAIL: STREET SIGNS
1096B-ARC-DRG-101	:	LAYOUT: ABLUTIONS
1096B-ARC-DRG-102	:	LAYOUT: GUARD HOUSE
1096B-ARC-DRG-103	:	LAYOUT :RECYCLABLE STORAGE AREA
1096B-ARC-DRG-104	:	LAYOUT :STORAGE ROOM
1096B-ARC-DRG-105	:	LAYOUT :CHANGING ROOM
1096B-ARC-DRG-106	:	DETAILS: WINDOW AND DOOR SCHEDULE

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DRAWN:	NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED:	M HAYAT-NAQVI		DATE
CHECKED:	L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED:	SS MNTAMBO	SCALE: NTS	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
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APPROVED:

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ECSA
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10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

engineering ACES
see the RESULT

CLIENT

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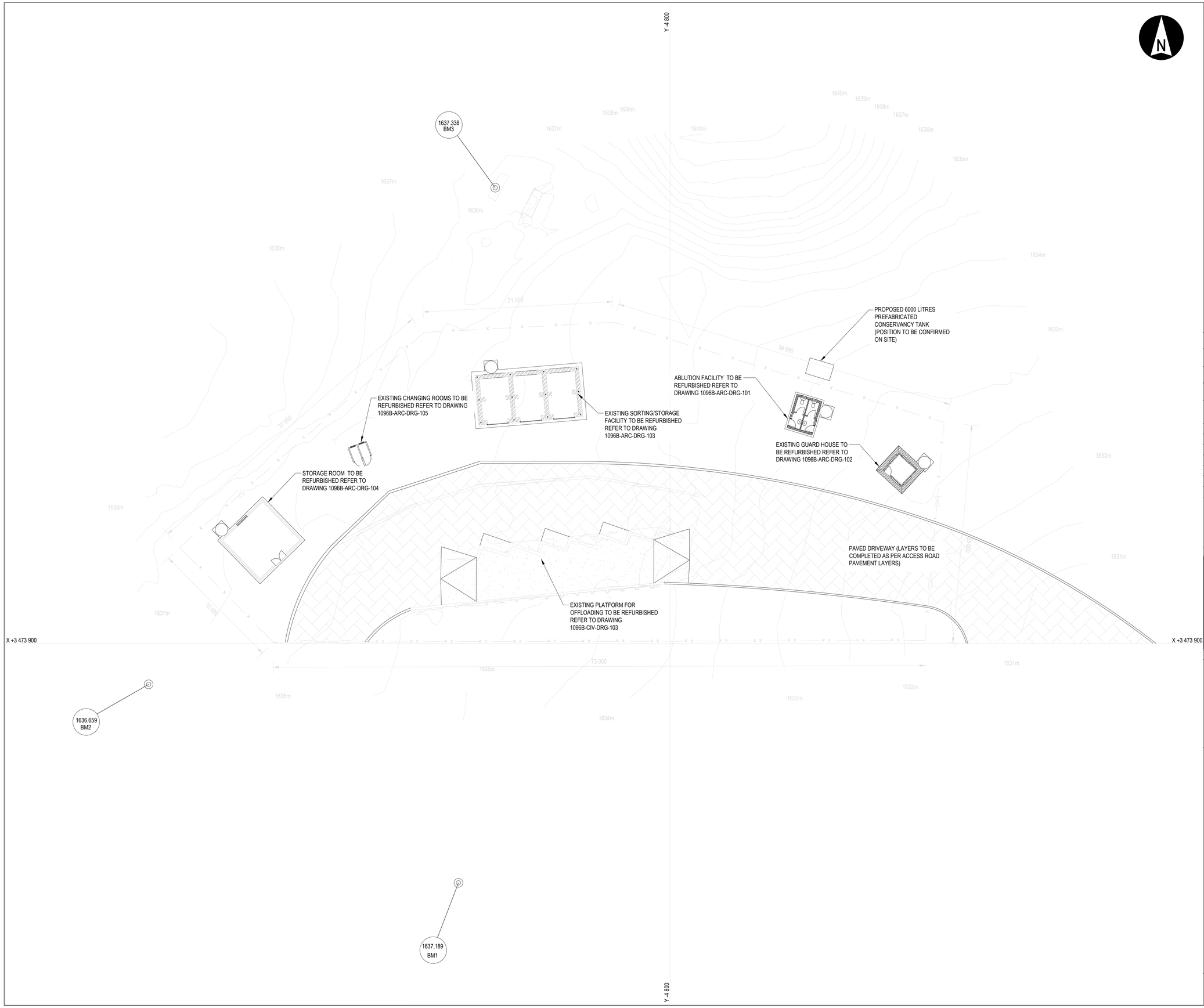
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

LAYOUT:
LOCALITY PLAN AND LIST OF DRAWINGS

DRAWING NO.	REVISION
1096B-CIV-DRG-100	T0



NOTES:

1. CO-ORDINATES BASED ON WGS84, Lo 25.
2. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH SANS 1200 STANDARDISED SPECIFICATIONS AND THE RELEVANT PROJECT SPECIFICATIONS.
3. DPM: ONE LAYER OF 300 MICRON DPM WATERPROOF SHEETING BEARING SABS 952-1985 TYPE C.THE SHEETING SHALL BE LAID IN THE WIDEST PRACTICAL WIDTHS TO MINIMISE JOINTS AND SHALL BE TURNED UP, DRESSED TO WALLS, AND LAPPED WITH BRIKGRIP SABS DPC. ALL JOINTS SHALL BE SEALED WITH THE BLACK PRESSURE SENSITIVE TAPE APPLIED OVER THE LEADING EDGE OF THE JOINT, MIN LAP 150mm.

Drawing signed for approval held at Engineering Aces offices

DRAWN:	K SETLHABI	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED:	M HAYAT-NAQVI		DATE
CHECKED:	L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED:	SS MNTAMBO	SCALE: 1:200	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
ECSA
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

engineering ACES
see the / RESULT

CLIENT

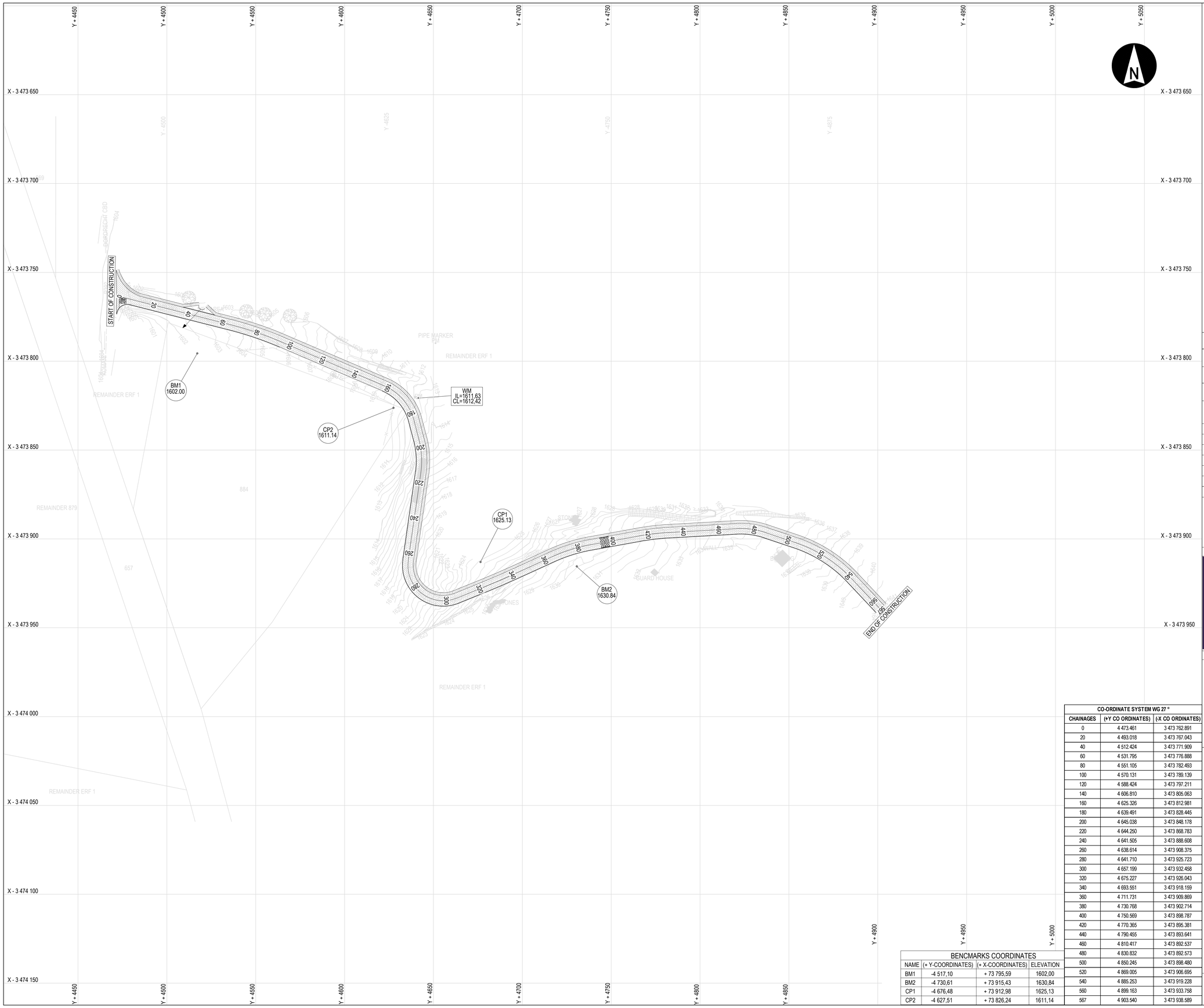
EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

LAYOUT:SITE

DRAWING NO.	REVISION
1096B-CIV-DRG-101	T0



BENCMARKS COORDINATES			
NAME	(+ Y-COORDINATES)	(+ X-COORDINATES)	ELEVATION
BM1	-4 517,10	+ 73 795,59	1602,00
BM2	-4 730,61	+ 73 915,43	1630,84
CP1	-4 676,48	+ 73 912,98	1625,13
CP2	-4 627,51	+ 73 826,24	1611,14

CO-ORDINATE SYSTEM WG 27 °		
CHAINAGES	(+Y CO ORDINATES)	(-X CO ORDINATES)
0	4 473.461	3 473 762.891
20	4 493.018	3 473 767.043
40	4 512.424	3 473 771.909
60	4 531.795	3 473 776.888
80	4 551.105	3 473 782.493
100	4 570.131	3 473 789.139
120	4 588.424	3 473 797.211
140	4 606.810	3 473 805.063
160	4 625.326	3 473 812.981
180	4 639.491	3 473 828.445
200	4 645.038	3 473 848.178
220	4 644.250	3 473 868.783
240	4 641.505	3 473 888.608
260	4 638.614	3 473 908.375
280	4 641.710	3 473 925.723
300	4 657.199	3 473 932.458
320	4 675.227	3 473 926.043
340	4 693.551	3 473 918.159
360	4 711.731	3 473 909.869
380	4 730.768	3 473 902.714
400	4 750.569	3 473 898.787
420	4 770.365	3 473 895.381
440	4 790.455	3 473 893.641
460	4 810.417	3 473 892.537
480	4 830.832	3 473 892.573
500	4 850.245	3 473 898.480
520	4 869.005	3 473 906.695
540	4 885.253	3 473 919.228
560	4 899.163	3 473 933.758
567	4 903.540	3 473 938.589

LEGEND:

- PAVED ROAD
- FENCE
- BENCHMARKS (BM 1600.00)
- EXISITING TREES
- CONCRETE EDGE BEAM
- ROAD SIGN WITH CODE
- STORMWATER CHANNEL
- SIGN BOARD
- PIPE CULVERT

NOTES:

1. ALL ROAD CONSTRUCTION TO BE IN ACCORDANCE WITH COTO STANDARDIZED SPECIFICATIONS AND THE RELEVANT PROJECT SPECIFICATIONS.
2. LEVELS TO BE CHECKED ON SITE BY THE CONTRACTOR AND THE ENGINEER BEFORE EXCAVATIONS START.
3. CONCRETE STRENGTH AS SHOWN IN THE DRAWINGS AND BILL OF QUANTITY.
4. ROAD CLASS 5(a) AND 5(b).
5. ROAD SPEED 40-60km/h.
6. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
7. ALL CHAINAGES ARE IN m UNLESS STATED OTHERWISE.

Drawing signed for approval held at Engineering Aces offices

DRAWN: NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED: SS MNTAMBO	SCALE: 1:1000	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026
ECSA

CONSULTANT:

engineering ACES
see the RESULT

CLIENT

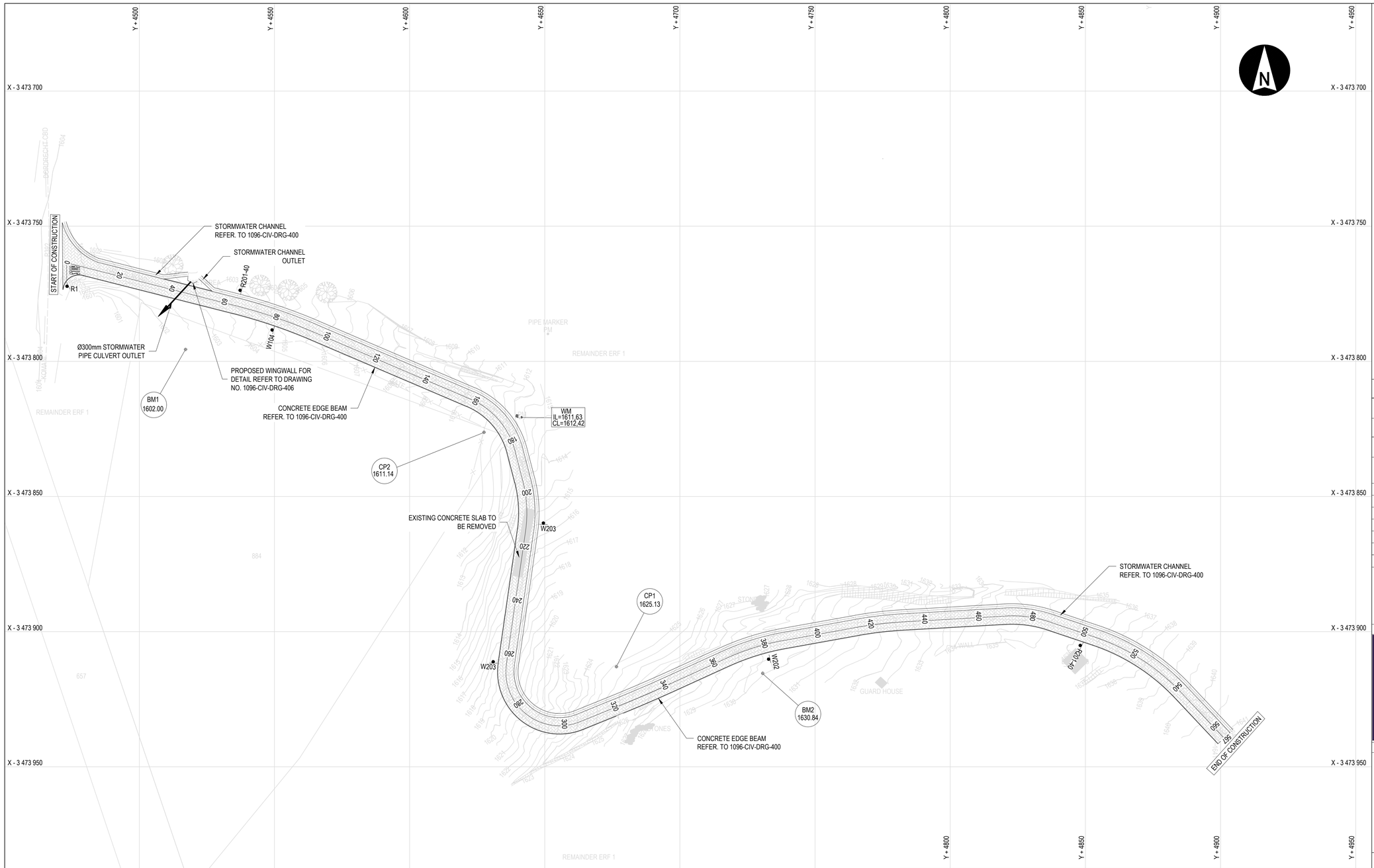
EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

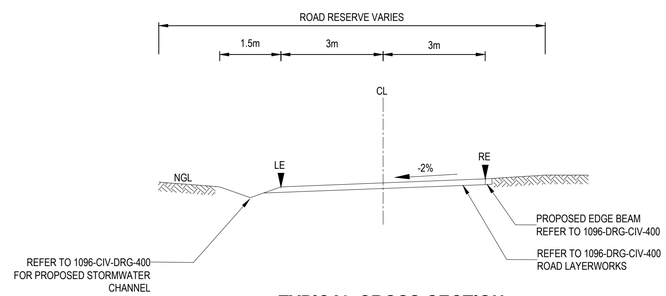
EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

LAYOUT: SITE

DRAWING NO.	REVISION
1096B-CIV-DRG-101A	T0





TYPICAL CROSS-SECTION

SCALE 1:75

LEGEND:

- PAVED ROAD
- FENCE
- BENCHMARKS (BM 1600.00)
- EXISITING TREES
- CONCRETE EDGE BEAM
- ROAD SIGN WITH CODE
- STORMWATER CHANNEL
- SIGN BOARD
- PIPE CULVERT

NOTES:

1. ALL ROAD CONSTRUCTION TO BE IN ACCORDANCE WITH COTO STANDARDIZED SPECIFICATIONS AND THE RELEVANT PROJECT SPECIFICATIONS.
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Drawing signed for approval held at Engineering Aces offices

DRAWN:	NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED:	M HAYAT-NAQVI		DATE
CHECKED:	L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED:	SS MNTAMBO	SCALE: 1:750	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
ECSA
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

engineering ACES
see the / RESULT

CLIENT

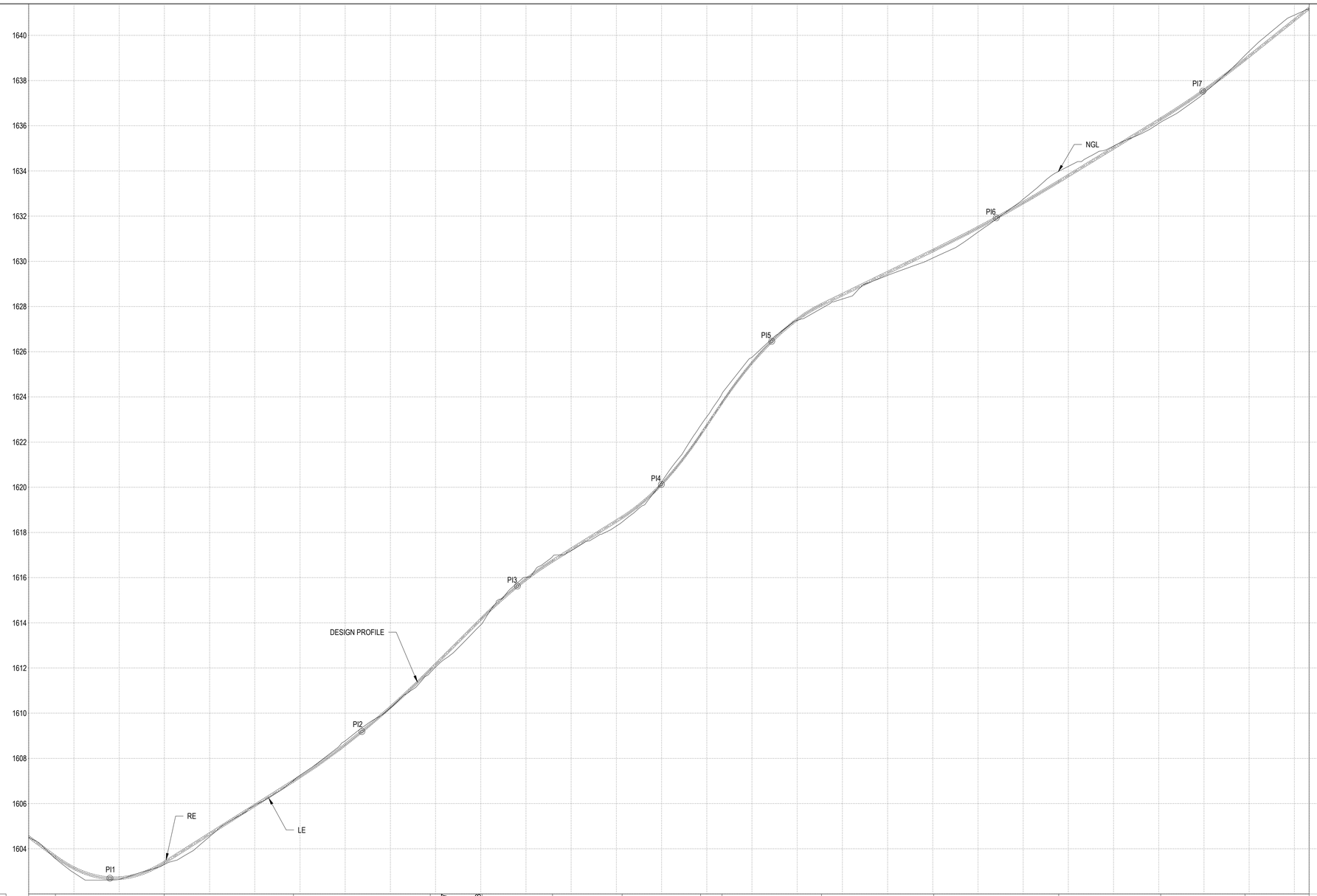
EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

LAYOUT: CH0 - CH567

DRAWING NO.	REVISION
1096B-CIV-DRG-102	T0



DORDRECHT

SCALE VERT 1:100
SCALE HOR 1:1000

DATUM : 1602 m

VERTICAL PROFILE GRADES

BVC	VCL	EVC
11.870	VCL=48.129m K=4	59.999
117.174	VCL=60.553m K=17	177.727
206.678	VCL=31.151m K=8	231.830
262.567	VCL=34.777m K=4	297.344
306.824	VCL=43.964m K=4	350.788
400.509	VCL=55.292m K=43	455.801
500.910	VCL=37.279m K=20	538.189

-7.4%	35.934	1601.871	6.3%	147.450	1608.910	10.0%	216.254	1615.769	6.2%	279.956	1619.748	14.9%	328.806	1627.009	4.9%	428.155	1631.835	6.1%	519.550	1637.441	8.0%								

FINAL DESIGN ROAD LEVELS

LEFT EDGE (HL)	1604.506	1603.087	1602.641	1603.330	1604.593	1605.855	1607.127	1608.543	1610.198	1612.095	1614.089	1615.658	1617.193	1618.442	1620.070	1622.667	1625.745	1627.354	1628.464	1629.436	1630.407	1631.425	1632.534	1633.728	1634.955	1636.182	1637.500	1639.015	1640.614	1641.018
CENTRE LINE (CL)		1603.145	1602.698	1603.390	1604.653	1605.915	1607.180	1608.597	1610.256	1612.155	1614.149	1615.920	1617.253	1618.502	1620.128	1622.727	1625.502	1627.420	1628.524	1629.496	1630.467	1631.483	1632.590	1633.788	1635.015	1636.242	1637.559	1639.075	1640.674	1641.012
RIGHT EDGE (HR)		1603.207	1602.761	1603.450	1604.713	1605.975	1607.247	1608.663	1610.318	1612.215	1614.209	1615.978	1617.313	1618.562	1620.188	1622.787	1625.56	1627.475	1628.584	1629.556	1630.527	1631.545	1632.654	1633.848	1635.075	1636.302	1637.621	1639.135	1640.734	1641.24

GROUND LEVELS ON CL

1602.939	1602.638	1603.289	1604.532	1605.920	1607.236	1608.768	1610.225	1612.035	1613.903	1616.014	1617.186	1618.279	1620.223	1623.109	1625.745	1627.385	1628.327	1629.374	1630.143	1631.288	1632.747	1634.199	1635.100	1636.097	1637.434	1639.269	1640.892	1641.012

SUPERELEVATION

LEFT: -2%

RIGHT: +2%

HORIZONTAL ALIGNMENT

DIRECTION 284° 14' 50"	BCC (0.063km)	R=200.000m I=288° 41' 20"	ECC (0.096km)	DIRECTION 293° 07' 50"	BCC (0.159km)	R=28.945m I=319° 15' 30"	ECC (0.185km)	DIRECTION 345° 23' 10"	BCC (0.196km)	R=47.366m I=356° 47' 10"	ECC (0.219km)	DIRECTION 8° 11' 20"	BCC (0.265km)	R=19.877m I=308° 02' 30"	ECC (0.307km)	DIRECTION 247° 53' 40"	BCC (0.323km)	R=486.255m I=246° 42' 00"	ECC (0.343km)	DIRECTION 245° 30' 10"	BCC (0.368km)	R=90.072m I=252° 38' 50"	ECC (0.388km)	DIRECTION 259° 47' 30"	BCC (0.416km)	R=138.253m I=263° 16' 20"	ECC (0.433km)	DIRECTION 266° 45' 00"	BCC (0.471km)	R=44.071m I=277° 39' 40"	ECC (0.488km)	DIRECTION 288° 34' 20"	BCC (0.505km)	R=76.984m I=302° 37' 50"	ECC (0.543km)	DIRECTION 316° 41' 20"

DISTANCE (km)	0.020	0.040	0.060	0.080	0.100	0.120	0.140	0.160	0.180	0.200	0.220	0.240	0.260	0.280	0.300	0.320	0.340	0.360	0.380	0.400	0.420	0.440	0.460	0.480	0.500	0.520	0.540	0.560	0.567
CUT / FILL	0.024	0.206	0.060	0.091	0.121	-0.005	-0.056	-0.171	0.031	0.120	0.246	-0.094	0.066	0.223	-0.095	-0.382	-0.242	0.035	0.197	0.121	0.324	0.195	-0.157	-0.411	-0.085	0.144	0.125	-0.214	-0.218	0.187

LEGEND:

PAVED ROAD
FENCE
BENCHMARKS (BM)
EXISITING TREES
CONCRETE EDGE BEAM
ROAD SIGN WITH CODE
STORMWATER CHANNEL
SIGN BOARD

NOTES:

1. ALL ROAD CONSTRUCTION TO BE IN ACCORDANCE WITH COTO STANDARDIZED SPECIFICATIONS AND THE RELEVANT PROJECT SPECIFICATIONS.
2. LEVELS TO BE CHECKED ON SITE BY THE CONTRACTOR AND THE ENGINEER BEFORE EXCAVATIONS START.
3. CONCRETE STRENGTH AS SHOWN IN THE DRAWINGS AND BILL OF QUANTITY
4. ROAD CLASS 5(a) AND 5(b).
5. ROAD SPEED 40-60km/h.
6. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
7. ALL CHAINAGES ARE IN m UNLESS STATED OTHERWISE.

Drawing signed for approval held at Engineering Aces offices

DRAWN: NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: M HAYAT-NAQVI	SS MNTAMBO Pr.Tech Eng - 2025302376	DATE
CHECKED: L SEROBE		
APPROVED: SS MNTAMBO	SCALE: 1:750	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

ECSA
PROFESSIONAL ENGINEERING TECHNOLOGIST
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

engineering ACES
see the RESULT

CLIENT

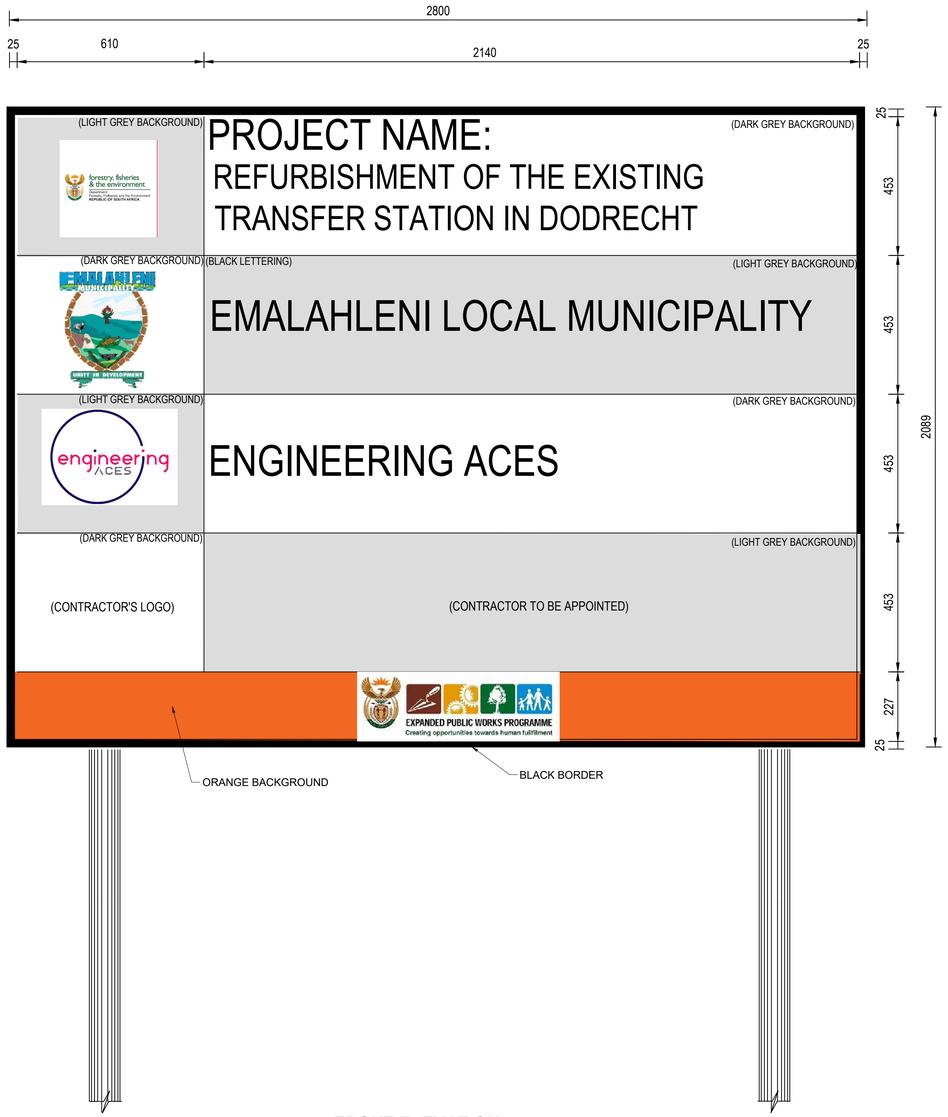
EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

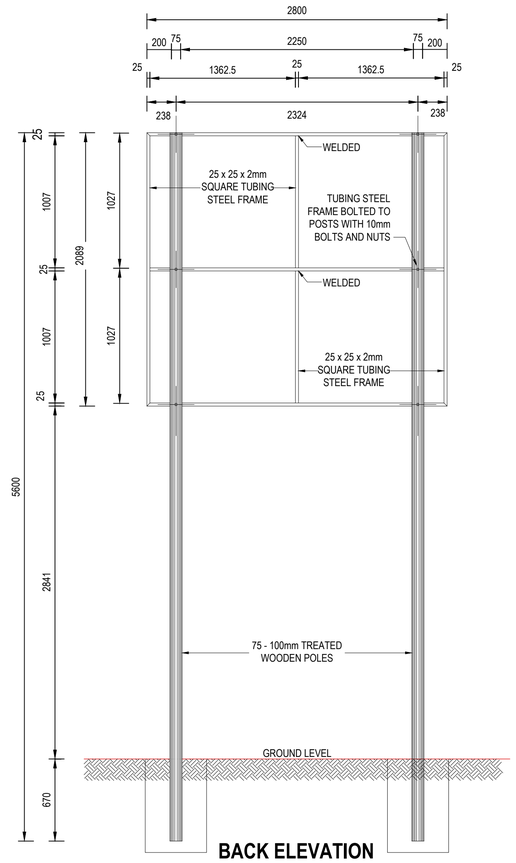
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

LAYOUT: CH0 - CH567

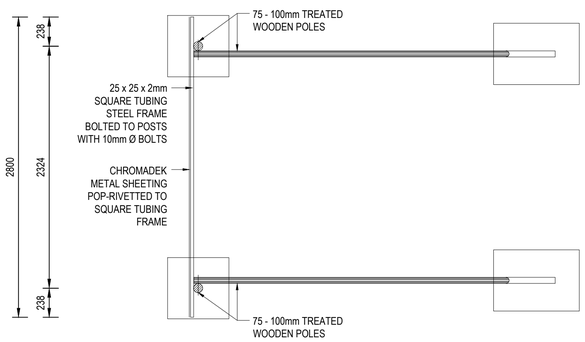
DRAWING NO.	REVISION
1096B-CIV-DRG-103	T0



FRONT ELEVATION
1:10



BACK ELEVATION
1:10



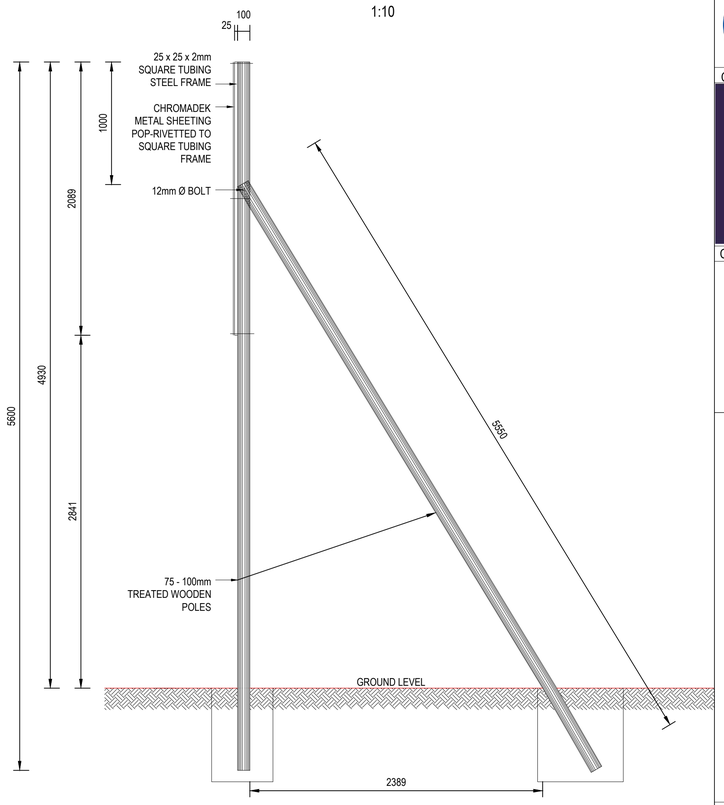
PLAN
1:10

CHROMADEK METAL SHEETING: (RUST RESISTANT METAL)
SPRAY PAINTED TO THE CUSTOMER'S SPECIFICATIONS WITH AUTOMOTIVE QUALITY DUCO PAINT.

WORDING:
HIGH PERFORMANCE 5 TO 7 YEARS OUTDOOR QUALITY VINYL.

LOGO'S:
UV RESISTANT FULL COLOUR THERMAL PRINT ONTO A HIGH PERFORMANCE OUTDOOR GRADE VINYL SUBSTRATE.
OR
HIGH PERFORMANCE 5 TO 7 YEARS OUTDOOR QUALITY VINYL APPLICATED DIRECTLY TO THE PREPARED CHROMADEK (IF LOGO CONSISTS OF FLAT COLOURS).

NOTE:
1. THE POSITION OF WHERE THE BOARD IS TO BE ERECTED MUST BE APPROVED BY THE ENGINEER AND THE CLIENT.
2. THE BOARD MUST REMAIN UNTIL THE END OF THE RETENTION PERIOD.



SIDE ELEVATION
1:10

Drawing signed for approval held at Engineering Aces offices

DRAWN:	NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED:	M HAYAT-NAQVI		DATE
CHECKED:	L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED:	SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

ECSA
PROFESSIONAL ENGINEERING TECHNOLOGIST
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

engineering ACES
see the RESULT

CLIENT

EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

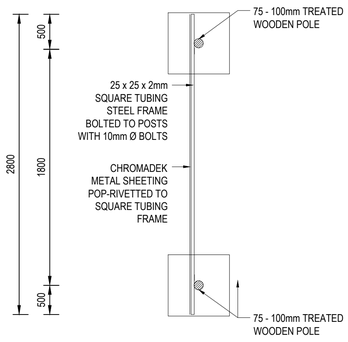
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

LAYOUT:
PROJECT NAME BOARD

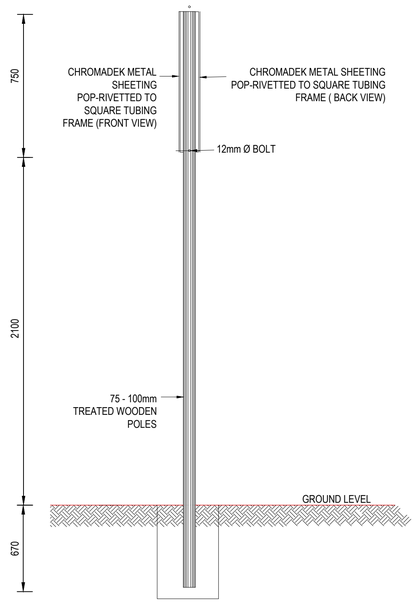
DRAWING NO.	REVISION
1096B-CIV-DRG-104	T0

FRONT ELEVATION
1:10

BACK ELEVATION
1:10



PLAN
1:10



SIDE ELEVATION
1:10

CHROMADEK METAL SHEETING: (RUST RESISTANT METAL)
SPRAY PAINTED TO THE CUSTOMER'S SPECIFICATIONS WITH AUTOMOTIVE QUALITY DUCO PAINT.

WORDING:
HIGH PERFORMANCE 5 TO 7 YEARS OUTDOOR QUALITY VINYL.

LOGO'S:
UV RESISTANT FULL COLOUR THERMAL PRINT ONTO A HIGH PERFORMANCE OUTDOOR GRADE VINYL SUBSTRATE.
OR
HIGH PERFORMANCE 5 TO 7 YEARS OUTDOOR QUALITY VINYL APPLICATED DIRECTLY TO THE PREPARED CHROMADEK (IF LOGO CONSISTS OF FLAT COLOURS).

NOTE:
1. THE POSITION OF WHERE THE BOARD IS TO BE ERECTED MUST BE APPROVED BY THE ENGINEER AND THE CLIENT.
2. THE SITE NAME BOARD IS TO BE CONSTRUCTED TO BE A PERMANENT STRUCTURE

Drawing signed for approval held at Engineering Aces offices

DRAWN:	NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED:	M HAYAT-NAQVI		DATE
CHECKED:	L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED:	SS MNTAMBO	SCALE:AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
ECSA
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

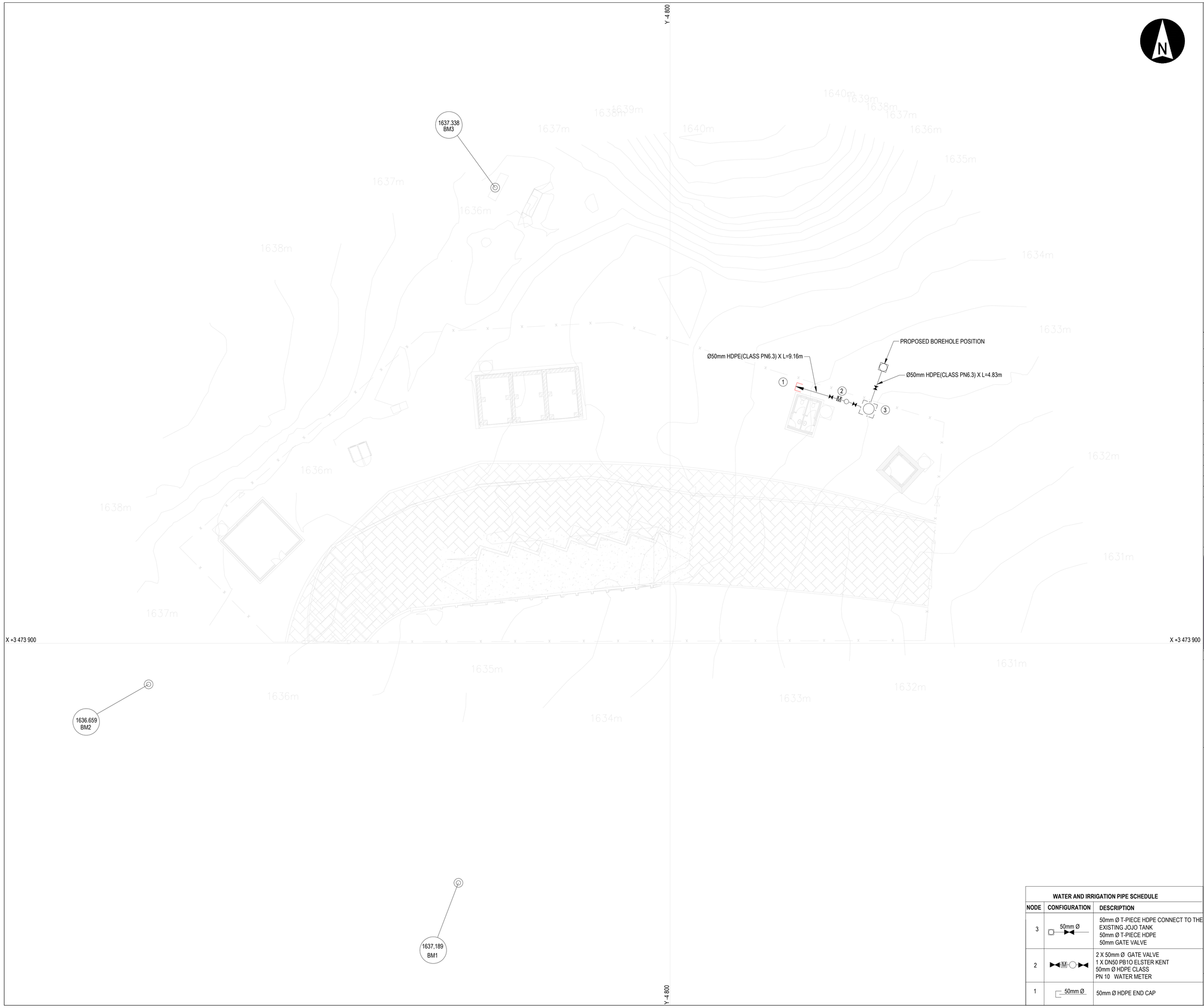
CLIENT

EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

LAYOUT: SITE NAME BOARD

DRAWING NO.	REVISION
1096B-CIV-DRG-105	T0



WATER AND IRRIGATION PIPE SCHEDULE

NODE	CONFIGURATION	DESCRIPTION
3	50mm Ø	50mm Ø T-PIECE HDPE CONNECT TO THE EXISTING JOJO TANK 50mm Ø T-PIECE HDPE 50mm GATE VALVE
2	M	2 X 50mm Ø GATE VALVE 1 X DN50 PB1O ELSTER KENT 50mm Ø HDPE CLASS PN 10 WATER METER
1	50mm Ø	50mm Ø HDPE END CAP

LEGEND:

- PROPOSED Ø 50mm WATER LINE
- GATE VALVE
- WATER METER

NOTES:

1. THE LATEST EDITION OF ANY STANDARD SPECIFICATION SHALL APPLY.
2. CONTRACTOR SHALL EXPOSE ALL EXISTING SERVICES TO BE CONNECTED TO PRIOR TO ANY WORK BEING DONE.
3. CONTRACTOR TO OBTAIN APPROVAL TO CONNECT WITH EXISTING INFRASTRUCTURE AND TO COMPLY WITH LOCAL AUTHORITY REGULATIONS
4. ALL EARTHWORKS AND SERVICES TO BE SET OUT BY A COMPETENT AND QUALIFIED SURVEYOR ACCORDING TO CO-ORDINATES ON PLANS.
5. EXCESS EXCAVATED MATERIAL SHALL BE SPOILED TO AN APPROVED SITE LOCATED BY THE CONTRACTOR.

Drawing signed for approval held at Engineering Aces offices

DRAWN:	M NENGUDZA	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED:	M HAYAT-NAQVI		DATE
CHECKED:	L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED:	SS MNTAMBO	SCALE: 1:200	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

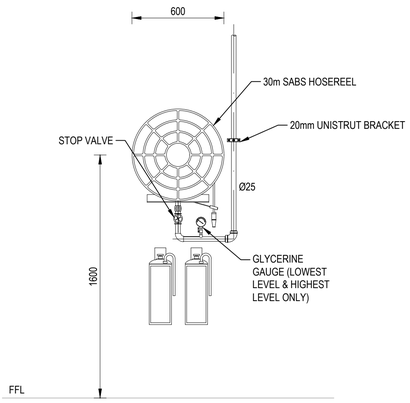
CLIENT

EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

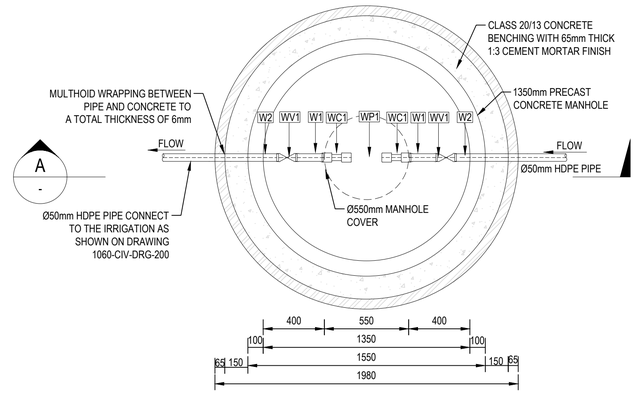
LAYOUT: WATER

DRAWING NO.	REVISION
1096B-CIV-DRG-200	T0



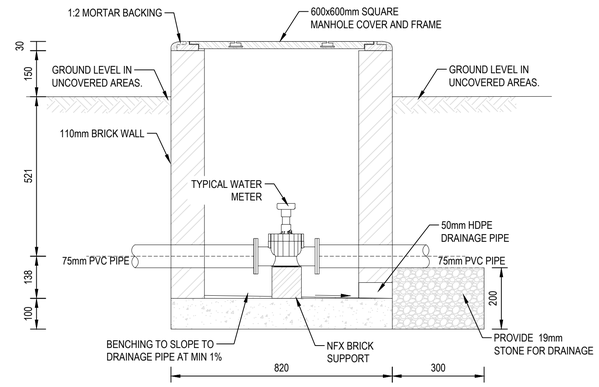
TYPICAL FIRE HOSE REEL DETAIL

SCALE : 1:20



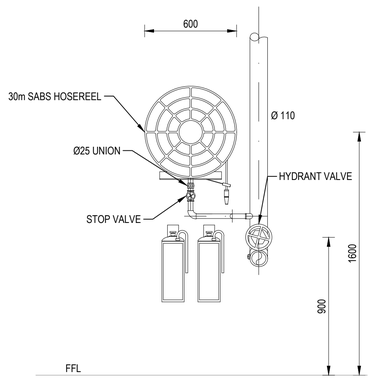
PLAN VIEW - JOJO TANK BOOSTER PUMP CHAMBER

SCALE 1 : 20



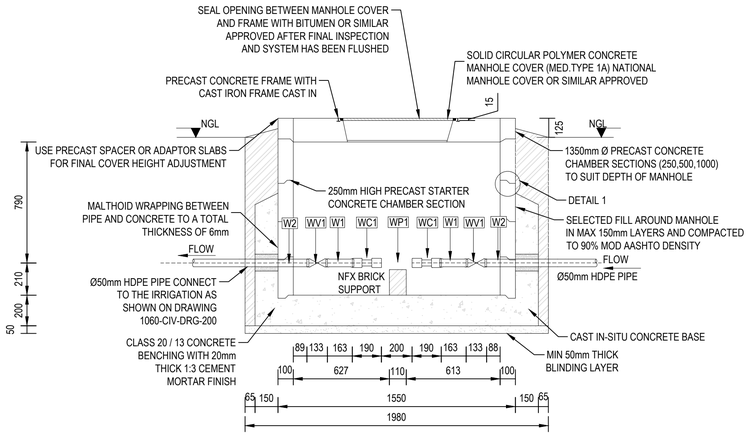
DETAIL - WATER METER CHAMBER

SCALE 1 : 10



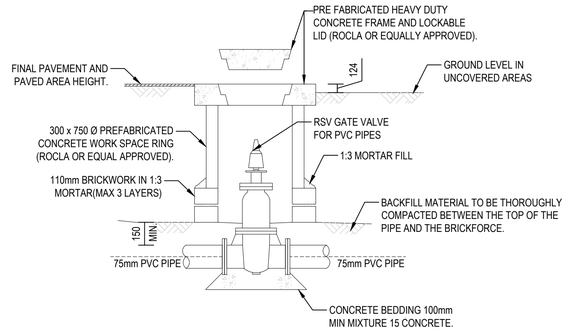
TYPICAL FIRE HOSE REEL & HYDRANT DETAIL

SCALE :1:20



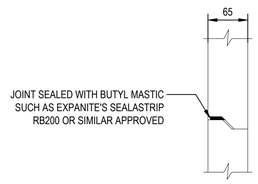
SECTION A

1:20



DETAIL - VALVE CHAMBER

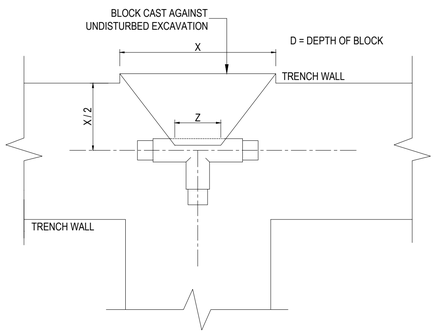
1 : 10



SHAFT / CHAMBER SEALING JOINT

DETAIL 1

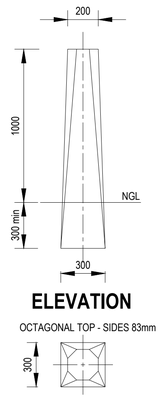
1:5



THRUST BLOCK FOR TEES AND END CAPS

NTS

TABLE 1			
PIPE DIAMETER	X (mm)	DEPTH OF BLOCK	Z (mm)
200	1300	800	350
150	1000	600	275
100	630	400	200
75	500	300	150
50	325	200	100

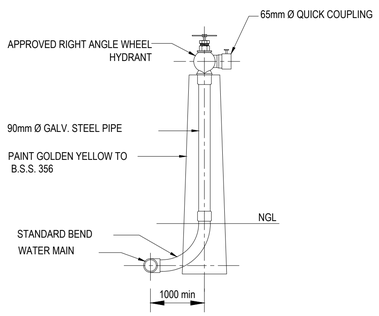


ELEVATION

PLAN

CONCRETE PEDESTAL

N.B. : PEDESTAL MUST NOT BE ERECTED DIRECTLY OVER WATER MAIN



ARRANGEMENT OF HYDRANT AND PIPING

VALVE HYDRANT FOR HYDRANT STAND POST

NTS

FITTINGS AND SPECIALS		
REF.	NO.	DESCRIPTION
W1	3	DN 50mm HDPE STRAIGHT MALE THREADED (LENGTH=165mm)
W2	2	DN 50mm HDPE STRAIGHT MALE THREADED CONNECT TO THE IRRIGATION SYSTEM
VALVES		
WV1	2	DN50mm BALL VALVE PVC THREADED
PUMP		
WP1	1	DN 50mm PROPOSED MULTISTAGE CENTRIFUGAL PRESSURE BOOSTING PUMP FOR DOMESTIC USE
COUPLING		
WC1	1	DN 50mm COUPLING COMPRESSION

NOTES:

1. TABLE 1 TO BE USED WHEN ALLOWABLE BEARING PRESSURE IS 40KPa OR MORE AND TEST PRESSURE HEAD IN PIPELINE IS 195mm OR LESS.
2. ALL DIMENSIONS IN "mm" UNLESS WHERE OTHERWISE INDICATED.
3. THE GRADE FOR CONCRETE & STRENGTH @ 28 DAYS
   ROOF SLAB CLASS 25/19
   FLOOR SLAB CLASS 25/19

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DRAWN: M NENGUDZA	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED: SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026
ECSA

CONSULTANT:

engineering ACES — see the RESULT

CLIENT

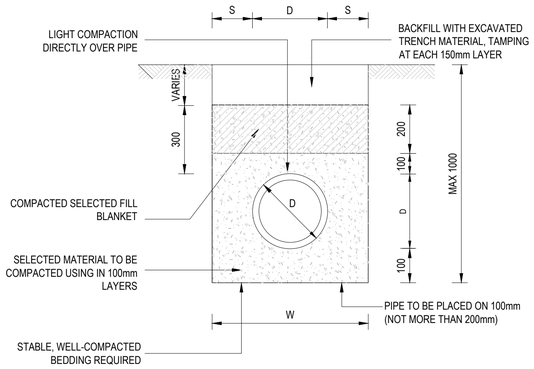
EMALAHLENI MUNICIPALITY — UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

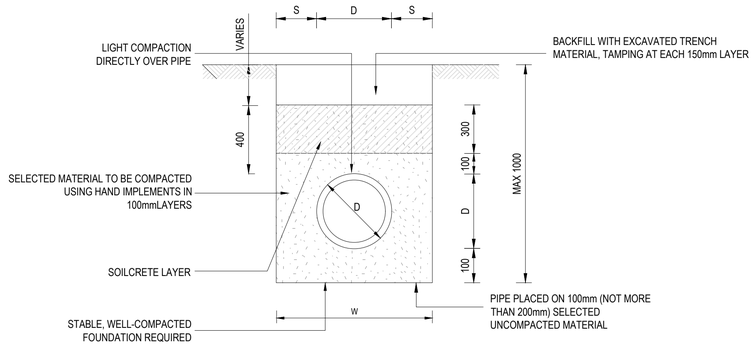
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

DETAIL:WATER

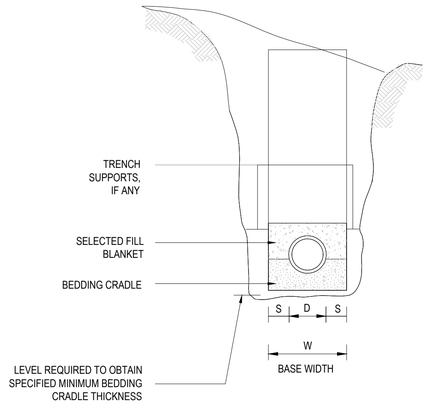
DRAWING NO.	REVISION
1096B-CIV-DRG-201	T0



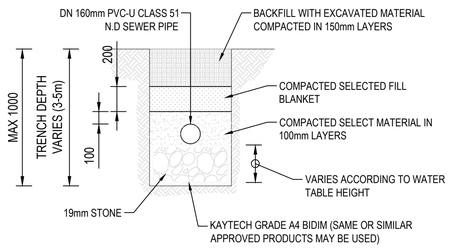
FLEXIBLE PIPES
1:100



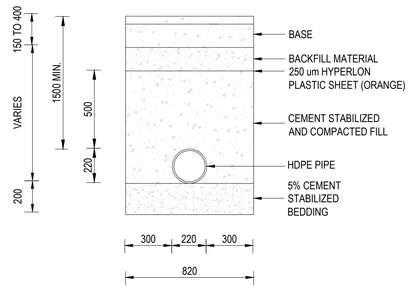
SOILCRETE LAYER
1:100



MEASUREMENT OF BEDDING
1:100



PIPE BACKFILL AND STONE BEDDING DETAILS TO ALL PIPES BEDDED WITHIN HIGH WATER TABLE
1:25



TYPICAL CROSS SECTION OF ROAD CROSSING
SCALE 1:20

NOTES :

1. SIDE ALLOWANCE FOR EXCAVATION IN ACCORDANCE WITH SANS 1200 DB
2. BACKFILL MATERIAL AS FOUND ON SITE. MATERIAL TO BE IN LAYERS OF 150mm COMPACTED TO 90% MOD AASHTO
3. ALL DIMENSIONS IN "MM" UNLESS OTHERWISE INDICATED
4. VALUES FOR S AND S1 TO BE SPECIFIED IN SANS 1200LB

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CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED: SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

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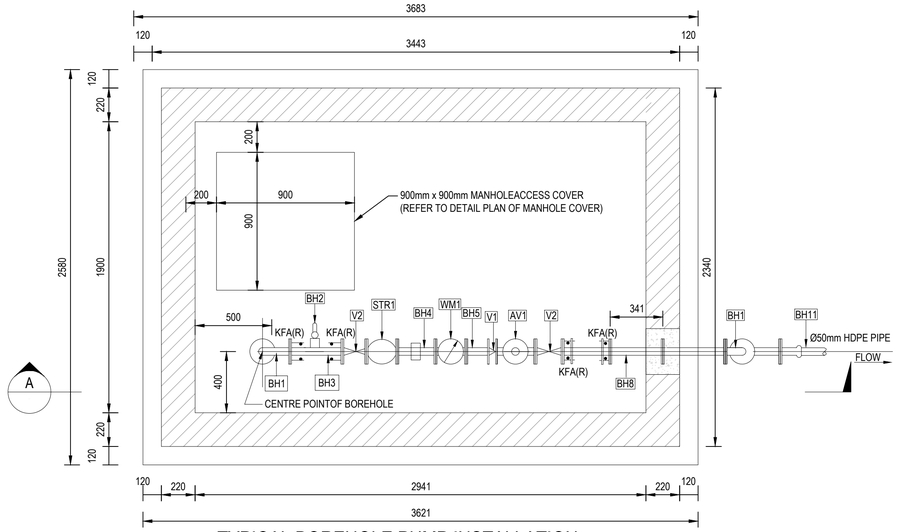
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

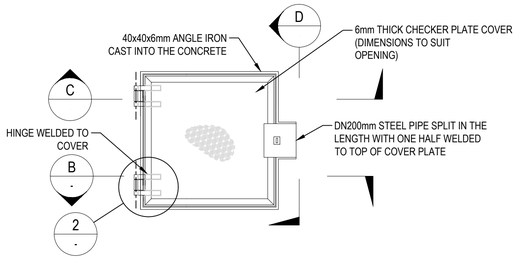
DETAILS:
PIPE BEDDING

DRAWING NO.	REVISION
1096B-CIV-DRG-202	T0



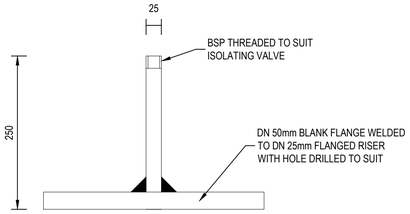
TYPICAL BOREHOLE PUMP INSTALLATION

SCALE 1:20



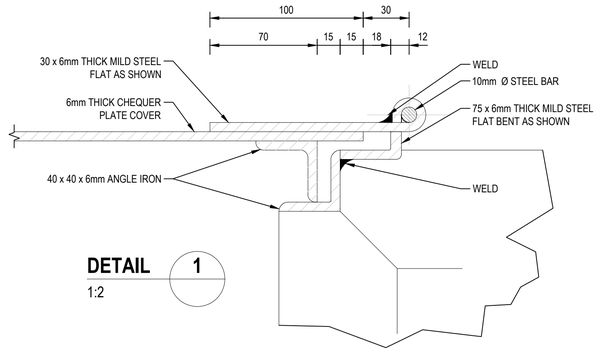
DETAIL PLAN OF MANHOLE COVER

1:20



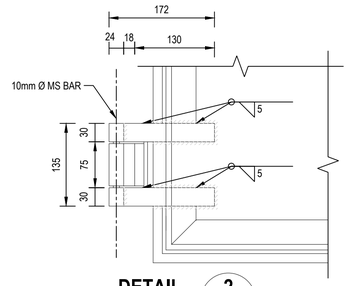
RISER DETAIL REF BH

1:5



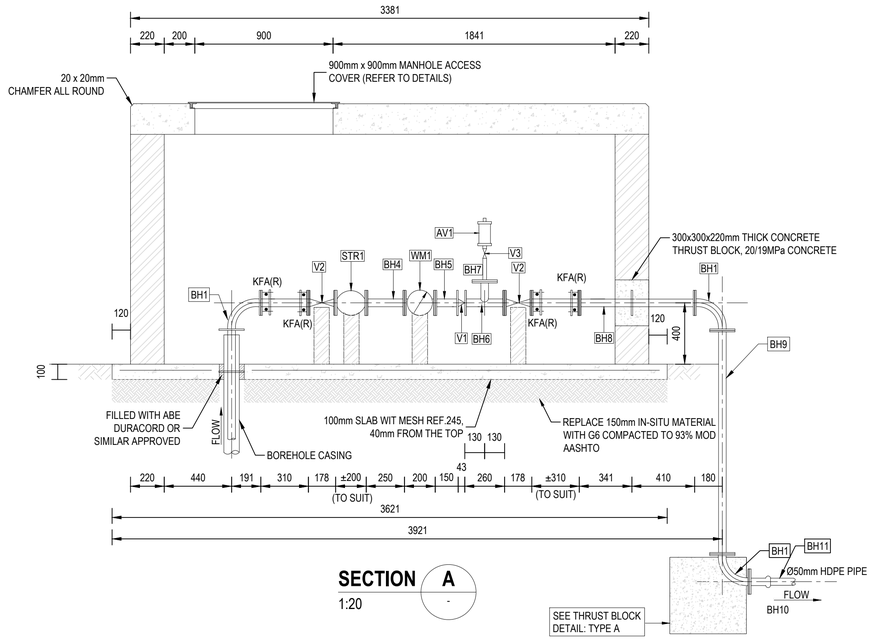
DETAIL 1

1:2



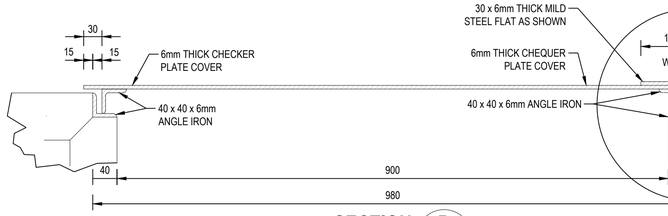
DETAIL 2

1:5



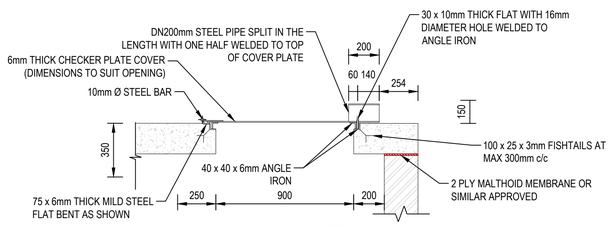
SECTION A

1:20



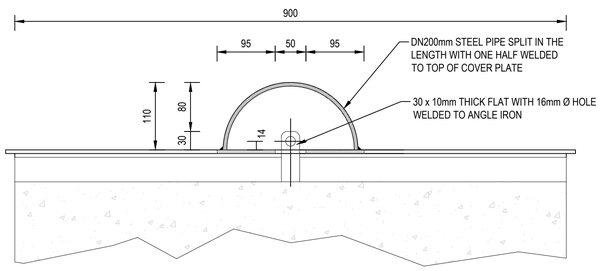
SECTION B

1:5



SECTION C

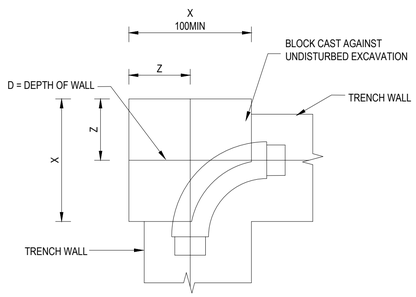
1:20



SECTION D

1:5

TABLE 1							
PIPE NOMINAL	DEPTH OF BLOCK	MAXIMUM TESTING PRESSURE					
		900 kPa		1350 kPa		1800 kPa	
(mm)	D (mm)	X (mm)	A (m²)	X (mm)	A (m²)	X (mm)	A (m²)
75	300	200	0,06	300	0,09	400	0,12
50	200	150	0,03	200	0,04	250	0,05



TYPE A: THRUST BLOCK FOR 90° BEND

NTS

FITTINGS AND SPECIALS (PN 10)		
REF.	NO.	DESCRIPTION
BH1	3	DN 50mm x 90° MILD STEEL FLANGED MEDIUM RADIUS BEND
BH2	1	DN 20mm BRASS SAMPLING TAP
BH3	1	DN 50mm MILD STEEL FLANGED STRAIGHT PIECE (LENGTH=341mm)
BH4	1	DN 50mm MILD STEEL FLANGED STRAIGHT PIECE (LENGTH=250mm)
BH5	1	DN 50mm MILD STEEL FLANGED STRAIGHT PIECE (LENGTH=150mm)
BH6	1	DN 50mm MILD STEEL FLANGED EQUAL TEE
BH7	1	DN 25mm MILD STEEL STRAIGHT, ONE END OF STRAIGHT FLANGED TO SUIT DN 50m FLANGE, OTHER END WITH MALE BSP THREADS TO SUIT DN 25mm ISOLATING VALVE
BH8	1	DN 50mm MILD STEEL FLANGED STRAIGHT PIECE (LENGTH=753mm)
BH9	1	DN 50mm MILD STEEL FLANGED STRAIGHT PIECE (LENGTH=1460mm)
BH11	1	DN 63 x 65mm PVC-u FLANGED ADAPTOR
		VALVES (PN 10)
V1	1	DN 50mm WAFER TYPE NON-RETURN VALVE
V2	1	DN 50mm RSV GATE VALVE
V3	1	DN 25mm ISOLATING VALVE (BSP FEMALE THREADED ENDS)
AV1	1	DN 25mm PN 10 BSP THREADED (FEMALE) "ARI" AIR VALVE
		WATER METER (PN 10)
WM1	1	DN 50mm WATER METER
		COUPLING (PN 10)
KFA(R)	2	DN 50mm KLAMFLEX FLANGED ADAPTOR (RESTRAINED)
		STRAINER (PN 10)
STR1	1	DN 50mm STRAINER

NOTES (for TABLE 1):

1. TABLE 1 IS VALID FOR 100 kPa EARTH BEARING PRESSURE
2. X- DIMENSION MAY BE REDUCED FOR HIGHER EARTH BEARING PRESSURES
3. Z SHALL BE THE MINIMUM OF X/2 OR W/2
4. HALF OF THE DEPTH OF THE BLOCK SHALL BE BELOW THE PIPE AXIS
5. KEEP COUPLINGS AND FLANGES 25mm CLEAR FROM CONCRETE

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DESIGNED: M HAYAT-NAQVI		DATE
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APPROVED: SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026
ECSA

CONSULTANT:

engineering ACES
see the RESULT

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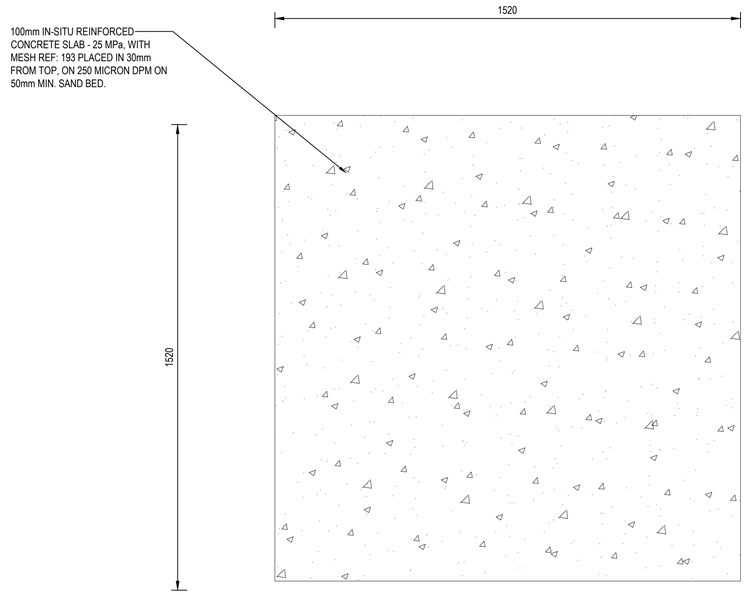
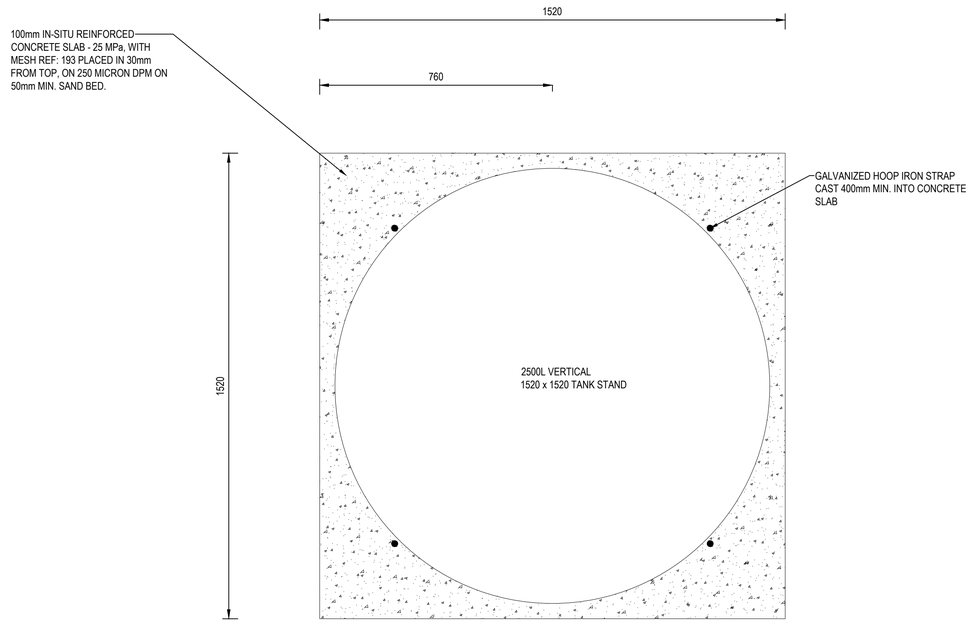
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

DETAILS:
BOREHOLE PUMP HOUSE CONNECTION

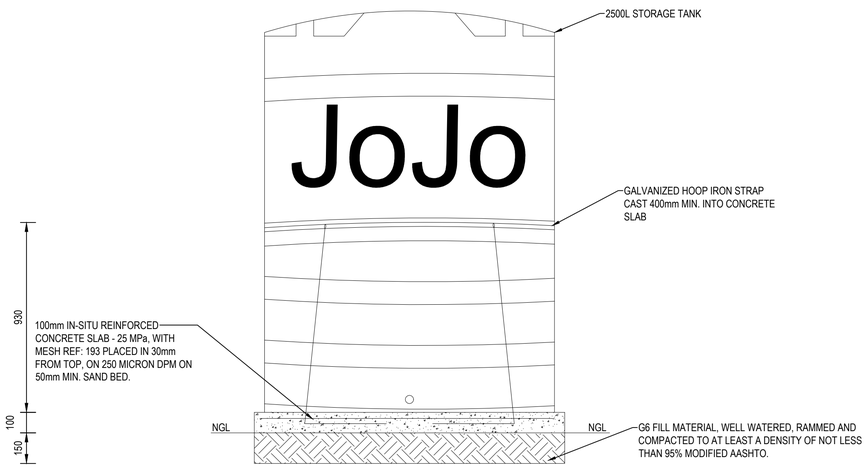
DRAWING NO.	REVISION
1096B-CIV-DRG-203	T0



FOUNDATION
1:10



SLAB LAYOUT
1:10



TYPICAL TANK - SECTION
1:15

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APPROVED: SS MNTAMBO	SCALE:AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

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SIPHAMANDLA SYDWELL MNTAMBO
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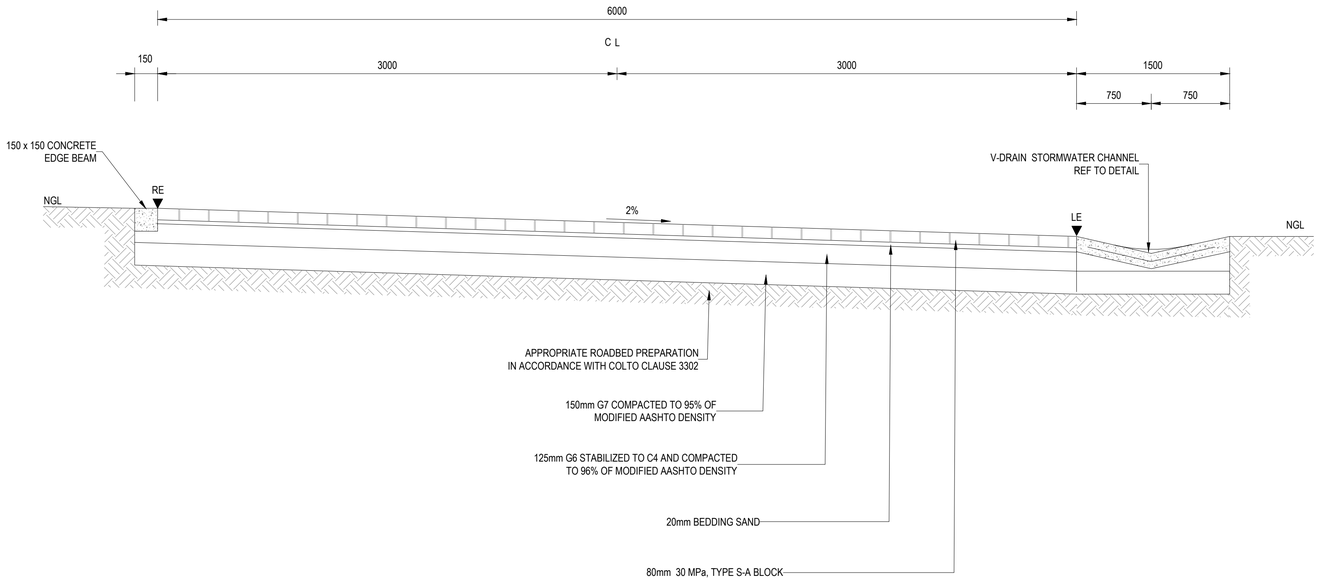
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

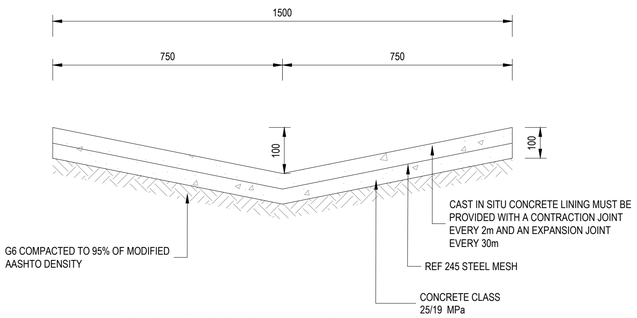
DETAIL:
TYPICAL TANK STAND

DRAWING NO.	REVISION
1096B-CIV-DRG-204	T0



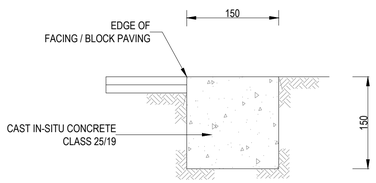
ROAD 1 PROPOSED ROAD CROSS SECTION

SCALE 1:30



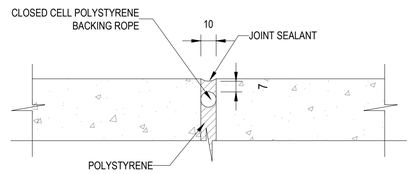
DETAIL OF STORMWATER CHANNEL

SCALE 1:8



DETAIL OF EDGE BEAM

SCALE 1:5



EXPANSION JOINT DETAIL FOR STORMWATER CHANNEL

SCALE 1:2

NOTES :

1. CONCRETE CHANNEL CASTING 2.5m LENGTHS
2. ENSURE THAT STEEL MESH IS PLACED AS SHOW

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APPROVED:	SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
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CONSULTANT:

engineering ACES
see the RESULT

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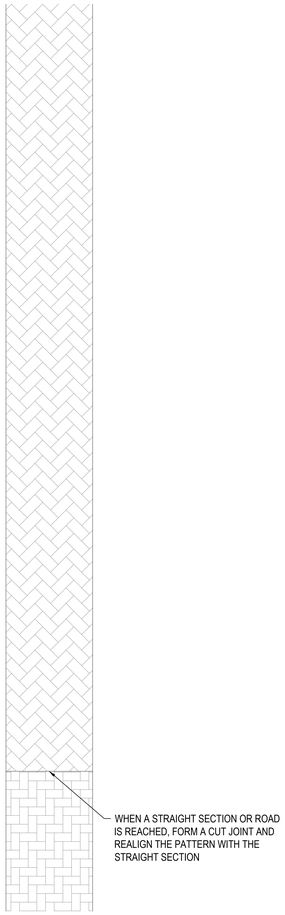
EMALAHLENI LOCAL MUNICIPALITY

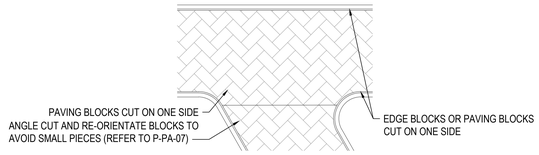
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

DETAILS:
ROAD CROSSING & STREET CROSS SECTION

DRAWING NO.	REVISION
1096B-CIV-DRG-400	T0

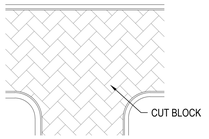


P-PA-10



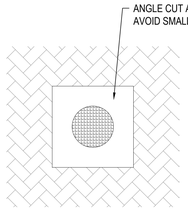
INTERSECTION LAID IN HERRINGBONE PATTERN

N.T.S



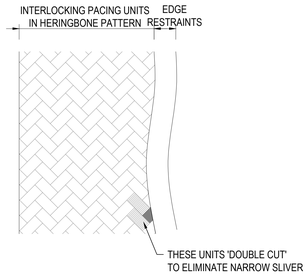
INTERSECTION LAID IN HERRINGBONE PATTERN

N.T.S



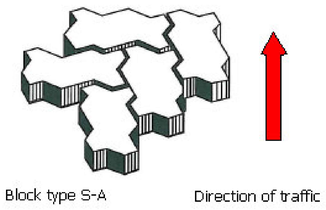
P-MH-01

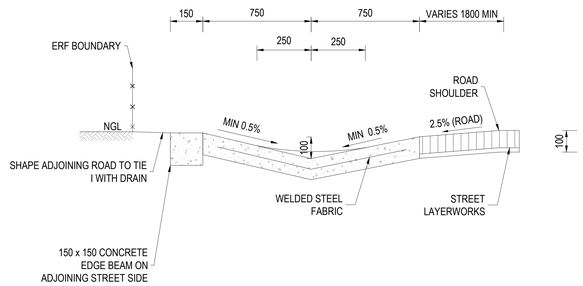
N.T.S



DETAIL SHOWING USE OF EDGE BLOCK

N.T.S





VEHICLE ACCESS

SCALE 1:13

NOTES:

1. POSITION AND TYPE TO BE SPECIFIED BY THE ENGINEER.
2. ALL CONCRETE TO BE CLASS 29/19
3. CAST IN SITU CONCRETE LINING MUST BE PROVIDED WITH A CONTRACTION JOINT EVERY 2m AND AN EXPANSION JOINT EVERY 30m

Drawing signed for approval held at Engineering Aces offices

DRAWN: NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED: SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
ECSA
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

engineering ACES
see the / RESULT

CLIENT

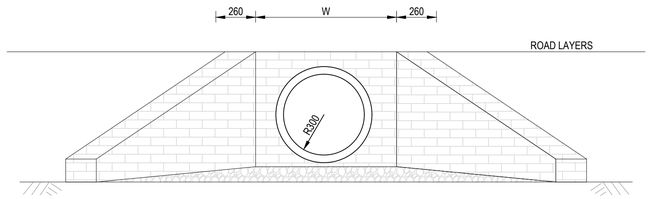
EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

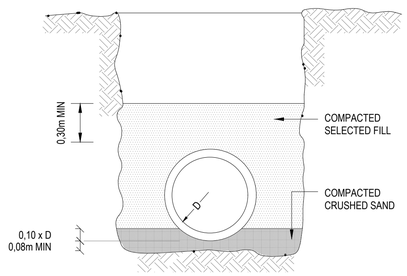
DETAILS:
DRAIN & ROAD PAVING

DRAWING NO.	REVISION
1096B-CIV-DRG-401	T0



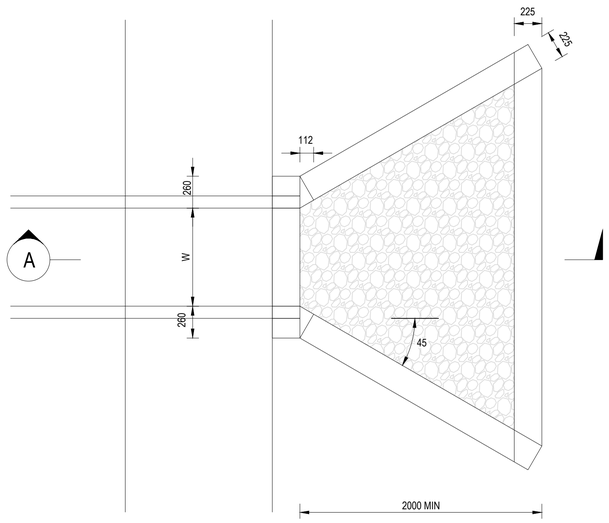
ELEVATION OF CULVERT FIELD OUTLET

SCALE 1:20



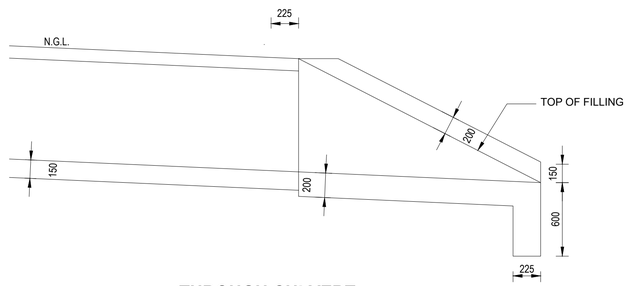
TRENCH IN SOIL

SCALE 1:25



PLAN OF FIELD OUTLET STRUCTURE

SCALE 1:25



THROUGH CULVERT SECTION A

1:25

NOTE:

PIPES TO BE BEDDED ON A CONTINUOUS CUSHION OF COMPACTED CRUSHER SAND. SELECTED FILL MATERIAL IS COMPACTED ROUND AND OVER THE PIPE IN LAYERS OF THICKNESS NOT EXCEEDING 0,15m, COMPACTED TO A HEIGHT OF AT LEAST 0,30m ABOVE THE TOP OF THE PIPE.

Drawing signed for approval held at Engineering Aces offices

DRAWN: NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED: SS MNTAMBO	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
ECSA
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

engineering ACES
see the RESULT

CLIENT

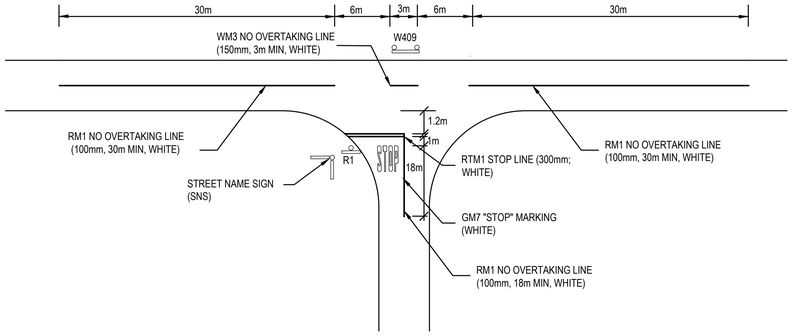
EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

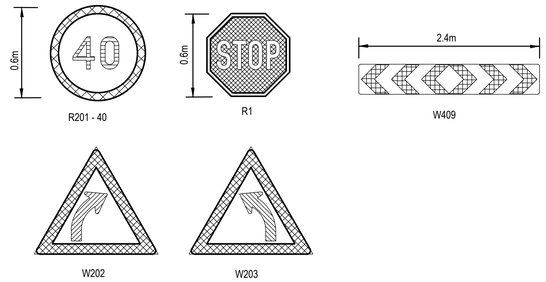
DETAILS: PIPE CULVERT

DRAWING NO.	REVISION
1096B-CIV-DRG-402	T0



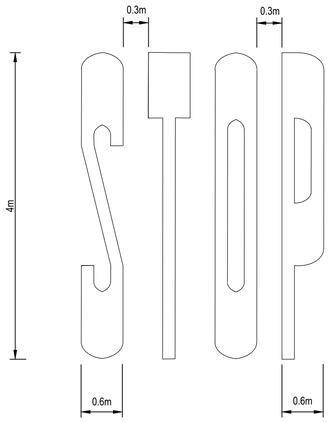
TYPICAL DETAIL OF A TYPE 2 INTERSECTION

NTS



ROAD SIGNS

NTS



DETAIL 1: TYPICAL GM7 - STOP MARKING

1:40

NOTES :

1. ALL ROAD SIGNS SHALL COMPLY WITH "THE SADC ROAD TRAFFIC SIGNS MANUAL" WITH LATEST MODIFICATIONS PROMULGATED AS ROAD TRAFFIC REGULATIONS.
2. NO ROAD SIGNS SHALL BE ORDERED WITHOUT WRITTEN CONSENT FROM THE ENGINEER.
3. THE POSITIONING AND THE SIZES OF THE GUIDANCE, WARNING AND REGULATORY SIGNS ARE DEPENDANT ON THE SPEED LIMIT AND TYPE OF ROAD. THESE SIZES AND DISTANCES SHALL BE IN ACCORDANCE WITH THE SADC RTSM (VOL 1, PART 1)
4. GM 8 KERBFACE MARKINGS TO BE APPLIED TO KERBING AT THE START OF TAPERS AND TO ALL RAISED ISLANDS IN THE ROUNDABOUT.
5. ALL SIGNS TO HAVE A MANUFACTURER GUARANTEE OF REFLECTIVITY OF THE SIGN FACE MATERIAL FOR A PERIOD OF 7 YEARS.
6. FULL DETAILS OF MANUFACTURER AND MANUFACTURING DATE TO BE ADDED TO THE BACK OF EACH ROAD TRAFFIC SIGN IN A LEGIBLE AND PERMANENT MANNER (THE USE OF STICKERS ARE NOT REGARDED AS A PERMANENT WAY OF PROVIDING THE REQUIRED INFORMATION).
7. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.

Drawing signed for approval
held at Engineering Aces offices

DRAWN: NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION		
DESIGNED: M HAYAT-NAQVI			DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376		
APPROVED: SS MNTAMBO	SCALE: AS SHOWN		

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ENGINEERING TECHNOLOGIST
SIPHAMANDLA SYDWELL MNTAMBO
10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

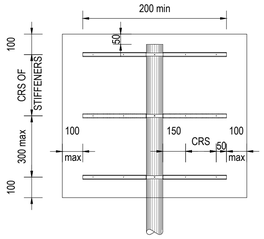
CLIENT

EMALAHLENI LOCAL MUNICIPALITY

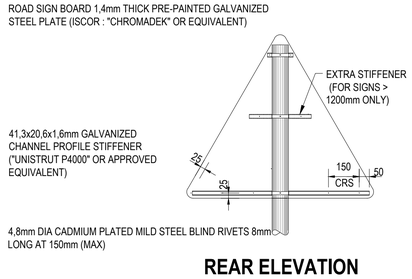
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

DETAILS: BELMOUTH & STREET SIGNS

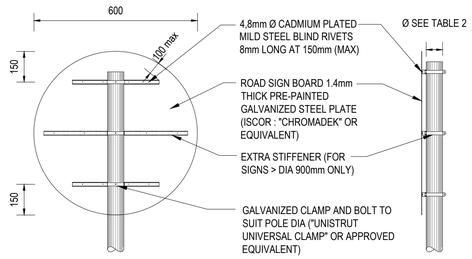
DRAWING NO.	REVISION
1096B-CIV-DRG-403	T0



REAR ELEVATION



REAR ELEVATION



REAR ELEVATION

TYPICAL SIDE ELEVATION

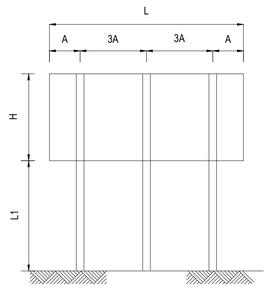
NOTES:

1. ALL ROAD SIGNS AND ROAD MARKINGS SHALL COMPLY WITH "THE SADC ROAD TRAFFIC SIGNS MANUAL" WITH LATEST MODIFICATIONS PROMULGATED AS ROAD TRAFFIC REGULATIONS.
2. THE POSITIONING AND THE SIZES OF THE GUIDANCE, WARNING AND REGULATORY SIGNS ARE DEPENDANT ON THE SPEED LIMIT AND TYPE OF ROAD. THESE SIZES AND DISTANCES SHALL BE IN ACCORDANCE WITH THE SADC RTSM (VOL 1, PART 1)
3. NO ROAD SIGNS MAY BE ORDERED WITHOUT WRITTEN CONSENT FROM THE ENGINEER.
4. DETAILS ON THIS DRAWING ARE APPLICABLE TO REGULATORY AND WARNING SIGNS REQUIRING A SINGLE SUPPORT.
5. ROAD SIGNS CONSTRUCTED FROM 1.4mm CHROMADEK.
6. ALUMINUM RIVETS (4.8mm Ø, 8mm LONG) AT 150mm MAXIMUM CENTERS MINIMUM 3 No. PER REINFORCING PROFILE.
7. RIVET HEADS ON THE SIGN FACE SHALL BE PAINTED TO SUIT SIGN FACE COLOUR.
8. ALL HORIZONTAL REINFORCING PROFILES SHALL BE SIZE 41.3 x 20.6 x 1.6mm.
9. THE ROAD SIGN FACES SHALL BE MANUFACTURED AND ERECTED IN ACCORDANCE WITH THE SPECIFICATIONS AND SHALL CONFORM TO THE NATIONAL ROAD TRAFFIC REGULATIONS, 2000.
10. SIGN FACES SHALL BE FOR TYPE 'A' OR 'B' EXPOSURE AS SPECIFIED:
    TYPE 'A': ALL CASES OTHER THAN TYPE 'B'
    TYPE 'B': SIGN FACES FOR USE IN MARINE OR CHEMICALLY POLLUTED CORROSIVE ENVIRONMENTS.
11. ALL REGULATORY AND WARNING SIGNS SHALL BE MANUFACTURED WITH CLASS III RETRO-REFLECTIVE BACKGROUNDS.
12. SIGN FACES SHALL BE FOR TYPE 'A' OR 'B' EXPOSURE AS SPECIFIED:
    TYPE 'A': ALL CASES OTHER THAN TYPE 'B'
    TYPE 'B': SIGN FACES FOR USE IN MARINE OR CHEMICALLY POLLUTED CORROSIVE ENVIRONMENTS.
13. REFERENCE MUST BE MADE TO THE RELEVANT ROAD SIGN DETAIL DRAWINGS FOR DETAILS OF THE SYMBOLS AND LEGEND FOR EACH INDIVIDUAL SIGN.
14. ALL STEEL SECTIONS SHALL BE HOT DIPPED GALVANIZED.
15. FOUNDATIONS:
    15.1 SIZE OF FOUNDATIONS IS SHOWN ON ROAD SIGN LAYOUT DRAWINGS.
    15.2 ALL FOUNDATIONS IN SAND OR SOFT CLAY TO BE APPROVED BY ENGINEER.

TABLE 1

POSITIONING OF ERECTION BRACKETS

L1	NUMBER OF SUPPORTS	H	A	A MAX
600 - 1500	1	R/W SIGNS	-	-
0 - 1500	1	≤900	L/2	L/2
		> 900	L/2	L/2
1500 - 3600	2	≤900	L/5	≤800
		> 900	L/5	≤700
3600 - 5400	3	≤900	L/8	≤800
		> 900	L/8	> 700
5400 - 7200	4	≤900	L/11	> 800
		> 900	L/11	≤700

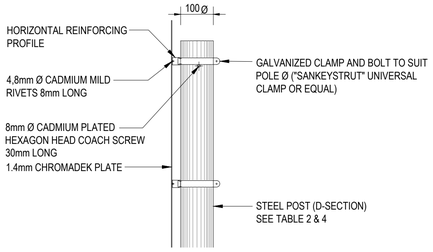


POSITIONING OF SUPPORTS AND ERECTION BRACKETS

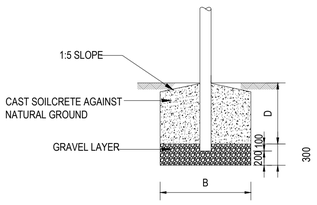
TABLE 2

FOUNDATION AND SUPPORT SIZES

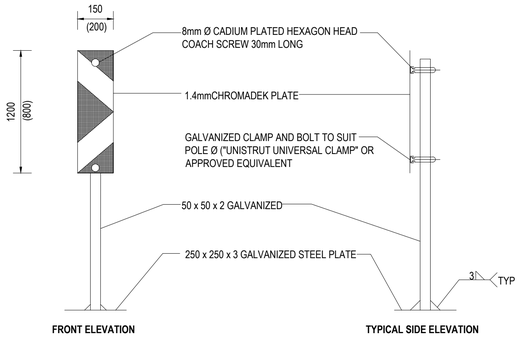
SIGN HEIGHT H (mm)	L1(mm)	FREESTANDING SUPPORTS		
		FOUNDATION		POSTS
		BASE SIZE B(mm)	BASE DEPTH D(mm)	D-SECTION DIA x t(mm)
400-900	≤2900	950	700	76 x 2
	2900-3400	1000	700	76 x 2
	3400-5600	1150	800	76 x 2
900-1200	≤2900	1000	800	76 x 2
	2900-3400	1050	800	76 x 2
	3400-5600	1300	800	76 x 2
1200-1800	≤2900	1200	800	76 x 2
	2900-3400	1300	800	100 x 4
	3400-5600	1450	900	100 x 4
1800-2400	≤2900	1350	900	100 x 4
	2900-3400	1400	900	100 x 4
	3400-5600	1550	1000	100 x 4
2400-3000	≤2900	1450	1000	100 x 4
	2900-3400	1500	1000	100 x 4
	3400-5600	1750	1000	100 x 4
3000-3600	≤2900	1600	1000	100 x 4
	2900-3400	1650	1000	100 x 4
	3400-5600	1900	1000	100 x 4
3600-4200	≤2900	1700	1000	100 x 4
	2900-3400	1750	1000	100 x 4
	3400-5600	2000	1000	100 x 4
4200-4800	≤2900	1850	1000	100 x 4
	2900-3400	1900	1000	100 x 4
	3400-5600	2300	1000	100 x 4
SINGLE POST REGULATORY AND WARNING SIGNS				
600-1500	≤3000	950	700	76 x 2



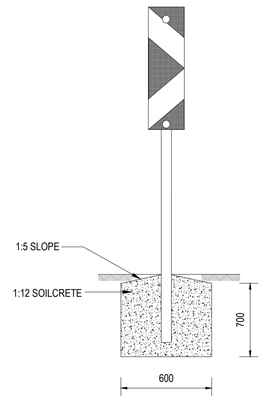
TYPICAL SIDE ELEVATION



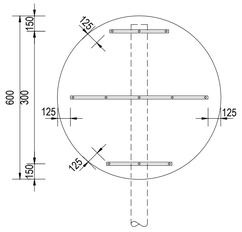
FOUNDATION DETAIL



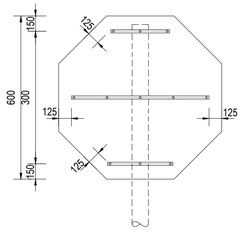
W410 DELINEATOR SIGN



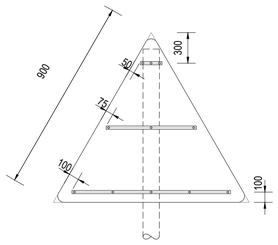
FOUNDATION DETAILS



ROAD SIGN

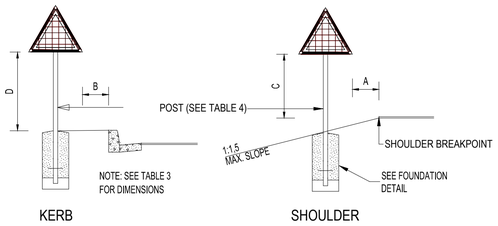


STOP SIGN



TRIANGULAR SIGN

REGULATORY AND WARNING SIGN



CLEARANCE FOR SMALL SIGNS

TABLE 3

	MAX.	PREFER-ABLE	MIN
A	2000	1500	1200
B		750	500
C	2500	2100	600
D	3000	2500	2100

TABLE 4

DETAIL OF STEEL POSTS

POST N	THICKNESS (t)	MASS
76	3,0	5,4kg/m
89	3,0	6,4kg/m
102	2,8	6,8kg/m
114	3,5	9,6kg/m
127	4,0	12,1kg/m
152	4,0	14,6kg/m

Drawing signed for approval held at Engineering Aces offices

DRAWN: NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: M HAYAT-NAQVI		DATE
CHECKED: L SEROBE	SS MNTAMBO Pr.Tech Eng - 2025302376	
APPROVED: SS MNTAMBO	SCALE: 1:30	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

ECSA — PROFESSIONAL ENGINEERING TECHNOLOGIST — SIPHAMANDLA SYDWELL MNTAMBO — 10:38 AM (Africa/Johannesburg) on 05 May 2026

CONSULTANT:

engineering ACES — see the RESULT

CLIENT

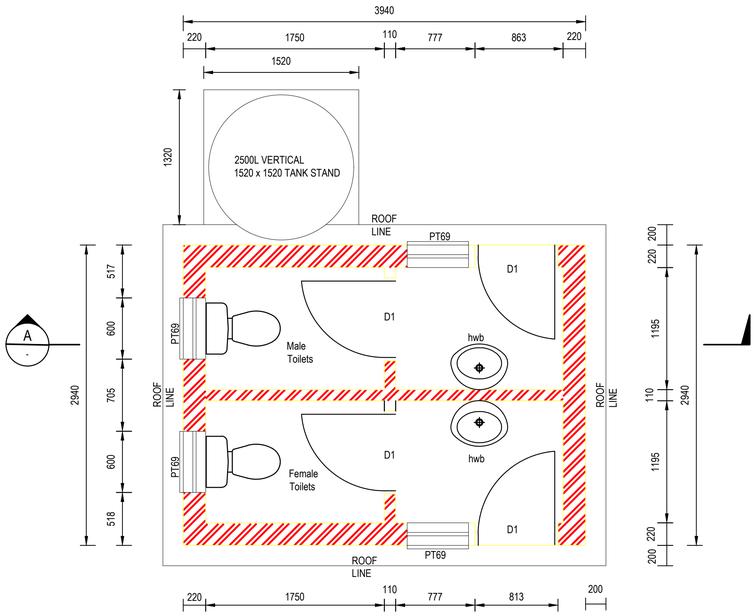
EMALAHLENI MUNICIPALITY — UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

DETAILS: STREET SIGNS

DRAWING NO.	REVISION
1096B-CIV-DRG-404	T0



PROPOSED ABLUTION FACILITY
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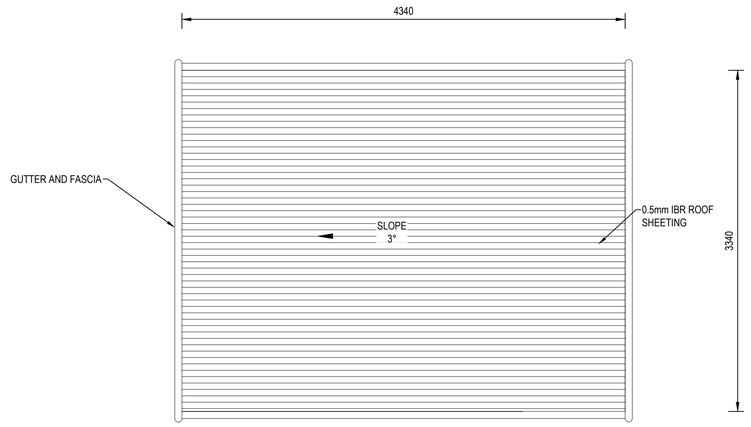

ROOF PLAN
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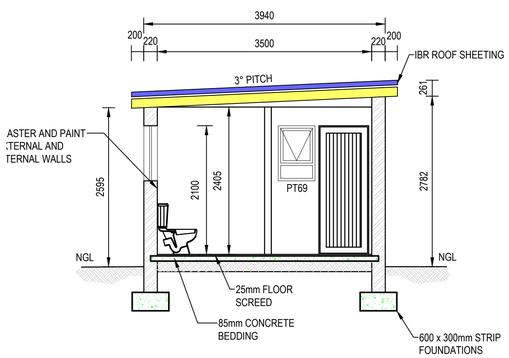

SECTION A
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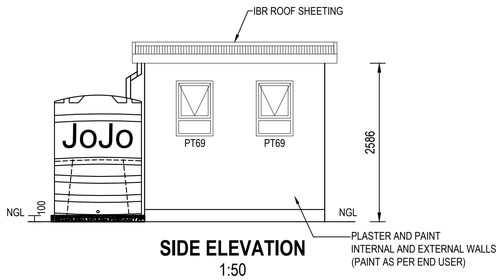

SIDE ELEVATION
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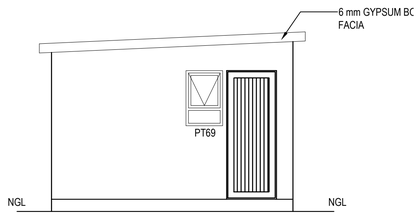

FRONT ELEVATION
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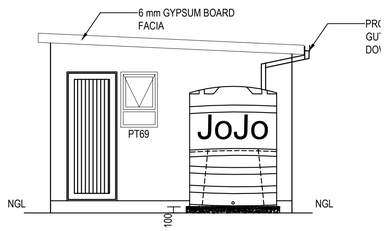

BACK ELEVATION
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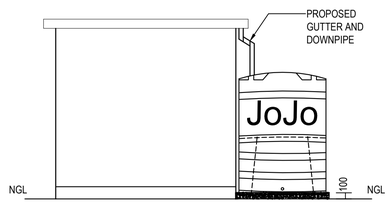


SIDE ELEVATION
1:50

NOTES:

1. FOUNDATIONS, STEEL STRUCTURE AND CONNECTION DETAILS TO PER AS PER STRUCTURAL DRAWINGS.
2. MASONRY WALLS TO BE CONSTRUCTED USING SEMI-FACE BRICKS WITH MINIMUM COMPRESSIVE STRENGTH OF 7 MPa.
3. REFER TO 1096B-ARC-DRG-106 FOR DOOR AND WINDOW DETAILS

NEW MASONRY WALLS

Drawing signed for approval held at Engineering Aces offices

DRAWN: M HAYAT-NAQVI	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: T.A MARAIS		DATE
CHECKED: T.A MARAIS	TA MARAIS Pr.Arch.D- 21015	
APPROVED: T.A MARAIS	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ARCHITECTURAL DRAUGHTSPERSON
South African Council for the Architectural Profession
TERENCE ALBAN MARAIS
15:09 PM (Africa/Johannesburg) on 08 Apr 2026

CONSULTANT:

engineering ACES
see the RESULT

CLIENT

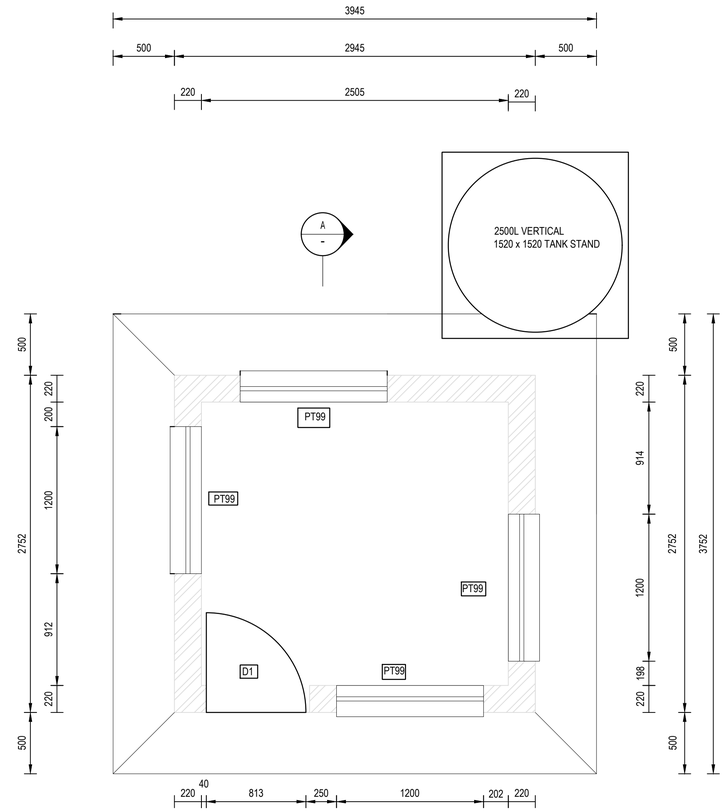
EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

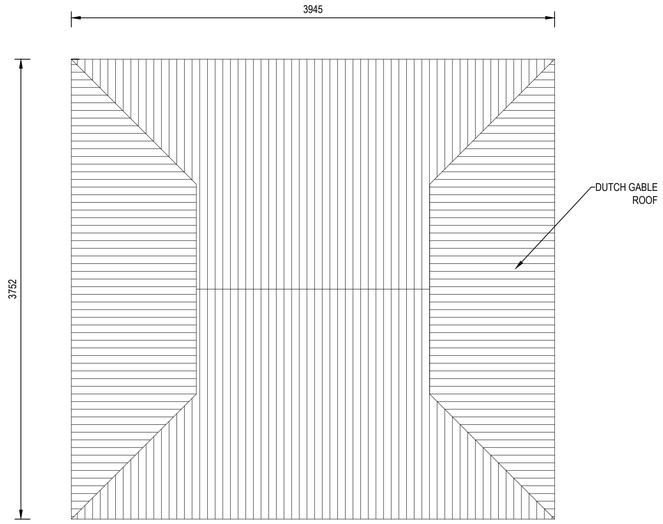
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

LAYOUT:
ABLUTION FACILITY

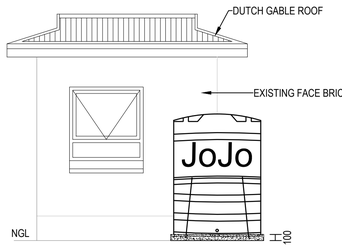
DRAWING NO.	REVISION
1096B-ARC-DRG-101	T0



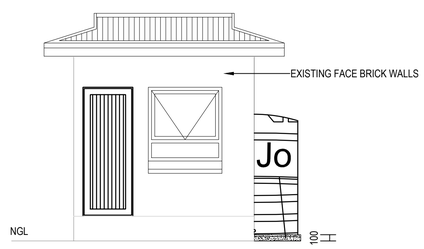
EXISTING GUARD HOUSE PLAN
1:25



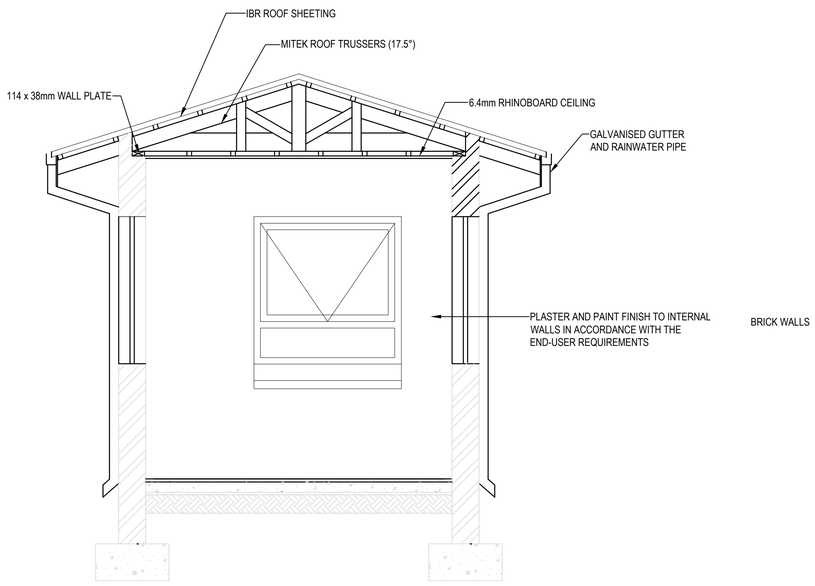
ROOF PLAN
1:25



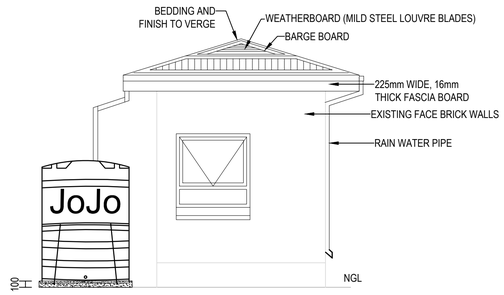
NORTH ELEVATION
1:50



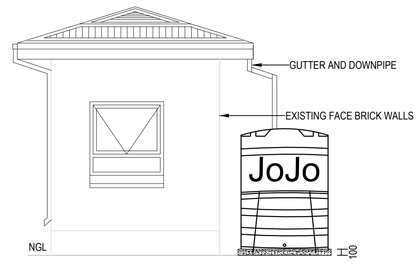
SOUTH ELEVATION
1:50



SECTION B
1:25



WEST ELEVATION
1:50



EAST ELEVATION
1:50

Drawing signed for approval
held at Engineering Aces offices

DRAWN: K SETLHABI	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: T.A MARAIS		DATE
CHECKED: T.A MARAIS	TA MARAIS Pr.Arch.D- 21015	
APPROVED: T.A MARAIS	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ARCHITECTURAL DRAUGHTSPERSON
South African Council for the Architectural Profession
TERENCE ALBAN MARAIS
15:09 PM (Africa/Johannesburg) on 08 Apr 2026

CONSULTANT:

engineering ACES
see the RESULT

CLIENT

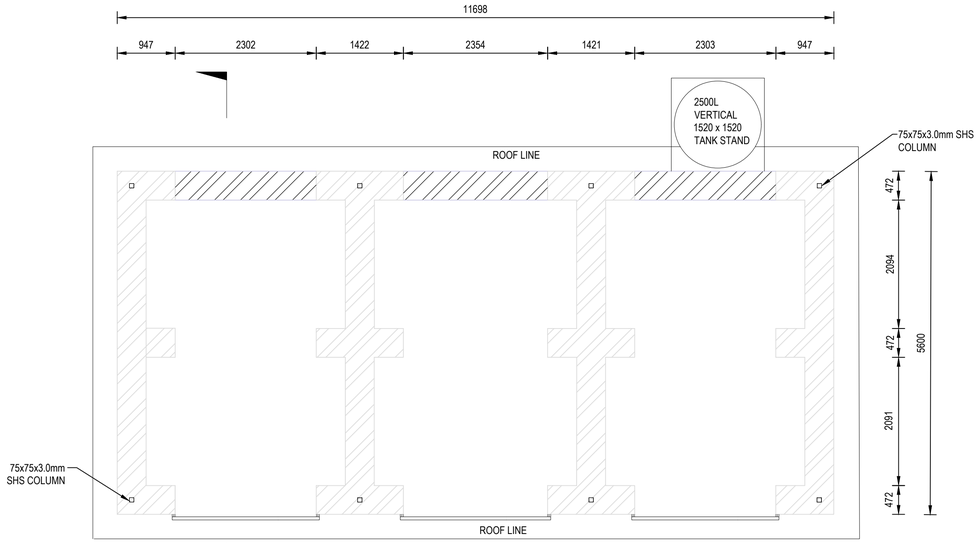
EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

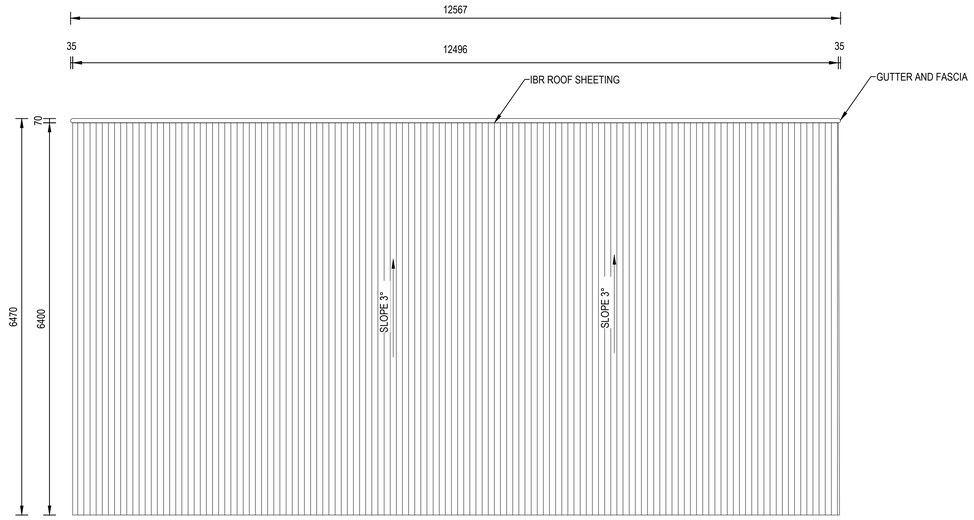
LAYOUT:
GUARD HOUSE

DRAWING NO.	REVISION
1096B-ARC-DRG-102	T0

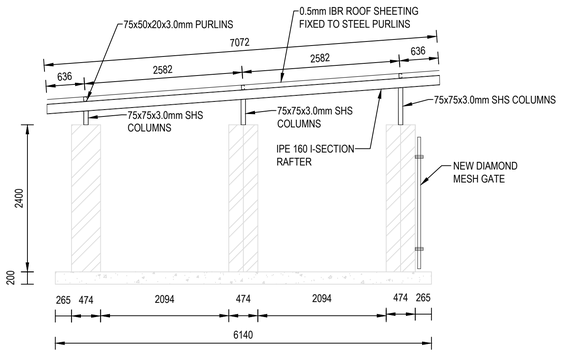


A
-

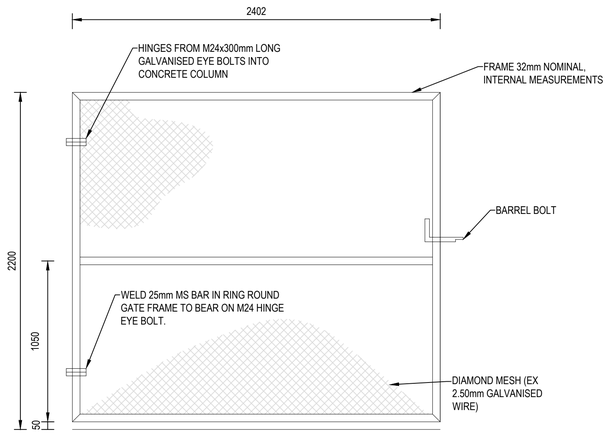
EXISTING RECYCLABLE FLOOR PLAN
1:50



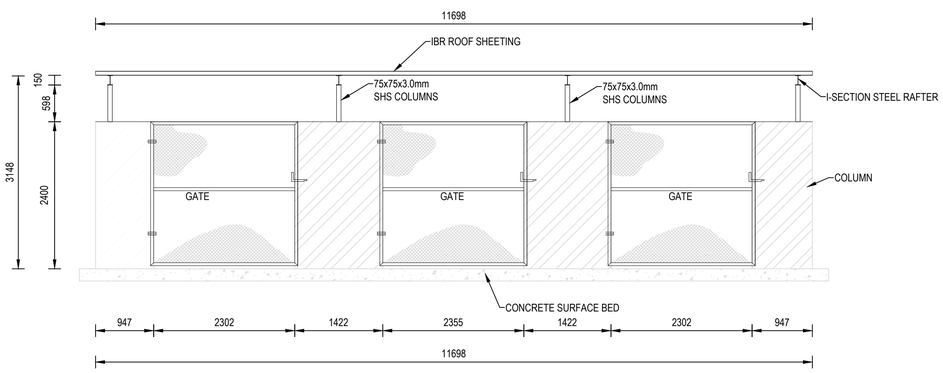
ROOF PLAN
1:50



SECTION A
1:50



GATE DETAIL TO RECYCLABLE ENCLOSURE
1:20



FRONT ELEVATION
1:50

NOTES:

1. FOUNDATIONS, STEEL STRUCTURE AND CONNECTION DETAILS TO PER AS PER STRUCTURAL DRAWINGS.
2. MASONRY WALLS TO BE CONSTRUCTED USING SEMI-FACE BRICKS WITH MINIMUM COMPRESSIVE STRENGTH OF 7 MPa.

NEW MASONRY WALLS

EXISTING MASONRY WALLS

Drawing signed for approval held at Engineering Aces offices

DRAWN: K SETLHABI	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: T.A MARAIS		DATE
CHECKED: T.A MARAIS	TA MARAIS Pr.Arch.D- 21015	
APPROVED: T.A MARAIS	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ARCHITECTURAL DRAUGHTSPERSON
South African Council for the Architectural Profession
TERENCE ALBAN MARAIS
15:09 PM (Africa/Johannesburg) on 08 Apr 2026

CONSULTANT:

engineering ACES
see the RESULT

CLIENT

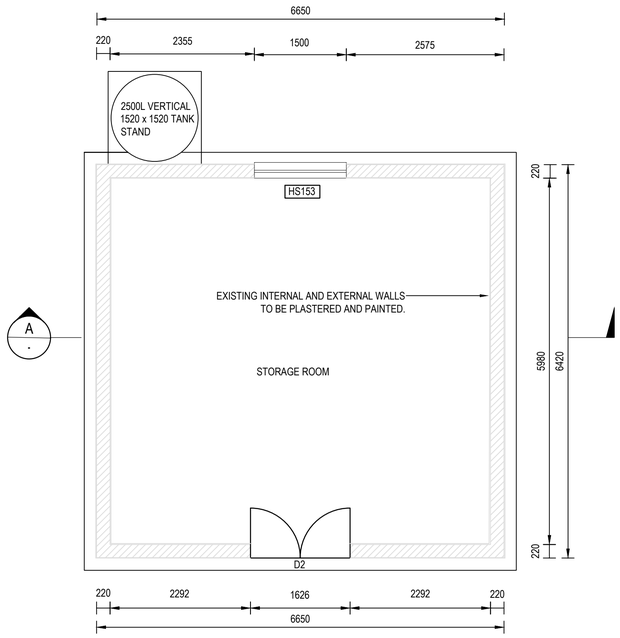
EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

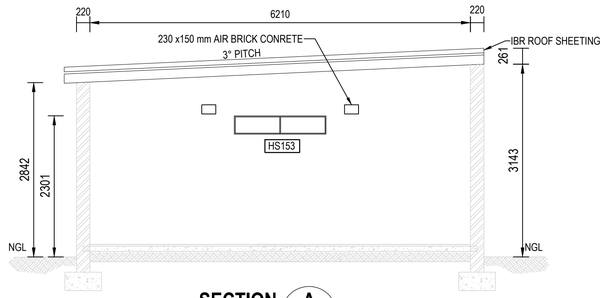
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

LAYOUT:
SORTING/STORAGE FACILITY

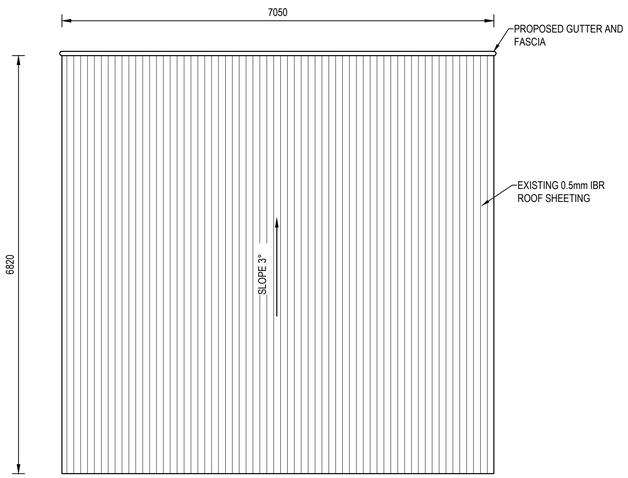
DRAWING NO.	REVISION
1096B-ARC-DRG-103	T0



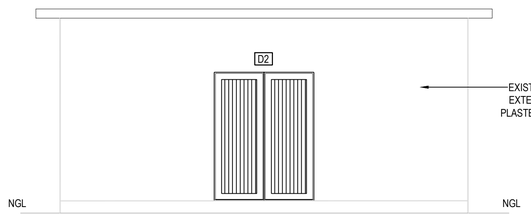
STORAGE ROOM
1:50



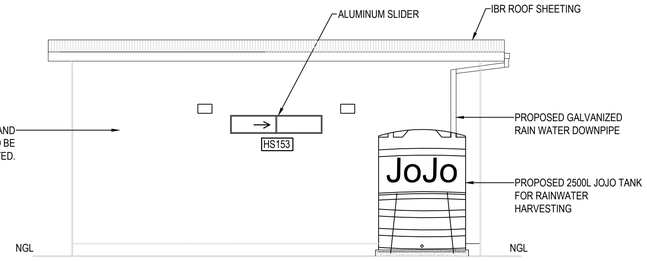
SECTION A
1:50



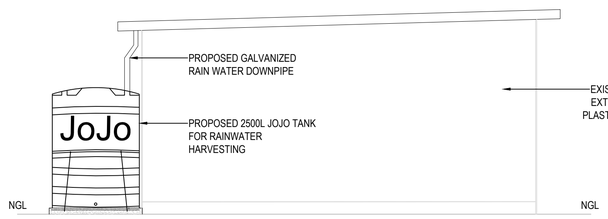
ROOF PLAN
1:50



SOUTH ELEVATION
1:50



NORTH ELEVATION
1:50



WEST ELEVATION
1:50

EAST ELEVATION
1:50

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APPROVED: T.A MARAIS	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ARCHITECTURAL DRAUGHTSPERSON
South African Council for the Architectural Profession
TERENCE ALBAN MARAIS
15:09 PM (Africa/Johannesburg) on 08 Apr 2026

CONSULTANT:

engineering ACES
see the RESULT

CLIENT

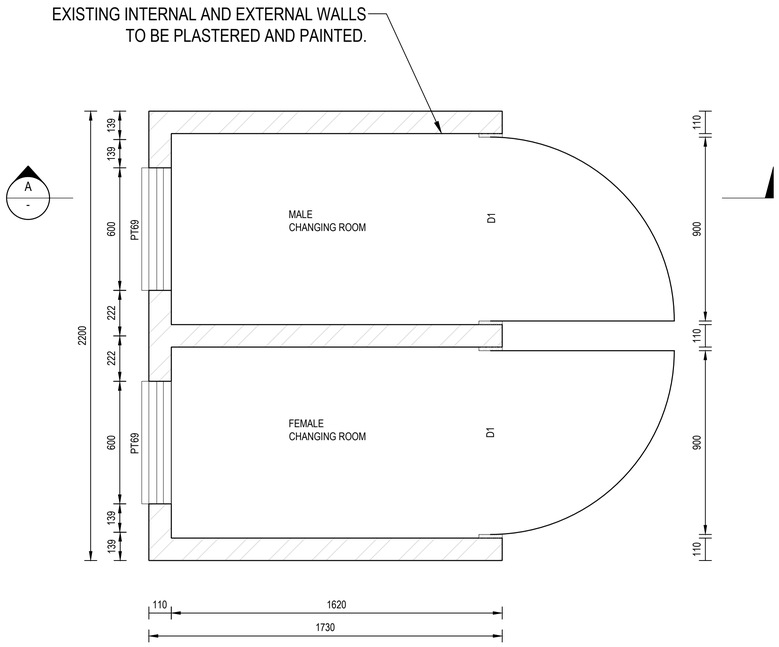
EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

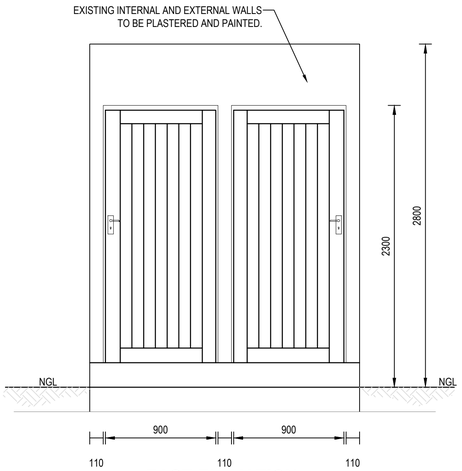
REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

LAYOUT:
STORAGE ROOM

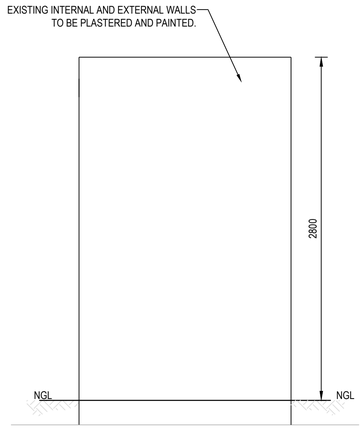
DRAWING NO.	REVISION
1096B-ARC-DRG-104	T0



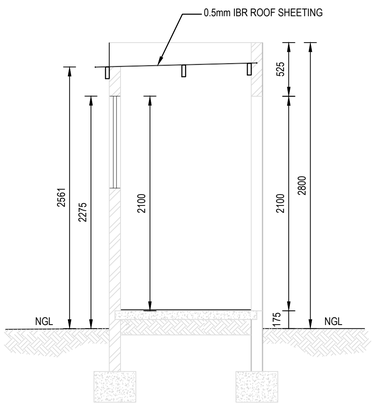
FLOOR PLAN
1:15



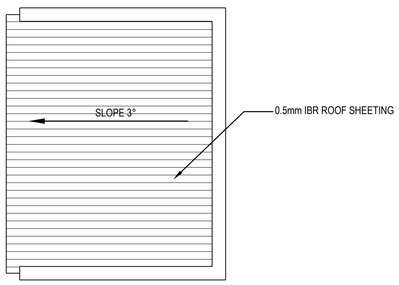
EAST ELEVATION
1:25



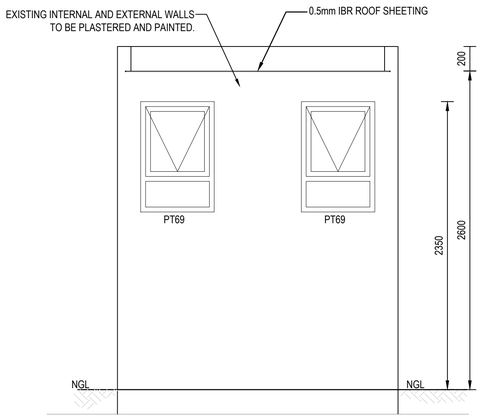
NORTH ELEVATION
1:25



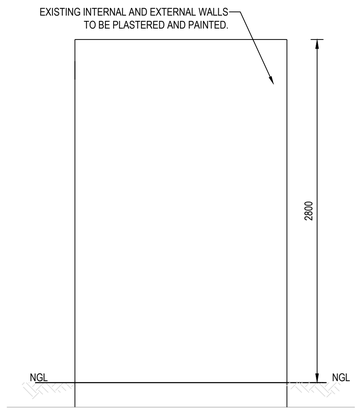
SECTION A
1:30



ROOF PLAN
1:25



WEST ELEVATION
1:25



SOUTH ELEVATION
1:25

Drawing signed for approval
held at Engineering Aces offices

DRAWN: K SETLHABI	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: T.A MARAIS		DATE
CHECKED: T.A MARAIS	TA MARAIS Pr.Arch.D- 21015	
APPROVED: T.A MARAIS	SCALE: AS SHOWN	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ARCHITECTURAL DRAUGHTSPERSON
TERENCE ALBAN MARAIS
South African Council for the Architectural Profession
15:09 PM (Africa/Johannesburg) on 08 Apr 2026

CONSULTANT:

engineering ACES
see the RESULT

CLIENT

EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

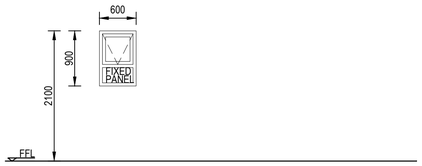
EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

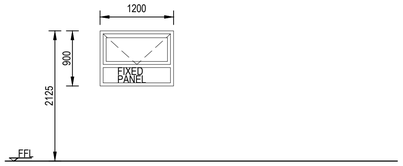
LAYOUT:
CHANGING ROOM

DRAWING NO.	REVISION
1096B-ARC-DRG-105	T0

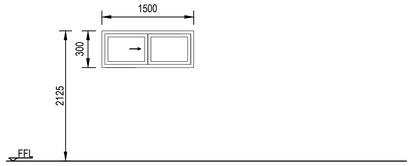
WINDOW SCHEDULE



WINDOW NO.'S	6
WINDOW NAME	PT 69
WINDOW TYPE	FIXED BOTTOM GLASS PANEL WITH TOP HUNG OPENING OUT
FRAME TYPE	ALUMINIUM SHOPFRONT CLIP44 26B OR EQUAL APPROVED
GLAZING	4mm FLOATGLASS OR 6mm SAFETY GLASS AS PER NATIONAL BUILDING REGULATIONS
IRONMONGERY	HANDLE : ALUMINIUM HANDLE TO MATCH HINGES : TO MANUFACTURER'S SPEC'S
FINISH	POWDER COATED - ANP 3056
OPENING IN BRICK WALL	W & H = AS PER DIM'S ABOVE
LOCATION	CHANGING ROOM AND ABLUTION FACILITY

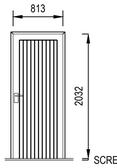


WINDOW NO.'S	4
WINDOW NAME	PT 99
WINDOW TYPE	FIXED BOTTOM GLASS PANEL WITH TOP HUNG OPENING OUT
FRAME TYPE	ALUMINIUM SHOPFRONT CLIP44 26B OR EQUAL APPROVED
GLAZING	4mm FLOATGLASS OR 6mm SAFETY GLASS AS PER NATIONAL BUILDING REGULATIONS
IRONMONGERY	HANDLE : ALUMINIUM HANDLE TO MATCH HINGES : TO MANUFACTURER'S SPEC'S
FINISH	POWDER COATED - ANP 3056
OPENING IN BRICK WALL	W & H = AS PER DIM'S ABOVE
LOCATION	GUARD HOUSE



WINDOW NO.'S	1
WINDOW NAME	HS153
WINDOW TYPE	HORIZONTAL SLIDING TO RIGHT
FRAME TYPE	ALUMINIUM SHOPFRONT CLIP44 26B OR EQUAL APPROVED
GLAZING	4mm FLOATGLASS OR 6mm SAFETY GLASS AS PER NATIONAL BUILDING REGULATIONS
IRONMONGERY	HANDLE : ALUMINIUM HANDLE TO MATCH HINGES : TO MANUFACTURER'S SPEC'S
FINISH	POWDER COATED - ANP 3056
OPENING IN BRICK WALL	W & H = AS PER DIM'S ABOVE
LOCATION	STORAGE ROOM

DOOR SCHEDULE

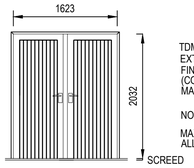


TDM TECHFORM HEAVY DUTY CLASS 1
EXTERIOR HARDWOOD, FINGER JOINTED
STANDARD DOOR WITH WEATHERBOARD
(CODE : 82112). SIZE TO SUIT FRAME x 42mm THICK
MANUFACTERED IN ACCORDANCE WITH SANS 545 : 2009.

NOTE :

MAX. 4mm GAP ALL ROUND BETWEEN DOOR AND FRAME.
ALL MILD STEEL SECTIONS TO BE HOT DIPPED GALVANISED

SOLID HARDWOOD DOOR (D1)



TDM TECHFORM HEAVY DUTY CLASS 1
EXTERIOR HARDWOOD DOUBLE LEAF DOOR,
FINGER JOINTED STANDARD DOOR WITH WEATHERBOARD
(CODE : 82112). SIZE TO SUIT FRAME x 42mm THICK
MANUFACTERED IN ACCORDANCE WITH SANS 545 : 2009.

NOTE :

MAX. 4mm GAP ALL ROUND BETWEEN DOOR AND FRAME.
ALL MILD STEEL SECTIONS TO BE HOT DIPPED GALVANISED

SOLID DOUBLE LEAF HARDWOOD DOOR (D2)

Drawing signed for approval
held at Engineering Aces offices

DRAWN: NP KHUMALO	ISSUED FOR TENDER NOT FOR CONSTRUCTION	
DESIGNED: T.A MARAIS		DATE
CHECKED: T.A MARAIS	TA MARAIS Pr.Arch.D- 21015	
APPROVED: T.A MARAIS	SCALE:	

AMENDMENTS

REV	DATE	DESCRIPTION	APPROVED
T0	05/05/2026	TENDER DRAWINGS	SS MNTAMBO

APPROVED:

PROFESSIONAL ARCHITECTURAL DRAUGHTSPERSON
TERENCE ALBAN MARAIS
15:09 PM (Africa/Johannesburg) on 08 Apr 2026

CONSULTANT:

engineering ACES
see the RESULT

CLIENT

EMALAHLENI MUNICIPALITY
UNITY IN DEVELOPMENT

EMALAHLENI LOCAL MUNICIPALITY

REFURBISHMENT OF THE EXISTING TRANSFER STATION IN DORDRECHT

DETAILS:
WINDOW & DOOR SCHEDULE

DRAWING NO.	REVISION
1096B-ARC-DRG-106	T0

CLIENT: EMALAHLENI LOCAL MUNCIPALITY

CONTRACT NO: DFFE-B008 (26/27)

CONTRACT TITLE: EC-COMPLETION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO EXISTING TRANSFER STATIONS IN THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS)

BILL OF QUANTITIES

NB: TENDERERS MUST COMPLETE THE SCHEDULE OF QUANTITIES IN BLACK INK

SECTION 1200 A

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SANS 1200 A 8,3	**110.00**	**GENERAL**				
	110.01	**SCHEDULED FIXED-CHARGE AND VALUE-RELATED ITEMS**				
SDA 8.2.1		01. Fixed preliminary and general charges	Sum	1	Sum	R 100 000,00
SDA 8.2.2		02. Value related preliminary and general charges	Sum	1	Sum	R 115 000,00
	110.02	**Scheduled time-related items:**				
SDA 8.2.2		.01 Time-related preliminary and general charges	-	-	Sum	R 84 000,00
8.3.2		**Establishment of facilities on site**				
8.3.2.1		**Facilities for Engineer**				
		(a) Furnished office with drawing stand and table	Sum	1		
		(b) Printer, 16gb ram computer, and cellphone	Sum	1		
8.3.2.2		**Facilities for Contractor**				
		(a) Office and storage sheds	Sum	1		
		(b) Ablution and latrines facilities	Sum	1		
		(c) Tools and Equipment	Sum	1		
		(d) Water supplies, electricity and communication	Sum	1		
		(e) Access to site	Sum	1		
8.3.3		**Other time related obligationsand charges**	Sum	1		
		(a) Provision of seating, refreshments and consumables for meetings	Sum	1		
1200 A	Carried forward					

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		Brought forward				R -
PSA 8,5	**110.03**	**Sums stated provisionally by the Engineer:**				
PSA 8.5.1		.03 Works executed by specialised Sub-Contractors:				
		.01 Drilling, Testing and Equipping of boreholes for Indwe and Dordrecht trasfer station (include all relevant pipe fittings, casing, etc.)	-	Prov	Sum	R 330 000,00
SDA 8.6	**110.04**	**Prime Cost Sums:**				
		.01 Additional tests required by the Engineer	-	-	PC Sum	R 25 000,00
		.02 Charge required by Contractor on subitem 110.04.01 above	%	R25 000,00		R -
		.03 Housing for Engineer's representative	-	-	PC Sum	R 68 000,00
		.04 Charge required by Contractor on subitem 110.04.03 above	%	R68 000,00		R -
		.05 Transportation for the Engineer	-	-	PC Sum	R 60 000,00
		.06 Charge required by Contractor on subitem 110.04.05 above	%	R60 000,00		R -
SDA 8.7	**110.05**	**Daywork (Provisional)**				
		.01 **Labour**				
		.01 Skilled labour	h	10		
		.02 Semi-skilled labour	h	10		
		.03 Unskilled labour	h	10		
		.02 **Materials**				
		.01 Allow for all-inclusive materials actually used	-	-	PC Sum	R 5 000,00
		.02 Charge required by Contractor on subitem 110.05.02.01 above	%	R5 000,00		
1200 A	Carried forward					

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		Brought forward				R -
SDA 8.7		.03 **Contractor's own Plant**				
		.01 Allow for all-inclusive cost of using Contractor's own plant on Site	-	-	PC Sum	R 5 000,00
		.02 Charge required by Contractor on subitem 110.05.03.01 above	%	R5 000,00		
		.04 **Plant hired by the Contractor**				
		.01 Allow for net cost of hired plant	-	-	PC Sum	R 10 000,00
		.02 Charge required by Contractor on subitem 110.05.04.01 above	%	R10 000,00		
SDA 8.9	**110.07**	**Compliance with OHS Act and Construction Regulations:**	Sum	1	Sum	R 70 000,00
SDA 8,9	**110.08**	**Local Subcontrators Compliance with OHS Act and Construction Regulations:**	Sum	1	Sum	R 50 000,00
HIV/AIDS Spec	**110.09**	**Compliance with the HIV/ AIDS and COVID 19 awareness specification as per OHS specification and construction regulation**	Sum	1	Sum	R 30 000,00
SDA 8.10	**110.10**	**Community Liaison Officer**				
		.01 Community Liaison Officer Cost (A CLO allocated on each site)	months	6	R12 000,00	R 72 000,00
		.02 Project Steering Committee costs (R350 per member per sitting)	-	-	PC Sum	R 10 500,00
		.03 Overheads, charges and profit on subitem 110.07.01 and 110.07.02 above	%	R82 500,00		R -
SDA 8.11	**110.12**	**Training**				
		.01 Allow for cost of training	-	-	PC Sum	R 50 000,00
		.01 Percentage adjustment on Item 110.12.01 for Contractor's overheads and profit	%	R50 000,00		
SDA 8.11		**Nameboard**				
	110,13	.01 Supply and install site nameboard as per specifications and locations specified by the Engineer	No	4		
	PZ 05.01	**Skip Bins**				
		.01 Applying corossion protection of skip bins, complete with surface preparation, priming, intermediate and finish coats as required. Branding and numbering of 8×6m³, Skip Container. Supply 8 rope hooks, and transport 4 skip bins to Dordrecht site	No	8		
1200 A	**TOTAL OF SECTION 1200 A CARRIED TO SUMMARY**					

SECTION 1200 C

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SABS 1200 C	**130.00**	**SITE CLEARANCE**				
SDC 8.2.1	**130.01**	**Clear and grub:**				
		.01 Areas	m²	15 510		
8.2.8	**130.08**	**Demolish and remove structures/ buildings and dismantle steelwork**				
		.01 Demolish existing walls	m²	50		
		.02 Remove existing paving	m²	250		
		.03 Remove existing kerbing	m	60		
		.04 Remove existing concrete culvert pipes	No	2		
8.2.9	**130.10**	**Transport materials and debris to unspecified site and dump**				
		.01 Demolished building material and rubble on site	m³-km	100		
	TOTAL SECTION 1200 C CARRIED TO SUMMARY					

SECTION 1200 D

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SABS 1200 D	**140.00**	**EARTHWORKS**				
SDD 8.3.2	**140.01**	**Bulk excavation:**				
	140.01	**Bulk excavation:**				
		.01 Excavate in all materials and use for embankment or backfill as ordered from:				
		.01 Necessary excavations	m³	1 100		
		.02 Excavate in all materials and dispose	m³	50		
		.03 Extra over items 140.01.01, 140.01.01.01 and 140.01.02 above for:				
		.01 Intermediate excavation	m³	30		
		.02 Hard rock excavation	m³	100		
8.3.4	**140.03**	**Importing of materials:**				
		.01 Extra over items 140.01 for importation of G6 materials from commercial sources	m³	300		
SDD 8.3.14	**140.07**	**Extra over items 140.01.01 for temporary stockpiling**	m³	100		
SDD 8.3.15	**140.08**	**Extra over items 140.01.02 for disposing of spoil material on a site provided by the Contractor**	m³	1 600		
SDD 8.3.8	**140.06**	**Existing services:**				
		.01 In roadways	m³	5		
	TOTAL SECTION 1200 D CARRIED TO SUMMARY					

SECTION 1200 DB

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SABS 1200 DB	**142.00**	**EARTHWORKS (PIPE TRENCHES)**				
		TRENCHES FOR WATER PIPES				
SDDB 8.3.2	**142.01**	**Excavate in all materials for trenches, backfill, compact and dispose of surplus material:**				
		.01 Pipes up to 150 mm dia for depths:				
		.01 Up to 1,0 m	m	200		
		.02 Over 1,2 to 2,0 m	m	100		
SDDB 8.3.2	**142.02**	**Extra over item 142.01 above for:**				
		.01 Intermediate excavation	m³	10		
		.02 Hard rock excavation	m³	5		
		.03 Backfill stabilized with 5% cement where directed by the Engineer	m³	5		
		TRENCHES FOR SEWER PIPES				
SDDB 8.3.2	**142.03**	**Excavate in all materials for trenches, backfill, compact and dispose of surplus material:**				
		.01 Pipes up to 110 mm dia for depths:				
		.01 Up to 1,0 m	m	75		
SDDB 8.3.2	**142.04**	**Extra over item 142.03 above for:**				
		.01 Intermediate excavation	m³	20		
		.02 Hard rock excavation	m³	5		
		.03 Hand excavation where odered by the Enginer:				
		.01 Soft material	m³	20		
		.02 Intermediate material	m³	20		
		.04 Backfill stabilized with 5% cement where directed by the Engineer	m³	10		
SDDB 8.3.2	**142.05**	**Excavate for stormwater inlet and outlet structures and for manholes, catchpits and the like in all materials, irrespective of depth and backfill around structures**	m³	10		
	TOTAL SECTION 1200 DB CARRIED TO SUMMARY					

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SABS 1200 G	**170.00**	**CONCRETE (STRUCTURAL)**				
		SCHEDULED FORMWORK ITEMS				
8.2.5	**170.02**	**Smooth:**				
		.01 Vertical formwork to:				
		.01 Narrow sections 200 mm to 400 mm deep	m	564		
		.02 Aprons	m²	50		
8.2.5		SCHEDULED REINFORCEMENT ITEMS				
8.3.1	**170,06**	**High-tensile steel bars in the following:**				
		.01 10 mm dia	t	0,50		
8.3.2	**170,07**	**High-tensile welded mesh in the following:**				
		.01 Mesh Ref No.193 in surface bed	m²	102		
		.02 Mesh Ref.No.245 in surface bed	m²	470		
8.3.1		SCHEDULED CONCRETE ITEMS				
8.4.2	**170.06**	**.02 Concrete Grade 30 MPa/20 mm to:**				
		.01 Foundations	m³	25		
		.02 Aprons	m³	14		
		.03 Slabs	m³	60		
	170.07	**Unformed surface finishes:**				
		.01 Steel-floated finishes to:				
		.01 Top of foundations	m²	40		
		.02 Top of slabs	m²	465		
SDG 8.5	**170,11**	**Joints:**				
		.01 10 mm isolation joints between concrete brickwork	m	100		
		.02 Saw Cut Joint	m	150		
	1200 G	**TOTAL OF SECTION 1200 G CARRIED TO SUMMARY**				

SECTION 1200 H

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SABS 1200 H	**180.00**	**STRUCTURAL STEELWORK**				
8.3.1	**180.01**	**Supply, deliver, fabricate and erect:**				
		.01 30m x 15m x 4.5m Steel Structure complete with columns rafters, purlins, sheeting connections etc.	Sum	1	Sum	R 250 000,00
SDH 8.3.1		.02 Provison of designs, shop drawings including comprehensive design report and structural assessment report to the Employer's agent in pdf and dwg format	Sum	1	Sum	R 85 000,00
		.03 **Jointing by welding and bolting:**				
		.01 IPE 160 I -Section Rafters Diagonal member	t	0,5		
		.02 200x65x20x3.0mm CFLC Horizontal member	t	0,3		
		.03 75x75x4mm SHS section Vertical member	t	0,5		
		Corrosion protection				
8.3.6		.01 Corrosion protection of structural , complete with surface preparation, priming, intermediate and finish coats as required.			Sum	R 15 000,00
8.3.6	**180.04**	**Erection bolts:**				
		.01 M12 Grade 4,8 Bolts	No	60,0		
8.3.5	**180.05**	**Site welding:**				
		.01 On site welding	m	40,0		
8.3.6	**180.06**	**Holding-down (HD) bolts:**				
		.01 M12 Grade 4,8 Chemical Anchors	No	60,0		
	TOTAL SECTION 1200 H CARRIED TO SUMMARY					

SECTION 1200 L

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SABS 1200 L	**210.00**	**MEDIUM-PRESSURE PIPELINES**				
8.2.1	**210.01**	**Supply, lay and bed on flexible bedding, complete with couplings:**				
		.02 HDPE class 6 pipes: complete with fiitings as per drawing:				
		.01 32mm diameter	m	100		
		.02 50mm diameter	m	250		
		.03 Copper Pipes: complete with fitings				
		.01 15mm diameter	m	12		
		.02 20mm diameter	m	20		
		.04 Galvanised Pipes: complete with fitings				
		.01 20mm diameter	m	20		
		.02 25mm diameter	m	20		
8.2.2	**210.03**	**Extra over items 210.01 for supplying, laying and bedding of PVC-U and HDPE specials complete with couplings:**				
		.01 90° elbows:				
		.01 DN32mm	No.	5		
		.02 DN50mm	No.	5		
		.02 Tees:				
		.01 50mm x 50mm dia	No,	3		
		.03 Reducing tees:				
		.02 DN50 mm x DN50 mm x DN32 mm	No.	3		
		.04 End caps				
		.01 DN32 mm	No.	2		
		.02 DN50 mm	No	2		
		.05 Reducing tees:				
		.02 DN50 mm x DN50 mm x DN32 mm	No.	2		
		.06 End caps				
		.01 DN32 mm	No.	2		
		.05 Adaptor Couplings				
		.01 DN32 mm	No.	4		
1200 L	Carried forward					

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		Brought forward				R -
		.05 Reducer				
		.01 DN50mm x 32mm Reducer	No.	5		
SDL8.2.11	**210.04**	**Anchor/thrust blocks and pedestals:**				
		.01 Concrete:				
		.01 Class 20 MPa/19 mm	m³	4		
PSL 8.2.14	**210,1**	**Pumps**				
		.01 1kw Booster pump fixed with base plate including fittings and valves	No	2		
		.02 Charge required by Contractor on subitem 210.68.01&02 above	%	R -		
	210.70	**JoJo tanks complete with fittings, valves and pipe work**				
		.01 4 x 2500l JoJo tanks	No	4		
		.02 2 x 5000l JoJo tanks	No	2		
		.02 Charge required by Contractor on subitem 210.70.01 & .02 above	%	R -		
	TOTAL SECTION 1200 L CARRIED TO SUMMARY					

SECTION 1200 LB

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SABS 1200 LB	**211.00**	**BEDDING (PIPES)**				
8.2.1	**211.01**	**Provision of bedding from trench excavations:**				
		.01 Selected granular material	m³	150		
		.02 Selected fill material	m³	180		
8.2.2	**211.02**	**Supply only of bedding by importation:**				
		.03 From commercial sources:				
		.01 Selected granular material	m³	35		
		.02 Selected fill material	m³	25		
8.2.4	**211.03**	**Encasing of pipes in concrete:**				
		.01 Class 25 MPa/19 mm	m³	2		
	TOTAL SECTION 1200 LB CARRIED TO SUMMARY					

SECTION 1200 LD

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SABS 1200 LD	**213.00**	**SEWERS**				
8.2.1	**213.01**	**Supply, lay, joint, bed and test pipeline:**				
		.01 DN 110mm PVC-u class 51 normal duty pipes	m	100		
	213.02	**Precast concrete manhole:** (Drawing No.1096-CIV-DRG-300)				
		.01 With concrete cover and slab:				
		.01 Depth 0 m up to 0,5 m	No.	1		
8.2.4	**213.03**	**Extra-over Item 213.02 for erf connection directly into manhole (length of building connection 2 to 6m) as per the drawings**				
		.01 DN 90 mm to manhole on DN110 mm main sewer	No	2		
8.2.6	**213.03**	**Rodding Eye**				
		.01 Contruction of rodding eye for the following depth, as indicated on drawings complete with concrete slabs,etc for 160mm dia pipes				
		.01 Depth 0,6 m up to 1,2 m	No	2		
SDLD8.2.13	**213.05**	.01 4000 litre Prefabricated conservancy tank	No	1		
	TOTAL SECTION 1200 LD CARRIED TO SUMMARY					

SECTION 1200 LK

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
(SPEC LK)	**220.00**	**VALVE INSTALLATIONS**				
SDLK 8.2.1	**220.01**	**Supply and deliver valve:**				
		Flanged/threaded valves with non-rising spindles,complete with handwheel, complete with coupling				
		.01 DN32mm	No	5		
		.02 DN50mm	No	2		
		Mechanical Watermeter				
		.01 DN32mm PN10 Elster Kent "Helix 4000" watermeter	No.	2		
		Strainer				
		.01 DN32mm PN 10 Elster Kent strainer	No.	2		
SDLK 8.2.2	**520.02**	**Install, bed and field-test small valve (nominal bore up to 300mm)**				
		.01 Gate Valves				
		.01 DN32mm	No	5		
		.02 DN50mm	No	2		
		.02 Mechanical Water Meter				
		.01 DN32mm	No.	2		
		.03 Strainer				
		.01 DN32mm	No.	2		
	TOTAL SECTION 1200 LK CARRIED TO SUMMARY					

SECTION 1200 ME

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SABS 1200 ME	**223.00**	**SUBBASE**				
SDME 8.3.2	**223,1**	**Construct the subgrade course with material from trench excavations**				
		.01 Minimum of 93% of modified AASHTO maximum density compacted layer thickness of 150 mm (G9)	m³	950		
SDME 8.3.3	**223.07**	**Construct the subbase course with material from commercial sources**				
		.01 Minimum of 95% of modified AASHTO maximum density compacted layer thickness of 150 mm (G7)	m³	950		
SDME 8.3.9	**223,1**	**Treatment of Subbase**				
		a) Weed Killer	m²	5 000		
		b) Insecticide	m²	5 000		
	TOTAL SECTION 1200 ME CARRIED TO SUMMARY					

SECTION 1200 MF

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SABS 1200 MF	**224.00**	**BASE**				
	224.03	**Construct base with material from commercial sources or designated borrow areas:**				
		.01 Minimum of 98% of modified AASHTO maximum density compacted layer thickness of 150 mm (G6) chemically stabilised to C4 with portland cement	m³	770		
		.03 Processing by stabilisation of the existing base layer (Indwe access road)	m³	265		
	TOTAL SECTION 1200 MF CARRIED TO SUMMARY					

SECTION 1200 MJ

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SANS 1200 MJ	**227.00**	**SEGMENTED PAVING**				
SDMJ 8.2.2	**227.02**	Concrete block paving:				
		.01 Type S-A interlocking paving blocks, 80mm thick, for the roadway	m²	7 068		
		.02 20mm bedding sand	m³	142		
	TOTAL SECTION 1200 MJ CARRIED TO SUMMARY					

SECTION 1200 MK

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
SABS 1200 MK	**228.00**	**KERBING AND CHANNELLING**				
8.2.1	**228.01**	**Cast-in-situ kerbing:**				
		.01 Cast in situ concrete edge and intermediate beams class 25/19	m^3	19,0		
8.2.1	**228.01**	**Precast concrete kerbing:**				
		.06 SABS 927 fig 7:				
		.01 Radius up to 4 m	m	40		
		.02 Radius over 4 m up to 20 m	m	20		
		.03 Radius over 20 m and straight sections	m	150		
	228.08	.02 Transition kerb class 25/19	m	5		
8.2.8	**228.10**	**Cast-in-situ concrete lining to open drains:**				
		.01 Grade 25 concrete, 100 mm thick	m^3	110		
8.2.9	**228.11**	**Formwork to cast-in-situ concrete lining of open drains (smooth surface finish):**				
		.01 To sides with formwork on the internal face only	m^2	1 180		
8.2.12	**228.14**	**Steel reinforcement:**				
		.01 Mesh Ref No.193 in slab	m^2	826		
8.2.13	**228.15**	**Chemical Stablilizing**				
		.01 Ordinary Portland cement checmical stabilizing agent	t	45		
	TOTAL SECTION 1200 MK CARRIED TO SUMMARY					

PARTICULAR SPECIFICATION PA

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
PA 12		**FENCING**				
		.02 Ø1050mm Razor wire coils to top of razor mesh	m	275		
		.03 Supply and install complete 2.4m diamond wire mesh swing gate including lock posts hinges, and heavy duty lock (Drawing No: 1096-CIV-DRG-105)	No.	4		
	TOTAL PARTICULAR SPECIFICATION PA CARRIED TO SUMMARY					

PARTICULAR SPECIFICATION PD

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
PD 10		**BUILDING WORK**				
	243.01	**Brickwork:**				
		.01 230 mm thick, non-facing plastered/ extra, engineering bricks	m²	210		
		.02 110 mm thick, non-facing plastered/ extra, engineering bricks	m²	22		
		.03 Rectificacation of defective work on buildings inlcuding brickwork, plaster and concrete works	-	Prov	Sum	R 50 000,00
		.04 Overheads, charges and profit on subitem .03 above	%	R 50 000,00		
	243.02	**Plaster work:**				
		.01 25 mm thick, wood-float finish	m²	570		
		.02 25 mm thick, steel-float finish	m²	20		
	243.03	**Brickwork reinforcement:**				
		.01 75mm Wide reinforcement built in horizontally	m	65		
		.02 150mm Wide reinforcement built in horizontally	m	130		
		.03 230mm Wide reinforcement built in horizontally	m	650		
	243.04	**Prestressed fabricated lintels:**				
		.01 110 x 75mm Lintels in lengths not exceeding 3m	m	50		
		.02 110 x 75mm Lintels in lengths exceeding 3m and not exceeding 4,5m	m	20		
		.03 110 x 75mm Lintels in lengths not exceeding 4,5m and not exceeding 6m	m	20		
	243.07	**Galvanised hoop iron cramps, ties, etc:**				
		.01 30 x 1,6mm Roof tie 1,5m long with one end fixed to timber and other end built into brickwork	No.	100		
	243.08	**Expansion Joint:**				
		.01 20 x 20mm Polysilphite expansion joint filler, place vertical between brickwork or concrete surfaces, including raking out softboard and finishing neatly to the face of the brickwork	m	190		
	243.09	**Face Brickwork:**				
		External Face bricks				
		"Corobrik Silvergrey Travertine", or of equal approved standard, external face bricks pointed with square recessed horizontal and vertical joints (allow a delivery purchase price of R120,00/ m² Vat excluded)				
		.01 Extra over brickwork for face brickwork	m²	10		
1200 PD	Carried forward					

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		Brought forward				R -
	243.10	**Roof Coverings:**				
		0.58mm thick Kliplock 890/Supa-Clad AZ150 Zincalume/Aluminium based coating on both sides. Craft-Lock profile installed strictly accordance with the , manufacturers specification underwritten by 10 year SAFAL guarantee.				
		.01 Roof covering with pitch not exceeding 25 degrees	m²	181		
		.02 0.58mm thick AZ150 Zincalume/Aluminium based coating				
		.01 Barge Flashing 350mm girth	m	100		
		.02 Roof louvre blades (Zincalume finish)	m	50		
		.03 300mm Zincalume Eaves closure flashings including polypropylene	m	40		
	243.11	**Roof and Wall Insulation:**				
		"SA Fibreglass - Sisalation 420", or of equal approved standard, reinforced aluminium foil faced resin bonded glass fibre flexible building insulation 50mm Insulation laid taut over purlins (at approximately 1200mm centres) and fixed concurrent with roof covering including 3mm diameter straining wires at 300mm centres.	m²	92		
	243.12	**Roof Construction:**				
		.01 Roof construction to dutch gable roof at 17,5 degree pitch for building of various sizes with timber rafters span including wall plates, trusses, jack rafters, permanent bracing, gangboarding, blocking pieces, metal connectors and 75 x 65 x 20mm CFLC purlins/battens a 750mm centres to receive sheet metal roof covering	No	2		
	243.13	**Doors:**				
		.01 TDM Techform heavy duty class 1 exterior hardwood Finger jointed standard door with weatherboard (code 82112), size to suit frame x 42mm thick manufactured in accordance with SANS 545:2009 (including door frame)	No	7		
		.02 Max 40mm thick semi-solid door with hardboord flush panels suitable for painting as by TDM or qually approved (including door frame)	No	2		
		.03 Roll - up serranda series 4000 galvanised and epoxy coated mild steel with corrosion resistant epoxy undercoat chain operated 75 x 1.0mm thick endlocked slatted curtain roller shutter for opening as shown with overhead box 335mm high, Standard bottom rail, 75mm wide guides, extruded aluminium t- bar with rubber seal powder coated ancillary components including 4.5mm thick end plates guide rails, slide bolt canopy cover fixed to jambs and lintel. Strictly to manufacturer's specifications. Ironmongery by door manufacturer.	No	2		
1200 PD	Carried forward					

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		Brought forward				R -
	243.16	**Ceilings:**				
		.01 Plaster-board ceiling 9 mm rhino board on light weight steel brandering 570mm c/c all to be screwed installed according and comply with min SANS specs	m²	81		
	243.17	**Floor Coverings:**				
		.01 Preparation of cement screeds and walls				
		.01 Prepare cement screed to receive vinyl floor covering by applying 3mm thick Tal Screed master self levelling screed and smoothing compound	m²	263		
	243.18	**Bathroom Fittings:**				
		.01 "Buchel B1686", or of equal approved standard, cistern backrail	No.	4		
		.02 19mm diameter stainless steel grab rail to door fixed inside	No.	4		
		.03 Professional MR3 satin finish stainless steel toilet tissue dispenser (Code SA426220), overall size 130x360mm high	No.	4		
		.04 BS618 Grade 304 18/10 satin stainless Steel soap dispenser (Code 359800), size 130 x 200 x 85mm deep, including replaceble 1 litre polyethylene container, cylinder lock with standard key, plugged and screwed to the wall with stainless steel screws	No.	4		
	243.20	**Door Furniture**				
		Manufactured by "Union"				
		.01 Male Indicator Sign on 152x152x3mm plate-Code AL5066-06ASE11	No.	4		
		.02 Female Indicator Sign on 152x152x3mm plate-Code AL5066-06ASE11	No.	4		
	243.21	**Windows**				
		.01 Aluminium Shopfront Clip44 26B window with frame, including, paintwork glazing and sills (as per drawings):				
		.01 Window 900 x 600mm (PT 69)	No.	6		
		.02 Window 900 x 900mm (PT 99)	No.	4		
		.03 Window 1200 x 600mm (PT 126)	No.	2		
		.04 Window 1500 x 1500mm (PT 1515)	No.	5		
		.05 Window 1500 x 1500mm (PT 1515)	No.	4		
	243.22	**Tiling**				
		200 x 200mm "Union", or of equal approved standard, white glazed wall tiles grouted with an approved grouting (allow a delivery purchase price of R180,00/ m² Vat excluded)				
		.01 On walls	m²	37		
1200 PD	Carried forward					

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		Brought forward				R -
		350 x 350mm approved standard, matt finish floor tiles grouted with an approved grouting (allow a delivery purchase price of R190,00/ m² Vat excluded)				
		.01 On floors	m²	81		
		.02 On shower floors (mosaic tiles)	m²	4		
	243.24	**Taps, Valves**				
		.01 "Cobra Stella 3306ST/EXT-15" or other approved wall tap with chrome plated flange plate	No.	2		
	243.25	**Fire Appliances**				
		.01 Hose in Reel with mass 22kg (PVC hose included) diameter of Disc 580mm, wall protection 260mm, hose diameter 30x 20mm SABS 1086 PVC (red), valve (stop cock) chromium plated double 25mm BSP thread. Discharge rate of 30 litres per min at standard pressure of 300kPa,	No.	2		
		.02 4.5kg Natex DCP Extinguisher (416mm height x 181 mm degree) according to SABS 1151 requirements and installed in accordance with SABS 0105	No.	5		
	243.27	**Paintwork**				
		.01 On floated plaster				
		.01 One coat universal undercoat and two coats Eggshell enamel paint				
		.01 On internal walls	m²	314		
		.02 On external walls	m²	994		
		.02 Rhino board Ceiling				
		One coat plaster primer, two universal undercoats and two coats "Self-coat", or of equal approved standard, paint				
		.01 On plastered ceilings	m²	108		
1200 PD	Carried forward					

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		Brought forward				R -
BA.01		**RAINWATER GOODS**				
		Supply and install rainwater goods:				
		.01 0.8 mm thick galvanized sheeting				
		.01 100 mm x 75 mm x 0.8 mm non-supporting box gutter	m	100		
		.02 100 x 75 x 8 mm downpipe	m	100		
		.02 Extra over for outlet with nozzle and joint for rainwater pipe	No	28		
		.03 Extra over for stopends	No	28		
		.04 Extra over for downpipe shoe	No	28		
	243.29	**Miscellaneuos**				
		.01 Water Closet (WC) suites	No.	2		
		.02 Wash Hand Basin (WHB)	No.	2		
		.02 Ironmongery				
		.01 Hinge	No.	20		
		.02 Lock, etc	No.	10		
		.03 Handles, etc	No.	20		
		.04 Door Closers, Floor Springs, etc	No.	10		
	TOTAL PARTICULAR SPECIFICATION PD CARRIED TO SUMMARY					

ELECTRICAL BILL 1

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		LV RETICULATION AND GENERAL				
		Allow for all items required to provide all distribution boards as specified and not included elsewhere, together with all LV cable supplies between the substations/Kiosks and these boards, including also for all earth conductors as necessary to comply with the wiring				
	1	**LV CABLES**				
		Provide multi-core armoured cables with copper conductors in the required lengths installed in trenches, on trays, against structures, in sleeves and in wiring channels, including for the fixing thereof				
		.01 35mm² 4-core cable	m	20		
		.02 25mm² 4-core cable	m	40		
		.03 16mm² 4-core cable	m	250		
		.04 6mm² 4-core cable	m	20		
	2	**MAIN EARTH CONDUCTORS**				
		The supply of all stranded copper earth conductors (both bare and PVC insulated) and lugs and the installation thereof, together with cables on trays, against structures, in sleeves and in wiring channels, including for the fixing and connecting thereof				
		.01 25mm² bare conductor	m	20		
		.02 16mm² bare conductor	m	40		
		.03 10mm² bare conductor	m	250		
		.04 4mm² bare conductor	m	20		
	3	**TERMINATION OF LV CABLES**				
		The supply of the correct glands, shrouds, lugs, tape, heat shrink material, clamps, nuts, washers and bolts, etc. and the provision of the complete cable termination in boards or on/in equipment				
		.01 35mm² 4-core cable termination	Each	2		
		.02 25mm² 4-core cable termination	Each	2		
		.03 16mm² 4-core cable termination	Each	2		
		.04 6mm² 4-core cable termination	Each	2		
	4	**CABLE TRENCHES**				
		All cable trenching necessary to lay new cables and plant lighting poles to expose existing cables including back filling - all to specification and with 75mm earth bed for cables in soft and hard rock trenches (450mm wide x 750mm deep)				
		.01 Excavations in earth	m	300		
		.02 Excavation in soft rock	m	40		
		.03 Excavation in hard rock	m	2		
	5	**PVC CABLE SLEEVES, MANHOLES AND MARKERS**				
		.01 110mm diameter	m	20		
		.02 50mm diameter	m	100		
		.03 Electrical Danger tape as specified	m	200		
		.04 Electrical Manholes (600 x 600)	Each	2		
Bill 1	Carried forward					

ELECTRICAL BILL 1

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		Brought forward				R -
		.05 Cable makers at all cable route deviations as detailed on the	Each	4		
	6	**KIOSKS AND SWITCHGEAR**				
		The supply installation testing and handing over of all LV Kiosks and control panels for the supplies to area lighting, indoor distribution boards, etc within the project premises, including for all equipment as specified and per drawings				
		.01 Kiosk 1 as specified	Sum	2	R2 750,00	R 5 500,00
	7	**DISTRIBUTION BOARD AND KIOSK COMPONENTS**				
		The supply of individual components for distribution boards and the installation thereof in boards with sufficient space for this (Prices required for alterations to boards and as such all quantities are provisional)				
		.01 6 - 15 kA 3 P Circuit Breakers				
		.01 60 A	Each	2		
		.02 80 A	Each	2		
		.03 125 A	Each	2		
	8	**AREA LIGHTING INSTALLATION**				
		This allows for the supply, installation and testing of flood light complete with cabling, switch gear, luminaires, lowering equipment, similar to existing masts on site.				
		.01 100W Flood light luminaires complete with lamps per specification	Each	4		
	9	**COMMISSIONING**				
		Tenderers to allow for all the commissioning requirements, including testing, attendance, as-built drawings, manuals, for wiring, DBs, power points, lighting points, etc. as set out in the specification and SANS 01042, prior to the installation being handed over to Employer	Sum	2		
	10	**GENERAL ITEMS**				
		.01 Health and Safety File	No.	1		
	11	**Provisional Amount for Electrical Connection at Indwe Transfer Station (60kVA or 3 Phase 60A)**	-	Prov	Sum	R 150 000,00
		.01 Overheads, charges and profit on subitem 11.01 above	%	R 150 000,00		R -
	12	**Provisional Amount for Borehole Electrical Installation for Indwe and Dordrecht Transfer Station**	-	Prov	Sum	R 60 000,00
		.01 Overheads, charges and profit on subitem 12.01 above	%	R 60 000,00		R -
	13	**Provisional Amount for Solar system Installation for Indwe and Dordrecht Transfer Station**				
		.01 Supply, deliver and install off solar panels, grid inverter, lithium battery, cables and other associated components. etc	-	Prov	Sum	R 297 000,00
		.02 Overheads, charges and profit on subitem 11.01 above	%	R297 000,00		R -
	TOTAL ELECTRICAL AND MECHANICAL BILL CARRIED TO SUMMARY					

ELECTRICAL BILL 2

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		INTERNAL ELECTRICAL INSTALLATION				
		Note: Electrical installation, including conduits, etc. for other services, but excluding all items covered elsewhere in the Bills of Quantities				
	1	**CONDUIT**				
		Rigid conduit, including all couplings, plugs, fixing saddles and screws, cutting bending, fixing, cleaning for wiring purposes				
		.01 20mm PVC cast in brickwork or ceiling void	m	680		
		.02 20mm PVC on surface	m	20		
		.03 25mm PVC cast in concrete or brickwork	m	240		
	2	**DRAW BOXES**				
		Supply and installation of pressed steel hot dipped galvanized boxes for sockets, draw boxes, etc. flush mounted in brickwork or cast into concrete connected to the conduit installation as specified				
		.01 100 x 50 x 50mm boxes	Each	19		
		.02 100 x 100 x 50mm boxes	Each	24		
		.03 Blank 100 x 100 x 50mm coverplates	Each	6		
		.04 Blank 100 x 50mm coverplates	Each	20		
		.05 1 to 4 way draw boxes 65mm dia. X 50mm deep for 20mm conduit and installation in brickwork or open ceilings	Each	80		
		.06 Round 65mm dia. x 50mm deep for 25mm conduit	Each	15		
	3	**SWITCH SOCKET OUTLETS**				
		Supply and installation of socket outlets installed in flush and galvanized draw boxes, complete with socket fixing screws				
		.01 16 A 3-pin single switch socket with coverplate	Each	20		
		.02 16 A 3-pin double switch socket with coverplate	Each	28		
	4	**ISOLATING SWITCHES FOR FLUSH INSTALLATION**				
		Supply and installation of the vandal resistant, weather-dust-and-vapourproof flush or ceiling mounted isolating switches for power points, complete with 100 x 100 x 50mm galvanized draw box, complete with coverplate and fixing screws				
		.01 20 A double pole isolating switch with coverplate	Each	20		
		.02 30 A double pole isolating switch with coverplate	Each	10		
	5	**LIGHT SWITCHES**				
		Supply and installation of the light switches installed in 100 x 50 x 50mm deep galvanized draw box, complete with fixing screws and coverplate				
		.01 16 A single lever one-way with coverplate	Each	16		
1200 PD	Carried forward					

ELECTRICAL BILL 2

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		Brought forward				R -
		.02 16 A photocell in an empty bulk head luminaire	Each	4		
		.03 10 A ceiling mount motion sensors	Each	16		
	6	**CONDUCTORS**				
		PVC insulated stranded copper conductors for electrical circuits installed in conduit, power skirting, etc. grouped and connected to equipment (All wasted cut-offs must be included in the tender price				
		.01 1,5mm²	m	2 000		
		.02 2,5mm²	m	1 700		
		.03 4mm²	m	100		
		.04 6mm²	m	40		
		Bare stranded copper earth wire for all electrical circuits installed in conduit, power skirtings, etc. grouped and connected to the equipment (All wasted cut-offs must be included in the tender price)				
		.01 1,5mm²	m	2 000		
		.02 2,5mm²	m	1 700		
		.03 4mm²	m	100		
		.04 6mm²	m	40		
	7	**TELEPHONE INSTALLATION**				
		Supply and installation of flush or surface mounted termination boards, complete with wooden backing board, door and architrave frame				
		.01 Termination Board: 400 x 300 x 114mm deep (flush)	Each	2		
	8	**DRAW WIRES**				
		Supply and installation of galvanized steel draw wires installed in all conduits and sleeves				
		.01 2,5mm diameter draw wires	m	2 700		
	9	**LIGHT FITTINGS**				
		Supply and installation of the following light fittings, including lamps, wiring, connections and earthing				
		.01 Type F2	Each	8		
		.02 Type D	Each	20		
		.03 Type B	Each	10		
		.04 Type B1	Each	10		
1200 PD	Carried forward					

ELECTRICAL BILL 2

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	TENDERED AMOUNT
		Brought forward				R -
	10	**LIGHTNING PROTECTION**				
		.01 Total cost for the provision of lightning points as indicated on the layout drawings and specific drawings including testing and issuance of certifcates thereof. Contractors shall allow for the installation and tesing to be performed by approved speciallists such as HHK.	Sum	2		
	11	**DISTRIBUTION BOARDS AND SWITCHGEAR**				
		The supply installation testing and handing over of all distribution boards and control panels for the supplies to general lighting and power circuits within the building, including for all equipment as specified and per drawings				
		.01 DB - 1 (MRF at Indwe)	Sum	1		
		.02 DB - 2 (Guard Houses and Storage Buildings)	Sum	4		
	12	**DISTRIBUTION BOARD COMPONENTS**				
		The supply of individual components for distribution boards and the installation thereof in boards with sufficient space for this (Prices required for alterations to boards and as such all quantities are provisional)				
		.01 5 kA 1 P Circuit Breaker				
		.01 10 A	Each	2		
		.02 20 A	Each	2		
		.02 30mA 5 kA Earth Leakage Protection Devive				
		.01 1 P + N 63 A without overload protection	Each	2		
		.03 5 kA 1 P + N Circuit Breaker				
		.01 60 A	Each	2		
		.04 Switch Disconector 5 kA				
		.01 60 A 1 P	Each	1		
	13	**COMMISSIONING**				
		Tenderers to allow for all the commissioning requirements, including testing, attendance, as-built drawings, manuals, for wiring, DBs, power points, lighting points, etc. as set out in the specification and SANS 01042, prior to the installation being handed over to Employer	Sum	1		
	TOTAL ELECTRICAL BILL CARRIED TO SUMMARY					

EMPLOYER: EMALAHLENI LOCAL MUNCIPALITY

CONTRACT NO: DFFE-B008 (26-27)

CONTRACT TITLE: EC-CONSTRUCTION OF A MATERIAL RECOVERY FACILITY (MRF) AND THE REFURBISHMENT OF TWO EXISTING TRANSFER STATIONS IN THE EMALAHLENI LOCAL MUNICIPALITY (INDWE AND DORDRECHT TOWNS)

SUMMARY OF SCHEDULE OF QUANTITIES

	Tendered Amount
SECTION 1200 A	R -
SECTION 1200 C	R -
SECTION 1200 D	R -
SECTION 1200 DB	R -
SECTION 1200 G	R -
SECTION 1200 H	R -
SECTION 1200 L	R -
SECTION 1200 LB	R -
SECTION 1200 LD	R -
SECTION 1200 LK	R -
SECTION 1200 ME	R -
SECTION 1200 MF	R -
SECTION 1200 MJ	R -
SECTION 1200 MK	R -
PARTICULAR SPECIFICATION PA	R -
PARTICULAR SPECIFICATION PD	R -
ELECTRICAL BILL 1	R -
ELECTRICAL BILL 2	R -
SUB TOTAL	**R -**
CONTINGENCIES (10%) The Sum provided here is under the sole control of the Engineer and may be deducted in whole or in part	R -
SUB TOTAL (Excl.Vat)	**R -**
VALUE ADDED TAX (VAT) The tenderer shall add 15% of the subtotal for value-added tax	R -
TENDER SUM CARRIED TO FORM OF OFFER AND ACCEPTANCE	**R -**