PROVINCIAL ADMINISTRATION OF KWAZULU-NATAL
DEPARTMENT OF PUBLIC WORKS

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

BILLS OF QUANTITIES

with GCC for Construction Works - Second Edition 2010

CONTRACTUAL SECTION

ONE VOLUME APPROACH

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT

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Tender Number:	**ZNTM01217W**	**Project Code:**	**064404**
CIDB Grading:	**5GB or Higher**	**Document Date:**	**19 July 2023**
ECDP Number:		Contract Period:	8 Calendar Months

Contracting Party: _____
CIDB Registration number: _____
Central Suppliers Database Registration Number: _____

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

THE TENDER

1. PART T1: TENDER PROCEDURES

		Page No.
T1.1	Tender Notice and Invitation to Tender	9-13
T1.2	PA-04.1: Summary for Tender Opening	14
T1.2	Tender Data	16-19
T1.3	Annexure C - Standard Conditions of Tender	21-29

2. PART T2: RETURNABLE DOCUMENTS

T2.1	List of Returnable Documents	31-33
T2.2	Authority to Sign Tender (T2.2)	34
T2.3	Authority for Consortia or Joint Venture's to Sign Tender (T2.3)	35-36
T2.4	Special Resolution of Consortia or Joint Venture's (T2.4)	37-39
T2.5	Joint Venture Involvement Declaration (T2.5)	40-41
T2.6	Schedule of Proposed Sub-Contractors (T2.6)	42
T2.7	Capacity of Tenderer (T2.7)	43-48
T2.8	Financial Standing and other resources of Business Declaration (T2.8)	49
T2.9	Preference Points Claim Form (T2.9)	50-52
T2.10	Site Inspection Certificate as proof for attendance of compulsory briefing meeting (T2.10)	53
T2.11	Bidder's Disclosure - SBD 4 (T2.11)	54-56
T2.12	Record of Addenda to Tender Documents (T2.12)	57
T2.13	Particulars of Electrical Contractor (T2.13)	58
T2.14	Schedule of Imported Materials and Equipment (T2.14)	59
T2.15a	Annual Financial Statement for past financial year (2.15)	60
T2.16	Equipment Schedules (T2.16)	61-65
T2.17	Contractor's Safety, Health and Environmental Declaration (T2.17)	66
T2.18	Compulsory Enterprise Questionaire (T2.18)	67
T2.19	Tax Compliance Status (TCS) PIN to verify on line Compliance Supplier Status via e-Filing (T2.19)	68
T2.20	Proof of Good Standing With the Compensation Commissioner (T2.20)	69
T2.21	Form of Offer and Acceptance (Bound into Section 1 of 2) (T2.21)	70-72
T2.21a	Confirm Receipt of Offer and Acceptance (T2.21a)	73
T2.22	Final Bill of Quantity (T2.22)	74-75
T2.23	Certified Proof of Paid Municipal Rates and Taxes (T2.23) **(Not Applicable)**	76
T2.24	Proof of Unemployment Insurance Fund (2.24)	77
T2.25	The National Industrial Participation Programme (T2.25)	78-79
T2.26	Proof of Registration on the Central Supplier Database (CSD) (T2.26)	80
T2.27	Certified Proof of CIDB Registration Number (T2.27)	81
T2.28	Proof of Deposit (T.28)	82
T2.29	Contract Form - Purchase of Goods/Works - Part 1 (T2.29)	83
T2.30	Contract Form - Purchase of Goods/Works - Part 2 (T2.30)	84
T2.31	OHSE Plan Structure (T2.31)	85
T2.32	Client's specific requirements for the Contractor's detailed OHSE Plan (T2.32)	86
T2.33	Baseline Risk Assessment (T2.33)	87
T2.34	Invitation to Tender - SBD 1 (T2.34)	88-89

T2.35	Proof of Working Capital	90
T2.36	Letter/s Of Credit Reference	91
T2.37	Detailed Schedule Of Resources	92
T2.38	Schedule Of Years Of Experience On Similar Projects	93-94
T2.39	Schedule Of Projects Of Building Nature	95
T2.40	Letter Of Intent To Provide A Construction Guarantee To A Value Of 5% Of The Project Value	96

THE CONTRACT

3. PART C1: AGREEMENT AND CONTRACT DATA

C1.1	Form of Offer and Acceptance	8
C1.2	Contract Data	10-16
C1.3	Form of Guarantee (C1.3)	18-20

4. PART C2: PRICING DATA

C2.1	Pricing Instructions	22-25
C2.2	Preliminaries for GCC for Construction works - 2nd Edition 2010	27-47
C2.3	Bills of Quantities	49-134
C2.4	Final Summary	135

5. PART C3: SCOPE OF WORKS

C3.1	Scope of Works	137-144
C3.2	Specification for HIV/AIDS awareness	145-147
C3.3	HIV/STI Compliance report	148-149

6. PART C4: SITE INFORMATION

C4.1	Site Information	151

7. DRAWINGS

C5.1	List of Drawings	153-154

8. ANNEXURES

Annexure 1	Model Preambles for Trades 2008	1 to 49
Annexure 2	General Electrical Specifications	E/1 to E/20
Annexure 3	Lightning Protection Specifications	LP/1 to LP/6
Annexure 4	Map of Tender submission location	1
Annexure 5	Geotechnical Investigation Report (If applicable)	1-27
Annexure 6	Joint Venture Agreement	1-7
Annexure 7	Health and Safety Specification and Bill of Quantities	1-58
Annexure 8	Builders Lien Agreement	1
Annexure 9	Scope of Works in respect of work relating to the EPWP	1-5
Annexure 10	Additional Specification - EPWP NYS	1-12
Annexure 11	EPWP Bill of Quantities	1-2
Annexure 12	EPWP Employment Agreement	1-9
Annexure 13	Attendance Register for on-site workers	1
Annexure 14	EPWP Data Colletion tool for Phase 3 system	1-5

IMPORTANT NOTICE TO TENDERERS

Any reference to words Tender or Tenderder herein and/or in any other documentation shall be construed to have the same meaning as the words Tender or Tenderer. These forms are for internal and external use for the KZN Department of Public Works, Provincial Administration of KwaZulu-Natal.

"Quality" shall mean totality of features and characteristics of a product or service that bears on the ability of the product or service to satisfy stated or implied needs.

No alternativeTenders will be accepted.

The Total (Including Value Added Tax) on the Final Summary of the Bill of Quantities must be carried to the "Offer" part only of the Form of Offer and Acceptance - T2.21

"Enterprise" shall mean the legal Tendering Entity or Tenderer who, on acceptance of the Offer, would become the contractor"

1.The Department reserves the right not to award to the lowest bidder.
2.In addition, the Department will conduct a detailed risk assessment prior to the award of the bid.
3.Tender Documents must be purchased prior or downloaded from e-Tender Portal before the starting time of tender briefing meeting.
4.The bid document can be downloaded from e-Tender Portal at no cost. However should any bidder require a printed/hard copy of the bid document, a non-refundable payment in the amount of R380.00 must be made for collection thereof as per the banking details indicated below. Proof of payment must be produced upon collection of the bid document.
5.No tender documents will be issued at the tender briefing meeting and no site inspection meeting certificates will be issued at the tender briefing meeting.
6.Bidders who attend without a bid document will not be allowed at the briefing meeting.
7.Late submissions will not be accepted.
8.Faxed or e-mailed bids are not accepted.
9.Multiple Award of Bids will be limited (unless by exception due to circumstances) in order to spread the work amongst many successful bidders and to minimise the risk to the Department. Multiple awards shall be limited to the ceiling value of the applicable CIDB grading of the recommended bidder unless previous contracts awarded has been more than 60% completed in terms of the actual scope of the contract and time expended are within the allocated time lines of the contract period of the contract with specific reference to the activity based construction program and concise demonstration has been given that the bidder has the capability and resources to complete the project successfully.
10.Proof of working capital of at least 2.5% of the project value from a registered financial institute or an original 3 months bank statement, stamped by the bank.
11.Schedule of projects of similar value and nature, within 4GB or higher, completed within the last 5 years by the bidding entity. Provide project name; description; value and duration (start & completion dates). Letters of award and practical completion certificates for projects must be submitted. (Minimum two projects required)
12.Only Bidders registered within the applicable CIDB grading and Central Suppliers Database will be eligible to submit bids.
13.This bid is specifically targeted for contracting entities that are currently on the Eyesizwe Contractor Database and whom have applied to be registered on the Eyesizwe Contractor's Database, are eligible to submit bids.
14.The Preference points system is applicable for this bid is 80/20, where 20 points of specific goals will be allocated as follows:
-Exempted Micro-Enterprise (EME) : 10 points
-Ownership by Black people: 10 points.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

THE CONTRACT

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

C1 - AGREEMENT AND CONTRACT DATA

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

FORM OF OFFER AND ACCEPTANCE

FORM OF OFFER AND ACCEPTANCE

Tender No - ZNTM01217W

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

C.1.1 - FORM OF OFFER AND ACCEPTANCE

THE OFFER AND ACCEPTANCE FORM IS BOUND INTO **SECTION 1** (See end of Returnable Documents) OF THIS DOCUMENT AS PART OF THE RETURNABLE DOCUMENTS. ONCE A CONTRACT IS CONCLUDED WITH A SUCCESSFUL TENDERER, THIS PAGE WILL BE REPLACED WITH THE FILLED AND SIGNED OFFER AND SIGN ACCEPTANCE BY THE EMPLOYER AND IT WILL BECOME PART OF THE CONTRACT.

PLEASE SUBMIT THE OFFER AND ACCEPTANCE FORM WITH THE OTHER RETURNABLE DOCUMENTS.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

C1.2 - CONTRACT DATA

C 1.2 CONTRACT DATA:
with GCC for Construction Works - Second Edition 2010

CONTRACT DATA FOR:

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT

Tender no: **ZNTM01217W**

The General Conditions of Contract are the clauses contained in the General Conditions of Contract (2010) (Second Edition) published by the South African Institution of Civil Engineering. Copies of these conditions of contract may be obtained through most regional offices of the South African Institution of Civil Engineering, telephone number 011 805 5947 or by visiting their website at www.saice.org.za.

CONTRACT SPECIFIC DATA
The following contract specific data are applicable to this contract:

CONTRACT VARIABLES

This schedule contains all variables specific to this document and is divided into pre-tender and post-tender categories. The pre-tender category must be completed in full and included in the tender documents. Both the pre-tender and post-tender categories form part of this **agreement.**

Spaces requiring information must be filled in, shown as 'not applicable' or deleted but not left blank. Where choices are offered, the non-applicable items are to be deleted. Where insufficient space is provided the information should be annexed hereto and cross referenced to the applicable clause of the schedule. Key cross reference clauses are italicised in *[ ]* brackets.
The Engineer/Principal Agent, in accordance with Clause 1.1.1.16, shall obtain the specific approval from the Employer before executing any of his functions according to the "Conditions under which Consultants are appointed", or in the event where an employee of the Employer represents the Employer, the relevant General Delegations applicable at the time of executing his/her duties as described in Clause 3.1.2.

Part 1: CONTRACT DATA PROVIDED BY THE EMPLOYER:

PRE-TENDER INFORMATION

CONTRACTING AND OTHER PARTIES

[1.1.1.15] **Employer:**

Head: Public Works (KZN Department of Public Works: Province of KwaZulu-Natal)

Postal address:

Private Bag X 9041
PIETERMARITZBURG
3200

Tel: ***033 - 8971399*** Fax: ***033 - 8971300***

[1.2.1.2] Physical address:

10 Prince Alfred Street
PIETERMARITZBURG
3200

[1.1.1.16] **Employers Agent 1**
AECOM

Agent's service:
Architect

Postal address:
P.O. Box 13320, Cascades
PIETERMARITZBURG
3202

Tel: ***031 204 3800*** Fax: ***N/A***

Employers Agent 2
AECOM

Agent's service:
Quantity Surveyor

Postal address:
P.O. Box 13320, Cascades
PIETERMARITZBURG
3202

Tel: ***031 204 3800*** Fax: ***N/A***

Employers Agent 3
AECOM

Agent's service:
Structural Engineer

Postal address:
P.O. Box 13320, Cascades
PIETERMARITZBURG
3202

Tel: ***031 204 3800*** Fax: ***N/A***

Employers Agent 4
AECOM

Agent's service:
Civil Engineer

Postal address:
P.O. Box 13320, Cascades
PIETERMARITZBURG
3202

Tel: ***031 204 3800*** Fax: ***N/A***

Tender no:	**ZNTM01217W**
	Employers Agent 5 ***AECOM*** ***Agent's*** service: ***Electrical Engineer*** Postal address: ***P.O. Box 13320, Cascades*** ***PIETERMARITZBURG*** ***3202*** Tel: ***031 204 3800*** Fax: ***N/A***
	PART 1: DATA PROVIDED BY THE EMPLOYER
[1.1.1.13]	**Defects Liability Period** The defects liability period is: **A time measured from the date of the Certificate of Completion.** Defects Liability Period is 12 Months for the whole of the Works
	Latent Defect Period
[5.16.3]	The latent defect period is: 5 years after the Final Approval Certificate
	Documentation required before Commencement of the Works:
[5.3.1]	The documentation required before commencement with the Works execution are;
[4.3]	Health and Safety Plan: The Contractor shall deliver his Health and Safety Plan of the Works within 14 calendar days after notice from the Employer, prior to the Commencement Date.
[5.6]	Initial Programme: The Contractor shall deliver his programme of work within 10 calendar days after notice from the Employer, prior to the Commencement Date.
[6.2]	Guarantee: The Contractor shall deliver his chosen Guarantee (security) for this Works within 14 calendar days after notice from the Employer, prior to the Commencement Date.
[8.6]	Insurance: The Contractor shall deliver his insurance for the Works within 14 calendar days after notice from the Employer, prior to the Commencement Date.
	Cash flow by contractor: The Contractor shall deliver his Cash flow for the Works within 14 calendar days after notice from the Employer, prior to the Commencement Date.
	Priced Bill of Quantity: The Contractor shall deliver his Priced Bill of Quantity within 14 calendar days after notice from the Employer, prior to the Commencement Date.
	Programme: The Contractor is required to submit his Programme of Works in terms of Clause 5.6.1 and 5.3.1 and the Principal Agent is required to approve this within 7 days in terms of Clause 5.6.3
	Other requirements:
[5.3.2]	The time to submit the documentation required before commencement with Works execution is: 14 calendar days
	Non-Working days
[5.8.1]	Non-Working days: **Sundays** Special non- working days: **All Nationally Recognized Public Holidays and the year end break**
[5.8.1]	First Year end break - commences: ***15-Dec-23*** ends on: ***08-Jan-24*** Second Year end break - commences: ***15-Dec-24*** ends on: ***13-Jan-25*** Third Year end break - commences: ***N/A*** ends on: ***N/A*** Fourth Year end break - commences: ***N/A*** ends on: ***N/A***
	Engineer/Principal Agent to consult with Employer
[3.1.3]	The Engineer shall obtain the specific approval from the Employer before executing any of his functions according to the "Conditions under which Consultants are appointed", or in the event where an employee of the Employer represents the Employer, the relevant General Delegations applicable at the time of executing his/her duties.
	Security
[6.2.1]	The time to deliver the deed of guarantee is Prior to site hand over in terms of clause 5.3.1 and 5.3.2.
[6.2.1]	Please see CONTRACT DATA - below to select Guarantee Option
	Commencement Date Commencement date means the date of Site Hand over that should not occur prior to the tenderer receiving one fully signed copy of the Offer and Acceptance in terms of the Form of Offer and Acceptance.
	*The **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)* *The agreement ("this document") consists of;* *1. Agreement and Conditions of Contract.* *2. Form of Offer and Acceptance.* *3. Contract Data.* *4. Scope of Works.* *5. Site Information.* *6. Drawings & documents referred to in the 1 to 4 above.* *(See Form of Offer and Acceptance)*

[5.3.1]	The contractor shall commence executing the Works within 7 calendar days from the Commencement Date.
[5.4.1]	***Possession of the*** **site** will be given within 10 calendar days after the **contractor** has fulfilled the conditions (4.3, 5.6, 6.2, 8.6) and received the notification from the Employer of Site Hand Over where the contractor will receive one fully signed copy of the Form of Offer and Acceptance from the **employer.**
[5.6.1]	The Contractor shall deliver his programme of work within 10 calendar days after notice from the Employer, prior to the Commencement Date.

CONTRACT DETAILS

[1.1.1.33]	***Works*** description: Refer to document C3 – Scope of Work.
[1.1.1.30]	***Site*** description: Refer to document C4 – Site Information.
	Specific options that are applicable to a **State** organ only Where so :
[6.10.6.2]	***1)*** Interest rate legislation: ***(a)*** in respect of interest owed by the **employer**, the interest rate as determined by the Minister of Justice and Constitutional Development from time to time, in terms of section 1(2) of the Prescribed Rate of Interest Act, 1975 (Act No. 55 of 1975), will apply; and ***(b)*** in respect of interest owed to the **employer**, the interest rate as determined by the Minister of Finance, from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No. 1 of 1999), will apply

2)	Lateral support insurance to be effected by the contractor:	***Yes X***	***No***
3)	Payment will be made for materials and goods	***Yes X***	***No***
4)	Dispute resolution by litigation	***Yes***	***No X***
5)	Extended **defects** liability period applicable to the following elements:	***Electrical, Mechanical and Civil work***	

[8.6.1.1.2]	The Value of material, supplied by the Employer, and not included in the Contract Price, is:	***R0.00***
[8.6.1.1.3]	The amount to cover Professional Fees, not included in the Contract Price, for repairing damage and loss to be included in the insurance: ***30% of the Contract Price***	
[8.6.1.3]	The limit for indemnity for liable insurance is:	***Unlimited***
[6.5.1.2.3]	The percentage allowance to cover overhead charges for contractor and subcontractors, is:	***33.30%***

[1.1.1.14] **Practical Completion Date**

The Practical Completion date is: **A time measured from the Commencement date.**

For the **works** as a whole:
The whole of the works shall be completed within: ***8*** *Months (which shall be deemed to include all Non – Working Days, Special Non – Working Days and the year-end Builders Annual Industry Holiday Periods).*

[5.5.1]	The date for **practical completion** shall be	***8 Calender months***
[5.13.1]	The penalty per calendar day shall be :	***0.04% of the Contract Price, rounded to the nearest R10***

For the **works** in **sections:**

The date for **practical completion** from the **commencement date** and the **penalty** per **calendar day:**

	Portion 1:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***
	Portion 2:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***
	Portion 3:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***
	Portion 4:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***
	Portion 5:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***
	Portion 6:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***

[1.3.2]	***The*** **law** applicable to this **agreement** shall be that of the: **Republic of South Africa**	
[6.10.1.5]	The percentage advance on materials not yet built into the Permanent Works is:	***80.00%***
[6.10.3]	Percentage retention on amounts due to contractor is:	***The Percentage retention is nil. The only security required by the Employer will be such as selected by the Contractor on the Form of Offer and Acceptance and Part 2: CONTRACT DATA PROVIDED BY THE CONTRACTOR, point 2 - Documents, of the Contract Data.***
	Maximum retention is: ***0.00%*** *of the Contract Price*	

[6.8.1]	Notwithstanding anything to the contrary contained in the General conditions of Contract and Preliminaries, this contract could only, when the construction period exceeds 6 months **and** the contract exceeds R1,000,000.00, be subject to a Contract Price Adjustment Factor.
[6.8.2] *[6.8.3]*	Clause 6.8.2 the last part of the sentence saying *"calculated according to the formula and the conditions set out in the Contract Price Adjustment Schedule."* must be replaced by *"calculated according to the Contract Price Adjustment Provisions (CPAP) Indices Application Manual for use with P0151 indices (Revised 1 January 2013)" as published by Statistics South Africa. The Contract Price Adjustment Provision (CPAP) will be subject to the most recently released indices by Statistic South Africa. Tenderers are advised that with reference to Clause 3.4.6 of the Contract Price Adjustment Provisions (CPAP) Indices Applications Manual, the Head: Public Works will not accept the submission by Tenderers of lists of additional items."*
[6.8.2] *[6.8.3]*	Where this contract is a Lump Sum contract, the contract will only be subject to Contract Price Adjustment Provisions (CPAP)(Revised 1 January 2013) where the contract period equals or exceeds 6 calendar months. The applicable work group shall be WG 180 for domestic buildings or WG 181 for commercial and industrial buildings only.
[5.14.5]	***The following clause must be added to clause 5.14.5:*** *[5.14.5.6]* The employers agent shall submit the **final account** within 3 calendar months to the principal agent.
[10.5] *[10.5.3]* *[10.9.1]*	The determinations of disputes shall be by ARBITRATION ONLY. The number of Adjudication Board Members to be appointed is: **One** Replace the last part of the clause with the following: *"..on the application of either party, by the Chairman, or his nominee of the Association of Arbitrators."*
	Where **CPAP** is applicable, the **contract sum** will be adjusted in accordance with the Contract Price Adjustment Provisions (**CPAP**) as set out in the **CPAP** Indices Application Manual as published by Statistics South Africa, dated 1 January 2013 and any amendments thereto: 1) Glass etc. measured in specialist section Metalwork, will be adjusted in terms of the index for that work group unless specifically stated otherwise in the bills of quantities. 2) In case of uninterruptible power supplies, elevators, escalators and hoists, generating sets, motor-alternator sets and intercommunication systems shall be adjusted in accordance with Work Group 170. 3) Further to clause 3.4.6 of the CPAP Indices Application Manual, the listing of additional items for exclusion by Tenderer's, will not be permitted. ***Alternative Indices:*** **Not Applicable** Details of changes made to the General Conditions of Contract for construction works (2010) Second Edition
	Clause
[1.1]	*[1.1.1.5]* **COMMENCEMENT DATE** – means the actual date of Site Hand over that should not occur prior to the Tenderer receiving one fully signed copy of the Offer and Acceptance in terms of the Form of Offer and Acceptance.
	[5.12.2.2] **ABNORMAL CLIMATIC CONDITIONS** - means conditions over and above what could reasonably be expected for the specific locality where the Works are being executed and include inter alia exessive rain, heat, cold, wind and any other climatic condition that would not normally be experienced during the season that the Works are executed in that area. The South African Weather Service's (http://www.weathersa.co.za) 10 year average climatic conditions statistics would be what could be reasonably expected for the specific locality where the Works are executed.
	[6.2.1] **CONSTRUCTION GUARANTEE** – means an on demand guarantee at call obtained by the **contractor** from an institution approved by the **employer** in terms of the **employer's** construction guarantee form as selected in the Offer and Acceptance Form and the **contract data.**
	CONSTRUCTION PERIOD – means the period commencing on the **commencement date** and ending on the date of **due completion date.** This period will be deemed to commence on actual site hand over date to the contractor and end on the date of practical completion and shall include all annual industrial holiday periods, Sundays and public holidays.
	CORRUPT PRACTICE – means the offer, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.
	FINAL ACCOUNT - The document prepared by the principal agent, which reflects the contract value of the works at final approval or termination.
	FRAUDULENT PRACTICE – means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any tenderer and includes collusive practise among tenderers (prior to or after the tender submission) designed to establish tender prices at artificial non-competitive levels and to deprive the tenderer of the benefits of free and open competition.
	INTEREST – the interest rates applicable on this contract, whether specifically indicated in the relevant clauses or not, will be in terms of the legislation of the Republic of South Africa, and in particular: (a) in respect of interest owed by the **employer,** the interest rate as determined by the Minister of Justice and Constitutional Development from time to time, in terms of section 1(2) of the Prescribed Rate of Interest Act, 1975 (Act No. 55 of 1975), will apply; and (b) in respect of interest owed to the employer, the interest rate as determined by the Minister of Finance, from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No. 1 of 1999), will apply
	[1.1.1.16] **ENGINEER/PRINCIPAL AGENT –** means the person or entity appointed by the **Employer** and named in the **Contract Data** as the **Engineer /Principal Agent** to act as agent of the **Employer**. In the event of an Engineer/**Principal Agent** not being appointed, then all the duties and obligations of an Engineer/**Principal Agent** as detailed in the **Contract** shall be fulfilled by a representative of the **Employer** as named in the **Contract Data. (Hereafter referred to as Engineer)** *[1.1.1.21]* **GENERAL ITEMS -** or preliminaries means items stipulated in the Pricing Data relating to general obligations, site services, facilities and/or items that cover elements of the cost of the work which are not considered as proportional to the quantities of the Permanent Works.
	[4.4.1] Add the following to the clause 4.4.1: *"The Contract shall only use subcontractors who are duly registered with the CIDB and who has an ACTIVE status at the time of submitting the tender"*
	[6.2.1] Refer to Offer and Acceptance form for the various options that the contractor may choose from in providing a form of **Guarantee** under "GUARATEE OPTIONS".
	[6.10.6.2] Replace *"at the prime overdraft rate, as charged by the Contractor's Bank,"* with *"..at the interest rate as determined by the Minister of Justice and Constitutional Development from time to time, in terms of section 1(2) of the Prescribed Rate of Interest Act, 1975 (Act No. 55 of 1975)."* Omit *",on all overdue payments from the date on which the same should have been paid..."* and replace with *" only after 30 calendar days from receiving written notice from the Contractor that the amount is overdue,.."*

SPECIAL CONDITIONS OF CONTRACT

[5.12.3] Omit clause 5.12.3 and add the following:

"5.12.3. If an extension of time is granted, the Contractor shall be paid such additional time-related General Items, including for special non-working days, if applicable as are appropriate regarding to any other compensation which may already have been granted in respect of the circumstances concerned.The reasons for extension of time that would invoke payment of time related General Items are inter alia;

5.12.3.1 Failure to give possession of the site to the contractor.
5.12.3.2 Making good physical loss and repairing damage to the works where the contractor is not at risk.
5.12.3.3 Contract instructions not occasioned by default by the contractor.
5.12.3.4 Failure to issue construction information timeously or the late issue of a contract instruction following a request from the contractor.
5.12.3.5 Late acceptance by the principal agent of a design undertaken by a selected subcontractor where the contractor's obligations have been met.
5.12.3.6 Suspension or cancellation termination invoked by a nominated or selected n/s subcontractor due to default by the employer or the principal agent.
5.12.3.7 Insolvency of a nominated subcontractor.
5.12.3.8 A direct contractor.
5.12.3.9 Opening up and testing of work and materials and goods where such work is according to in accordance with the contract documents.
5.12.3.10 The execution of additional work for which the quantity included in the bills of quantities is not sufficiently accurate.
5.12.3.11 Late or failure to supply materials and goods for which the employer is responsible.
5.12.3.12 Suspension of the works."

[5.14.5.1] Omit entire clause 5.14.5.1

[5.16.4] Add the following new clause *"5.16.4. Upon the issue of a Final Approval Certificate, unless otherwise provided in the Contract:*
5.16.4.1. The performance Guarantee (if any) shall be returned within 14 days to the guarantor in terms of Clause 7."

[6.2.2] Replace the following *"..it shall be deemed that the Contractor has selected a security of ten percent retention of the value of the Works."* with *"..it shall be deemed that the Contractor has selected a security of a bank or insurance guarantee of 5% of the value of the Works and a payment reduction of 5% of the value certified in the payment certificate excluding value added tax."*

[6.2.3] Add to clause 6.2.3 the following "*The Contractor shall provide proof of paid-up premium payments to accompany his payment certificate as proof that his performance guarantee has not expired yet. The Contractor will not receive payment without proof of the validity of their performance guarantee.*

[9.3.2.2] Omit *"without prejudice to the exercise of any lien the Contractor may have acquired over the Employer's property."*

Duties and functions of the **Engineer** requiring the specific approval of the **Employer** BEFORE execution of any part of these duties are as follows:

(a) Determinations of contractors claims for extension of time (revision of the contract completion date). All claims for extension of time shall be submitted by the **Engineer,** together with the **Engineer's** recommendations, to the **Employer** for determination. Omit "Engineer" in clause 42.2 and replace with

(b) Drawings, instructions or communications of any kind requiring variations of the works and involving EXTRA's shall NOT be given effect by the **Contractor** UNTIL BOTH the "Official Variation Order" and the "Financial Request for Variation Order and Additional Funds" form, as issued by the Department of Public Works, have been approved and signed by the **Employer**.

(c) Insurance policies to be approved by the **Employer** within 21 days of the date of the **Commencement** of the Works.

(d) Any notice of disagreement raised by the **Contractor** or written Dispute Notice given by the **Contractor** to the **Engineer** shall be submitted by the **Engineer**, together with the **Engineer's** recommendations, to the **Employer** for determination.

(e) The issue of the certificate of practical completion, certificate of completion and the final approval certificate shall be signed and submitted by the **Engineer**, to the **Employer** for final approval and signature. The certificates shall not be considered as officially issued until signed by the **Employer**.

MANAGING PROJECT DURATION

(a) The Contractor shall co-ordinate his programme with all other contractors whose work may precede or be executed simultaneously to his own. The Contractor will be called upon to plan and control the project using the Project Evaluation and Review Technique (PERT) or other approved Critical Path Method (CPM) network analysis of his events and activities and those of the dub-contractors in his employ and must co-ordinate his planning with any other contractor employed on the project. A fortnightly project control report will be expected from the Contractor in writing, evaluating any gains or delays against the critical path and he should allow for all costs involved in planning reviewing and updating the programme to the satisfaction of the Principal Agent against this item.

(b) Activity-and total float shall belong to the Employer.

(c) The Contractor shall deliver his programme of work within 10 calendar days after notice from the Employer, prior to the Commencement Date.
It is a condition of this contact that, the contracter submit to the Engineer/principal agent a detailed CPM Programme which shall be to the approval of the Engineer/principal agent. In this regard tenderers are advised to consult with the Engineer/Principal Agent as to the format and requirements of the programme as no claim whatsoever will entertained should the programme fail to meet the requirements of the Engineer/Principal Agent. Failure to submit the programme within the stipulated time may result in the contractor being held in breach of contract.

The approved programme will form the basis of time management of the project and extension of time will not be guaranteed unless the Contractor has strictly complied with this provision.
The programme shall make allowance for rain and the number of rain days allowed within the critical path shall be on the provisions of the clause dealing with inclement weather and claiming for delays in performance in this bill.
Allowance for the above must be made under this item as no claims for failing to comply with this precondition will later be entertained.

INCLEMENT WEATHER AND CLAIMS FOR DELAYS IN PERFORMANCE

(a) The inclement weather shall be claimed according to the conditions of contract (GCC 2010 Second Edition)

(b) Claims for delays in performance due to inclement weather shall be calculated separately for each calendar month and for the project as a whole. Delays or gains to the critical path shall be reflected in all revisions of the programme. An extension of time will only be granted where the following conditions are met:

(i) The criteria to be used for WORK stoppages shall be for safety hazards or poor quality of work.
(ii) The Employer's site representative or the Employer's Principal Agent, if the site representative is not available shall be notified when the Contractor stops the work and intends to claim performance delays. The Employer representative shall inspect the situation together with the Contractor and give an immediate decision.

1. The stoppage claimed must cause a delay in the Completion Date of work. If the critical activities can proceed and a non-critical activity is delayed due to inclement weather no claims for delay shall be granted.
2. No claims for stoppages less than 2(two) hours per day shall be considered.
3. Claims granted for more than 2 (two) hours, but less than 10 (ten) hour (lunch included) day, shall be added together and expressed as full days.
4. All claims shall be submitted in writing to the Principal Agent within one working day of the actual stoppage.
5. The total delay in performance granted to the Contractor expressed in days shall be added to the contractual Completion Date of each section of the Works. The contractual penalty clause shall only come into effect after this newly arrived date.
6. Total delays (in hours) will be rounded up or down to the nearest integer for the calculation of Working Days. The total hours (including lunch) per Working Day shall be 10 unless otherwise indicated on the Contractor's programme.
7. Where the programmed delays for inclement weather exceed the actual delays incurred the Completion Date(s) will not be adjusted.
8. Where the project includes builder's holidays the programmed durations for inclement weather shall be adjusted pro-rate to the actual Working Days.

Tender no:	**ZNTM01217W**	**Part 2: CONTRACT DATA PROVIDED BY THE CONTRACTOR:**

POST-TENDER INFORMATION

Note: All information for this section requires consultation with the **Contractor**. The **Engineer/Principal Agent** shall not pre-select any of the alternatives available to the **Contractor.**

1 CONTRACT DETAILS

[1.1.1.9] **Contractor Name:** .....

[1.2.1.2] Postal address:

.....

.....

.....

Tel no ..... Fax no .....

Tax / VAT Registration No: ..... e-mail .....

Physical address:

.....

.....

.....

[1.1.1.10] The accepted **contract price** inclusive of **tax** is R :

.....

[Amount in words]

Payment Of Preliminaries (Clause 6.7, 6.8, 6.10 and 6.11)

The preliminaries amounts shall be paid in terms of:

***Alternative A**	**Yes**
****Alternative B**	**N/A**

** Assessed by the Engineer/Principal Agent as an amount prorated to the value of the Work duly executed in the same ratio as the Preliminaries bears to the Contract Price excluding VAT, Preliminary amount, Contingencies and any CPAP.*

*** Calculated from the priced Bill of Quantity/Lump Sum document. The Contractor and the Engineer/Principal Agent shall agree on a division of the priced Preliminaries items into: initial establishment charge, monthly charge and final disestablishment charge.*

If the Contractor and the Engineer/Principal Agent can not agree, within 10 Working Days from the Commencement Date, on such a division then the Engineer/Principal Agent shall make a division of the Preliminaries to be incorporated in the valuations for each monthly payment certificate as follows;

10% of the General Items/Preliminaries amount shall not be varied

15% of the General Items/Preliminaries shall only be varied in proportion of the Contract Price to the Contract Sum

75% of the General Items/Preliminaries shall be varied in proportion to the revised Construction Period compared with the initial Construction Period.

Alternative A

Adjustment of Preliminaries (Clause 6.7, 6.8, 6.10 and 6.11)

For the adjustment of Preliminaries both the Contract Sum and the Contract Value (including tax) shall exclude the amount of Preliminaries, all Contingency Sum(s) and any provision for Cost Price Adjustment Provisions:-

- An amount which shall not be varied.

- An amount varied in proportion to the contract value as compared to the Contract Sum.

- An amount varied in proportion to the Construction Period as compared to the initial Construction Period (excluding revisions to the Construction Period to which the Contractor is not entitled) to adjustment of the Contract Value in terms of the agreement.

The Contractor shall provide a breakdown of charges (including tax) within 15 working days of the date of acceptance of tender and, where applicable, an apportionment of Preliminaries per section

If the Contractor and the Principal Agent cannot agree, within ten (10) Working Days from the Commencement Date, on such a division then the Principal Agent shall make a division of the Preliminaries to be incorporated in the valuations for each monthly payment certificate as follows;

10% of the amount shall not be varied

15% varied in proportion of the Contract Value to the Contract Sum

75% varied in proportion to the revised Construction period compared with the initial Construction Period

Sectional Completion : Subdivision of Preliminaries Costs

For the adjustment of preliminaries for sections of the work the value of fixed, value, and time related amounts of the preliminaries for each section is required. The contractor is to provide such information within fifteen (15) working days of taking possession of the site, failing which the categorised preliminaries amounts shall be prorated to the value of each section.

The above shall apply equally for projects where sectional completion was not contemplated at tender stage but subsequently occurred on an adhoc basis during construction of the works as agreed between the client and the employer. The original priced categorised amounts for fixed, value, and time related amounts shall be prorated to the value of each section.

When an extension of time has been granted in terms of the GCC and the preliminaries require to be adjusted accordingly, the pertinent sectional (subdivided) categorised preliminaries amounts shall be utilised, where applicable and not the overall preliminary amounts.

Where sectional completion is required in terms of the agreement, the Contractor shall provide the Principal Agent with the division of the above categorized amounts into sections. Should the Contractor fail to provide such information within the period stipulated the categorized amounts shall be prorated to the value of each section.

YES *yes / no*

or

Alternative B

The Contractor shall within 15 working days of the date of possession of the site provide the Principal Agent with a detailed breakdown of Preliminaries amounts for the works as a whole, or per section where applicable, including administrative and supervisory staff charges and for the use of construction equipment in terms of the programme.

NO *yes / no*

The contractor is informed that only option 'A' shall apply

2 DOCUMENTS

Contract documents marked and annexed hereto:

Priced **Bills of Quantities:**	**Yes**		**No**	
Lump Sum document: **:**	**Yes**		**No**	

Guarantee Options:

Not applicable

2.2 DESIGN BRIEF

Not applicable		**YES or NO**
2.3 DRAWINGS		**YES or NO**
See list of drawings/Annexure's attached to this document.		**YES or NO**
2.4 DESIGN PROCEDURES		**YES or NO**

Not applicable

Contract drawings:	**Yes**	**No**
Other documents**:**		

Waiver of the Contractors lien or right of continuing possession is required.	**YES**

GUARANTEE OPTIONS

The Tenderer agrees to provide a bank or insurance guarantee in accordance with clause 6.2.3 of the Conditions of the GCC2010 Contract within the period stated in the Contract Data. This guarantee shall be for a sum equal to an amount stated in the Contract Data.

Guarantees submitted must be issued by either an insurance company duly registered in terms of the Insurance Act (Long Term Insurance Act No 52 of 1998 or Short Term Insurance Act No 53 of 1998) or by a bank duly registered in terms of the Banks Act No 94 of 1990, on the pro-forma referred to above. No alterations or amendments of the wording of the pro-forma will be accepted.

(a) the tenderer accepts that in respect of contracts up to R1 million, a payment reduction of 5% of the contact value will be applicable and will be reduced by the Employer in terms of the applicable conditions of contract.

(b) in respect of contracts above R1 million, the Tenderer offers to provide security as indicated below: select one option

(i) cash deposit of 10 % of the Contract Price	N/A
(ii) bank or insurance Performance Guarantee of 10 % of the Contract Price	X
(iii) cash deposit of 5% of the Contract Price and a payment reduction of 5% of the value certified in the payment certificate (excluding VAT)	N/A
(iv) bank or insurance guarantee of 5% of the Contract Price and a payment reduction of 5% of the value certified in the payment certificate (excluding VAT)	N/A

NOTE: Where the Tenderer has not selected one of the guarantee options above, the default option will be as if the Tenderer has selected a security of a bank or insurance guarantee of 5% of the value of the Works and a payment reduction of 5% of the value certified in the payment certificate excluding value added tax. - See GCC2010 clause 6.2.2 as amended in Contract Data.

3 SIGNATURES OF THE CONTRACTING PARTIES

Thus done and signed at……on ……..of……20…..

Name of signatory — for and behalf of the **Employer** who by signature hereof warrants

Capacity of signatory — as Witness.

Thus done and signed at……on ……..of……20…..

Name of signatory — for and behalf of the **Contractor** who by signature hereof warrants

Capacity of signatory — as Witness.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

C1.3 - FORM OF GUARANTEE

C1.3 PERFORMANCE GUARANTEE - GCC FOR CONSTRUCTION WORKS (2nd Edition - 2010)

Head: Public Works
KZN Department of Public Works:
Private Bag X 9041
PIETERMARITZBURG
3200

Sir,

ON DEMAND PERFORMANCE GUARANTEE

Tender Number ZNTM01217W	**Project Code 064404**

For use with the General Conditions of Contract for Construction Works, Second Edition, 2010.

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: _____

Physical Address: _____

"Employer" means: The Provincial Administration of KwaZulu-Natal in its Department of Public Works

"Contractor" means: _____

"Engineer" means: _____

"Works" means: **DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT**

"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: _____

Amount in Words:

"Guaranteed Sum" means: The maximum aggregate amount of: 10% _____
Of Contract Sum

Amount in Words: _____

"Expiry Date" means: On Practical Completion

CONTRACT DETAILS

Engineer Issues: Interim Payment Certificates, Final Payment Certificates 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 acknowledges 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 the 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 payments 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 Payment 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 with 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 all 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 Court Act No 32 of 1944, as amended, to this jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at _____

Date _____

Guarantor's signatory (1) _____

Capacity _____

Guarantor's signatory (2) _____

Capacity _____

Witness signatory (1) _____

Witness signatory (2) _____

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

PART C2 - PRICING DATA

C2.1 PRICING INSTRUCTIONS
GCC FOR CONSTRUCTION WORKS (Second Edition 2010)

Project title:	**DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT**		
Tender no:	**ZNTM01217W**	**Project Code:**	**064404**

C2.1 Pricing Instructions

Where any item is not relevant to this specific contract, such item is marked N/A (signifying "not applicable")

The adjustment of the preliminaries each item priced is to be allocated to one or more of the three categories by insertion of "F", "V", "T" as the case may be against the price in the "rate" column immediately preceding the "amount" column, where "F" denotes a fixed amount (amount not varied), "V" denotes an amount variable in proportion to value and "T" denotes an amount variable in proportion to time.

1 MASSES AND MEASURING UNITS

These shall be in accordance with the Measuring Units and National Measuring Standards Act No. 76 of 1973 and amendments thereto.

The pages of each of these documents are numbered consecutively and before the Tenderer submits his tender he should check the number of pages, and if any are found missing or duplicated, or the figures or writing indistinct, or the documents contain any obvious error, he should apply to the Head : Public Works AT ONCE and have same rectified as no liability whatsoever will be admitted by the Administration in respect of errors in Tender due to the foregoing.

2 PRICES FOR VARIATIONS

Where prices or quotations for variations are submitted by the Contractor during the currency of the Contract, it is to be clearly understood that these are for the purpose of consideration by the Head : Public Works and that there is no assumption of acceptance. The Contractor will be notified of acceptance of prices or quotations either by insertion of the amount on the variation order or by written intimation.

3 SCALE

The scale to which the Drawings are made is only to be made use of when no figured dimensions are given either on the Drawings or in the tender documents and the figured dimensions are always to be followed though they may not coincide with the scale of the Drawings, but dimensions where possible are to be taken from the buildings.

4 PROVISIONAL ITEMS

All items described as "Provisional" shall be used as directed by the Employer and measured and valued or paid for.

No work for which "Provisional" items are allowed shall be commenced without written instructions from the Head : Public Works.

5 TIMELY ORDERING OF MATERIALS

The Contractor is warned to place all orders for materials or special articles as early as possible, as he will be held solely responsible for any delay in the delivery of such goods.
Nevertheless this tender is conditional upon no liability being attached to the Contractor if delivery of materials is rendered impossible by reason of any act of the Government.

6 ELECTRICAL LIGHTING, POWER AND WATER

The Contractor shall provide any artificial lighting which may be necessary or required for the proper execution of the works, and provide electric power and water required by all Sub-Contractors, Nominated Sub-Contractors and Sub-Contractors appointed directly by the Employer.

The Contractor shall give all notices and pay all fees in connection with temporary electrical and water connections and shall connect temporary Electrical and Water meters for and pay for all current and water consumed.

Tenderers are advised that the permanent light fittings and water points of any kind installed in the Works are not to be used to provide temporary lighting and supplement water requirements for construction purposes.

7 IMPORT PERMITS, DUTIES AND SURCHARGES.

All tenders by means of which imported products are being called for, must use the rate of exchange 14 days prior to the closing date indicated in the tender documents. If this day falls on a weekend or public holiday, the next working day must be used.

Furthermore, Tenderers must submit documentary proof (in the form of a certified copy) from their bank or legally recognised financial institution, clearly indicating what the rate of exchange was 14 days prior to the closing date, as mentioned above.

Together with this, the Tenderer must confirm that the tender price relating to an imported product, was based on the rate of exchange 14 days prior to the closing date as mentioned above.

8 STANDARD SYSTEM OF MEASUREMENT WHERE BILLS OF QUANTITIES FORM PART OF THE TENDER DOCUMENTS

The work executed under this Contract has been measured in accordance with the;

Standard System of Measuring Builders Work (6th Edition)

including all amendments unless descriptions of items indicate a deviation and it shall be understood that the system of measurement which is herein adopted is the only system of measurement which will be recognised in connection with this contract. Any contradictions to this system of measurement contained in the “Model Preambles for Trades 2008” shall be disregarded (unless same have been accommodated in the system of measurement) but applicable rates shall be included for all requirements stated and not measured separately in compliance with this system.

9 PRICING OF ROCK EXCAVATIONS

It is a condition of this tender that should the tenderer elect to price the Rock Excavation included in this tender, the rates must be market related and should be identically priced for the same classification of excavations and not vary for similar billed items in the different sections.

10 BROAD BASED BLACK ECONOMIC EMPOWERMENT

1. It is the deliberate policy of the Provincial Administration of KwaZulu-Natal to foster and to encourage the economic empowerment of Black South Africans. This policy will be implemented without prescription and without prejudicing the principles and the integrity of the Provincial Administration of KwaZulu-Natal. Subject to these constraints and also subject to good business practise and commercial consideration, it is therefore considered appropriate that the Provincial Administration of KwaZulu-Natal should encourage business relationships with companies which actively pursue Affirmative Action and Black Economic Empowerment Programmes.

2. In responding to this tender you are therefore encouraged to devote attention to these two subjects of Affirmative Action and Economic Empowerment. In addition, in considering the appointment of sub-contractors, you are requested to extend the spirit of these policies.

3. The foregoing enunciations of this policy are not intended to be prescriptive nor to preclude any individual or operation from responding to this tender.

11 REGISTRATION ON THE CENTRAL SUPPLIERS DATABASE

1. In terms of the Public Finance Management Act (PFMA), 1999 (Act No 1 of 1999) Section 38 (1) (a) (iii) and 51 (1) (iii) and Section 76 (4) of PFMA National Treasury developed a single platform, The Central Supplier Database (CSD) for the registration of prospective suppliers including the varification functionality of key supplier information.
2. Prospective suppliers will be able to self - register on the CSD website: www.csd.gov.za
3. Once the supplier information has been varified with external data sources by National Treasury a unique supplier number and security code will be allocated and communicated to the supplier. Suppliers will be required to keep their data updated regularly and should confirm at least once a year that their data is still current and updated.
4. Suppliers can provide their CSD supplier number and unique security code to organs of state to view their varified CSD information.
5. Tenderers are required to fill in clearly, legibly, in bold print and black ink their CSD supplier number in the space hereunder:

Name of Supplier	
Central Supplier Database (CSD) Supplier Number:	

12 TAX CLEARANCE REQUIREMENTS

It is a condition of tender that the taxes of the successful tenderer must be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the Tenderder's tax obligations. It is a condition of this Offer of Commission that your practice remains in good standing with SARS (South African Revenue Services) in terms of its tax clearance, during the project, which is required to process your payment certificates.

1 In order to meet this requirement tenderers are required to apply via e-filing at any SARS branch office nationally. The Tax Complance Status (TCS) requirements are also applicable to foreign Tenderders / individuals who wish to submit Tenders.

2 SARS will then furnish the Tenderder with a Tax Compliance Status (TCS) PIN that will be valid for a period of 1 (one) year from the date of approval.

3 In tenders where Consortia / Joint Ventures / Sub-contractors are involved, each party must submit a separate Tax Compliance Status (TCS) PIN.

4 Application for Tax Compliance Status (TCS) PIN can be done via e-filing at any SARS branch office nationally or on the website www.sars.gov.za.

5 Tax Clearance Certificates may be printed via eFiling. In order to use this provision, taxpayers will need to register with SARS as eFilers through the website www.sars.gov.za.

6 Tax Clearance Certificates may be printed via eFiling. In order to use this provision, taxpayers will need to register with SARS as eFilers through the website www.sars.gov.za.

Security PIN Number	
Company / Entity Tax Reference Number	

13 BILLS OF QUANTITIES/LUMP SUM DOCUMENT

The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract documents, the Standard Conditions of Tender, Conditions of Contract, Standard Preambles to all Trades, Specifications, Drawings and all other relevant documentation.

14 VALUE ADDED TAX

The tender price must include for Value Added Tax (VAT). All rates, provisional sums, etc. in the Bills of Quantities must however be net (exclusive of VAT) with VAT calculated and added to the Total Value thereof in the Final Summary.

15 FIXED PRICE CONTRACT

Tenderders are to take note that the contract price adjustments are applicable to this contract.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

C2.2 - Preliminaries for GCC for Construction works - 2nd Edition 2010

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

BILL NO. 1
C2 .2 PRELIMINARY AND GENERAL

	NOTES	UNIT	QUANTITY	RATE	AMOUNT
i)	The agreement is to be the General Conditions of Contract for Works of Civil Engineering Construction (2010) (Second Edition) , published by the S. A. Institution Of Civil Engineering.				
ii)	The Preliminaries are to be the Construction and management requirements for works contracts - Part 1: General engineering and construction works (SANS 1921-1: 2004 Edition 1) prepared by Standards South Africa and shall be deemed to be incorporated herein.				
iii)	Tenderers are referred to the abovementioned documents for the full intent and meaning of each clause thereof (hereinafter referred to by heading and clause number only) for which such allowance must be made as may be considered necessary.				
iv)	Where standard clauses or alternatives are not entirely applicable to this contract such modifications, corrections or supplements as will apply are given under each relevant clause heading.				
v)	Where any item is not relevant to this specific contract such item is marked N/A (signifying "not applicable").				
vi)	Adjustment of the preliminaries: each item priced, is to be allocated to one or more of the three categories, where "F" denotes a fixed amount (amount not to be varied), "V" denotes an amount variable in proportion to value and "T" denotes an amount in proportion to time.				
vii)	Time (T) related Preliminaries will only be adjusted for omissions or additions, issued by the Employer, or delays caused by the Employer, for which variation and extension of time has been granted. ***See Contract Data*** .				
	SECTION A: GENERAL CONDITIONS OF CONTRACT				
A1	General (clause 1) F:..... V:..... T:.....	Item			
A2	Basis of Contract (clause 2) F:..... V:..... T:.....	Item			
A3	Engineer (clause 3) F:..... V:..... T:.....	Item			
A4	Contractor's General Obligation (clause 4) F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
A5	Time and Related Matters (clause 5) - As referred to in the Contract Data under Special Condition of Contract. The Contract Period shall be deemed to include all Non – Working Days, Special Non – Working Days and the year-end Builders Annual Industry Holiday Periods. F:..... V:..... T:.....	Item			
A6	Payment and Related Matters (clause 6) F:..... V:..... T:.....	Item			
A7	Quality and Related Matters (clause 7) F:..... V:..... T:.....	Item			
A8	Risk and Related Matters (clause 8) F:..... V:..... T:.....	Item			
A9	Termination of Contract (clause 9) F:..... V:..... T:.....	Item			
A10	Claims and Disputes (clause 10) F:..... V:..... T:.....	Item			
	SECTION B: SANS 1921-1:2004 (Edition 1): CONSTRUCTION AND MANAGEMENT REQUIREMENTS FOR WORKS CONTRACTS: PART 1 **Refer to the SCOPE OF WORK for detail requirements:**				
B1	Scope F:..... V:..... T:.....	Item			
B2	Normative references F:..... V:..... T:.....	Item			
B3	Definitions F:..... V:..... T:.....	Item			
B4	Requirements for construction and management F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
B4.1	General F:..... V:..... T:.....	Item			
B4.2	Responsibilities for design and construction F:..... V:..... T:.....	Item			
B4.3	Planning, programme and method statements F:..... V:..... T:.....	Item			
B4.4	Quality assurance F:..... V:..... T:.....	Item			
B4.5	Setting out F:..... V:..... T:.....	Item			
B4.6	Management and disposal of water F:..... V:..... T:.....	Item			
B4.7	Blasting F:..... V:..... T:.....	Item			
B4.8	Works adjacent to services and structures F:..... V:..... T:.....	Item			
B4.9	Management of the Works and site F:..... V:..... T:.....	Item			
B4.10	Earthworks F:..... V:..... T:.....	Item			
B4.11	Testing F:..... V:..... T:.....	Item			
B4.12	Materials, samples and fabrication drawings F:..... V:..... T:.....	Item			
B4.13	Equipment F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
B4.14	Site establishment F:..... V:..... T:.....	Item			
B4.15	Survey control F:..... V:..... T:.....	Item			
B4.16	Temporary works F:..... V:..... T:.....	Item			
B4.17	Existing services F:..... V:..... T:.....	Item			
B4.18	Health and safety The Contractor is to quantify and price the H&S Bill of Quantities in Annexure 7 and is to ensure that all information that is required is priced and items that are not applicable are omitted . The Contractor must ensure to include and price all other H&S items and Covid 19 related items in Bill of Quantities at his own discretion. F:..... V:..... T:.....	Item			
B4.19	Environmental requirements F:..... V:..... T:.....	Item			
B4.20	Alterations, additions, extensions and modifications to existing works F:..... V:..... T:.....	Item			
B4.21	Inspection of adjoining structures, services, buildings and property F:..... V:..... T:.....	Item			
B4.22	Attendance on nominated and selected subcontractors F:..... V:..... T:.....	Item			
	SECTION C: SCOPE OF WORK in accordance with SANS 10403 *(The reference to Clauses refer to Table B.1 of SANS 1921-1:2004)*				
C1	Certification by recognised bodies - CLAUSE 4.4 F:..... V:..... T:.....	Item			
C2	Agrément certificates - CLAUSE 4.5 F:..... V:..... T:.....	N/A			
C3	Other services and facilities - CLAUSE 4.8 F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
C4	Recording of weather - CLAUSE 5.2 F:..... V:..... T:.....	Item			
C5	Management meetings - CLAUSE 5.3 F:..... V:..... T:.....	Item			
C6	Daily records CLAUSE 5.6 F:..... V:..... T:.....	Item			
C7	Bond and guarantees - CLAUSE 5.7 F:..... V:..... T:.....	Item			
C8	Permits - CLAUSE 5.9 F:..... V:..... T:.....	Item			
C9	Proof of compliance with the law - CLAUSE 5.10 F:..... V:..... T:.....	Item			
	SECTION D: SPECIFICATION DATA ASSOCIATED WITH SANS 1921-1:2004 (Table A.1)				
D1	Requirements for drawings, information and calculations for which the contractor is responsible CLAUSE 4.1.7 F:..... V:..... T:.....	Item			
D2	The responsibility strategy assigned to the contractor for the works CLAUSE 4.2.1 F:..... V:..... T:.....	Item			
D3	The planning, programme and method statements - CLAUSE 4.3 F:..... V:..... T:.....	Item			
D4	Samples of materials, workmanship and finishes - CLAUSE 4.12.1 F:..... V:..... T:.....	Item			
D5	Fabrication drawings that the contractor is to provide and deliver to the employer - CLAUSE 4.12.2 F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
D6	Office for the foreman CLAUSE 4.14.3 F:..... V:..... T:.....	Item			
D7	Telephone - CLAUSE 4.14.3 F:..... V:..... T:.....	Item			
D8	Office for inspector of works - CLAUSE 4.14.3 F:..... V:..... T:.....	Item			
D9	Telephone in office for inspector of works - CLAUSE 4.14.3 F:..... V:..... T:.....	Item			
D10	Sheds - CLAUSE 4.14.3 F:..... V:..... T:.....	Item			
D11	Provision and erection of EPWP branded signboard - CLAUSE 4.14.6 F:..... V:..... T:.....	Item			
D12	Termination, diversion or maintenance of existing services - F:..... V:..... T:.....	Item			
D13	Services which are known to exist - CLAUSE 4.17.3 F:..... V:..... T:.....	Item			
D14	Detection apparatus - CLAUSE 4.17.4 F:..... V:..... T:.....	Item			
D15	Additional health and safety requirements - CLAUSE 4.18 F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

	SECTION E: SPECIFIC PRELIMINARIES	UNIT	QUANTITY	RATE	AMOUNT
	SECTION E: SPECIFIC PRELIMINARIES				
	Section E contains Specific Preliminary items which apply to this contract except where "N/A" (Not Applicable) appears against the item.				
E1	**PROPRIETARY BRANDED PRODUCTS** The contractor shall take delivery of, handle, store, use apply and/or fix all proprietary branded products in strict accordance with the manufacturers' instruction after consultation with the manufacturer's authorised representative. F:..... V:..... T:.....	Item			
E2	**OVERTIME** Should overtime be required to be worked for any reason whatsoever, the costs of such overtime are to be borne by the Contractor unless the Engineer/Principal Agent has specifically authorised in writing, prior to the execution thereof, that costs for such overtime are to be borne by the Employer. F:..... V:..... T:.....	Item			
E3	**AS BUILT DRAWINGS** The position of construction breaks and the extent of individual concrete pours are to be recorded by the Contractor on the Structural Engineer's drawings and are to be submitted to the Engineer/Principal Agent and the Structural Engineer for their records. F:..... V:..... T:.....	Item			
E4	**SITE INSTRUCTIONS** Site Instructions issued on site are to be recorded in triplicate in a Site Instruction book which is to be maintained on site by the Contractor. F:..... V:..... T:.....	Item			
E5	**LABOUR RECORD** At the end of each month the Contractor shall provide the Engineer/Principal Agent with a written record, in schedule form, reflecting the number and description of tradesmen and labourers employed by him and all sub-contractors on the works each day. F:..... V:..... T:..... *Note : In the event that the contractor fails to satisfy the requirements of this specification, the Employer (Head: Public Works) may apply any of the sanctions provided in the contract. Sanctions may include the application of a financial penalty of .04% of the Contract Sum per calendar day of which the required report has not been submitted.*	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
E6	**PLANT RECORD** At the end of each week the Contractor shall provide the Engineer/Principal Agent with a written record, in schedule form, reflecting the number, type and capacity of all plant, excluding hand tools, currently used on the works. F:..... V:..... T:.....	Item			
E7	**NON CESSION OF MONIES** The Contractor shall not cede nor assign his rights or claims to any monies due or to become due under this contract. F:..... V:..... T:.....	Item			
E8	**SECTIONAL COMPLETION** When it is required that the contract be executed in sections or portions, the tenderer shall allow for all costs in this regard as no claim for additional costs will be entertained. F:..... V:..... T:.....	Item			
E9	**LOCAL LABOUR** It is a general requirement of this contract that persons normally resident in the locality of the works (Local Labour) be given preference for employment on the contract. Provided, however, that should adequate and appropriate Labour not be available within the locality, others may be employed subject to satisfactory proof being provided that every reasonable endeavour has been made to employ Local Labour. The Contractor shall consult the local community leaders with the purpose of negotiating with them regarding the utilization of Local Labour in the construction process. In this regard, the Contractor shall furthermore give preference, wherever possible to the employment of single heads of households, women and youth (profiled on Operation Sukuma Sakhe (OSS)). The Contractor shall, in general, maximize the involvement of the local community. F:..... V:..... T:.....	Item			
E10	**IMPORT PERMITS AND DUTIES** The responsibility for obtaining the necessary import permits shall rest with the successful Tenderer. No foreign exchange will be arranged or provided by the Administration. Tenderers are to allow in their tenders and pay the ordinary levy imposed on imported items in terms of item 196.10 of Part 8 of Schedule No. 1 of the Customs and Excise Act, 1964 with effect from 1 October 1989. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
E11	**CONTRACT PRICE ADJUSTMENT PROVISIONS (CPAP)** Notwithstanding anything to the contrary contained in the GCC for Construction Works 2010 2nd Edition, this Contract shall only when the Construction Period exceeds 6 months and the Contract sum exceeds R1,000,000,00 be subject to the Contract Price Adjustment Provisions Indices Application Manual for use with P0151 indices (CPAP) (Revised 1 January 2013) as published by Statistics South Africa. Tenderers are advised that with reference to Clause 3.4.6 of the Contract Price Adjustment Provisions (CPAP) Indices Applications Manual, the Head: Public Works ***will not accept the submission by Tenderers of lists of additional items.*** Where this contract is a Lump Sum contract, the contract will be subject to Contract Price Adjustment Provisions (CPAP) only where the contract period equals or exceeds 6 calendar months. The applicable work group shall be WG 180 for domestic buildings or WG 181 for commercial and industrial buildings. F:..... V:..... T:.....	Item			
E12	**EPWP CONDITIONS AND SPECIFICATIONS** **12.1 EMPLOYMENT TARGETS** E12.1 a Employment Targets The contractor needs to provide a realistic estimate on the number of work opportunities that the project has the potential to create throughout the project duration as the project will be implemented using labour intensive construction methods on elements where it is economical and feasible for this construction method. No. of work opportunities to be created = …….. F:..... V:..... T:.....	Item			
	It is a general requirement of this contract that persons normally resident in the ward of the works (local labour) be given preference for employment on the contract. Provided, however, that should adequate and appropriate labour not be available within the ward, others may be employed subject to satisfactory proof being provided that every reasonable endeavour has been made to employ local labour (Local Sub-contractor(s); Skilled; Semi-Skilled and Unskilled). The contractor shall in consultation with the local community leaders (Project Steering Committee) with the purpose of negotiating with them regarding the utilization of local resources in the construction process. In this regard, the contractor shall furthermore give preference, wherever possible to the employment of single heads of households, women and youth as well as families declared as most indigent by War on Poverty/ Operation Sukuma Sakhe (OSS) program profiling process. The contractor should aim, in general, to maximise the involvement of the local community, however workers from other communities should not exceed 20% of all persons working on the project, where local employees possess skills at level of competency that meet contractors requirements				
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	E12.1 b Employment requirements Tenderers are advised that this contract will be subject to the Expanded Public Works Program (EPWP) aimed at alleviating and reducing unemployment. Tenderers must allow for any costs for the following employment requirements of the EPWP 1. 60% of unskilled labour to be women 2. 55% of unskilled labour to be youth aged between 18 and 35 years 3. 2% of unskilled labour to be people with disability 100% unskilled labour utilized must reside within the boundaries of the Municipality Ward where this contract is executed, with preference to the local community closest or a walking distance to the contract site. Wherever possible local skilled tradesmen are to be employed on this contract with the view to maximize utilization of local resources.				
	F:..... V:..... T:.....	Item			
	E12.1 c Labour rate and payment intervals The contractor should ensure that the labour rate paid to unskilled local labour is cpmpliant with the National Miniumum Wage. When determining the rate, consideration should be given to that EPWP beneficiaries are mostly bread winners in their families, as the program intends alleviating poverty. There should also be consideration that the labour rate promotes creation of expanded number of jobs created and person days of work. Contractors should make endeavours to ensure that labourers, particularly unskilled are remunerated on fortnight basis and prior notification be made should there be a shortfall on their wages. The labour rate for local unskilled shall also be determined in consideration of the location of the project, i.e. for projects implemented in urbanized municipalities will not be the same as that for rural municipalities.				
	F:..... V:..... T:.....	Item			
	12.2 LABOUR INTENSIVE CONSTRUCTION METHOD E12.2 (a) Labour Intensive Construction Method Those parts of the contract to be constructed using Labour Intensive methods will be marked in the BoQ with letter LI (indicating Labour Intensive) against every item so designated. Such works will only be constructed using the method so indicated. Reference to be made to Guidelines for the implementation of Labour Intensive Infrastructure projects under EPWP. "Scope of Work in Respect of Work Relating to the Expanded Public Works Programme (EPWP)" **Labour-intensive component** Due to the nature of the work involved, this type of project lends itself to be feasible as a labour Intensive project i.e. the construction activities will indeed require skilled/unskilled labour. The aim of the projects is to provide some form of economic benefit whilst generating and increasing the acquired skills shortage to improve sustainability in the local area. The following are potential focus areas where employment creation can be optimized per project:				
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	(i) Trenching works not exceeding depth of 1.5m, including trenching for Foundation, Electrical, Water, Mechanical & Civil Services Works including backfilling where ground conditions permit (ii) Building Works; All masonry works (which include concrete mixing on site; brickwork; block work ; plastering; screed works; jointing; etc.); Painting, Plumbing, Ironmongery; roof cladding; glazing; tilling; carpentry; flooring; waterproofing; etc. (iii) Sewers works including Construction of manholes, laying of Sewer pipes, bedding, backfilling and compaction. (iv) Water Reticulation works including excavation, bedding, laying of pipes and compaction (v) Site Clearance Works (vi) Electrical Reticulation works. (vii) Stormwater water drainage using in-situ concrete (viii) Landscaping and Grassing of Sports Field (ix) Cleaning and Fencing Works The above identified activities are deemed suitable to be constructed using the LIC methods; to build, upgrade and maintain the social and economic of the underdeveloped area, promoting community participation, development of skills and creating more work opportunities. Payment for items which are designated to be constructed labour-intensively (either in this schedule or in the Scope of Works) will not be made unless they are constructed using labour-intensive methods. Any unauthorised use of plant to carry out work which was to be done labour-intensively will not be condoned and any works so constructed will not be certified for payment. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	E12.3 RECORD KEEPING 12.3.1 Every employer must keep in the project site office the following minutes of site progress minutes; contractors' monthly site progress reports; accurately recorded attendance register; proof of payment as means to verify authenticity of data in the EPWP Beneficiary form submitted with payment certificates. Copies of submitted EPWP beneficiary data forms should also be kept in the site office. 12.3.2 The employer must keep this record for a period of at least three (3) years after the completion of the project in his/her office as the project site office would have been relocated. This should be safely kept for job creation data verifications and periodical audits on projects conducted by National and Provincial Department of Public Works after one (1) or two (2) quarters of submitting captured EPWP Data to the National EPWP coordinating Department. F:..... V:..... T:.....	Item			
	E12.4 EPWP REPORTING as per EPWP DATA FORM At the end of each month the contractor must submit: • EPWP monthly data collection form • Worker monthly payment upload • Worker monthly acknowledgement of receipt of payment • Worker monthly Payment register • Worker monthly training form • Monthly attendance Register • Worker Monthly pay slips • Unskilled labour certified ID copies (once off) • Beneficiary ID-size photos • Proof of UIF • Proof of COIDA F:..... V:..... T:.....	Item			
	E12.5 EPWP PROMOTION 12.5.1 EPWP signage board EPWP Program at the project level shall always be promoted through the provision of projects signage board that embraces EPWP logo at the bottom, correct measurement for this sign board will be provided by the project leader during the site handing over meeting. F:..... V:..... T:.....	Item			
	12.5.2 Branding of labour apparel Contractor & Sub-contractors' labourers shall be provided with yellow EPWP branded Personal Protective Equipment (PPE), with EPWP acronym at the back as an ideal and cost effective means of promoting program on site. The contractor is shall price for both items 12.5.1 and 12.5.2 F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	E12.6 COMMUNITY LIAISON OFFICER (CLO) UTILISATION OF A COMMUNITY LIAISON OFFICER The Contractor shall allow for and pay any and all costs necessary for the engagement of the services of a Community Liaison Officer (CLO) for the full duration of this contract A CLO will be identified by the local structures (Project Steering Committee) of the ward areas and appointed following fair and transparent interviewing process. This is to be conducted in the presence of local structures and the contractor representative, in order to assist the Contractor in sourcing of any local labour, etc. required for this project. The Contractor is to liaise with the CLO and afford him or her any assistance needed in ensuring sound working relations with the local community. **Key Responsibilities of the CLO are envisaged to include and not necessary be limited to:** 1. Assisting local leadership in conducting skills and resources audit which facilitates sourcing labour from within the ward or targeted areas for employment, as required by contractor 2. Assisting in sourcing labour-only domestic sub-contractors and the procurement of materials from local resources, as required by the contractor. 3. Assisting the contractor by identifying areas of potential conflict and or threats to the project or to stakeholders in the project and recommend appropriate action to the contractor. 4. Assisting contractor and stakeholders in the project in the resolution of any conflict which may arise. 5. Establishing and ensuring that sufficient and open communication channels between the contractor and the work force are maintained. 6. Establish and ensuring that efficient and open communication channels between the contractor and the community are maintained 7. Identifying and reporting to the Contractor regarding issues where communication between stakeholder is necessary, recommend courses of action and facilitate such communications 8. Assisting the Contractor and the work force in the establishment of grievance procedures and necessary recommendation to the Contractor regarding the grievances and solution thereto. 9. Attending to site meetings and project implementation meetings as required by the Contractor and prepare periodic reports as may be required by the Contractor from time to time. 10. Attending to such other duties which are consistent with the functions of a CLO, as may be required by the Contractor from time to time. Tenderers are to price 150% the rate of unskilled local labour rate for the Community Liaison Officer (CLO) against this item for any and all costs arising out of compliance with the foregoing and in the event of a Tenderer failing to price against this item or making inadequate financial provision against this item for compliance as aforesaid, then no claim for costs or additional cost incurred will be entertained by the Head: Public Works F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	E12.7 SKILLS DEVELOPMENT ON SITE The Contractor is conforming to the objectives of EPWP if his beneficiaries are capacitated with skills that will render them employable in the future. It is then the responsibility of the contractor that mandatory life skills are provided to 100% of workforce on site and on the job training to labourers from whom the potential for further development has been identified. The latter is not mandatory to all as it covers technical skills. Contractor should also make provision for the possibility that there might be local youth that will need to be placed on the project with an intention to be provided support towards improving their level of competency and productivity. Contractor shall also provide all necessary on-the-job training to targeted labour to enable such labour to master and advance on techniques required to undertake the work in accordance with requirements of the contract in a manner that does not compromise workers health and safety. F:..... V:..... T:.....	Item			
	E12.8 Sub-Contracting for local emerging enterprises The project shall support the notion of one main contractor to be appointed whilst several subcontractors, possibly from the local Small, Medium and Micro Enterprises (SMME) group, are appointed to undertake various smaller activities however due to the nature of the project , there will be local subcontracting. E12.8.1 Subcontractor Procedure The recommendation will be that the Contractor shall advertise and call for competitive tenders in respect of each portion of the works that are required to be subcontracted. The tenders received are then evaluated by both the employer and the contractor. The evaluation panel shall comprises equal representatives from the Employer and from the Contractor The Contractor shall without delay enter into contract with the successful tendering subcontractor based on their accepted tender submission. This will promote the cost effective participation and development of smaller registered contractors in larger valued contracts without losing single point of accountability for projects. This will allow the emerging contractors to tender for work in a fair, transparent and equitable manner rather than having to negotiate such contracts with the main contractor. Also guarantees the participation of contractors registered in lower contractor grading designation. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	E12.8.2 Subcontractor Mentoring Once the Subcontractors have been identified and engaged, the Contractor shall closely monitor their performance in the execution of their contracts. The Contractor will be responsible for drawing implementation plan that will assist in managing the development of sub-contractors undertaking Labour Intensive work. The Contractor will be responsible for management of the sub-contractors and to ensure that they comply with all EPWP requirements as set-out in this specification. The Contractor and sub-contractors will be required to compile monthly progress reports to be submitted with payment certificates. The reports shall include planned targets with regards to the works and employment, employment of EPWP beneficiaries and project expenditure. Failure to produce monthly reports will render payment certificates incomplete The contractor will be required to assist, train, mentor and monitor its Sub-contractors and report through monitoring tool on progress of each Sub-contractor. F:..... V:..... T:.....	Item			
	E12.8.3 Portfolio of Evidence The Contractor is to develop and /or maintain a portfolio of evidence for each sub-contractor. The Portfolio of Evidence is a collection of proof of the training, coaching, guidance and monitoring inputs provided to the Sub-contractor. It is the document which records the development progress of the Sub-Contractor and will need to be updated continually throughout the duration of the contract. The Portfolio of Evidence should include but not limited to the following documentation: • The development path designed for each Sub-Contractor, • The Training course completed by the Sub-Contractor, • The hours of guiding, coaching and mentoring received for each activity listed in the developmental plan, • A list of outcomes achieved at each level for each activity. F:..... V:..... T:.....	Item			
	Performance and penalties The Contractor performance will be monitored throughout the contract. Should the Contractor fail to fulfil his obligation he will be liable for penalties. Payment of the penalty shall not absolve the Contractor of any claim, or relieve the Contractor of any of his duties, obligations or responsibilities under the contract. **Utilisation of the Sub-Contractors** The Contractor's achievement of the targets will be measured quarterly to determine the progress made to date.				
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	E12.8.4 Local Suppliers Local material suppliers within the vicinity of the site to be utilise as long as their materials meets the required specification. However, quality and suitability would have to be checked by the employer, if the local suppliers are unable to meet the demand the nearest suitable suppliers are to be used. Production of materials should be done on site, where economies of scale allow e.g. concrete paving blocks should be encouraged which will enable employment creation and also allow for enterprise development. F:..... V:..... T:.....	Item			
	E12.8.5 TENDERER'S TO NOTE CONDITIONS a) The contract to be entered into between the Contractor and the PPG's will be a LABOUR ONLY sub-contract. b) The Contractor will be responsible for ensuring that all materials for use by the PPG's in the works are to be on site timeously. The Contractor shall liaise with The Mentor and PPG to determine the nature and extent of materials required and the lead time necessary. F:..... V:..... T:.....	Item		Not Applicable	
	c) The Contractor shall be responsible for the overall programming of the Works and he is to allow for monitoring the PPG's programme and progress. d)In conjunction with the Mentor, he is to allow for the supervision and mentoring (where necessary) of the PPG to ensure quality and adherence to standard building practice F:..... V:..... T:.....	Item		Not Applicable	
	e) The Contractor is to allow for extra storage facilities on site for the PPG's tools and equipment. F:..... V:..... T:.....	Item		Not Applicable	
	f) Basic tools shall be provided by the PPG's and where these are not available; the Contractor will supply him with the necessary tools and equipment and deduct the costs thereof from the interim claims made by the PPG. g) Work requiring specialized tools will be provided free of charge by the Contractor with the provision that these be returned upon completion of the Work. **CO-ORDINATION** The Contractor is to co-ordinate the work of all the SMME's, local Subcontractor's etc., Sub-Contractors and Nominated Sub- Contractors appointed direct by the Employer in such a manner and at all times as will suit the building programme and he is to allow adequate access, for the SMME's, local Subcontractor's etc., where required, to carry out their work in an efficient manner as no claims for extras in this connection will be entertained.				
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	ATTENDANCE The Contractor may allow for attendance upon the SMME's, local Subcontractor's etc. concerned to execute the work. The Contractor is to allow the SMME's, local Subcontractor's etc. the use of any scaffolding belonging to him while it remains so erected on the site. Where scaffolding is necessary for the use by any SMME's, local Subcontractor's etc. and the Contractor has not erected any for his own use or has removed same after his own use, the Contractor shall supply sufficient scaffolding to the SMME's, local Subcontractor's etc. to be erected and dismantled by the SMME's, local Subcontractor's etc. and returned to the Contractor. This attendance upon SMME's, local Subcontractor's etc. to execute the work is to include for the scaffolding provisions as aforesaid and, in addition, is to include for co-operating to the fullest extent with all the parties, attending on off-loading materials, providing suitable storage for tools and materials used by the SMME's, local Subcontractor's etc. use of general facilities such as latrines, etc., supply and cost of power, lighting, water and the like F:..... V:..... T:.....	Item			
	E12.9 EPWP contract for labour It is compulsory that shortly after the contractor and or sub contractor has appointed local labour, the employment contract should be signed by both parties, prior to commencement with works on site. The employment contract forms part of the Ministerial Determination or from Department of Employment and Labour. F:..... V:..... T:.....	Item			
	E12.10 EPWP Scope of Work For This Project Contractors are to price the items on the Bill of Quantities highlighted below, bearing in mind that they are regarded as main sources of job creation, whether sub contracted or undertaken by the main contractor. Elements of the scope of work where the application of Labour Intensive Construction methods are indicated with the letters (LI) are as follows; i) Excavating trenches for foundations and any other civil works with the depth not more than 1.5 m ii) All masonry works which include concrete mixing on site; brickwork; plastering; screed works; jointing; etc. iii) Painting, Plumbing, Ironmongery; roof cladding; glazing; tilling; carpentry; flooring; waterproofing; etc. iv) External works such as landscaping; cleaning; paving; fencing; tarmac; etc.				
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
E13	**HIV/AIDS AWARENESS** Tenderers are to price against the following items for compliance with the SPECIFICATION FOR HIV/AIDS AWARENESS bound into this document (The clauses referred to are those of the Specification for HIV/AIDS)				
E13.1	Provide and maintain a condom dispenser in terms of Clause 5.1a) F:..... V:..... T:.....	Item			
E13.2	Provide and maintain HIV/AIDS awareness posters terms of Clause 5.1b) F:..... V:..... T:.....	Item			
E13.3	HIV /Aids Awareness Programme on Site for not less than 90% of workers inclusive of all direct and indirect costs; Engage a qualified service provider as described in the scope of works to conduct an HIV Awareness Programme in terms of Clause 5.2.1a) F:..... V:..... T:.....	Item			
E13.4	Arrange for workers to attend the HIV Awareness Programme in terms of Clause 5.2.1b) F:..... V:..... T:.....	Item			
E13.5	**Reporting** Prepare and attach to claims for payment a brief report in terms of Clause 5.3 (see also HIV/STI Compliance Report included with this document). F:..... V:..... T:..... ***Note: In the event that the contractor fails to satisfy the requirements of this specification, the employer (Head: Public Works) may apply any of the sanctions provided for in the contract. Sanctions may include the application of a financial penalty of .04% of the Contract Sum per calendar day of which the required reports has not been submitted.***	Item			
E14	**OCCUPATIONAL HEALTH AND SAFETY ACT NO. 85 OF 1993** Tenderers are to allow for costs in providing a project specific ' Construction Phase Safety, Health and Environmental Plan' in accordance with "Section 2 - Specification Data associated with SANS 1921-1:2004" clause C4.18 in "Part C3 - Scope of Work" F:..... V:..... T:.....	Item			
E15	**NOTICE BOARD, SITE OFFICE, ETC.** Bidders are to allow for the provision and removal of a project notice board and a site office in accordance with the Principal Agent's requirements. F:..... V:..... T:.....	Item			
E16	**IMPORTED MATERIALS AND EQUIPMENT** Where imported items are listed in the tender documents, the tenderer shall provide all information called for, failing which the price of any such item, material or equipment shall be excluded from currency fluctuations. (***Refer to T2.14 - Schedule of Imported Materials and Equipment*** . F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
E17	**CONTRACT DOCUMENTS** The drawings issues with these Bid documents do not comprise the complete set but serves as a guide only for Biding purposes and for indicating the scope of works to enable the Bidder to acquaint him with the nature and extent of the works and the manner in which they are to be executed. Should any part of the drawings not be clearly legible to the Bidder he shall, before submitting his Bid, obtain clarification in writing from the principal agent. F:..... V:..... T:.....	Item			
E18	**GENERAL PREAMBLES** The Document Preambles will be the "ASAQS Model Preambles for Trades – 2008" and is obtainable from the various Regional Office's of the Department of Public Works and shall be read in conjunction with the Bills of Quantities and be referred to for the full descriptions of work to be done and materials to be used. F:..... V:..... T:.....	Item			
E19	**TRADE NAMES** Wherever a Trade Name for any product has been described in the Bills of Quantities the Bidder's attention is drawn to the fact that any other product of equal quality may be used subject to the written approval of the Principal Agent being obtained prior to the closing date for submission of Bids. F:..... V:..... T:.....	Item			
E20	**EXISTING PREMISES OCCUPIED** Refer to Scope of Works Part C3 of this Bid Document for information on the occupation of existing buildings. F:..... V:..... T:.....	Item			
E21	**INACCURATE AND DEFECTIVE WORK EXECUTED UNDER PREVIOUS CONTRACT** The contractor shall, after taking possession of the site and before commencing the work, check all levels, liners, profiles and the like and satisfy himself as to the dimensional accuracy of all work executed under the previous contract which may affect his work. Should any inaccurate or defective work be found, the contractor shall immediately notify the principal agent in writing requesting his instructions with regard thereto and afford every facility to those rectifying such inaccurate or defective work. F:..... V:..... T:.....	Item			
E22	**VIEWING THE SITE IN SECURITY AREAS** If the site is situated in a security area and the Bidder must arrange with the Authorities to obtain permission to enter the site for Bidding purposes. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
E23	**COMMENCEMENT OF WORKS IN SECURITY AREAS** If the works falls within a security area, the contractor must arrange with the Authorities and give the necessary notices before commencement of the works. Should the contractor fail to make such arrangements, admission to the site may be refused and any additional costs will be for the contractor's account. F:..... V:..... T:.....	Item			
E24	**ENTRANCE PERMITS TO SECURITY AREAS** If the works fall within a security area, the contractor shall obtain entrance permits for his personnel and workmen entering the area and shall comply with all regulations and instructions which may be issued from time to time regarding the protection of persons and property under control of the Authority. F:..... V:..... T:.....	Item			
E25	**SECURITY CHECK OF PERSONNEL** The principal agent may require the contractor to have his personnel and workmen, or a certain number of them, security classified. In the event of the principal agent requesting the removal of a person or persons from the works for security reasons, the contractor shall do so forthwith and shall thereafter ensure that such person or persons are denied access to the works and the site and/or to any document or information relating to the works. F:..... V:..... T:.....	Item			
E26	**PROHIBITION ON TAKING PHOTOGRAPHS** In terms of article 119 of the Defence Act, 44 of 1957, it is prohibited to sketch or to take photographs of any military site or installation or any building or civil works thereon or to be in possession of a camera or other apparatus used for taking photographs, except when authorised thereto by or on behalf of the Minister. The same prohibition is also applicable to all Correctional Institutions in terms of article 44.1(e) of the Correctional Services Act 8 of 1959. F:..... V:..... T:.....	Item			
E27	Management of Water Water for Construction purposes must be obtained from alternative water sources (i.e. supply other than water that is produced and distributed by a regulated water service authority from a licenced water treatment works for human consumption), eg dams, rivers, boreholes, springs, rainwater harvesting, recycled sewerage water,etc. The alternative water source shall not be of an inferior quality / standard than that required for construction purposes. The client reserves the rigfht through his agents to test such supplies or request certificates confirming the grade and nature of the water supply. Relevant knowledge of the respective area will be an advantage. **GENERAL:** 1.Provisional Bill of Quantities: 1.1 The quantities are provisional. **Yes** 2.The Bill of Quantities may be used as a specification Document **No**				
	Carried forward to collection			R	

SECTION 1

SUMMARY – PRELIMINARY & GENERAL

Collection	Page No.	Amount	
	1	R	
	2	R	
	3	R	
	4	R	
	5	R	
	6	R	
	7	R	
	8	R	
	9	R	
	10	R	
	11	R	
	12	R	
	13	R	
	14	R	
	15	R	
	16	R	
	17	R	
	18	R	
	19	R	
	20	R	
Carried forward to Final Summary		R	

Section No. 1
Preliminary & General
Summary

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

PART C2.3 BILL OF QUANTITIES

Item No		Quantity	Rate	Amount

BILL NO. 2

ALTERATIONS

NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.

NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No. 102 for Calculation of Contract Price Adjustments on the Haylett Formula.

NOTE: All the work in this Section is attached to or inside existing buildings. Tenderers are to allow in their pricing of the following work for working in confined or restricted spacings with limited access. Care must be taken to avoid damaging existing structure and finishes. Any damage by the the Contractor is to be made good at his own cost to the satisfaction of the Principal Agent.

NOTE: Prices are to include for carting away from site all materials not specifically mentioned as being stored on site for re-use or handed over to the Director and all rubbish, debris, etc., arising from the alterations, etc., and for making good all work damaged or disturbed to the approval of the Director.

SUPPLEMENTARY PREAMBLES

View site

Before submitting his tender the contractor shall visit the site and satisfy himself as to the nature and extent of the work to be done and the value of the materials contained in the buildings or portions of the buildings to be demolished. No claim for any variations of the contract sum in respect of the nature and extent of the work or of inferior or damaged materials will be entertained.

Carried to Collection R

Explosives

No explosives whatsoever may be used for demolition purposes unless otherwise stated.

General

The contractor shall carry out the whole of the works with as little mess and noise as possible and with a minimum of disturbance to adjoining premises and their tenants. He shall provide proper protection and provide, erect and remove when directed, any temporary tarpaulins that may be necessary during the progress of the works, all to the satisfaction of the principal agent.

Water supply pipes and other piping that may be encountered and found necessary to disconnect or cut, shall be effectually stopped off or grubbed up and removed, and any new connections that may be necessary shall be made with proper fittings, to the satisfaction of the principal agent.

Doors, fanlights, fittings, frames, linings, etc., which are to be re-used shall be thoroughly overhauled before refixing including taking off, easing and rehanging, cramping up, re-wedging as required and making good cramps, dowels, etc, and easing, oiling, adjusting and repairing ironmongery as necessary, replacing any glass damaged in removal or subsequently and stopping up all nail and screw holes with tinted plastic wood to match timber, unless otherwise described. Re-painting or re-varnishing is given separately.

Prices for taking out of doors, windows, etc., shall include for removal of all beads, architraves, ironmongery, etc.

Prices for taking out and removing doors and frames shall include for removing door stops, cabin hooks, etc., and making good floor and wall finishes to match existing.

With regard to building up of openings in existing walls, cement screeds and pavings, granolithic, tops of walls, etc, shall be levelled and prepared for raising of brickwork.

Making good of finishes shall include making good of the brick and concrete surfaces onto which the new finishes are applied, where necessary.

Carried to Collection R

	The contractor will be required to take all dimensions affecting the existing buildings on the site and he will be held solely responsible for the accuracy of all such dimensions where used in the manufacture of new items (doors, windows, fittings, etc).				
	DEMOLITIONS ETC				
	Demolishing and removing buildings with roof, comprising concrete footings, surface beds, external block walls, roof coverings, sanitary fittings, etc. complete including breaking up reinforced concrete pit cover slab, filling up pit with granular material, sealing off and carting away debris				
1	Single storey building approximately 20 000 x 5 900mm, complete	No	1		
2	Single storey building approximately 25 000 x 2 500mm, complete	No	1		
	MASONRY				
	Corobrik NFP bricks (14MPa nominal compressive strength) in class II mortar:				
3	One-brick walls.	m2	25		
	Carpentry and Joinery				
	Wrot Salinga door hung to timber stile:				
4	32mm Medium duty hardboard faced door size 813 x 1800mm high.	No	2		
	Wrot Saligna:				
5	60 x 50mm Rebated and angle rounded frame bolted to wall with heads of bolts sunk and pelleted	m	8		
	"Everite Nutec" medium density plain fibre cement boards:				
6	12 x 225mm Thick fascia (Product no. 041-202) with aluminium H-profile fascia joiners (Product no.685-195) including drilling for and fixing with hot dip galvanised drive screws and washers.	m	35		
	Carried to Collection			R	

1	80 x 200mm Moulded socketless barge board (Everite 521-731) with aluminium H-profile barge joiners.	m	17		
	METALWORK				
	Galvanised mild steel gate and frame:				
2	850 x 2250mm Hot dip galvanized steel security gate to be made up with 20mm steel tubing and to be fixed to the wall with 2 x 8mm raw bolts per hinge to typical gate detail MG47 union galvanised padlock.	No	2		
	Galvanised steel windows and frame with 8mm burglar bars to opening sashes including glazing:				
3	Window type NE1 (W02), 533 x 654mm high including approved standard brass fittings complete with window.	No	6		
	ROOF COVERINGS				
	0,5mm Chromadek or other approved, Colomate finish galvanised metal IBR profile roof sheeting at 17.5 degrees fixed to intermediate timber purlins:				
4	Roof covering with pitch not exceeding 25 degrees fixed to timber purlins at maximum 1200mm centres with a minimum of 50mm sheeting projection beyond purlins at eaves.	m2	45		
5	Extra over IBR metal roof covering for OPAL Glass fibre reinforced polyster (weight 2,4kg/m²) roof sheeting fixed with 65 mm galvanised Tek screws and newway seals in alternate sheets between galvanised metal sheet.	m2	10		
6	Sondor or other approved corrugated polycloser under ridge capping.	m	12		
7	Sondor or other approved corrugated polycloser at beamfilling.	m	14		
	Carried to Collection			R	

	Sisalation® 420 Heavy industrial grade reinforced aluminium foil insulation double sided, heavy grammage reflective foil laminate incorporating eight layers of aluminium foil, reinforcing scrim, Kraft paper and polyethylene, tested for conformance with SANS 1381-4:2009 , with a Class 1 fire rating in accordance with SANS 10177 - 3:2005 and BS 476 part 5, 6 and 7, drawn tautly across rafters and secured to each rafter with 38mm x 3,2mm x 1100mm hardboard counter batten strips positioned flush with the bottom edge of the material thus leaving 150mm overlap exposed at the top for the next layer and 150mm overlap thereafter on each 1250mm width roll:				
1	Insulation laid taut over rafters and under purlins (at approximately 1250mm centres) including galvanised steel straining wires.	m2	45		
	Ironmongery				
2	Chromium plated toilet roll holder as "Halcast No 366" plugged to wall	No	6		
	"Union" or other approved:				
3	100 x 75mm Medium duty brass butt hinge	Pairs	2.0		
4	50 x 25mm LD polished barrel bolt or similar approved	No	2		
5	47mm Padlock code: MG47	No	2		
	Plumbing				
	"Atlas Plastics"				
6	Pit VIP 200 pedestal c/w flap and incorporated seet Code 222 AP.	No	4		
7	Bambi VIP long-drop Pan c/w flap (a long-drop tolet designated specially for chidren) Code 627AP.	No	2		
8	Bowl urinal c/w brackets Code 507AP.	No	2		
	Carried to Collection			R	

1	Christy wash hand basin with splashback Code 383AP or other equal and approved polyethylene wash hand basin size 570 X 395mm, colour granite. Fixed to wall on cast iron brackets. Installation heights - 500mm off finished floor for grade "R" and 820mm for primary and secondary.	No	2		
	Sanitary plumbing				
2	50mm Pipe fixed to walls	m	12		
3	50mm Bend	No	6		
4	50mm Junction	No	3		
5	50mm Inspection bend	No	2		
	Waste Union				
	Traps, etc.				
6	Traps, etc. to be Marley uPVC 50 x 50mm Deep seal P trap (anti-syphon) Code ETP10.	No	2		
7	Chromium plated basin bottle trap.	No	2		
	Valves, etc., including jointing to copper pipe and to fittings				
8	15mm Cobra Watertech Star pillar tap with flanged backnut (Code: 111-15), manufactured in accordance with SANS 226:2004 Type 1 (BS 5412).	No	2		
	Cold Water (From JoJo Tank)				
9	15mm Polycop piping	m	40		
10	15mm Fittings	No	20		
11	Tie into existing pipe	No	1		
	Carried to Collection			R	

	Water tanks				
1	5500 litre "JoJo" polyethylene water tank with 75mm inlet at top 20mm outlet at base including access hatch at top fitted with vermin proof vent and set on concrete base (elsewhere measured)	No	1		
2	20mm Brass lockable bib tap including 20mm diameter galvanised mild steel pipe extension 200mm long back to tank with barrel nipple and socket.(Holing tank elsewhere measured)	No	1		
3	3mm Thick galvanised mild steel flat bar 50mm wide and 370mm long, once holed for 20mm steel pipe and twice holed for and bolted to concrete with 8mm rawlbolts including mortices	No	1		
	Tank Stand				
4	Concrete column base size 2500 x 2500mm x 300mm thick formed of 30Mpa/19mm concrete including all necessary ref. 888 reinforcing in cage, formwork, excavation, backfill, cart away, soil poisoning, wood float finish to top of insitu concrete	No	1		
	Paintwork				
	Prepare, prime with one coat Dulux Trade alkali-resistant primer, one coat Dulux trade universal undercoat and two finishing coats of dulux pearglo weatherguard paint:				
5	Internal plastered walls.	m2	273		
6	External plastered walls.	m2	251		
	Prepare and varnish existing doors				
7	Internal Doors	m2	20		
	2-Part Epoxy primer Sikafloor 161 with grey colour 2-Part Epoxy roller and seal coat. Sikafloor 264 over as per manufacturer's specification.				
8	On floors and landings.	m2	45		
	REMOVAL OF EXISTING DOORS, WINDOWS, ETC., FROM BRICKWORK				
	Carried to Collection			R	

	Taking out and removing doors, windows, etc., including thresholds, sills, etc., from brickwork to remain (new timber door and frame elsewhere):				
1	Window and frame not exceeding 2,5m².	No	6		
	REMOVAL OF EXISTING ROOF COVERINGS				
	Taking down and removing pitched roof not exceeding 50 degree complete with ridge and hip cappings, fittings flashings, etc.:				
2	Profiled or corrugated metal roof sheeting from purlins to remain.	m2	45		
	REMOVAL OF EXISTING ROOF COVERING SUNDRIES				
	Taking down and removing sundry roof items:				
3	Fibre cement or timber fascias and barge boards.	m	35		
	SERVICING OF EXISTING IROMONGERY				
4	Service existing mortice lock, oil and ease furniture and lock, replace missing keys, and refix with matching screws including re-setting striking plate.	No	4		
	MAKING GOOD OF PLASTERING FINISHES, ETC.				
	Making good 20mm thick untinted granolithic:				
5	Floors in small areas.	m2	41		
	REMOVAL OF EXISTING SANITARY FITTINGS				
	Taking out and removing sanitary fittings including making good wall and floor finishes and stop off services:				
6	Vitreous china WC suite.	No	6		
	REMOVAL OF EXISTING RAINWATER GOODS				
	Carried to Collection			R	

	Taking off and removing piping, gutters, etc., and making good wall finishes (making good paintwork elsewhere measured):				
1	Gutters and brackets.	m	20		
2	Downpipe and holder bats.	m	10		
3	uPVC rainwater pipes and holderbats.	m	23		
	REMOVAL OF EXISTING ROOF TRUSSES				
	Taking off and purlins, etc., and making good wall finishes (making good paintwork elsewhere measured):				
4	Roof trusses	m2	45		
	BUDGETARY ALLOWANCES				
	Roof Inspection				
5	Allow for the amount of R 60 000.00 (Sixty Thousand Rand) for Roof structure inspections to the following buildings			SUM	
	Carried to Collection			R	

Section No. 1

Bill No. 1

Alterations

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	49		
	50		
	51		
	52		
	53		
	54		
	55		
	56		
	57		
Carried Forward to Summary of Section No. 1		R	

Item No		Unit	Quantity	Rate	Amount

BILL NO. 3

EARTHWORKS (PROVISIONAL)

NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.

NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No.104 for Haylett formula purposes

NOTE: Under no circumstances will the contractor be paid for overblast of excavations. Quantities are measured and paid net and the contractor is to make allowance for this in his rate if deemed necessary.

SUPPLEMENTARY PREAMBLES

Nature of the ground

The Tenderer shall acquaint himself by personal examination of the nature of the ground. Descriptions of excavations shall be deemed to include all ground conditions classifiable as "earth" and where conditions of a more difficult character are indicated these are separately measured

Excavation for working space in rock

Notwithstanding clause 11 page 8 of the Standard System of Measuring Building Work, excavation for working space in rock will be measured in cubic metres to the extent executed and given as "extra over" bulk excavation or trench and hole excavation as the case may be

Bulking

No allowance is made in the measurements below for bulking

Carried to Collection R

Carting away of excavated material

Descriptions of carting away of excavated material shall be deemed to include loading excavated material onto trucks directly from the excavations or alternatively, from stock piles situated on the building site

Filling

Notwithstanding the reference to prescribed multiple handling in clause 1 page 6 of the Standard System of Measuring Building Work, prices for filling and backfilling shall include for all selection and any necessary multiple handling of material

Testing

Prices for filling are to include for all necessary density tests in accordance with SANS 1200.

Carried to Collection R

	EXCAVATION, FILLING, ETC				
	EXCAVATIONS ETC				
	Excavation in earth not exceeding 2m deep				
1	Trenches	m3	31		
2	Holes	m3	17		
	Excavation in earth exceeding 2m and not exceeding 4m deep				
3	Latrine pit	m3	206		
	Extra over trench and hole excavations in earth for excavation in				
4	Soft rock	m3	25		
5	Hard rock	m3	13		
	Back excavation of vertical sides of excavation in earth for working space including backfilling compacted to 98% Mod. AASHTO density				
6	Exceeding 0.50m and not exceeding 1.50m deep for placing and removing formwork to walls, etc., 200mm away from excavated face	m2	90		
7	Exceeding 1.50m and not exceeding 3.00m deep for placing and removing formwork to walls, etc., 200mm away from excavated face	m2	167		
	Extra over back excavation in earth for working space for excavation in soft rock material				
8	Exceeding 0.50m and not exceeding 1.50m deep for placing and removing formwork to walls, strip footing, etc., 200mm away from excavated face	m2	9		
9	Exceeding 1.50m and not exceeding 3.00m deep for placing and removing formwork to walls, strip footing, etc., 200mm away from excavated face	m2	17		
	Carried to Collection			R	

	Extra over back excavation in earth for working space for excavation in hard rock material				
1	Exceeding 0.50m and not exceeding 1.50m deep for placing and removing formwork to walls, strip footing, etc., 200mm away from excavated face	m2	5		
2	Exceeding 1.50m and not exceeding 3.00m deep for placing and removing formwork to walls, strip footing, etc., 200mm away from excavated face	m2	8		
	Risk of collapse of excavations				
3	Sides of trench and hole excavations not exceeding 1,5m deep	m2	112		
4	Sides of trench and hole excavations exceeding 1,5m deep	m2	167		
	Extra over all excavations for carting away				
5	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the Contractor	m3	237		
	Keeping excavations free of water				
6	Keep excavations free of water (other than subterranean water)		Item		
	De-watering of seepage water and water from other sub-soil sources				
7	Dewatering system for removal of seepage water and water from other subterranean sources in the excavations designed and executed by the contractor including all temporary pipes, drainage sumps, silt trap, connections, well points, etc		Item		
	Carried to Collection			R	

	FILLING ETC				
	Earth filling obtained from the excavations and/or prescribed stock piles on site stabilised with 8% cement per volume, compacted to 98% Mod AASHTO density				
1	Backfilling to trenches, etc	m3	16		
	G6 Earth filling supplied by the Contractor and brought to site and compacted to 98% Mod AASHTO density				
2	Under floors, steps, pavings, etc	m3	27		
	Soil supplied by the contractor stabilised with 5% cement per volume, compacted to 100% Mod AASHTO density				
3	Backfilling behind pit walls, etc	m3	68		
	Coarse clean river sand filling supplied by the contractor				
4	Under floors, steps, pavings, etc	m3	13		
	Compaction of surfaces				
5	Compaction of ground surface under floors, etc., including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density	m2	140		
	Carried to Collection			R	

	SOIL POISONING				
	Soil insecticide in accordance with SANS 5859				
1	Under floors etc including forming and poisoning shallow furrows against foundation walls etc, filling in furrows and ramming	m2	151		
2	To bottoms and sides of trenches etc	m2	64		
	Carried to Collection			R	

Section No. 1

Bill No. 2

Earthworks (Provisional)

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	59		
	60		
	61		
	62		
	63		
	64		
Carried Forward to Summary of Section No. 1		R	

Item No		Unit	Quantity	Rate	Amount

BILL NO. 4

CONCRETE, FORMWORK AND REINFORCEMENT

NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.

NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No.110 for Haylett formula purposes.

SUPPLEMENTARY PREAMBLES

Concrete

All concrete work shall be done in accordance with the latest edition of SABS 1200G, excluding clause 8.

Formwork

Descriptions of formwork shall be deemed to include use and waste only (except where described as "left in" or "permanent"), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use

Formwork to soffits of solid slabs, etc shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described

Formwork has been measured to the sides of all reinforced concrete in foundations and will be remeasured according to actual usage. However, formwork necessitated by irregularity or collapse of excavated faces will not be measured and the cost thereof shall be deemed to be included in the allowance for taking the risk of collapse of the sides of the excavations, provision for which is made in "Earthworks"

Carried to Collection R

	Cost of tests All concrete is to be tested in accordance with SANS 2001-CC1 and shall include the cost of providing cube moulds necessary for the purpose, for testing costs and for submitting reports on the tests to the principal agent. The testing shall be undertaken by an independent firm or institution nominated by the contractor to the approval of the principal agent.				
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES				
	15MPa/19mm concrete				
1	Surface blinding under footings and bases	m3	7		
2	Filling in cavity walls	m3	17		
	REINFORCED CONCRETE CAST AGAINST FORMWORK				
	30MPa/19mm concrete				
3	Strip footings	m3	10		
4	Foundation beams	m3	5		
5	Bases	m3	38		
6	Ramps	m3	1		
7	Sloping apron including forming falls	m3	5		
8	Surface beds cast in panels on waterproofing	m3	11		
9	Slabs including beams and inverted beams	m3	14		
	TEST BLOCKS				
	Carried to Collection			R	

	Test blocks				
1	Allow for all necessary concrete test cubes size 150 x 150 x 150mm cast from batches of concrete set of three, made, stored, cured and tested in accordance with SANS 2001-CC1, including use of approved cube moulds, transporting to an approved testing laboratory for testing, paying all charges and submitting reports to the Structural Engineer. (Provisional)	Sets	25		
	CONCRETE SUNDRIES				
	Finishing top surfaces of concrete smooth with a wood float				
2	Surface beds, slabs, bases, etc	m2	240		
3	Surface beds, slabs, apron, etc to falls	m2	40		
	SLEEVES				
	Plastic sleeves for pipes cast in concrete slabs not exceeding 300mm long				
4	110mm Sleeve	No	19		
5	250mm Sleeve	No	19		
	Core drilling of holes for pipes exceeding 200mm and not exceeding 250mm diameter				
6	255mm Thick reinforced concrete slab, beam, wall, etc	No	2		
	FORMWORK				
	NOTE: Unless otherwise stated herein, all items in this section shall be deemed to fall into Work Group No. 111 for Haylett formula purposes.				
	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to sides				
7	Bases	m2	14		
8	Strip foundations	m2	26		
	Carried to Collection			R	

1	Edges, risers, ends and reveals not exceeding 300mm high or wide	m	64		
2	Edges of surface bed panels, ramps, etc not exceeding 300mm high or wide	m	299		
	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to soffits				
3	Soffit of slab not exceeding 250mm thick propped up exceeding 1.5m and not exceeding 3.5m	m2	19		
4	Soffit of slab exceeding 250mm not exceeding 500mm thick propped up exceeding 1.5m and not exceeding 3.5m	m2	11		
	MOVEMENT JOINTS, ETC				
	Expansion joints with 10mm Jointex between vertical concrete and brick surfaces				
5	Not exceeding 300mm wide	m	85		
	Saw cut joints				
6	3 x 40mm Saw cut joints in top of concrete	m	29		
	REINFORCEMENT (PROVISIONAL)				
	NOTE: Unless otherwise stated herein, all items in this section shall be deemed to fall into Work Group No. 114 for Haylett formula purposes				
	High tensile and mild steel reinforcement to structural concrete work				
7	Various diameter reinforcing bars	t	6.348		
	High tensile steel dowel bars				
8	16mm Diameter dowel bar 500mm long with one end embedded 250mm deep in side of concrete at expansion joint and other end greased and wrapped in polythene sheeting, including hole through formwork	No	31		
	Carried to Collection			R	

	Fabric reinforcement				
1	Type 193 fabric reinforcement in surface beds, etc	m2	144		
2	Type 395 fabric reinforcement in surface beds, etc	m2	127		
	Carried to Collection			R	

Section No. 1

Bill No. 3

Concrete, Formwork and Reinforcement

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	66		
	67		
	68		
	69		
	70		
Carried Forward to Summary of Section No. 1		R	

Item No			Quantity	Rate	Amount
	BILL NO. 5				
	PRECAST CONCRETE				
	NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.				
	NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No.112 for Haylett Formula purposes.				
	NOTE: All precast/prestressed concrete shall be in accordance with SANS 2001-CC1.				
	PRECAST CONCRETE				
	Precast concrete slab for toilet pedestal				
1	470 x 600 x 150mm Thick reinforced slab including 250mm diameter opening	No	19		
	Prefabricated pre-stressed concrete ribs				
2	990 x 447.5 x 100mm Thick concrete slab with 20 x 20mm chamfer around top edge, including ref 193 mesh, two 10mm diameter galvanised continuous threaded lifting bars with bolt and nut to end of bars and with 50 x 50 x 5mm thick galvanised plate with 12mm diameter hole drilled in the centre for 10mm handle bar to slide through and secured through the slab using 15mm pipe sleeve, including all necessary formwork	No	18		
3	1 265 x 447.5 x 100mm Thick concrete slab with 20 x 20mm chamfer around top edge, including ref 193 mesh, two 10mm diameter galvanised continuous threaded lifting bars with bolt and nut to end of bars and with 50 x 50 x 5mm thick galvanised plate with 12mm diameter hole drilled in the centre for 10mm handle bar to slide through and secured through the slab using 15mm pipe sleeve, including all necessary formwork	No	14		
	Carried to Collection			R	

1	1 420 x 447.5 x 100mm Thick concrete slab with 20 x 20mm chamfer around top edge, including ref 193 mesh, two 10mm diameter galvanised continuous threaded lifting bars with bolt and nut to end of bars and with 50 x 50 x 5mm thick galvanised plate with 12mm diameter hole drilled in the centre for 10mm handle bar to slide through and secured through the slab using 15mm pipe sleeve, including all necessary formwork	No	2		
2	2 140 x 447.5 x 100mm Thick concrete slab with 20 x 20mm chamfer around top edge, including ref 193 mesh, two 10mm diameter galvanised continuous threaded lifting bars with bolt and nut to end of bars and with 50 x 50 x 5mm thick galvanised plate with 12mm diameter hole drilled in the centre for 10mm handle bar to slide through and secured through the slab using 15mm pipe sleeve, including all necessary formwork	No	4		
3	220 x 100mm Pre-stressed concrete rib in lengths not exceeding 5m	m	15		
4	220 x 100mm Pre-stressed concrete rib in lengths exceeding 5m and not exceeding 7,5m	m	36		
	Carried to Collection			R	

Section No. 1

Bill No. 4

Precast Concrete

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	72		
	73		
Carried Forward to Summary of Section No. 1		R	

Item No		Unit	Quantity	Rate	Amount
	BILL NO. 6				
	MASONRY				
	NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No.116 for Haylett Formula purposes				
	NOTE: All masonry shall be in accordance with SANS 2001-CM1.				
	SUPPLEMENTARY PREAMBLES				
	Sizes in descriptions				
	Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick				
	Hollow walls				
	Descriptions of hollow walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole				
	Bagged and sealed walls				
	Walls in two skins described as "bagged and sealed" shall be deemed to include having the outer face of the inner skin bagged with 1:6 cement and sand mixture and sealed with two coats bitumen emulsion waterproofing coating.				
	Face bricks				
	Bricks shall be ordered timeously to obtain uniformity in size and colour.				
	Carried to Collection			R	

	Pointing				
	Descriptions of recessed pointing to fair face brickwork and face brickwork shall be deemed to include square recessed, hollow recessed, weathered pointing, etc.				
	BRICKWORK				
	FOUNDATIONS (PROVISIONAL)				
	Brickwork of NFX bricks (14 MPa nominal compressive strength) in class II mortar				
1	Piers	m3	1		
2	One brick walls	m2	68		
3	330mm Hollow walls of two half brick skins including wire ties	m2	142		
	SUPERSTRUCTURE				
	Brickwork of NFP bricks in class II mortar				
4	Piers	m3	1		
5	Half brick walls	m2	73		
6	Half brick walls in beamfilling	m2	10		
7	One brick walls	m2	253		
	BRICKWORK SUNDRIES				
	Bagging of 1:3 cement and sand mixture				
8	On brick walls, piers, etc	m2	339		
	Movement joints with "Jointex" between horizontal concrete and brick surfaces				
9	10mm Joints not exceeding 300mm wide	m	143		
	Carried to Collection			R	

	Brickwork reinforcement				
1	75mm Wide reinforcement built in horizontally	m	538		
2	150mm Wide reinforcement built in horizontally	m	1 701		
	Pre-stressed fabricated lintels				
3	110 x 75mm Lintels in lengths not exceeding 3m	m	25		
	Galvanised hoop iron cramps, ties, etc				
4	30 x 1,6mm Roof tie 1,5m long with one end built into brickwork and other end fixed to timber	No	56		
	Air bricks etc				
5	229 x 152mm Clay vermin proof air brick	No	28		
	FACE BRICKWORK				
	Face brickwork to be "Corobrik®" (Lawley-Gauteng) Montana Traventine FSB of 20-30MPa nominal compressive strength in Class II mortar with recessed horizontal and recessed vertical joints				
6	Extra over NFX brickwork for face brickwork in foundations (Provisional)	m2	43		
7	Extra over NFP brickwork for face brickwork	m2	249		
8	Extra over NFP brickwork for brick-on-edge header course lintels 1 course high, pointed on face and 115mm soffit	m	33		
	Brick-on-edge header course copings, sills, etc of "Corobrik® (Lawley-Gauteng) Montana Traventine FSB" face bricks, pointed with recessed joints on all exposed faces				
9	170mm Wide sills set level and slightly projecting	m	19		
	FIBRE CEMENT WINDOW CILLS				
	Natural grey sills in single lengths bedded in class II mortar including metal fixing lugs etc				
10	12 x 150mm Wide sills set flat and slightly projecting	m	19		
	Carried to Collection			R	

Section No. 1

Bill No. 5

Masonry

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	75		
	76		
	77		
Carried Forward to Summary of Section No. 1		R	

Item No		Unit	Quantity	Rate	Amount
	BILL NO. 7				
	WATERPROOFING				
	NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No. 120 for Haylett formula purposes.				
	DAMP PROOFING OF WALLS AND FLOORS				
	One layer 375 micron embossed polyethylene dampproof course (SANS 952-1985 type B)				
1	In walls	m2	27		
2	Under slabs on brickwork	m	87		
	Two coats of "Brixeal" or other approved bitumen waterproofing coating				
3	On bagged brick walls	m2	135		
	One layer 250 micron green polyethylene waterproof sheeting (SANS 952-1985 type C) sealed at laps with PVC self-adhesive tape				
4	Under surface beds	m2	51		
	JOINT SEALANTS				
	Pre-compressed bitumen impregnated foam plastic joint sealing strips				
5	10 x 10mm In joints between frames and walls	m	201		
	Carried to Collection			R	

	"Thioflex" two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc				
1	3 x 40mm In saw cut joints in floors	m	29		
2	10 x 10mm In expansion joints in floors	m	371		
	Carried to Collection			R	

Section No. 1

Bill No. 6

Waterproofing

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	79		
	80		
Carried Forward to Summary of Section No. 1		R	

Item No		Unit	Quantity	Rate	Amount
	BILL NO. 8				
	ROOF COVERINGS				
	NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No.124 for Haylett Formula purposes.				
	NOTE: All roof covering to be installed to manufacturers detail and applicable SANS codes. All roof sheeting shall be laid under a 5 year written guarantee for site workmanship and watertightness.				
	PROFILED METAL SHEETING AND ACCESSORIES				
	0,5mm "Chromadek" or other approved, Colomate finish galvanised metal IBR profile roof sheeting at 17.5 degrees fixed to intermediate timber purlins at 1 250mm centres and to ridge and eaves with minimum 50mm sheeting end overlaps, all in accordance with architects drawings and manufacturer's specifications				
1	Roof covering with pitch not exceeding 25 degrees fixed to timber purlins at maximum 1200mm centres with a minimum of 50mm sheeting projection beyond purlins at eaves.	m2	149		
2	Extra over IBR metal roof covering for OPAL Glass fibre reinforced polyster (weight 2,4kg/m²) roof sheeting fixed with 65 mm galvanised Tek screws and newway seals in alternate sheets between galvanised metal sheet.	m2	60		
	Carried to Collection			R	

	0,5mm "Chromadek" or other approved, Colomate finish galvanised metal ridge cap with and including ridge closer, all in accordance with architects drawings and manufacturer's specifications				
1	Ridge capping	m	28		
2	Counter flashing 70mm girth	m	56		
	"Sondor" or other approved corrugated polycloser				
3	Under ridge capping	m	28		
4	On beamfilling	m	56		
	ROOF AND WALL INSULATION				
	Sisalation® 420 Heavy industrial grade reinforced aluminium foil insulation double sided, heavy grammage reflective foil laminate incorporating eight layers of aluminium foil, reinforcing scrim, Kraft paper and polyethylene, tested for conformance with SANS 1381-4:2009 , with a Class 1 fire rating in accordance with SANS 10177 - 3:2005 and BS 476 part 5, 6 and 7, drawn tautly across rafters and secured to each rafter with 38mm x 3,2mm x 1100mm hardboard counter batten strips positioned flush with the bottom edge of the material thus leaving 150mm overlap exposed at the top for the next layer and 150mm overlap thereafter on each 1 250mm width roll				
5	Insulation laid taut over rafters and under purlins (at approximately 1 250mm centres) including galvanised steel straining wires	m2	149		
	Carried to Collection			R	

Section No. 1

Bill No. 7

Roof Coverings

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	82		
	83		
Carried Forward to Summary of Section No. 1		R	

Item No		Unit	Quantity	Rate	Amount
	BILL NO. 9				
	CARPENTRY AND JOINERY				
	NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No 126 for Haylett Formula purposes				
	SUPPLEMENTARY PREAMBLES				
	Roof Trusses:				
	The following is applicable in respect of plate nailed roof trusses:				
	Trusses are at maximum 1000mm centres. Roof covering is 0,50mm colomate galvanised metal IBR on timber purlins.				
	The dimensions in the descriptions of the trusses are nominal and actual measurements are to be obtained from the Architect and/or on site before design or fabrication commences.				
	Joinery:				
	Descriptions for the following joinery fittings, etc., shall be deemed to include all ironmongery, metalwork, paint finishes, laminated finishes, etc., and for assembling and installing complete.				
	Carried to Collection			R	

	TIMBER ROOF CONSTRUCTION				
	Design Responsibility				
	The contractor shall be responsible for the design of the timber roof construction. The contractor will submit shop drawings for approval by the **principal agent** within two weeks after the date of tender closing. Appointment of the successful tenderer will be subject to approval of the timber roof construction. The contractor shall commence manufacturing only after written approval of shop drawings from the **principal agent.**				
	Plate nailed timber roof construction grade V4 minimum				
1	Design, supply and erect the complete double pitch roof structure to new building (approx. 47m² on flat) including purlins, braces, battens, gandboarding, wall plates, roof ties, gusset plates, bolts, etc (8B)	No	1		
2	Design, supply and erect the complete double pitch roof structure to new building (approx. 47m² on flat) including purlins, braces, battens, gandboarding, wall plates, roof ties, gusset plates, bolts, etc (8G)	No	1		
3	Design, supply and erect the complete double pitch roof structure to new building (approx. 35m² on flat) including purlins, braces, battens, gandboarding, wall plates, roof ties, gusset plates, bolts, etc (4R1T)	No	1		
4	Design, supply and erect the complete double pitch roof structure to new building (approx. 24m² on flat) including purlins, braces, battens, gandboarding, wall plates, roof ties, gusset plates, bolts, etc (1F1D)	No	1		
	EAVES, VERGES, ETC				
	"Everite Nutec" medium density plain fibre cement boards				
5	225 x 12mm Thick fascia (code: 041-202) with aluminium H-profile fascia joiners (code: 685-195) including drilling for and fixing with hot dip galvanised drive screws and washers	m	56		
6	200 x 80mm Moulded socketless barge board (code: 721-731) with uPVC H-profile barge joiners	m	43		
	DOORS, ETC.				
	Carried to Collection			R	

	Wrought softwood doors				
1	32mm Door 813 x 1800mm high (D1)	No	18		
	"TDM" or similar approved "Saligna BB" doors hung to steel frames (elsewhere measured)				
2	40mm Framed, ledged and braced batten door size 813 x 2032mm high of SA Pine sub-frame with double top and bottom rails, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces, filled in with tongued and grooved boarding in V-joint rail (D2)	No	4		
	FRAMED, FRAMES, ETC				
	Wrought softwood				
3	60 x 50mm Rebated and angle rounded frame bolted to wall with heads of bolts sunk and pelleted	m	79		
	Carried to Collection			R	

Section No. 1

Bill No. 8

Carpentry and Joinery

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	85		
	86		
	87		
Carried Forward to Summary of Section No. 1		R	

Item No		Unit	Quantity	Rate	Amount
	BILL NO. 10				
	IRONMONGERY				
	NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No 132 for Haylett Formula purposes.				
	SUPPLEMENTARY PREAMBLES				
	Proprietary items				
	Where applicable the manufacturers' names or product catalogue titles are given in sub-headings preceding the items				
	Prices are to be based on the specific products/articles specified. If tenderers wish to offer alternative products/articles for certain items, these items are to be clearly marked and the alternative specification given with supporting brochures etc clarifying the features of the products/articles offered				
	On request returnable samples are to be provided to the principal agent for consideration				
	Carried to Collection			R	

Finishes to ironmongery

Where applicable finishes to ironmongery are indicated by suffixes in accordance with the following list:
BS Satin bronze lacquered
CH Chromium plated
SC Satin chromium plated
SE Silver enamelled
GE Grey enamelled
AN Anodised natural
AS Anodised silver
AB Anodised bronze
AG Anodised gold
ABL Anodised black
PB Polished brass
PL Polished and lacquered
PT Epoxy coated
SD Sanded

Carried to Collection R

	HINGES, BOLTS, ETC				
	Manufactured by "Union" or similar approved				
1	100 x 75mm Medium duty brass butt hinge	No	44		
2	100 x 75mm Two ball bearing butt hinge (Code 8352-100 SB)	No	15		
3	50 x 25mm LD polished barrel bolt	No	18		
	CATCHES, CABIN HOOKS, ETC.				
	Manufactured by "Dorma" or similar approved				
4	"DHC-SS-030-A" stainless steel hat and coat hook without rubber buffer	No	18		
	Manufactured by "Miles Nelson" or similar approved:				
5	150mm "276SC10150BP" cabin hook solid chrome	No	4		
	LOCKS				
	Manufactured by "Dorma" or similar approved				
6	"D036S Europrofile" single cylinder sash lock	No	4		
	Manufactured by "Union" or similar approved				
7	47mm "MG47" Padlock	No	5		
8	"CZ80941CH" WC indicator bolt	No	18		
	HANDLES				
	Manufactured by "Dorma" or similar approved				
9	"CB30" Lever handle on rectangular Euro cylinder back plate 61cm centres.	No	8		
	Carried to Collection			R	

	PHOTOLUMINESCENT SIGNS				
	SUPPLEMENTARY PREAMBLES				
	Signs are to comply with SANS 1186-1 to 5 and to be to the approval of the local authority. Signs are to have anodised aluminium frames				
	Prices are to include for fixing by approved methods. The use of double sided tape will not be permitted. Surface mounted signs are to be concealed fixed				
	Samples, specifications, literature, etc of materials and fabricated articles the tenderer proposes to use shall be submitted with the tender				
	A ten year guarantee on materials and workmanship shall be submitted by the successful tenderer				
	Wall mounted photoluminescent statutory signs				
1	180 x 180mm Female Sign	No	2		
2	180 x 180mm Male Sign	No	2		
	BATHROOM ACCESSORIES				
	Manufactured by "Franke" or simlar approved				
3	"Halcast No. 366" Chromium plated toilet roll holder, plugged and screwed to wall with stainless steel screws	No	19		
	Manufactured by "She Bin" or similar approved				
4	Feminine hygiene pedal bins	No	19		
	Manufactured by "Buchel" or similar approved				
5	"B-2111" Surface mounted soap dispenser, plugged	No	16		
	Manufactured by "Jassen Dakile" or similar approved				
6	"L12603.3801-02" Hinged arm supports	No	2		
7	"L12806.0000-00" Wall mounting sets	No	2		
	Carried to Collection			R	

Section No. 1

Bill No. 9

Ironmongery

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	89		
	90		
	91		
	92		
Carried Forward to Summary of Section No. 1		R	

Item No		Unit	Quantity	Rate	Amount

BILL NO. 11

METALWORK

NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.

NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No.136 for Haylett formula purposes

SUPPLEMENTARY PREAMBLES

Descriptions

Descriptions of bolts shall be deemed to include nuts and washers.

Descriptions of expansion anchors and bolts and chemical anchors and bolts shall be deemed to include nuts, washers and mortices in brickwork or concrete.

Metalwork described as"holed for bolt(s)" shall be deemed to exclude the bolts unless otherwise described.

Galvanising must comply to: SANS 121-ISO 1461 & SANS 32-EN 10240 and SANS 14713-ISO 14713 for Hot Dip galvanising on iron and steel articles.

Door frames

Pressed steel door frames shall be supplied with one pair of 100mm galvanised steel loose pin hinges.

Galvanised steel windows

Windows shall be provided with polished brass fittings.

Carried to Collection R

Only window openings shall be fitted with horizontal 8mm square burglar bars at maximum 150mm centres.

Courses adjacent to window jambs are to have cores filled allowing fixing lugs to be built-in.

Carried to Collection R

	GALVANISED MILD STEEL GATES, SCREENS, ETC.				
	Welded gate and frame				
1	Single gate 850 x 2250mm high of 20mm steel tubing and fitted with a pair of suitable hinges welded to post and with ears for padlock	No	5		
	GALVANISED PRESSED STEEL DOOR FRAMES				
	1,2mm Rebated frames suitable for one brick walls				
2	Frame for door 813 x 2032mm high	No	4		
	GALVANISED STEEL WINDOWS, DOORS, ETC				
	Purpose made steel windows with 8mm burglar bars to opening sashes				
3	Window (W01) overall size 889 x 457mm high	No	10		
4	Window (W02) overall size 533 x 654mm high	No	18		
	Carried to Collection			R	

Section No. 1

Bill No. 10

Metalwork

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	94		
	95		
	96		
Carried Forward to Summary of Section No. 1		R	

Item No		Unit	Quantity	Rate	Amount

BILL NO. 12

PLASTERING

NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.

NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No 142 for Haylett formula purposes.

SUPPLEMENTARY PREAMBLES

Testing of sand/cement screeds:

Testing to be done by an accredited independent testing specialist, or by the provision of independently certified test date to demonstrate compliance with the Specification as set out below.

Testing to include both light tap and heavy weight impact using a 4kg mass in compliance with the BRE screed tester requirements.

Maximum indentation not to exceed 3mm.

Alternative substrate testing methods may be put forward for consideration and acceptance by the Principal Agent.

All test results to be provided in Microsoft Excel format with unique numbers and the positions of tests referenced and indicated on a floor plan (floor plan to be provided by Principal Agent.).

In all instances of results failing to comply as determined by the Principal Agent, additional tests to prove final compliance will be for the account of the contractor.

Carried to Collection R

	EPOXY FLOOR COATINGS				
	2 Part "Sikafloor 161" epoxy primer with "Sikafloor 264" seal coat (colour: Grey) as per manufacturer's specifications				
1	On screeded floors	m2	67		
2	Skirtings 60mm high	m	108		
	SCREEDS				
	Screeds on concrete				
3	30mm Thick on narrow widths	m2	1		
4	30mm Thick on floors and landings	m2	67		
	INTERNAL PLASTER				
	Cement plaster on brickwork				
5	On walls	m2	388		
6	On narrow widths	m2	23		
	SPECIALISED PLASTER TYPE WALL COATINGS				
	15mm Thick impermeable plaster mixed with silicite sealing agent applied in strict accordance with manufacturer's specifications, on brickwork				
7	On walls	m2	339		
	Carried to Collection			R	

Section No. 1

Bill No. 11

Plastering

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	98		
	99		
Carried Forward to Summary of Section No. 1		R	

Item No		Unit	Quantity	Rate	Amount
	BILL NO. 13				
	TILING				
	NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No 144 for Haylett formula purposes				
	SUPPLEMENTARY PREAMBLES				
	Fixing				
	Unless described as "fixed with adhesive to plaster (plaster elsewhere)" descriptions of tiling on brick or concrete walls, columns, etc shall be deemed to include 1:4 cement plaster backing and descriptions of tiling on concrete floors etc shall be deemed to include 1:3 plaster bedding				
	Tiling described as "fixed with adhesive on power floated concrete" shall be deemed to include for approved tiling key-coat				
	Ceramic, porcelain, marble and granite tiles are to be fixed and grouted with suitable adhesives and grouts from the "Tal Professional" ("Ceresit Tylon"?) range of products as recommended by the manufacturer of the tiles				
	WALL TILING				
	200 x 200 x 5mm White glazed ceramic tiles fixed with an approved adhesive to plaster (plaster elsewhere)				
1	On walls in isolated panels, splashbacks, etc	m2	10		
	Carried Forward to Summary of Section No. 1			R	

Item No		Unit	Quantity	Rate	Amount

BILL NO. 14

PLUMBING AND DRAINAGE (PROVISIONAL)

NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.

NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No.148 for Haylett formula purposes.

SUPPLEMENTARY PREAMBLES

Wire gratings

Descriptions of gutter outlets etc shall be deemed to include wire balloon gratings

Stormwater channels

Descriptions of channels shall be deemed to include necessary excavation, surface preparation, compaction, etc, and disposal of surplus material on site

Septic tanks

Descriptions of proprietary type septic tanks shall be deemed to include excavation, bedding and jointing, concrete base slabs, jointing to drains and backfilling, compaction, etc all in accordance with the manufacturer's instructions and disposal of surplus material on site

Sealing of edges

Outer edges of sinks, basins, baths, urinals, etc are to be sealed against adjacent surfaces with approved silicone

Carried to Collection R

uPVC pipes and fittings

Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings

Soil, waste and vent pipes and fittings shall be solvent weld jointed or sealed with butyl rubber rings

uPVC pressure pipes and fittings

Pipes of 50mm diameter and smaller shall be plain ended with solvent welded uPVC loose sockets and fittings

Pipes of 63mm diameter and greater shall have sockets and spigots with push-in type integral rubber ring joints. Bends shall be uPVC and all other fittings shall be cast iron, all with similar push-in type joints

Copper pipes

Pipes shall be hard drawn and half-hard "Maksal" pipes of the class described. Class 0 (thin walled hard drawn) pipes shall not be bent. Class 1 (thin walled half-hard), Class 2 (half-hard) and Class 3 (heavy walled half-hard) pipes shall only be bent with benders with inner and outer formers. Fittings to copper waste, vent and anti-syphon pipes, capillary solder fittings and compression fittings shall be "Cobra Watertech" type. Capillary solder fittings shall comply with ISO 2016

Copper pipes are to be installed in accordance with the latest revision of the Code of Practice for Copper Plumbing soldering techniques. Flux, solder, etc to be strictly in accordance with the manufacturer's requirements with special attention to copper flux composition

Reducing fittings

Where fittings have reducing ends or branches they are described as "reducing" and only the largest end or branch size is given. Should the contractor wish to use other fittings and bushes or reducers he may do so on the understanding that no claim in this regard will be entertained

Carried to Collection R

Fixing of pipes

Unless specifically otherwise stated, descriptions of pipes shall be deemed to include fixing to walls, etc, casting in, building in or suspending not exceeding 1m below suspension level

Paper wrapping to pipes

Pipes chased into brickwork must be wrapped with two layers of stout brown paper tied with wire. Rates are to include for wrapping around joints and fittings

Disinfection of water pipework

Water pipework is to be disinfected at completion in accordance with SABS 1200L (provision for disinfection elsewhere)

Laying, backfilling, bedding, etc of pipes

Pipes shall be laid and bedded in accordance with manufacturers' instructions and trenches shall be carefully backfilled

Where no manufacturers' instructions exist, pipes shall be laid in accordance with Clauses 5.1 and 5.2 of each of the following:
SANS 1200L : Medium-pressure pipelines
SANS 1200LD : Sewers
SANS 1200LE : Stormwater drainage

Pipe trenches, etc shall be backfilled in accordance with Clauses 3, 5.5, 5.6, 5.7 and 7 of SANS 1200DB : Earthworks (Pipe trenches)

Pipes shall be bedded in accordance with Clauses 3.1 to 3.4.1, 5.1 to 5.3 and 7 of SANS 1200LB : Bedding (Pipes)

Unless otherwise described bedding of rigid pipes shall be Class B bedding

Carried to Collection R

	General Descriptions of pipes laid in and including trenches and of inspection chambers, catchpits, etc shall be deemed to include excavation, bedding, backfilling, compaction to a minimum of 93% Mod AASHTO density and disposal of surplus material on site Descriptions of service pipes and flexible connecting pipes shall be deemed to include connections to taps, cisterns, etc and to steel pipes (adaptors for connections to copper pipes, etc are given separately) Descriptions of WC pans, slop hoppers, etc shall be deemed to include for joints to soil pipes (pan connectors are separately measured) As-built drawings Where required, the contractor shall prepare an updated set of as-built drawings. At completion of the contract the contractor shall hand these drawings to the principal agent for reproducing onto the originals for handing over to the employer (provision for allowance of as-built drawings elsewhere)				
	PLUMBING				
	RAINWATER GOODS				
	uPVC gutters and rainwater pipes				
1	110mm Half-round roof gutters	m	56		
2	Extra over gutter for stopped end	No	16		
3	Extra over gutter for outlet for 110mm pipe	No	7		
4	75mm Diameter rainwater pipes	m	9		
5	Extra over rainwater pipe for bend	No	9		
6	Extra over rainwater pipe for shoe	No	7		
7	Extra over rainwater pipe for swan-neck	No	7		
	Carried to Collection			R	

	SANITARY FITTINGS				
	"Atlas Plastics" or similar approved				
1	"Bowl" urinal (code: 507AP) fixed to wall with and including matching brackets complete	No	4		
2	"Christy" wash hand basin with splashback (code: 383AP) polyethylene wash hand basin size 570 X 395mm (colour: granite) fixed to wall with and including cast iron brackets	No	16		
3	"VIP 200" low level floor mounted WC pedestal (code: 222AP) complete with flap and incorporated seat	No	19		
	WASTE UNIONS ETC				
	"Atlas Plastics" or similar approved				
4	Waterless urinal fitting and waste (code: 496AP)	No	4		
	"Cobra Watertech" or similar approved				
5	32mm Basin waste union (code: 303) including plug and chain	No	16		
	TRAPS, ETC.				
	"Marley" or similar approved				
6	50mm PVC trap (code: ETPA10)	No	16		
	TAPS, VALVES, ETC				
	"Cobra Watertech" or similar approved				
7	15mm 111-15 Pillar taps fitted with restriction washer, one tap hole stopper	No	14		
8	15mm 111-041 Medical elbow action pillar tap with flanged backnut fitted with restriction washer and one tap hole stopper	No	2		
9	15mm 1003/125 Brass fullway wheelhead gate valve	No	16		
	VENT PIPES, ETC				
	Carried to Collection			R	

	"SWAN plastics" or similar approved black PVC UV stabilized vent pipes				
1	110mm Vent pipe with and including holderbats screwed to walls	m	68		
	Extra over black PVC UV stabilized vent pipe for fittings				
2	110mm Sockets to be cut off and used to fix shade cloth over vent pipe (elsewhere measured).	No	19		
3	110mm PVC single socket cast into slab for 110mm vent pipe (elsewhere measured)	No	19		
4	110mm pipe x 130mm Long welded to socket to form hole through slab.	No	19		
5	55% Black shade cloth to top of vent pipe (elsewhere measured)	No	19		
	Sundries				
6	Provide all necessary apparatus, water, etc, for and test the whole of the Sanitary Plumbing to the satisfaction of the Architect and Local Authority and replace any defective work free of charge and leave perfect (PIT)	No	4		
	SANITARY PLUMBING				
	NOTE: Unless otherwise stated herein, all items in this section shall be deemed to fall into Work Group No. 146 for Haylett formula purposes.				
	Class 34 uPVC pipes				
7	50mm Pipes	m	74		
	Extra over uPVC pipes for				
8	50mm Access bend	No	20		
9	50mm Access junction	No	8		
10	50mm Bend	No	53		
	Carried to Collection			R	

1	50mm Junction	No	20		
	WATER SUPPLIES				
	Class II copper pipes				
2	15mm Pipes	m	11		
3	22mm Pipes	m	45		
	Extra over class II copper pipes for solvent welded fittings				
4	15mm fittings	No	22		
5	22mm fittings	No	22		
	Carried to Collection			R	

	TANKS, ETC				
	"Jo-jo" or similar approved				
1	2500 litre Low profile water tank with and including 4mm galvanised wire looped double to top of tank and anchored to top of slab with Y10 rod cast into slab at all four corners, including 15mm standard garden hose to isolate wire and prevent damage to tank or other approved holding down material secured around tank and to concrete pedestal	No	4		
2	3mm Thick galvanised plate with and including 23mm hole to be bolted onto edge of concrete slab with 2 x 8mm raw bolts	No	4		
3	20mm "Cobra" 541 tank locking tap fitted to a 22mm extension pipe with barrel nipple and galvanised socket	No	4		
	Carried to Collection			R	

Section No. 1

Bill No. 13

Plumbing and Drainage (Provisional)

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	102		
	103		
	104		
	105		
	106		
	107		
	108		
	109		
Carried Forward to Summary of Section No. 1		R	

Item No		Unit	Quantity	Rate	Amount
	BILL NO. 15				
	GLAZING				
	NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No.150 for Haylett formula purposes				
	GLAZING TO STEEL WITH PUTTY				
	4mm Sandblasted glass				
1	Panes exceeding 0,1m² and not exceeding 0,5m²	m2	11		
	TOPS, SHELVES, DOORS, MIRRORS, ETC				
	6mm Silvered float glass copper backed mirror with polished edges, holed for and fixed with chromium plated dome capped screws with rubber buffers to plugs in brickwork or concrete				
2	Mirror 300 x 600mm high with dome capped screws	No	16		
	Carried Forward to Summary of Section No. 1			R	

Item No		Unit	Quantity	Rate	Amount
	BILL NO. 16				
	PAINTWORK				
	NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No 152 for Haylett formula purposes.				
	SUPPLEMENTARY PREAMBLES				
	PROPRIETY ITEMS OR MATERIALS				
	Proprietary items or materials where specified are to be of the brand specified - or other approved - by the Head: Public Works.				
	COLOURS				
	Unless otherwise described all paintwork shall be deemed to have a colour value in excess of 7 on the Munsell system in accordance with SANS 1091				
	PAINTWORK ETC TO NEW WORK				
	ON INTERNAL FLOATED PLASTER SURFACES				
	One coat alkali resistant primer and two coats PVA emulsion paint for interior use				
1	Walls	m2	411		
	ON FIBRE-CEMENT BOARD SURFACES				
	Carried to Collection			R	

	One coat alkali resistant primer and two coats superior quality acrylic emulsion paint for interior and exterior use				
1	Cills	m	19		
2	Fascias and barge boards, including priming metal jointing strips	m2	43		
	ON WOOD SURFACES				
	Two coats oil wood primer				
3	Backs of frames, linings, etc not exceeding 300mm wide	m	79		
	One coat primer, one coat alkyd based universal undercoat and two coats superior quality universal enamel paint				
4	Doors	m2	66		
5	On roof timbers at eaves and verges	m2	37		
	Carried to Collection			R	

Section No. 1

Bill No. 15

Paintwork

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	112		
	113		
Carried Forward to Summary of Section No. 1		R	

Item No			Quantity	Rate	Amount
	BILL NO. 17				
	EXTERNAL WORKS				
	STORMWATER CHANNELS (PROVISIONAL)				
	NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No.146 for Haylett formula purposes				
	BULK EARTHWORKS (PROVISIONAL)				
	NOTE: Tenderers are advised to study the Model Preambles for Trades before pricing this bill				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No 104 for Haylett formula purposes				
	SITE CLEARANCE				
	Site clearance:				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m2	725		
2	Stripping average 150mm thick layer of top soil and stockpiling on site within 250m of the excavation.	m2	725		
	BULK EARTHWORKS, FILLING, ETC.				
	Carried to Collection			R	

	Open face excavation in earth over sloping site not exceeding 2m deep:				
1	Excavate to reduce levels (Cut).	m3	248		
	Earth filling (all materials) to within 50mm level tolerance obtained from the excavations including haulage not exceeding approximately 200m from perimeter of the excavations compacted to 95% Mod AASHTO density (rates to include for shaping of the above fill material):				
2	Over site to form platforms, terraces, banks, etc.	m3	217		
	G7 Earth filling supplied by the contractor, compacted to 93% Mod AASHTO density				
3	Over site to form platforms	m3	92		
	Extra over bulk excavations in earth for excavation in				
4	Soft rock	m3	25		
5	Hard rock	m3	12		
	Keeping excavations free of water:				
6	Keeping bulk excavations free of all water other than subterranean water.		Item		
	Extra over all excavations for carting away:				
7	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the Contractor.	m3	31		
	STORMWATER DRAINAGE				
	The following in concrete apron and channels:				
8	Excavate in earth not exceeding 2m deep.	m3	14		
9	Extra over excavation for excavating in soft rock material.	m3	2		
10	Extra over all excavations for surplus material from excavations and/or stock piles on site to a dumping site to be located by the Contractor.	m3	14		
	Carried to Collection			R	

1	Earth filling supplied by the Contractor, 150mm G5 material compacted to 98% Mod AASHTO denisty.	m3	9		
2	Soil insecticide to bottoms and sides of earth channel.	m2	68		
3	Type 193 fabric reinforcement in surface beds, pavings, etc.	m2	59		
4	Concrete Class 25MPa/19mm in earth channel.	m3	5		
5	3mm Wide x 20mm deep saw cut joints in top of concrete.	m	20		
6	Polysulphide sealant to manufacturer's specification (with suitable bond breaker chord).	m	20		
7	Unformed finishes Class U2 wood float finish to concrete channel.	m2	59		
8	Formed finish Class II rough formwork to edges not exceeding 300mm high.	m	236		
	<u>The following in concrete storm water channels</u>				
9	Excavate in earth not exceeding 2m deep for trenches	m3	22		
10	Extra over excavations in earth for excavating in soft rock	m3	2		
11	Extra over excavations in earth for excavating in hard rock	m3	1		
12	Risk of collapse of sides of excavations not exceeding 1.5m deep	m2	57		
13	Extra over for carting away surplus excavated material and/or stock piles on site to a dumping site to be located by the Contractor	m3	22		
14	Soil insecticide in accordance with SANS 5859 to bottom and sides of channels, etc	m2	99		
15	Compaction of natural ground surface under channel, including scarifying for a depth of 150mm and compacting to 93% Mod AASHTO density	m2	82		
16	Surface blinding under footings and bases	m3	2		
	Carried to Collection			R	

1	25Mpa/19mm Reinforced concrete in bottom and sides	m3	8		
2	Finishing concrete bottoms smooth with a steel trowel to falls	m2	82		
3	Rough formwork to sides	m2	25		
4	Type 193 fabric reinforcement in concrete bottoms and sides	m2	82		
5	3 x 20mm Deep saw cut joints in top of concrete	m	8		
6	Polysulphide sealant to manufacturer's specification (with suitable bond breaker chord)	m	8		
	Reno Mattress				
7	1 500 x 1 000 x 300mm high reno mattress with and including excavations, compaction to 93% Mod AASHTO density, carting away and Grade 3 geotextile membrane or similar approved to be laid below and along side of mattress	No	1		
	The following in 1 No. Soak away:				
	Size approximate 46 x 0.6 x 1.4m deep on plan				
8	Excavate in earth not exceeding 2m deep.	m3	39		
9	Extra over trench and basement excavation in earth for excavation in soft rock	m3	4		
10	Extra over excavation for excavation in hard rock material.	m3	2		
11	Extra over all excavations for surplus material from excavations and/or stock piles on site to a dumping site to be located by the Contractor.	m3	39		
12	Backfill	m3	7		
13	Working space not exceeding 1.50m	m2	132		
14	Risk of collapse of excavations not exceeding 1,5m deep.	m2	132		

Carried to Collection R

1	Compaction of ground surface under floors, etc., including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density.	m2	28		
2	160mm PVC heavy duty sewer pipe.	m	46		
3	Approved selected stones 50mm to 100mm diameter in layer 100mm thick in soak away.	m3	3		
4	Non-woven Kaymat U34 or other approved geotextile material laid over stone filling (elsewhere measured).	m2	46		
5	Plastic sheet atop crushed stone	m2	37		
6	River sand filling in bedding under and filling below pipes	m3	1		
	Manholes:				
7	Excavate for and build circular precast concrete manhole with 1000mm inside diameter. Depth of manhole exceeding 750mm and not exceeding 1000mm deep, formed of a circular concrete barrel cut to required length including a 160mm thick 20Mpa concrete base, average 500mm deep benching to falls at the bottom, 1000mm long channel set in middle of benching plus 160mm diameter bend or junction set in centre of channel, 150mm thick factory fabricated (ex. Rocla (Pty) Ltd) concrete roof reducer slab with 1000mm diameter opening, 150mm high factory fabricated circular spacer rings 550mm diameter fitted to together and including 550mm diameter circular heavy duty cover and frame SABS 558-1973 Type 2A set in suitable reinforced concrete rebated frame and and steps irons at 300mm intervals set into walls of manhole.	No	4		
8	Ditto, but exceeding 1000mm and not exceeding 1500mm deep.	No	1		
9	Ditto, but exceeding 2000mm and not exceeding 2500mm deep.	No	1		
	Sundries:				
10	Provide all necessary apparatus, water, etc., for and test the whole of the Soil Drainage System to the satisfaction of the Architect and Local Authority and replace any defective work free of charge and leave perfect.		Item		
	Carried to Collection			R	

WALKWAYS (All TRADES) (PROVISIONAL)

NOTE: Tenderers are advised to study the Model Preambles for Trades before pricing this bill

NOTE: Unless otherwise stated herein, all items in this section shall be deemed to fall into Work Group No 180 for Haylett formula purposes

NOTE : Walkway panels to be cast in 1.5m wide alternating panels.

EARTHWORKS

EXCAVATION, FILLING, ETC.

Excavation in earth not exceeding 2m deep:

1	To reduce levels.	m3	52	

Extra over trench and hole excavations in earth for excavation in:

2	Sock rock material.	m3	5	
3	Hard rock material.	m3	3	

Extra over all excavations for carting away:

4	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the Contractor.	m3	52	

Filling supplied by the contractor under pavings, etc.:

5	Earth filling (G2) supplied by the Contractor and brought to site and compacted to 98% Mod AASHTO density material under floors	m3	19	

Soil insecticide:

6	Soil insecticide under floors etc including forming and poisoning shallow furrows against foundation walls etc, filling in furrows and ramming	m2	220	

Carried to Collection R

	CONCRETE				
	25MPa/19mm Vibrated reinforced concrete:				
1	Vibrated reinforced 25MPa/19mm stone concrete surface beds cast in panels	m3	33		
2	Edge thickening	m3	6		
	Test blocks:				
3	Allow for all necessary concrete test cubes size 150 x 150 x 150mm cast from batches of concrete set of three, made, stored, cured and tested in accordance with SABS Methods 861 and 863, including use of approved cube moulds, transporting to an approved testing laboratory for testing, paying all charges and submitting reports to the Structural Engineer.	Sets	3		
	CONCRETE SUNDRIES				
	Unformed finish Class U2:				
4	Finishing top surfaces of concrete smooth with a wood float to walkways	m2	165		
	FORMED FINISH				
	Smooth formwork to sides (Degree of Accuracy Class II):				
5	Smooth formwork to sides of edges, risers, ends and reveals not exceeding 300mm high or wide.	m	223		
	REINFORCEMENT				
	Fabric reinforcement:				
6	Type 193 fabric reinforcement in surface beds, etc.	m2	165		
	WATERPROOFING				
	Carried to Collection			R	

	Joint sealants:				
1	Sondor Performance Foams Jointex low density (33kg/m³) or other approved, cross linked, closed cell, expanded polyethylene joint former, size 75 x 10mm thick with tear off strip fitted to concrete surface with adhesive as per adhesive manufacturer's recommendation.	m2	4		
2	10 x 10mm Thick approved sealant with polyethylene bond breaker joint.	m	36		
3	Polysulphide sealant to joint with approved joint sealant with backing cord bond breaker strip.	m	36		
	WATER RETICULATION (PROVISIONAL)				
	NOTE: Tenderers are advised to study the Model Preambles for Trades before pricing this bill				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No 148 for Haylett formula purposes				
	WATER RETICULATION				
4	Cut into existing 110mm diameter HDPE pipe in ground, at not exceeding 2m deep, insert new 100mm cast iron flanged reducing tee to take new 63mm diameter HDPE pipe including necessary fittings, adaptors and jointing.	No	3		
	PE 80 PN 12 Pipe (Class 12 HDPE Pipe) or other approved (Water Supply):				
5	50mm Pipe laid in ground including excavation in trench not exceeding 1m deep.	m	380		
6	Ditto, but exceeding 1m not exceeding 2m deep.	m	95		
7	Extra over for 50mm elbow.	No	189		
8	Extra over for 50mm adaptor.	No	141		
9	Extra over for 50mm tee or reducing tee.	No	95		
	Carried to Collection			R	

	Sundries:				
1	Excavate for and build stop valve chamber size internally 600 x 450 x 800mm deep with one brick sides in cement mortar and 100mm thick Class 20MPa/19mm stone kerb all round top rebated for and including 600 x 450mm x 38Kg cast iron cover and frame.	No	3		
	FENCING AND GATES (PROVISIONAL)				
	NOTE: Tenderers are advised to study the Model Preambles for Trades before pricing this bill				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No 136 for Haylett formula purposes				
	The following in galvanised steel security fencing 2.25m high				
2	Level and prepare surface of ground along line of fence by excavating or filling as necessary	m	48		
3	25 x 50mm Rectangular "weldmesh" of 3,15mm diameter; 1,8m high fixed to and including 5 No. eight guage straining wires	m	48		
4	"Razorwire" flat roll 500mm high fixed to and including 3 No. double strand straining wires	m	48		
5	100 x 150mm Mass concrete 15MPa ground beam including excavation, bedding lower 75mm of weldmesh and dressing top to falls m	m	48		
6	100 x 100mm Precast reinforced concrete post 3m long, set vertical with bottom 750mm of post set below ground in 450 x 450 x 900mm deep mass insitu concrete 15MPa base including excavation, backfill, cart away, ramming and compacting, soil poison, etc (Post set a 3m intervals along fence line)	No	16		
	Carried to Collection			R	

1	75 x 75mm Precast reinforced concrete stay 2,6m long set Diagonally with one end embedded in 760 x 450 x 600mm Mass concrete base including excavation, etc and bonded other end to fence post (elsewhere) with epoxy adhesive (2 No. stays at 30m intervals and 1 No. at corners and gate posts)	No	15		
	Galvanised Gates				
2	Double gate formed of 50mm diameter x 2,8mm galvanised mild steel tubular frame all round with one 50mm diameter x 2,8mm diagonal brace filled in with thirteen strands of horizontal barbed wire as for fencing and with three rolls of "Razorwire" security coil 500mm high, the gate hung on two pair of approved hinges as detailed with mild steel padbolt including holing frame and gate post. Size 4000 x 2300mm high (Boundary)	No	1		
	Padlocks				
3	63mm Brass five pin tumbler padlock with two keys	No	1		
4	Locking chain 600mm long with 50mm links	No	1		
5	Provide 100 x 100 x 200mm deep concrete block complete with hollow steel pegs cast in centre for barrel bolts. Top of concrete to be 5mm above ground level and top of pin to be flush with concrete. Provide one block underneath first closing gate in closed position and provide one under-neath each gate in open position	No	1		
	Carried to Collection			R	

Section No. 1

Bill No. 16

External Works

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	115		
	116		
	117		
	118		
	119		
	120		
	121		
	122		
	123		
	124		
Carried Forward to Summary of Section No. 1		R	

Item No			Quantity	Rate	Amount
	BILL NO. 18				
	ELECTRICAL INSTALLATION				
	NOTE: The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract document, the Standard Conditions of Tender, Conditions of Contract, Model Preambles for Trade 2008, Specifications, Drawings and all other relevant documentation.				
	NOTE: Unless otherwise stated herein, all items in this bill shall be deemed to fall into Work Group No 152 for Haylett formula purposes.				
	SUPPLEMENTARY PREAMBLES				
	Proprietary items or materials:				
	Proprietary items or materials where specified are to be of the brand specified - or other approved - by the Head: Public Works.				
1	LV Cable Supply and Install 2c x 4mm2 CU 0,6/1kV PVC/ECC/PVC Cable (SANS1507) run in trench or Ceiling void, Including all LV glands, lugs and terminations	m	85		
2	LV Cable Supply and Install 1c x 2.5mm2 CU 0,6/1kV Insulated House Wire (red/black/green) (SANS 1507-2) run in conduit	m	411		
3	Trenching soft sand, cable bedding and sifted compacted backfill to 98% MOD ASTM, with cable marker tape 400mm (w)x 650mm (d) in accordance with detail.	m	85		
4	Supply and Install 50mm Flexible Corrugated HDPE double walled Cable Conduit (SANS 61386-24) incl, adaptors, end caps, bends, tees, draw wire and all other related accessories.	m	97		
	Carried to Collection			R	

1	Supply and Install 32mm PVC Conduit fixed into Brick or Dry Wall or Cast into Concrete incl fixings, adaptors, unions, end caps, bends, tees, draw wire and all other related accessories.	m	137		
2	Supply and Install 32mm Galvanized Bosal Conduit fixed into Brick or Dry Wall or Cast into Concrete incl fixings, adaptors and unions and draw wire	m	15		
3	Supply Luminaire Type E as per Luminaire Schedule	No	18		
4	Install Luminaire Type E as per Luminaire Schedule including trailing cable, all accessories, fixings, labelling, commissioning and performance testing	No	18		
5	Supply Luminaire Type G as per Luminaire Schedule	No	10		
6	Install Luminaire Type G as per Luminaire Schedule including trailing cable, all accessories, fixings, labelling, commissioning and performance testing	No	10		
7	Supply and Install Photo cell IP 65 rated with adjustable lux level Plastic UV resistant housing	No	4		
8	Supply and Install PVC Wall box (4x4)100mm x 100mm Box incl cover plate surface mounted wall	No	5		
9	Supply and Install 1L (1/2W) Switch (SANS60669-1) in Galvanised 100mm x 50mm Box Recessed Wall Mounted	No	7		
10	Supply and install 1 x new CBI 10A - C2, QF-1(13), 6kA CB - Feeding light circuits in ablution "BLOCK 4G, 2M2F1D, 4G & 2R1T"	No	1		

Carried to Collection R

	Commissioning, As Builts, QA, Training, OEM Manuals etc				
1	Compliance Certificate LV Distribution Board Installation in accordance with SANS 10142-1 - secondary distribution D/B 0-12 Feeder Circuits	No	1		
2	Commissioning of Entire Installation in accordance with requirements as specified		Item		
3	Mark-up of As Built Documentation for Handover to Engineer in accordance with requirements as specified		Item		
	Carried to Collection			R	

Section No. 1

Bill No. 17

Electrical Installation

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	126		
	127		
	128		
Carried Forward to Summary of Section No. 1		R	

Item No		Quantity	Rate	Amount

BILL NO. 19

PROVISIONAL SUMS

NOTES:

1. The Contractor's attention is drawn specifically to the Principal Building Agreement Clause 20.0 (Nominated Sub-Contractors), Clause 21.0 (Selected Sub-Contractors) and Clause 22 (Work by Others) and to the related Clauses in Bill No. 1 - Preliminaries.

2. The Contractor's attention is drawn also to the definition of attendance on Nominated or Selected Sub-Contractors and of fuel, power and water for commissioning of mechanical and other specialised installations given in the JBCC Preliminaries.

3. Where special attendance includes the provision of hoisting facilities for a Sub-Contractor then the Contractor shall:-

   * Ensure that the capacities of his hoisting equipment are sufficient to deal with the masses and the quantities of the items to be hoisted,

   * Schedule the times of availability of the hoisting equipment for each Sub-Contractor,

   * Provide all necessary personnel to operate the hoisting equipment,

   all to enable the Sub-Contractor to execute the hoisting or lowering of his material, etc. using the facilities provided by the Contractor.

4. Under no circumstances may any Prime Cost - Provisional Amount, etc. be extended at an amount lower than the amount given in this Bill.

BUDGETARY ALLOWANCES

Carried to Collection R

	Temporary Ablutions			
1	Allow a budgetary amount of R250 000.00 (Two Hundred and Fifty Thousand Rand) for the provision of temporary ablutions		SUM	
	Carried to Collection		R	

Section No. 1

Bill No. 18

Provisional Sums

COLLECTION

	Page No		Amount
Total Brought Forward from Page No.	130		
	131		
Carried Forward to Summary of Section No. 1		R	

SECTION SUMMARY - MHLABA JS

Bill No		Page No	Amount
1	Alterations	58	
2	Earthworks (Provisional)	65	
3	Concrete, Formwork and Reinforcement	71	
4	Precast Concrete	74	
5	Masonry	78	
6	Waterproofing	81	
7	Roof Coverings	84	
8	Carpentry and Joinery	88	
9	Ironmongery	93	
10	Metalwork	97	
11	Plastering	100	
12	Tiling	101	
13	Plumbing and Drainage (Provisional)	110	
14	Glazing	111	
15	Paintwork	114	
16	External Works	125	
17	Electrical Installation	129	
18	Provisional Sums	132	

Carried to Final Summary R

MHLABA JS

WATER AND SANITATION PROGRAMME FOR SCHOOLS
60491906 - PRINCIPAL BUILDING AGREEMENT

FINAL SUMMARY

Section No		Page No		Amount
1	MHLABA JS	133		
	Sub-Total - A		R	
	Add: Value Added Tax (15%)		R	
	Total Carried to Form of Offer and Acceptance		R	

WATER AND SANITATION PROGRAMME FOR SCHOOLS
60491906 - PRINCIPAL BUILDING AGREEMENT

Feb-23

Cluster No. HG-15
Wims No. 064404

FINAL SUMMARY

Section No		Page No	Amount
1	Mhlaba Junior Secondary School- Preliminaries	47	
2	Mhlaba Junior Secondary School- Builders Work	134	
3	Mhlaba Junior Secondary School- Health and Safety	TO BE INCLUDED IN PRELIMINARIES	
	Sub-Total		
	Add: Value Added Tax (15%)		
	Total Carried to Form of Offer and Acceptance T2.21		

WATER AND SANITATION PROGRAMME FOR SCHOOLS

60491906 - PRINCIPAL BUILDING AGREEMENT

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

PART C3. SCOPE OF WORKS

C3.1 SCOPE OF WORKS
GCC FOR CONSTRUCTION WORKS (Edition 2 of 2010)

Scope of Works complied in accordance with SANS 10403 where reference is made to this part of SANS 1921-1:2004

Project title:	**DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT**		
Tender no:	**ZNTM01217W**	**Project Code:**	**064404**

SECTION 1

1 EXTENT OF THE WORKS

1.1 EMPLOYERS OBJECTIVES

This project is part of the Department of Public Works (DoPW) Schools Water and Sanitation Programmes. The Employer's Objectives are to provide healthy, hygienic and appropriate ablution facilities at schools in the Kwa Zulu Natal province.
The objective of this project is to renovate existing and construct new ablution facilities at Mhlaba's Junior

1.2 OVERVIEW OF THE WORKS

This project involves the construction of four (4) new ablution facilities comprising of nineteen (19) toilet seats, four (4) urinals and sixteen (16) wash hand basins and the renovation and repurpose of the existing female teacher facilities and the dismantling of the male VIP blocks for repurposing.

1.3 EXTENT OF THE WORKS

The project will consist of the following major components:
•Cut and fill operations to form new building platforms with a total volume of 218 m3
•Cut to spoil operations to form new building platforms with a total volume of 31 m3
•Imported fill operations to form new building platforms with a total volume of 92 m3
•Preparation of new building platform/s with a total footprint of 711 m2
•Construction of a 48 m new soakaway.
•Construction of four new ablution facilities with a total footprint of 615 m2
o1F1D facility comprising of two (2) toilet seats and two (2) wash hand basins
o8B facility comprising of four (4) toilet seats, four (4) urinals and four (4) wash hand basins
o8G facility comprising of eight (8) toilet seats and five (5) wash hand basins
o4R1T facility comprising of five (5) toilet seats, five (5) wash hand basins
•Renovation of existing block. Refer to renovation schedule.
oExisting teacher's facility comprising of six toilet seats
oRenovations to include:
□Dismantling of male VIP blocks for reuse and not demolition.
•Construction of 62 metres of new sewer reticulation
•Construction of stormwater control measures such as berms and open drains
•Construction of 110 metres of walkway
•Installation of 42 metres of fencing and one number of gates for the Grade R ablutions
The works will also include:
•Individual service connections to the new and existing ablution facilities
•Installation of all fixtures including toilets, urinals, hand basins and fittings associated with the works for the new and existing ablution facilities as highlighted above
•Reinstatement of paved areas removed or damaged during construction
•Demolition of old ablution facilities
•Filling old pits/septic tanks after demolition of buildings
•Disposal of excavated material
•Rehabilitation of construction area
•Provision of temporary ablution facilities for the exclusive use of learners and staff at the school

1.4 LOCATION OF THE WORKS

The project is situated at Mhlaba's Junior School. The school is located 18 kilometres from Umzinkulu in the Sisonke District of KwaZulu-Natal. The coordinates of the school are 30°17'57.74"S and 29°48'57.70"E. Unfettered access to the site cannot be guaranteed at all times as the school will remain operational for the duration of the project.

1.5 TEMPORARY WORKS

All temporary works to comply with the Occupational Health and safety Act (Act 85 of 1993). Special care should be taken to barricade all excavations and fence off the project site where appropriate.
The contractor is specifically alerted to the fact that the Works are situated within the school grounds and precautions must be taken to ensure the safety of all learners and staff.
Unfettered access to the site cannot be guaranteed at all times as the school will remain operational for the duration of the project.

2 ENGINEERING

2.1 EMPLOYER'S DESIGN

Not applicable

2.2 DESIGN BRIEF

Not applicable

2.3 DRAWINGS

See list of drawings/Annexure's attached to this document.

2.4 DESIGN PROCEDURES

Not applicable

3 PROCUREMENT

3.1 PREFERENTIAL PROCUREMENT PROCEDURES

This tender will be subject to the implementation of the Preferential Procurement Regulations, 2022, pertaining to the Preferential Procurement Policy Framework Act, Act Number 5 of 2000 and the relevant Supply Chain Management Legislation and the KwaZulu-Natal Supply Chain Management Policy Framework published by the KwaZulu-Natal Provincial Treasury. Tenderders are referred to www.kzntreasury.gov.za for access to the relevant documents.
Tenderders are advised to familiarize themselves with the contents of the KwaZulu-Natal Supply Chain Management Policy Framework regarding Preference Point Systems, evaluation of tenders appeals and other matters.

3.2 RESOURCE STANDARD PERTAINING TO TARGETED PROCUREMENT

NOTE : This project will be adjudicated as not exceeding R 50,000 000,00

3.3 SCOPE OF MANDATORY SUBCONTRACT WORK

Not applicable

3.4 PREFERRED SUBCONTRACTORS/SUPPLIERS

Not applicable

3.5 SUBCONTRACTING PROCEDURES

Not applicable

4 CONSTRUCTION

4.1 APPLICABLE SANS 2001 STANDARDS FOR CONSTRUCTION WORKS

The Contractor is referred to the "Model Preambles to Trades - 2008", any "Supplementary Preambles", the Electrical Specifications and Mechanical Specification for full descriptions of materials and methods referred to in these Bills of Quantities/Lump Sum documents, insofar as they apply. The Contractor is advised to study the "Standard Preambles to all Trades", any "Supplementary Preambles", the Electrical Specifications and Mechanical Specification, before pricing Bills of Quantities/Lump Sum documents.

Where the description in the Bills of Quantities/Lump Sum documents differ from those in the Standard Electrical Specifications, the descriptions in the Bills of Quantities/Lump Sum documents are to apply. No claim whatsoever will be allowed in respect of errors in pricing due to brevity of description of items in the Bills of Quantities/Lump Sum documents which are fully described when read in conjunction with the relevant Preambles and/or Specifications. Suppliers of materials and the like, whose quality systems apply with one or more of the SABS/SANS ISO 9000 Series should be used whenever possible in the absence of a particular SABS/SANS Specification Standard Mark.

Wherever the words "shall be deemed to be included in the description", "shall be stated" or other words having the same effect, appear in the Standard System, it shall be deemed that all descriptions in these Bills of Quantities/Lump Sum documents incorporated such inclusions and statements whether specifically stated or not.

The Contractor is hereby informed that where SABS/SANS Specifications are referred to in these Bills of Quantities/Lump Sums documents and Specifications thereto, then ONLY the Specification of Work Clauses will apply. The method of measurement and payment clauses will NOT apply to this Contract.

The Contractor is hereby informed that risk of collapse and keeping excavations free from water (excluding subterranean water) generally are deemed to be included in the descriptions unless accommodated in the system of measurement. Please refer to the Geotechnical Investigation report when included at the end of these tender documents.

Whenever reference is made to "Sub-Contractor", "Nominated Sub-Contractor" or the like in the specifications included or referred to in these Bills of Quantities/Lump Sums documents, it shall be deemed to mean "Contractor" as defined.

4.2 APPLICABLE NATIONAL AND INTERNATIONAL STANDARDS

See above 4.1

4.3 PARTICULAR / GENERIC SPECIFICATIONS

The Contractor is referred to the following documents whether attached to this document or not:

SPECIFICATION	PAGES
Specification for HIV/AIDS Awareness (CIDB)	HIV1 TO HIV3
Specific Construction, Safety, Health and Environmental Plan	
Model Preambles for Trades 2008	1 to 49
General Electrical Specification	E/1 to E/20
Lightning Protection Installation	LP/1 to LP/6

4.4 CERTIFICATION BY RECOGNIZED BODIES

Only contractors registered with the Electrical Contracting Board of South Africa in accordance with the Regulations of the Occupational Health and Safety Act will be accepted and permitted to do work under this contract.

4.5 AGRÉMENT CERTIFICATES

Not applicable

4.6 PLANT AND MATERIAL PROVIDED BY THE EMPLOYER

Not applicable

4.7 SERVICES AND FACILITIES PROVIDED BY THE EMPLOYER

Not applicable

4.8 OTHER SERVICES AND FACILITIES

The Contractor shall provide any artificial lighting which may be necessary or required for the proper execution of the works, and provide electric power and water required by all Sub-Contractors, Nominated Sub-Contractors and Sub-Contractors appointed directly by the Administration.
The Contractor shall give all notices and pay all fees in connection with temporary electrical and water connections and shall connect temporary Electrical and Water meters for and pay for all current and water consumed.
The Contractor is advised that the permanent light fittings and water points of any kind installed in the Works are not to be used to provide temporary lighting and supplement water requirements for construction purposes.

5 MANAGEMENT

5.1 APPLICABLE SANS 1921 STANDARDS

Tenderders are referred to
SECTION 2 : SPECIFICATION DATA ASSOCIATED WITH SANS 1921-1:2004 IN THIS DOCUMENT

5.2 RECORDING OF WEATHER

The Contractor shall keep record of abnormal climatic conditions to facilitate the adjudication of claims for extension of the contract period.

The Contractor shall allow in his programme for the following number of days for rain days (rain > 10mm per day) as per the table below:

CURRENT YEAR			YEAR + 1	YEAR + 2
January	*w/days*		3	3
February	*w/days*		3	3
March	*w/days*		3	3
April	*w/days*		3	3
May	*w/days*		3	3
June	*w/days*		3	3
July	*w/days*		3	
August	*w/days*		3	
September	*w/days*		3	
October	*w/days*		3	
November	*w/days*		3	
December	*w/days*	3	3	

5.3 MANAGEMENT MEETINGS

In order to facilitate the smooth functioning of the Works and to ensure the closest co-operation between all the parties concerned, the Employer will call for regular meetings to be held on the site, at which a senior member of the Contracting firm and the General Foreman of the Works will always be required to be present.
In addition to the above, other persons will be required to attend these meetings as and when their presence is necessary, e.g., Consultants in all disciplines, representatives of the various Sub-Contractors, etc.
Proper minutes of these meetings will be kept by the Employer\Principal Agent and copies will be circulated to all persons attending the meetings and to others who need to be kept informed.

5.4 FORMS FOR CONTRACT ADMINISTRATION

The Employer shall provide all necessary forms.

5.5 ELECTRONIC PAYMENTS

The Contractor shall provide all required information to the Employer to facilitate electronic payments upon request.

5.6 DAILY RECORDS

The Contractor shall keep daily records of people and equipment employed as well as a site diary in respect of work performed on the site.
At the end of each week the Contractor shall provide the Principal Agent with a written record, in schedule form, reflecting the number and description of tradesmen and labourers employed by him and all Sub-Contractors on the works each day.
At the end of each week the Contractor shall provide the Principal Agent with a written record, in schedule form, reflecting the number, type and capacity of all plant, excluding hand tools, currently used on the works.

5.7 BONDS AND GUARANTEES

The Contractor shall within 10 calendar days after receiving notice from the Engineer and prior to receiving a completed copy of this agreement, including the schedule of deviations (if any), contact the Employer's agent (whose details are given in the contract data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the conditions of contract identified in the Contract Data.

5.8 PAYMENT CERTIFICATES

Requirements will be in accordance with the Employers prescriptions.

5.9 PERMITS

The Contractor is advised that, in the case of an existing building or institution, all security measures in force will remain in operation and he must acquaint himself and his Employees with them as he and his Employees will at all times be subject to these measures.
The Contractor will on no account extend his operations beyond the confines of the building site as indicated by the Employer and must ensure that all his Employees are made aware of these limits. Any Employee disregarding this instruction and found outside the limit of the building site without authority, shall be redeployed immediately and shall not again be employed on this Contract.
The Contractor will be responsible for ensuring that this instruction is strictly enforced and must provide and remove upon completion or when directed, such other necessary temporary barriers, fences, etc., as may be required and is to allow opposite this item for any charges he may wish to make in this connection.
The Employer will accept no responsibility whatsoever for damage to or the loss of plant, materials, etc., from the site.

5.10 PROOF OF COMPLIANCE WITH THE LAW

The following certificates must be provided before first delivery is taken:
- HIV/STI Report (Bound into this document)
- Electrical Compliance Certificate
- Plumbing Compliance Certificate
- Lightning Certificate
- Soil Protection Certificate
- Concrete test and cube certificates
- Waterproofing Guarantee certificates
- TR1 and TR2 prefabricated roof truss certificates
- Soil compaction certificates
- Electrical and Mechanical test certificates
- Plumbing and drainage pressure test certificates
- Fire Compliance Certificate
- Entomology Certificate
- SANS 10400-A:2010 compliance certificates
- Latest National Building Regulation

5.11 INSURANCE PROVIDED BY THE EMPLOYER

Not Applicable

Clause Numbers	
	SECTION 2
	SPECIFICATION DATA ASSOCIATED WITH SANS 1921-2004
4.1.7	**The requirements for drawings, information and calculations for which the Contractor is responsible are:**
	Prefabricated roof trusses design must be submitted for approval 30 days prior to erections.
4.2.1	**The responsibility strategy assigned to the Contractor for the works is:**
	Strategy A
4.2.2	**The structural engineer is:**
	AECOM Engineers
4.2.3	**Drawings & other info are to be submitted in accordance with the contractors programme**
	N/A
4.3	**The planning, programme and method statement are to comply with the following:**
	N/A
4.12.1	**Samples of materials**
	The work is to be executed with materials of the best specified and in the most substantial and workmanlike manner under the inspection of the Employer and to his satisfaction. The Contractor shall furnish, without delay, such samples as called for or may be called for by the Employer, who may reject all materials or workmanship not corresponding with the approved sample. The samples of materials, workmanship and finishes that the Contractor is to provide and deliver to the employer are: - Tile sample. - Brick sample. - Light fitting sample. - Screed panel 2m x 2m impact test. - Tested trial mix to be approved by the Engineer.
4.12.2	**Fabrication drawings that the contractor is to provide to the employer are:**
	None
4.12.3	**Office accommodation, equipment, accommodation for site meetings and other facilities for use by the employer and his agents are:**
	OFFICE FOR FOREMAN
	Provide, erect, maintain and remove at completion a suitable temporary office for the Contractor or his Foreman, perfectly secured, lighted and ventilated and having a desk with drawers.
	TELEPHONE
	The Contractor shall provide a telephone on the site for the use of the Contractor and all Sub-Contractors for the duration of the Contract, and must make the necessary application for connection, give all notices and pay all fees, rentals and charges for the service and also for all calls.

	OFFICE FOR INSPECTOR OF WORKS
	Provide, erect, maintain and remove at completion a well constructed temporary office for the Inspector of Works not less than 4 x 3 m on plan and 3 m high to eaves to the approval of the Employer. The office shall be constructed of wood framing covered externally with corrugated iron or corrugated asbestos and with a lean-to roof covered with the same material as the external wall covering. The office shall be lined internally with soft board or other approved material and a ceiling shall be provided of the same material as the internal lining. A suspended wood floor shall be provided and is to finish not less than 300 mm above the ground level. A lockable door and a window, which provides adequate light and ventilation, shall be fitted. An office constructed of 115 mm thick brick-work and provided with a screeded concrete floor and roofed and ceiled as above described may be accepted as an alterative but prior permission of the Employer will be necessary before construction of such an office is commenced and his requirements shall be stated and fulfilled by the Contractor. The office shall be fitted in an approved manner with a sloping topped desk of height and length suitable for the laying out and studying of drawings, a desk or table with not less than two lock-up drawers, shelves, seating and wash-stand, and the Contractor shall provide all necessary attendance.
	TELEPHONE IN OFFICE FOR INSPECTOR OF WORKS
	The Contractor shall arrange for the installation of a lockable telephone in the Office for the Inspector of Works for the duration of the Contract. The Contractor will be required to make the necessary application for connection and give all notices on behalf of the Employer. The Employer will, however, be responsible for the direct payment of all fees, rentals and other charges by Telkom for the service for the Inspector of Works and for all calls made from this telephone.
	SHED
	Provide, erect, maintain and remove at completion, ample temporary sheds for the proper storage of materials and for the use of the workmen, and remove when no longer required.
4.14.6	**The requirement for provision and erection of signboards are:**
	Supply, erect, maintain and remove at completion a painted notice board, size overall 2800 x 2345 mm high sign written to detail as Drawing No. T9506 which drawing is available from offices of the Department of Public Works. Only the official notice board is to be displayed on the site and no Sub-Contractor's boards will be permitted. The Contractor, at his own cost, may provide a board on which all sub-contract firms' names may be sign written. The notice board is to be to the approval of the Employer and is to be maintained in first class condition and placed where directed at the entrance to the site and remain there for the duration of the Contract.
4.17.1	**Requirement for the termination, diversion or maintenance of existing services:**
	Should the Contractor come in contact with any underground cables or pipes during excavations, immediate notification must be made to the Employer and all work in the vicinity of such cables, pipes, etc., shall cease until authority to proceed has been obtained from the Employer. Should the Contractor damage underground cables or pipes resulting in a disruption of services to an existing institution such damage shall be repaired immediately.
4.17.3	**Services which are known to exist on the site:**
	Investigate and provide detail drawings.
4.17.4	**Requirement for detection apparatus**
	None

4.18	**ADDITIONAL HEALTH AND SAFETY REQUIREMENTS ARE:**
	By the submission of a tender, any Tenderder will, if awarded the contract to which this tender document relates, be deemed to be the mandatory as envisaged by Section 37 (2) of the Act. As a mandatory the successful Tenderder will be deemed to be the “principal contractor” and an employer in his/her/their own right with duties as prescribed in the Act and accordingly will be deemed to have agreed to be solely responsible for ensuring that in connection with the service to which this tender document relates, all work will be performed and machinery and plant used in accordance with the Act. Should the Contractor, for whatever reason be unable to perform as required by the Act, the Contractor undertakes to inform the Employer accordingly. Tenderders are advised that it is a Condition of this Tender that a 'Construction Phase Safety, Health and Environmental Plan' specifically relates to the project for which tenders are being submitted and must be prepared by the Tenderder and submitted with the other tender documents at the time of tender. Failure to do so will invalidate the tender. Tenderders are therefore advised to study the 'Construction Safety, Health and Environmental Specification' which is issued as part of this tender document, the Model Preambles to Trades - 2008, any project Specification included in this tender document and any and all drawings which are referred to and issued as part of this tender document before preparing their own project specific 'Construction Phase Safety, Health and Environmental Plan' . Tenderders are also advised that such a plan which is submitted with a tender but is incomplete or considered inadequate by the Employer or his Representative will invalidate the tender. The Contractor will be deemed to have satisfied himself with his obligations in terms of the Act and to have allowed for all costs arising from compliance with the Act as no claim for extra costs arising from compliance with, and obligations in terms of the Act will be entertained.
4.22	**WORK BY NOMINATED AND SELECTED SUBCONTRACTORS COMPRISE:**
	[Provide list of applicable contractors]

C3.2 - SPECIFICATION FOR HIV/AIDS AWARENESS

1 Scope

This generic specification contains requirements applicable to the reduction of the risk of transfer of the HIV virus between and among construction workers and the local community through the following four strategies:

a) raising awareness about HIV/AIDS;
b) providing construction workers with access to condoms;
c) HIV counselling, testing and referral services; and
d) Sexually Transmitted Infection diagnosis and treatment.

2 Normative references:

The following standard contains provisions that, through reference in this text, constitute provisions of this standard:

SANS 4074 ISO 4074, *Condom Rubbers*

3 Definitions and Abbreviations

3.1 Definitions

Construction Worker: all persons in the employ of the contractor or in the employ of any of the subcontractors contracted by the contractor.

Local Community: the communities local to the site which are most likely to have contact with the construction worker and, in particular, sex workers in those communities.

Service provider: the natural or juristic person recognised by the South African Department of Health as specialist in conducting Aids Awareness Programmes.

3.2 Abbreviations

STI: Sexually transmitted infection

HIV: Human Immunodeficiency Virus

AIDS: Acquired Immune Deficiency Syndrome

4 Objectives

The objectives are to:

a) reduce the risk of transfer of the HIV virus between and among construction workers and the local community;
b) raise awareness amongst construction workers and the local community of the risk of infection with the HIV virus;
c) promote early diagnosis; and
d) assist affected individuals to access care and counselling.

5 Requirements

5.1 General requirement

The contractor shall, in order to satisfy the objectives stated in 4:

a) make condoms complying with the requirements of SABS ISO 4074 available to all construction workers at readily accessible points on the site, suitably protected from the elements, for the duration of the contract;

b) either place and maintain HIV/AIDS awareness posters of size of not less than A1 in areas which are highly trafficked by construction workers, or provide construction workers with a pamphlet, in languages largely understood by construction workers, which

c) encourage voluntary HIV/STI testing;

d) provide information concerning counselling, support and care of those that are infected services; and

e) comply with the requirements of 5.2.

The **provisions** *of* **5.1 c)** *and d) do not apply to* **this contract.**

5.2 HIV awareness programme

5.2.1 The contractor shall:

a) engage a qualified service provider as described in the scope of works to conduct an HIV Awareness Programme which is structured to achieve the outcomes stated in 5.2.3 for contract workers as soon as a construction workers camp is established and populated or, where no such camp is established, within two weeks of the commencement of a significant portion of the works and at subsequent intervals, if any, provided for in the scope of works; and

b) arrange for, provide a suitable venue, and instruct all construction workers to attend the HIV Awareness Programme and notify the Employer's Representative of the date, time and venue whenever a session with construction workers is conducted.

Note: The National Department of Public Works maintains a list of qualified service providers.

5.2.2 The contractor shall do nothing to dissuade construction workers from attending such an HIV Awareness Programme and shall take all reasonable steps to ensure that a minimum of 90% of construction workers engaged in the works attend such a programme, when it is conducted.

5.2.3 The outcomes of the HIV Awareness Programme shall as a minimum, result in contract workers exposed to such a programme being able to:

a) communicate the existence of problems of HIV and be able to outline the consequences of transmission of HIV to or from the local community;

b) recall and communicate the mode of HIV transmission and preventative measures including the proper use of the condom.

The HIV/ Aids awareness programme described in 5.2 is to be repeated at four month intervals throughout the duration of the contract. (Four times in total, including the initial one at the start of the contract)

5.3 Reporting

5.3.1 The contractor shall prepare and attach to his claims for payment a brief report which outlines how the actions taken by the contractor in the period for which payment is claimed satisfy the requirements and a schedule which lists the names, identity numbers, trade / occupation and name of employer of all construction workers exposed to the programme (see **HIV/STI Compliance Report**).

5.3.2 The employer's representative shall certify the report and schedule described in 5.3.1 whenever a claim for payment is issued to the employer.

Note: In the event that the contractor fails to satisfy the requirements of this specification, the employer (Head: Public Works) may apply any of the sanctions provided for in the contract. Sanctions may include the application of a financial penalty of .04% of the Contract Sum.

The *HIV /Aids* awareness programme *described* in 5.2 shall in addition *be conducted* for the benefit *of* the local community on two occasions in the community centre nearest to the building site. The contractor shall be *responsible* for inviting identifiable community-based *institutions and organisations, churches, and schools to participate in the* programme.

C3.3 - HIV/STI COMPLIANCE REPORT

Pro-forma reporting format in terms of the SPECIFICATION FOR HIV/AIDS AWARENESS

Project Code:	064404		
Payment Claim number:		Period covered by payment claim:	

1. Distribution of condoms (briefly describe where and how condoms are distributed).

2. Posters / pamphlets (briefly describe where posters were placed / how pamphlets were distributed).

3. Voluntary testing (briefly describe the actions taken / information provided to promote testing).

4. Counselling, support and care (summarise information provided).

5. HIV awareness programme (briefly describe action).

6. Schedule of construction workers exposed to the HIV awareness programme.

Name	Identity number	Trade / occupation	Name of employer

I hereby declare the above to be a true reflection of actions taken to ensure compliance with the specification.

For Contractor:

Name: _____

Signature: _____

Date: _____

Employer's representative:

Name: _____

Signature: _____

Date: _____

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

PART C4. SITE INFORMATION

C4.1 SITE INFORMATION
GCC FOR CONSTRUCTION WORKS (2 Edition of 2010)

Project title:	**DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT**		
Tender No.	**ZNTM01217W**	**Project Code:**	**064404**

C4.1 Site Information

C4.1 GENERAL

(a) Bidders are advised to visit the site before pricing in order to satisfy themselves as to the nature and full extent of the work to be done and the conditions generally affecting the execution of the contract. Claims on the grounds of lack of knowledge in such respects or otherwise will not be entertained.

(b) The project is situated at Mhlaba's Junior School. The school is located 18 kilometres from Umzinkulu in the Sisonke District of KwaZulu-Natal. The coordinates of the school are 30°17'57.74"S and 29°48'57.70"E. Unfettered access to the site cannot be guaranteed at all times as the school will remain operational for the duration of the project.

(c) The site is an existing, operational school. Extreme care must be taken to ensure that construction areas are kept secure and not accessible to students.
The Tenderer is to note that various blocks that are currently in use, are required to be worked on. Planning and co-ordination therefore will be required by the Contractor to ensure that school activities are not interrupted, and under no circumstances will the Contractor be allowed to utlize any occupied buildings for any purpose other than the renovation of that building.

C4.2 GEOTECHNICAL INVESTIGATION REPORT

(a) Attached

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

PART C5 - DRAWINGS / ANNEXURES

C5.1 - LIST OF DRAWINGS/ANNEXURES

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

Tender No.:	**ZNTM01217W**	**Project Code:**	**064404**

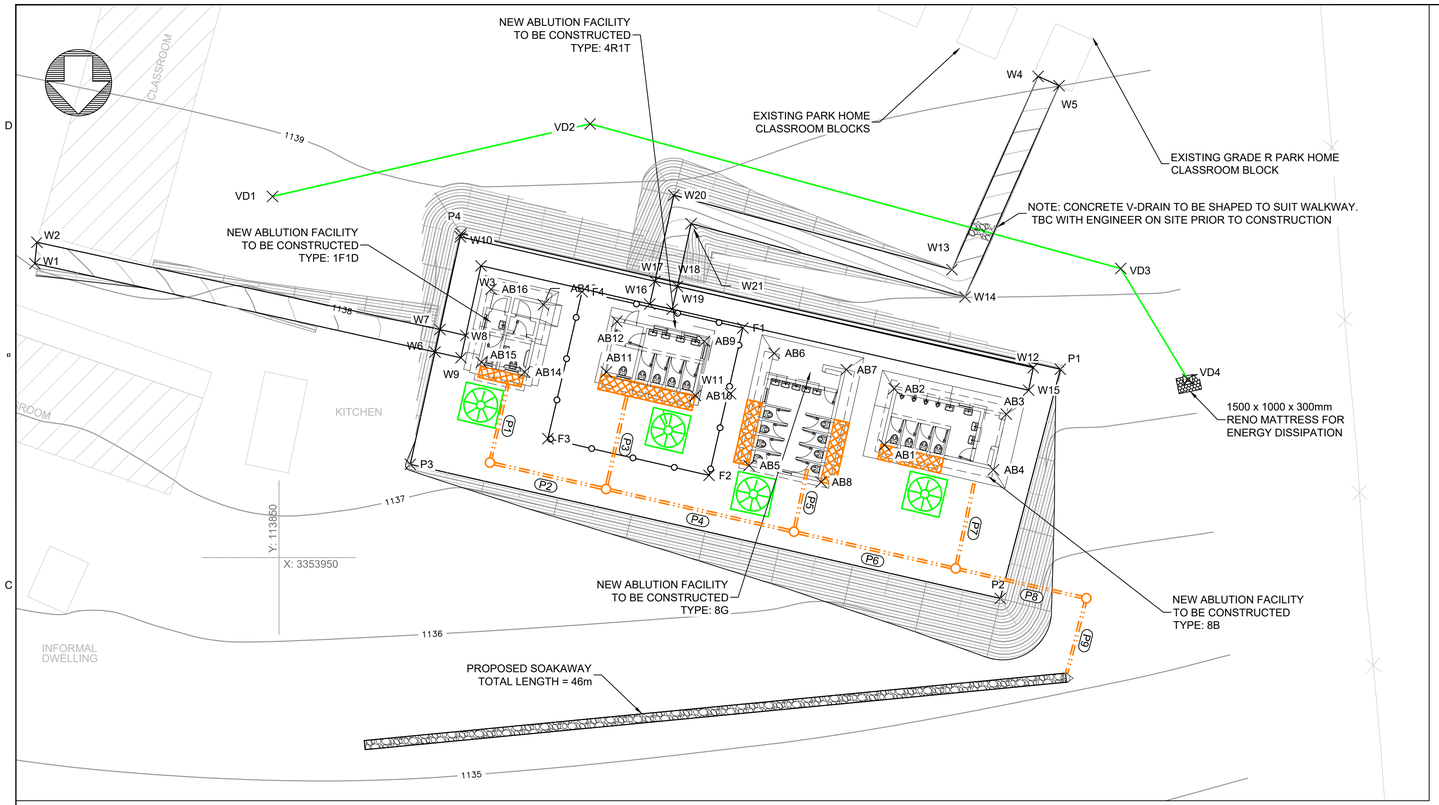
The following drawings/annexure's shall be issued during the Tender period to form part of the tender documentation. Where applicable, drawings/annexure's could be re-issued to the Contractor at commencement of the construction phase.

DRAWING NO	**DESCRIPTION**
60491906 03 HG10 C AC - 001 C 0	NEW ABLUTION FACILITIES SETTING OUT DETAILS
60491906-01-0000-A-AF-200-C	3 MALE + 3 FEMALE TEACHER & 1 DISABLED ABLUTION
60491906-01-0000-A-AF-201-C	3 MALE + 3 FEMALE TEACHER & 1 DISABLED ABLUTION
60491906-01-0000-A-AF-911-C	GRADE R + 1 TEACHERS ABLUTIONS BLOCK FLOOR
60491906-01-0000-A-AF-912-C	GRADE R + 1 TEACHERS ABLUTIONS BLOCK
60491906-01-0000-A-AF-914-C	GRADE R + 1 TEACHERS ABLUTIONS BLOCK INTERNAL
60491906-01-0000-A-AF-916-C	GRADE R + 1 TEACHERS ABLUTIONS BLOCK DETAILS
60491906-01-0000-A-ED-004-C	GRADE R SANITARY SCHEDULE (DRY)
60491906-01-0000-A-AF-450-C-1	6 BOYS ABLUTION BLOCK (DRY)
60491906-01-0000-A-AF-451-C-1	6 BOYS ABLUTION BLOCK DETAILS (DRY)
60491906-01-0000-A-AF-500-C	6 GIRLS ABLUTION BLOCK (DRY)
60491906-01-0000-A-AF-501-C	6 GIRLS ABLUTION BLOCK DETAILS (DRY)
60491906-01-0000-S-AC-210-C	3 MALE, 3 FEMALE, 1 DISABLED ABLUTION BLOCK DRY -
60491906-01-0000-S-AD-210-C	3 MALE, 3 FEMALE, 1 DISABLED ABLUTION BLOCK DRY -
60491906-01-0000-S-BA-210-C	3 MALE, 3 FEMALE, 1 DISABLED ABLUTION BLOCK DRY -
60491906-01-0000-S-AC-160-C	3 GRADE R, 1 TEACHER ABLUTION BLOCK DRY - RAFT
60491906-01-0000-S-AD-160-C	3 GRADE R, 1 TEACHER ABLUTION BLOCK DRY - RAFT
60491906-01-0000-S-BA-160-C	3 GRADE R, 1 TEACHER ABLUTION BLOCK DRY - RAFT
60491906-01-0000-S-AC-460-C	6 BOYS ABLUTION BLOCK DRY - RAFT PLAN LAYOUTS
60491906-01-0000-S-AD-460-C	6 BOYS ABLUTION BLOCK DRY - RAFT REINFORCEMENT
60491906-01-0000-S-BA-460-C	6 BOYS ABLUTION BLOCK DRY - RAFT SECTIONS AND
60491906-01-0000-S-AC-510-C	6 GIRLS ABLUTION BLOCK DRY - RAFT PLAN LAYOUTS
60491906-01-0000-S-AD-510-C	6 GIRLS ABLUTION BLOCK DRY - RAFT REINFORCEMENT
60491906-01-0000-S-BA-510-C	6 GIRLS ABLUTION BLOCK DRY - RAFT SECTIONS AND
60491906-01-3M3F1D-E	EMVUBUKAZI JS - 3M3F1D LIGHTING LAYOUT
60491906-01-3R1T-E	EMVUBUKAZI JS - 3R1T LIGHTING LAYOUT

60491906-01-6B-E	EMVUBUKAZI JS - 6B LIGHTING LAYOUT
60491906-01-6G-E	EMVUBUKAZI JS - 6G LIGHTING LAYOUT
60491906 01 0000 C DA - 801 C	STANDARD TYPICAL DETAILS SHEET 1
60491906 01 0000 C DA - 802 C	STANDARD TYPICAL DETAILS SHEET 2
60491906 01 0000 C DA - 802 C	STANDARD TYPICAL DETAILS SHEET 2 cont
60491906 01 0000 C DA - 803 C	STANDARD DETAILS - SEWER SHEET 1
60491906 01 0000 C DA - 804 C	STANDARD DETAILS - SEWER SHEET 2
60491906 01 0000 C DA - 805 C	STANDARD DETAILS - SEWER SHEET 3
60491906 01 0000 C DA - 806 C	STANDARD DETAILS - SEWER SHEET 4
60491906 01 0000 C DA - 807 C	STANDARD DETAILS - SEWER SHEET 5
60491906 01 0000 C DA - 808 C	STANDARD DETAILS - WATER SHEET 1
60491906 01 0000 C DA - 809 C	STANDARD DETAILS - WATER SHEET 2
60491906 01 0000 C DA - 810 C	STANDARD DETAILS - WATER SHEET 3
60491906 01 0000 C DA - 811 C	STANDARD DETAILS - WATER SHEET 4
60491906 01 0000 C DA - 812 C	STANDARD DETAILS - STORMWATER SHEET 1
60491906 01 0000 C DA - 813 C	STANDARD DETAILS - STORMWATER SHEET 2
60491906 01 0000 C K - 001 C	SPECIFICATIONS

ANNEXURES

Annexure 1	Model Preambles for Trades 2008
Annexure 2	General Electrical Specifications
Annexure 3	Lightning Protection Specifications
Annexure 4	Map of Tender submission location
Annexure 5	Geotechnical Investigation Report (If applicable)
Annexure 6	Joint Venture Agreement
Annexure 7	Health and Safety Specification and Bill of Quantities
Annexure 8	Builders Lien Agreement
Annexure 9	Scope of Works in respect of work relating to the EPWP
Annexure 10	Additional Specification - EPWP NYS
Annexure 11	EPWP Bill of Quantities
Annexure 12	EPWP Employment Agreement
Annexure 13	Attendance Register for on-site workers
Annexure 14	EPWP Data Colletion tool for Phase 3 system



PLATFORM LAYOUT
MHLABA'S JUNIOR SCHOOL
SCALE 1:200

BENCHMARKS

POINT	Y	X
BM	113918.310	3353902.638
BM1	113917.800	3353868.304
BM2	113942.584	3353963.245
BM3	113825.886	3354013.833
BM4	113785.147	3353900.731

PLATFORM

POINT	Y	X	Z
P1	113798.987	3353937.710	1137.363
P2	113802.906	3353952.675	1137.363
P3	113841.427	3353943.917	1139.663
P4	113838.112	3353928.857	1137.363

CONCRETE V-DRAIN SETTING OUT POINTS

POINT	Y	X	INVERT
VD1	3353926.428	113850.422	1139.313
VD2	3353921.691	113829.686	1138.646
VD3	3353931.133	113795.043	1138.124
VD4	3353938.385	113790.656	1137.588

WALKWAY

POINT	Y	X	Z
W1	113865.943	3353930.808	1138.346
W2	113865.803	3353929.424	1138.269
W3	113836.810	3353930.957	3334.361
W4	113800.436	3353918.589	1139.173
W5	113799.066	3353919.200	1137.313
W6	113839.813	3353936.583	1137.360
W7	113839.490	3353935.118	1137.360
W8	113837.797	3353935.496	1131.129
W9	113838.116	3353936.962	1131.133
W10	113838.156	3353929.067	1139.601
W11	113820.515	3353939.311	2275.725
W12	113800.756	3353937.604	2276.750
W13	113806.063	3353931.207	1138.170
W14	113805.211	3353932.992	2277.973
W15	113801.054	3353939.078	2109.601
W16	113825.792	3353933.461	2276.701
W17	113825.452	3353931.966	2276.701
W18	113823.990	3353932.303	2276.701
W19	113824.330	3353933.793	2276.701
W20	113824.221	3353926.349	1138.883

* ALL WALKWAYS ARE TO BE CONSTRUCTED AT A MAXIMUM GRADE OF 1V : 12H TO ENSURE WHEELCHAIR ACCESSIBILITY.

ABLUTION BLOCKS*

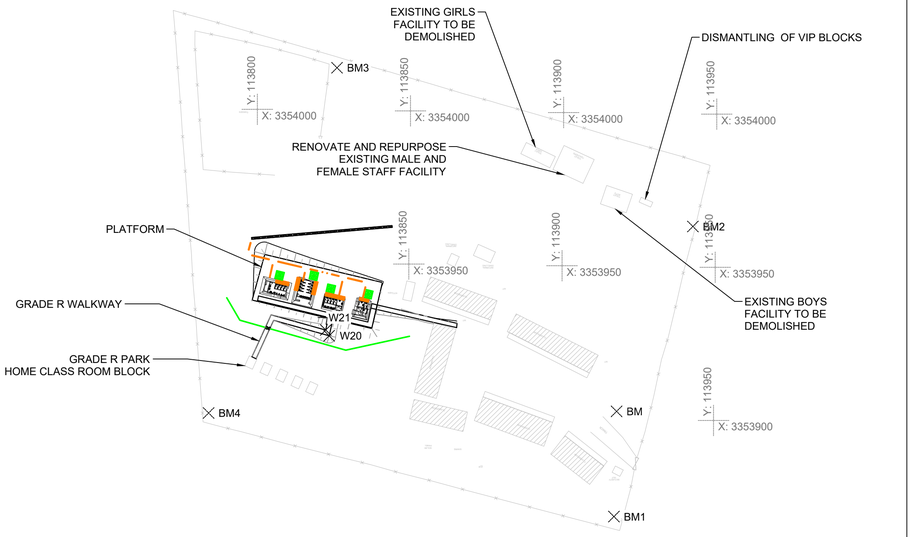
POINT	Y	X
AB1	113810.465	3353942.656
AB2	113809.841	3353938.973
AB3	113802.514	3353940.639
AB4	113803.352	3353944.273
AB5	113819.308	3353943.998
AB6	113817.665	3353936.666
AB7	113812.958	3353937.736
AB8	113814.602	3353945.068
AB9	113822.222	3353935.885
AB10	113822.814	3353939.431
AB11	113828.622	3353937.886
AB12	113827.941	3353934.584
AB13	113832.733	3353933.493
AB14	113833.958	3353937.891
AB15	113836.786	3353937.248
AB16	113836.156	3353932.490

* ABLUTION BLOCK SETTING OUT POINTS ARE INDICATIVE. ABLUTION BLOCKS TO BE CONSTRUCTED IN ACCORDANCE WITH DIMENSIONS AS PROVIDED IN THE STRUCTURAL AND ARCHITECTURAL LAYOUT/DETAIL DRAWINGS.

GRADE R FENCE

POINT	Y	X
F1	113819.711	3353935.014
F2	113821.922	3353944.636
F3	113832.443	3353942.239
F4	113830.210	3353932.652

REF. DRG. NO	REFERENCE DRAWING DESCRIPTION



KEY PLAN
N.T.S.

FOR CONSTRUCTION

SEWER MANHOLE SETTING OUT DETAILS

MANHOLE	Y	X	COVER LEVEL	INVERT LEVEL	DEPTH
MH1	113 836.234	3 353 943.806	1137.363	1136.571	0.792
MH2	113 828.651	3 353 945.531	1137.363	1136.494	0.870
MH3	113 816.380	3 353 948.320	1137.363	1136.368	0.995
MH4	113 805.827	3 353 950.719	1137.363	1134.977	2.387
MH5	113 797.292	3 353 952.660	1135.688	1134.380	1.308
MH6	113 798.656	3 353 957.878	1135.108	1134.326	0.782

SEWER NETWORK - PIPE LIST

PIPE NAME	START INVERT LEVEL	END INVERT LEVEL	LENGTH (m)	SLOPE	DIAMETER AND CLASS
P1	1136.608	1136.571	4.701	0.704%	160 mm Class 34
P2	1136.571	1136.494	6.779	1.000%	160 mm Class 34
P3	1136.608	1136.523	5.725	1.359%	160 mm Class 34
P4	1136.494	1136.368	11.586	1.000%	160 mm Class 34
P5	1136.608	1136.461	3.652	3.553%	160 mm Class 34
P6	1136.368	1136.260	9.824	1.000%	160 mm Class 34
P7	1136.608	1136.554	5.137	0.948%	160 mm Class 34
P8	1134.977	1134.889	7.755	1.000%	160 mm Class 34
P9	1134.380	1134.326	4.395	1.000%	160 mm Class 34

EARTHWORKS VOLUMES

NAME	CUT TO FILL (m3)	IMPORTED FILL (m3)	CUT TO SPOIL (m3)
PLATFORM	217	92	20
WALKWAY	1	0	11
TOTAL	218	92	31

AECOM

CONSULTANT

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3201
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www.aecom.com Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

LEGEND:

- PROPOSED SEWER LINES
- PROPOSED CONCRETE V-DRAIN
- JOJO TANK
- PROPOSED FENCELINE
- EXISTING FENCELINE
- PROPOSED PITS

NOTES

1. FOR GENERAL NOTES, REFER TO STANDARD DETAILS:
2. DRAWINGS ARE NOT TO BE SCALED. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORKS. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER / ARCHITECT'S ATTENTION IMMEDIATELY.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SCHEDULES AND SPECIFICATIONS RELATED TO THIS PROJECT.
4. ALL BUILDING WORK AND MATERIALS ARE TO COMPLY WITH LOCAL AUTHORITY'S REQUIREMENTS AND ARE TO BE IN ACCORDANCE WITH SANS 10400 NATIONAL BUILDING REGULATIONS

ISSUE / REVISION

I/R	DATE	DESCRIPTION	
	2022-10-04	INITIAL ISSUE	PN
I/R	DATE	DESCRIPTION	DRN

DRAWING CHECKS

DESIGNED BY	P.NYIDE	N/A
DRAWN BY	P.NYIDE	N/A
DESIGNED CHECKED BY	S.RASOOL	N/A
DRAWING CHECKED BY	A.CHETTY	N/A

APPROVAL CONSULTANT

NAME D.PILLAY DATE
PROF REG. No. 201270383 SIGNATURE

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

HARRY GWALA DISTRICT
MHLABA'S JUNIOR SCHOOL
EMIS No. 500426758
NEW ABLUTION FACILITIES
SETTING OUT DETAILS

DISCIPLINE

CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	03	HG15	C	**AC - 002**	**C**	**0**

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

SCALE As Indicated

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ISO A1 841mm x 594mm
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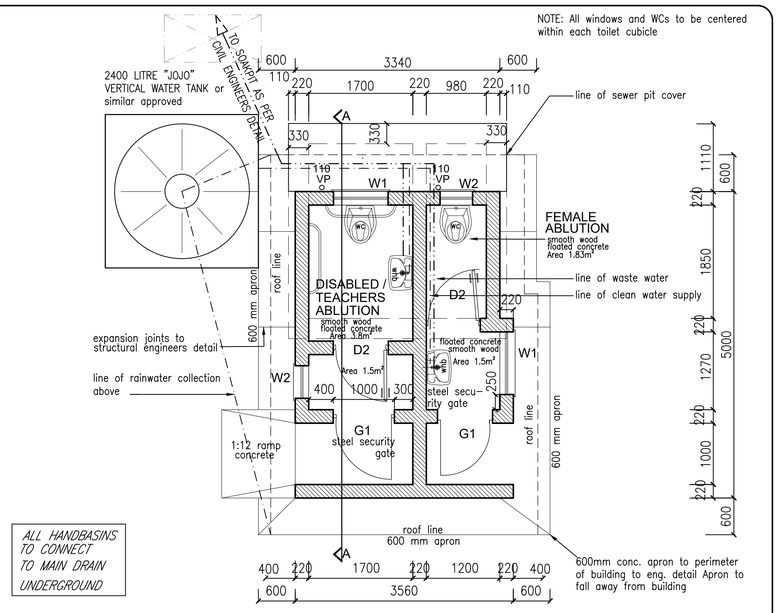
Plotted by: % Plot Consumer
Last Plotted: 2022/10/05 16:12:27
File Name: C:\USERS\PNYIDE\ONEDRIVE - AECOM\DOPW PROJECTS\DOPW DESIGN REVIEW OF SCHOOLS\MHLABAS JS-2022-10-03\TO BE MAILED\MHLABA'S JS - CONSTRUCTION DRAWING - REV0_1.DWG



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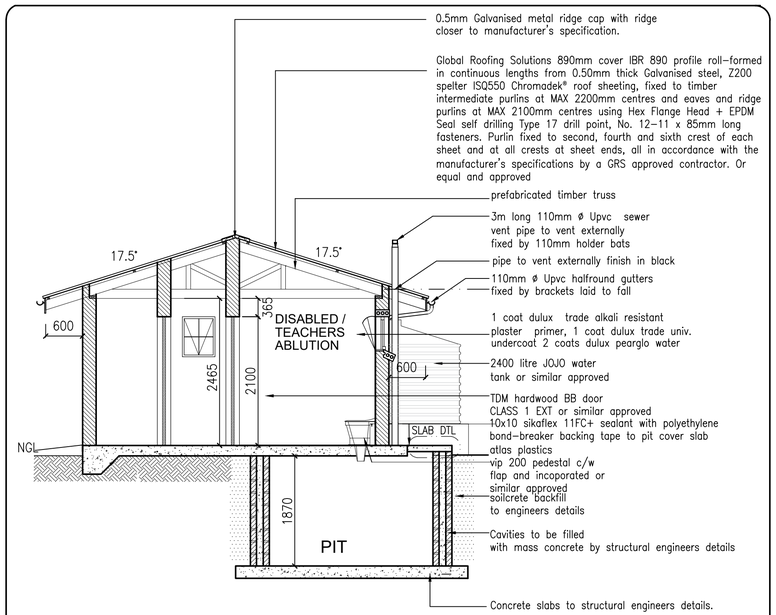
DETAIL DESCRIPTION.
FLOOR PLAN



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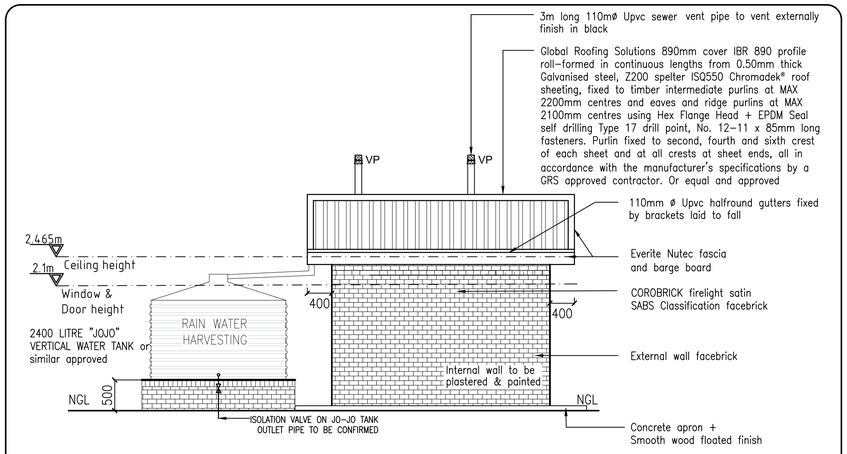
DETAIL DESCRIPTION.
SECTION A-A



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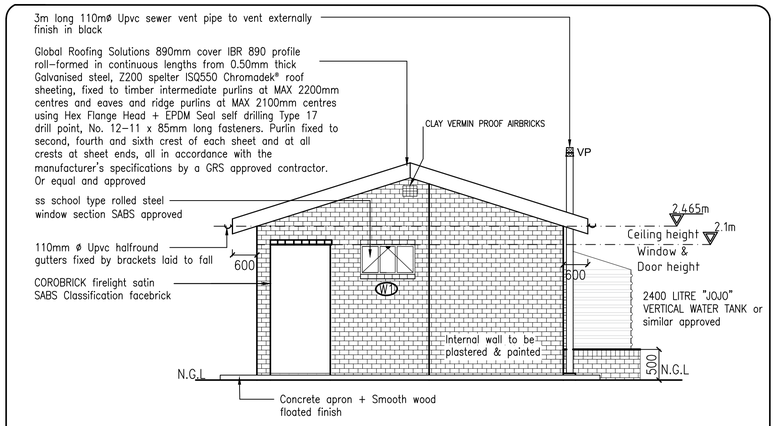
DETAIL DESCRIPTION.
FRONT ELEVATION



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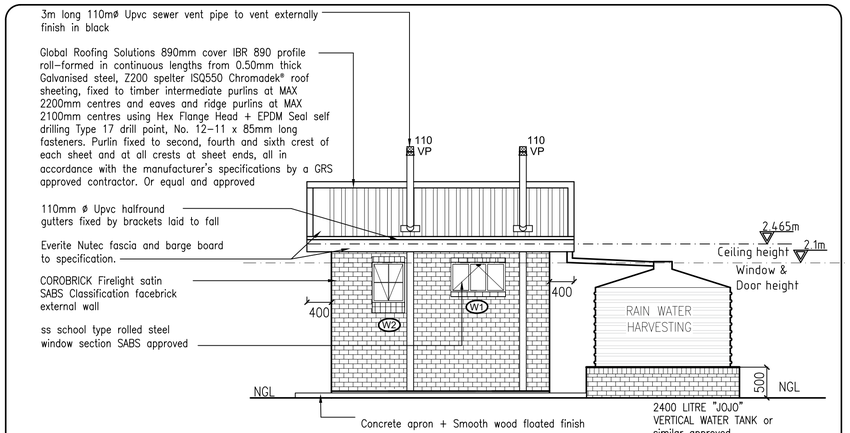
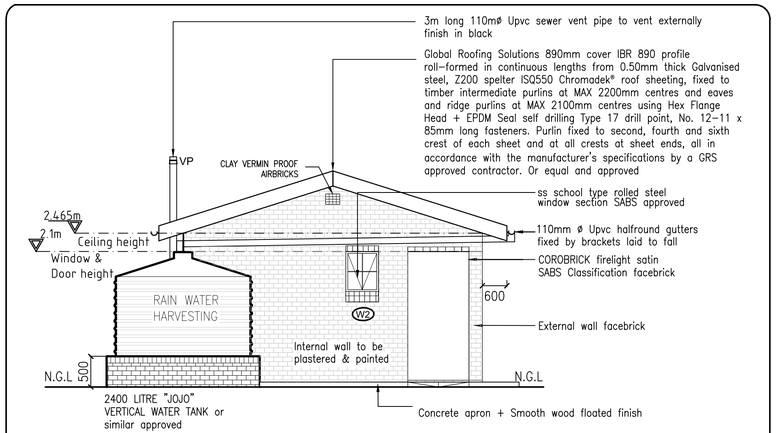
DETAIL DESCRIPTION.
SIDE ELEVATION



SCALE: 1:50

DETAIL DESCRIPTION.
BACK ELEVATION



SCALE: 1:50

DETAIL DESCRIPTION.
SIDE ELEVATION

GENERAL NOTES:

1. Quality of materials & workmanship to comply with relevant SABS & BSS specifications. All to conform to the minimum standards as specified in the preambles in the BOQ. All work to comply with NBR.
2. Contractor is responsible for correct setting out of building external & internal walls, with particular reference to boundaries & building lines.
3. Contractor to locate & identify existing services and to protect these from damage for the duration of the work.
4. Any discrepancies were brought to the architect's attention immediately and prior to the commencement of any building operations.
5. All dimensions and levels to be checked on site.
6. This drawing is read in conjunction with all other drawings, schedules and specifications related to this project as well as all engineers' drawings.
7. Drawings are not to be scaled off.
8. All building work and materials to comply with the local authorities requirements and are in accordance with the SABS 0400-1990 National Building Regulations.
9. Unless otherwise stated, any products specified by trade name are installed strictly in accordance to the manufacturer's specifications and instructions.
10. All slabs, beams, columns, foundations, structural steel, structural walls, retaining walls as well as any other structural elements are in accordance with the structural engineer's design, detail and approval.
11. All stormwater design is in accordance with the civil engineer's design, detail and approval.

CONSTRUCTION NOTES:

A. FOUNDATIONS / BACKFILL

1. All to Engineers detail and specification.

B. FLOORS

1. All construction, movement and control joints are in accordance with the structural engineer's design and detail and to the structural engineer's approval.
2. All surface beds are on minimum 250 micron, sabs approved, damp proof membrane (dpm) sheeting is laid on a blinding layer on well compacted soil, all in accordance with the Structural Engineer.
3. The soil is treated and certified by a soil poisoning specialist using approved soil poisoning in accordance with the recommendations of SABS 0124.

C. WALLS / BEAMS

1. All walls are to comply with "Part K" of the National Building Regulations.
2. COROBRICK commons to be used where to receive plaster. COROBRICK engineering Bricks to be used below ground level in foundation walls.
3. Brickforce to every 3rd course up to window head height thereafter all courses from window head to underside of wallplate. Galvanised crimp wire wall ties (7 per square metre - laid staggered).
4. External face of inner skin to be painted bitumen paint. 375 micron embossed damp-proof membrane stepped below all window cills.
5. Where plaster is required internally (13 - 16mm thick) ratio must be 1:5 cement:sand mix. Beam filling to underside of roofing sheets.
6. Isolation joints to be square struck 10x10mm, all to structural engineers details.
7. All founding and / or retaining wall to Structural Engineers details.
8. P.C. lintols to be installed over all new openings.
9. All Facebrick on edge lintols built above every window and door opening (unless otherwise specified) to eng. detail.
10. Bearing areas on either side of openings on all lintel lengths shall be a minimum of 300mm.

D. ROOF

1. Global Roofing Solutions 890mm cover IBR 890 profile roll-formed in continuous lengths from 0.50mm thick Galvanised steel, Z200 spelter ISQ550 Chromadek® roof sheeting, fixed to timber intermediate purlins at MAX 2200mm centres and eaves and ridge purlins at MAX 2100mm centres using Hex Flange Head + EPDM Seal self drilling Type 17 drill point, No. 12-11 x 85mm long fasteners. Purlin fixed to second, fourth and sixth crest of each sheet and at all crests at sheet ends, all in accordance with the manufacturer's specifications by a GRS approved contractor. Or equal and approved
2. Pitch: 17.5degrees
3. Colour of sheeting to be matched to existing roof structure on site.
4. Roof sheet to be laid on Sisalation 405 reflective foil laminate on 75mm x 50mm SA Pine purlins on prefabricated timber trusses to Structural Engineers Details and Specifications.
5. Purlin spacings are dependant on both downward loading and negative suction loading caused by wind. The engineer should be consulted to calculate the load (kN/m2) for particular application

E. PAINT

1. All paints, stains, varnishes, etc, are of an approved manufacturer, and used in strict accordance to the manufacturer's instructions.

F. DRAINAGE / STORMWATER NOTES

1. All drainage work and materials comply with the local authority requirements in accordance with the SABS 0400-1990 National Building Regulations Part P.
2. Walls and foundations are to bridge over all pipes.
3. All pipes under building encased in concrete, and approved by engineer.
4. Vent pipes to secured to the walls outside the ablution facilities - 3m 110mm Ø vent pipe (black - uv) fixed with 3 110mm holder bats - 110mm fly screen used at vent end.
5. DRY toilets: All WC for students Atlas plastic vip 200 pedestal, color granite
6. DRY toilets: All WC for teachers and disabled to be Atlas plastic vip 200 pedestal, color granite
7. DRY urinals: Atlas plastic bowl urinal, colour: granite
8. Atlas plastic Christy wash hand basin with traditional chrome cobra watertech or equal and approved Stella basin cold water tap and cobra watertech or equal and approved dura chrome plated single lever basin mixer (code: du-951) for paraplegic toilet. colour: granite.
9. Close taps to ensure reliable water conservation, which must be able to close at minimum 15kpa pressure.
10. Domestic water supply to be connected to existing water mains where possible.
11. All flushing mechanisms if applicable as per civil engineers design
12. The rain water harvesting tank must be equipped with a fload valve and connected to the main water supply within the school yard, where it is available.
13. All downpipes are pvc. All downpipes sizes in accordance with engineer's approval.
14. - pipes from sinks & urinal outlets to soakaway pit (50mm pvc)
    - pipes from gutters to fill tank (75mm pvc)
    - pipe from tank to sinks (15mm polycop) fitting to be done internally

G. FIRE NOTES

1. All building work comply with the local authority requirements in accordance with the SANS10400 National Building Regulations.
2. Fire stability of all structural elements and components comply with National Building Regulations Part TT7 and TT9.

NOTE: ALL INTERNAL WALLS TO GO UP TO THE UNDERSIDE OF THE ROOF

FOR CONSTRUCTION

AECOM

CONSULTANT

DURBAN
Ridgeview Building, 3rd Floor, 1 Nokwe Avenue Ridgeside, Umhlanga Ridge
PO BOX 56, Durban, 3630
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Reg No. 1968/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

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4. ALL BUILDING WORK AND MATERIALS ARE TO COMPLY WITH LOCAL AUTHORITY'S REQUIREMENTS AND ARE TO BE IN ACCORDANCE WITH SANS 10400 NATIONAL BUILDING REGULATIONS

ISSUE / REVISION

1	2022.09.30	ISSUED FOR CONSTRUCTION	FR
0	2022.02.25	ISSUED FOR CONSTRUCTION	MM
I/R	DATE	DESCRIPTION	DRN
	2019-09-16	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	J.NAIR	N/A	
DRAWN BY	J.NAIR	N/A	
DESIGNED CHECKED BY	F.RANDEREE	N/A	
DRAWING CHECKED BY	F.RANDEREE	N/A	

APPROVAL CONSULTANT

NAME D.NOETZOLD DATE 2022.09.30
PROF REG. No. 21510 SIGNATURE

THE MASTER HELD AT THE **AECOM DURBAN OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

1 FEMALE / 1 DISABLED
ABLUTION BLOCK DRY

DISCIPLINE

ARCHITECTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	A	AF - 001	C	1

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

SCALE As Indicated

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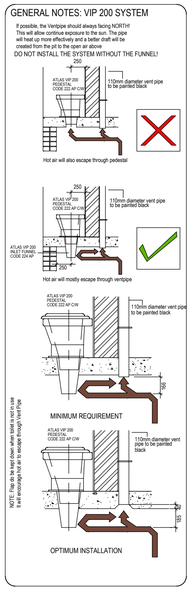
Printed on 100% Post-Consumer Recycled Content Paper
Last Plotted: 2022/09/29 21:17:54
Filename: C:\USERS\DAVID.NAIR\DOCUMENTS\DOPW ARCHITECTURE\60491906 - 1F + 1D DRY (REV 1).DWG

ISO A1 841mm x 594mm

GENERAL NOTES: VIP 200 SYSTEM

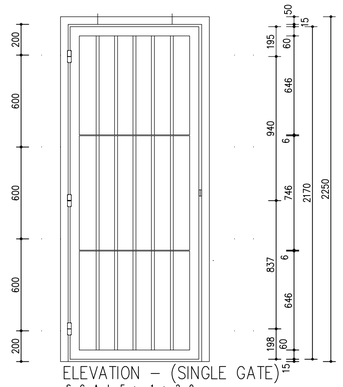
If possible, the Ventpipe should always facing NORTH!
This will allow continue exposure to the sun. The pipe will heat up more effectively and a better draft will be created from the pit to the open air above
DO NOT INSTALL THE SYSTEM WITHOUT THE FUNNEL!



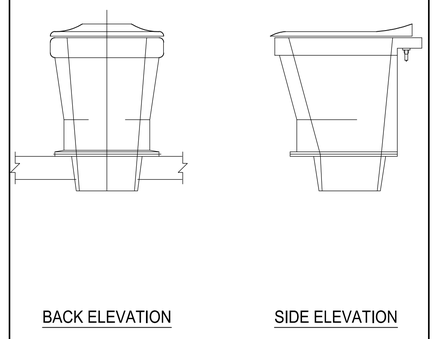
SIGNAGE

* 1 X FEAR GREEN Vinyl or SIMITZ 5.5mm thick Chromadek painted 4.4.4mm dam holes must be provided by the sponge manufacturer
Sponge must be fixed to the door with 4 No. 4.0mm diameter holes screws with washers and standard 10mm wall plugs, into brick walls.

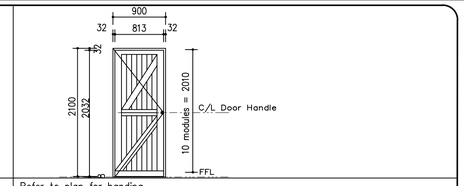
SCALE:	DETAIL DESCRIPTION.
NTS	VIP 200 SYSTEM & SIGNAGE

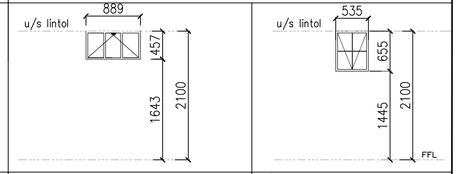


SCALE:	DETAIL DESCRIPTION:	QUANTITY
1:20	GATE (G1) DETAILS	x2

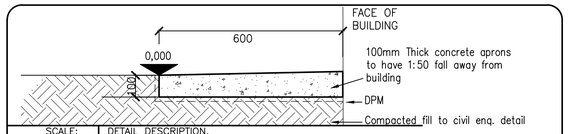


SCALE:	DETAIL DESCRIPTION.	QUANTITY
1:10	WC DETAILS	x2



	Refer to plan for handing	
TYPE:	D2	no. of x2
FRAME:	1.2mm pressed metal 1 No. frame suitable for 230mm wall	
F.FINISH:	Galvanised. Not painted.	
DOOR:	2032x813x40mm meranti hardwood doors. Tongue and groove boarding with v-joints SA pine sub frame with double 20x225mm top and bottom ledges. 20x150mm middle ledge and 20x110mm braces	
D.FINISH:	Wood prime, one coat undercoat and two coats gloss	
IRONMONGERY	LOCKS: DORMA D036S Euro-profile cylinder sash lock SS HANDLE: DORMA CB30 Lever handle on rectangular Euro-cylinder backplate 61mm centre.	
		
TYPE:	W1 NO REQD: 2	W2 NO REQD: 2
FRAME:	Rolled steel window sections, bottom hung openings. SABS approved.	Rolled steel window sections, top hung openings. SABS approved.
GLASS:	4mm sandblasted glass puttied in with steel window putty.	4mm sandblasted glass puttied in with steel window putty.
FITTING:	Approved standard brass fittings completed with window.	Approved standard brass fittings completed with window.
B. BARS	8mmø bars	8mmø bars
FINISH:	Galvanised. No Painting required	Galvanised. No Painting required
NOTES:	Courses adjacent to window jambs are to have cores filled allowing fixing lugs to be built-in	Courses adjacent to window jambs are to have cores filled allowing fixing lugs to be built-in

SCALE:	DETAIL DESCRIPTION.
1:50	DOOR SET & WINDOW SCHEDULE



SCALE:	DETAIL DESCRIPTION.
1:10	CONC APRON DETAIL

Global Roofing Solutions 890mm cover IBR 890 profile roll-formed in continuous lengths from 0.50mm thick Galvanised steel, Z200 spelter ISQ550 Chromadek® roof sheeting, fixed to timber intermediate purlins at MAX 2200mm centres and eaves and ridge purlins at MAX 2100mm centres using Hex Flange Head + EPDM Seal self drilling Type 17 drill point, No. 12-11 x 85mm long fasteners. Purlin fixed to second, fourth and sixth crest of each sheet and at all crests at sheet ends, all in accordance with the manufacturer's specifications by a GRS approved contractor. Or equal and approved

Nutec Everite 200mm x 800mm socketless barge boards. Upvc H-profile barge board joiners. Drill for and fix with hot-dipped galvanised screws and washers. 76 x 50mmm trimmer batten fixed underside of purlin ends for barge board fixing.

Nutec Everite fascia boards 12mm thick and 225mm with aluminium H-profile fascia joiners. Drill for and fix with hot-dip galvanised drive screws and washers.

110mm Nutec Everite gutters or similar approved in maximum possible lengths & fixed with concealed brackets laid to fall 1:200 towards outlet. Joints at corners etc, if any are to be accurately formed, sealed & rivetted to achieve a watertight finish. Brackets to be fixed at max 1m centres. 75mm Dia Upvc downpipes with 1NO. to discharge into rain water tank

Reinforced BOE Facebrick lintel

Steel windows with burglar bars to schedule bottom hung

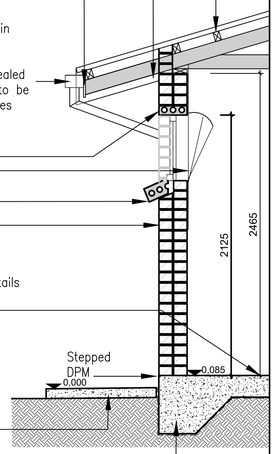
BOE Facebrick window cills with DPC under.

COROBRIC Firelight satin SABS Classification Facebrick lintel or similar approved .

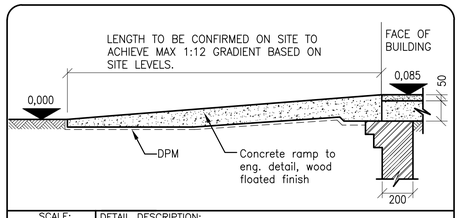
Reinforced concrete slab to structural engineers details on compacted fill by civil engineers. Soil to be poisoned in accordance with SABS 1165. (Certificate to be provided)

Concrete aprons laid to fall off 1:50 to structural engineers details on compacted fill by civil engineers

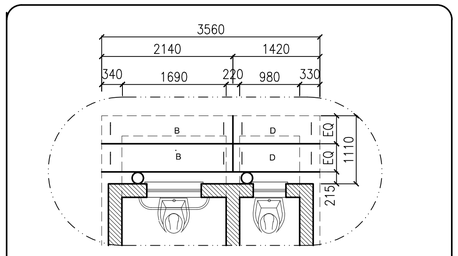
Foundation to be concrete raft foundations to structural eng. detail, under all walls. they are to sit on firm compacted ground by civil eng.

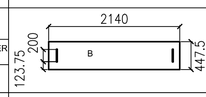
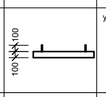
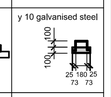
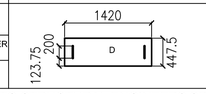
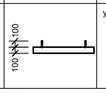
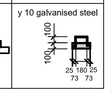


SCALE:	DETAIL DESCRIPTION.
1:25	TYPICAL SKIN SECTION



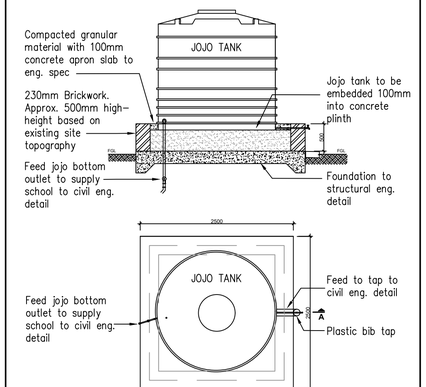
SCALE:	DETAIL DESCRIPTION:
1:20	RAMP DETAILS



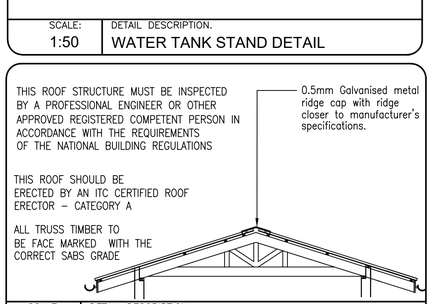
SLAB TYPE	PLAN	1 - 1	2 - 2
B			
NUMBER OFF 2			
SLAB TYPE	PLAN	1 - 1	2 - 2
D			
NUMBER OFF 2			

*ALL TO STRUCTURAL ENGINEERS SPECS.

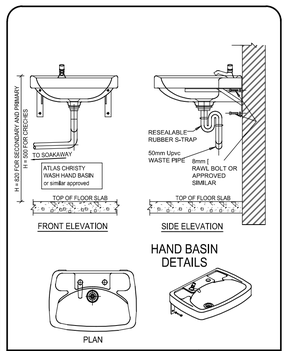
SCALE:	DETAIL DESCRIPTION.
1:50	SLAB DETAIL (PIT COVER)



SCALE:	DETAIL DESCRIPTION.
1:50	WATER TANK STAND DETAIL



SCALE:	DETAIL DESCRIPTION.
1:50	ROOF DETAIL



SCALE:	DETAIL DESCRIPTION.	QUANTITY
1:20	BASIN DETAIL	x2

FOR CONSTRUCTION

AECOM

CONSULTANT

DURBAN
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	2019-09-16	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	J.NAIR	N/A	
DRAWN BY	J.NAIR	N/A	
DESIGNED CHECKED BY	F.RANDEREE	N/A	
DRAWING CHECKED BY	F.RANDEREE	N/A	

APPROVAL CONSULTANT

NAME	D.NOETZOLD	DATE	2022.09.30
PROF REG. No.	21510	SIGNATURE	

THE MASTER HELD AT THE **AECOM DURBAN OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

1 FEMALE / 1 DISABLED
ABLUTION BLOCK DRY

DISCIPLINE

ARCHITECTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	A	**AF - 002**	**C**	**1**

D. DRAFT / P. PRELIMINARY / T. TENDER / F. FINAL / C. CONSTRUCTION / A. AS-BUILT, RECORD / R. REPORT

SCALE: As Indicated

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Printed on: 90 gsm Bond Paper
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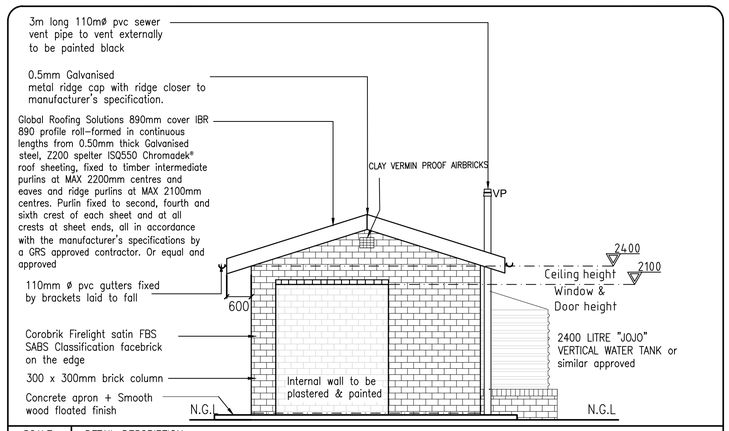
ISO A1 841mm x 594mm



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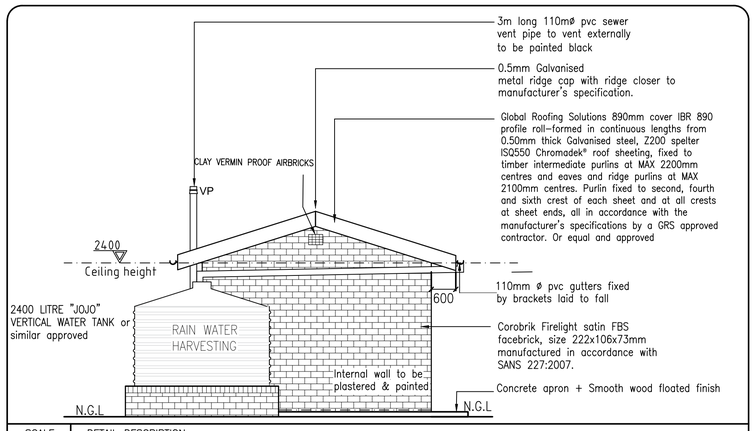


SCALE: 1:50 | DETAIL DESCRIPTION. SIDE ELEVATION

GENERAL NOTES:

1. Quality of materials & workmanship to comply with relevant SABS & BSS specifications. All to conform to the minimum standards as specified in the preambles in the BOQ. All work to comply with NBR.
2. Contractor is responsible for correct setting out of building external & internal walls, with particular reference to boundaries & building lines.
3. Contractor to locate & identify existing services and to protect these from damage for the duration of the work.
4. Any discrepancies were brought to the architect's attention immediately and prior to the commencement of any building operations.
5. All dimensions and levels to be checked on site.
6. This drawing is read in conjunction with all other drawings, schedules and specifications related to this project as well as all engineers' drawings.
7. Drawings are not to be scaled off.
8. All building work and materials to comply with the local authorities requirements and are in accordance with the SABS 0400-1990 National Building Regulations.
9. Unless otherwise stated, any products specified by trade name are installed strictly in accordance to the manufacturer's specifications and instructions.
10. All slabs, beams, columns, foundations, structural steel, structural walls, retaining walls as well as any other structural elements are in accordance with the structural engineer's design, detail and approval.
11. All stormwater design is in accordance with the civil engineer's design, detail and approval.

CONSTRUCTION NOTES:

A. FOUNDATIONS / BACKFILL

1. All to Engineers detail and specification.

B. FLOORS

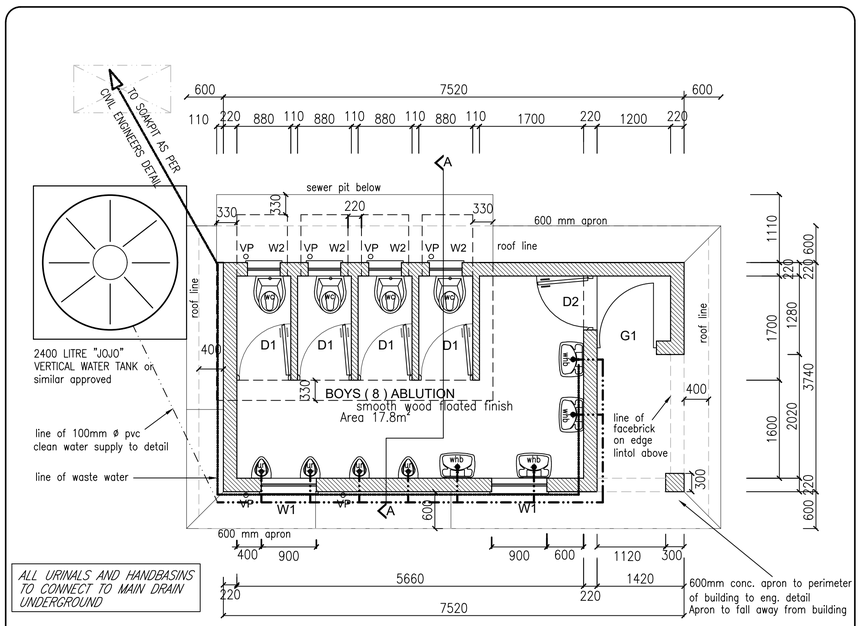
1. All construction, movement and control joints are in accordance with the structural engineer's design and detail and to the structural engineer's approval.
2. All surface beds are on minimum 250 micron, sabs approved, damp proof membrane (dpm) sheeting is laid on a blinding layer on well compacted soil, all in accordance with the Structural Engineer.
3. The soil is treated and certified by a soil poisoning specialist using approved soil poisoning in accordance with the recommendations of SABS 0124.

C. WALLS / BEAMS

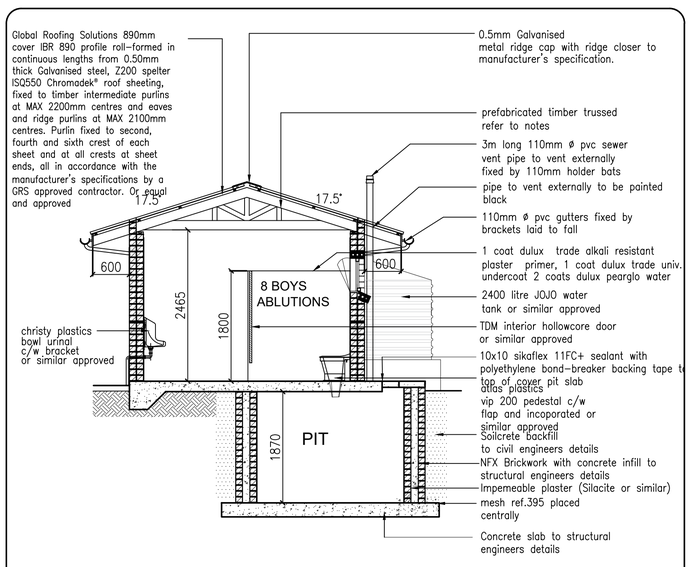
1. All walls are to comply with "Part K" of the National Building Regulations.
2. COROBRICK commons to be used where to receive plaster. COROBRICK engineering Bricks to be used below ground level in foundation walls.
3. Brickforce to every 3rd course up to window head height thereafter all courses from window head to underside of wallplate. Galvanised crimp wire wall ties (7 per square metre - laid staggered).
4. External face of inner skin to be painted bitumen paint. 375 micron embossed damp-proof membrane stepped below all window cills.
5. Where plaster is required internally (13 - 16mm thick) ratio must be 1:5 cement:sand mix. Beam filling to underside of roofing sheets.
6. Isolation joints to be square struck 10x10mm, all to structural engineers details.
7. All founding and / or retaining wall to Structural Engineers details.
8. P.C. lintols to be installed over all new openings.
9. All Facebrick on edge lintols built above every window and door opening (unless otherwise specified) to eng. detail.
10. Bearing areas on either side of openings on all lintel lengths shall be a minimum of 300mm.

D. ROOF

1. Global Roofing Solutions 890mm cover IBR 890 profile roll-formed in continuous lengths from 0.50mm thick Galvanised steel, Z200 spelter ISQ550 Chromadek® roof sheeting, fixed to timber intermediate purlins at MAX 2200mm centres and eaves and ridge purlins at MAX 2100mm centres using Hex Flange Head + EPDM Seal self drilling Type 17 drill point, No. 12-11 x 85mm long fasteners. Purlin fixed to second, fourth and sixth crest of each sheet and at all crests at sheet ends, all in accordance with the manufacturer's specifications by a GRS approved contractor. Or equal and approved
2. Pitch: 17.5degrees
3. Colour of sheeting to be matched to existing roof structure on site.
4. Roof sheet to be laid on Sisalation 405 reflective foil laminate on 75mm x 50mm SA Pine purlins on prefabricated timber trusses to Structural Engineers Details and Specifications.
5. Purlin spacings are dependant on both downward loading and negative suction loading caused by wind. The engineer should be consulted to calculate the load (kN/m2) for particular application



SCALE: 1:50 | DETAIL DESCRIPTION. FLOOR PLAN

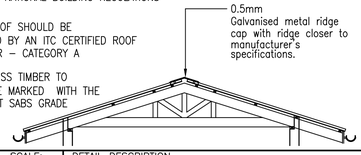


SCALE: 1:50 | DETAIL DESCRIPTION. SECTION A-A

THIS ROOF STRUCTURE MUST BE INSPECTED BY A PROFESSIONAL ENGINEER OR OTHER APPROVED REGISTERED COMPETENT PERSON IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS

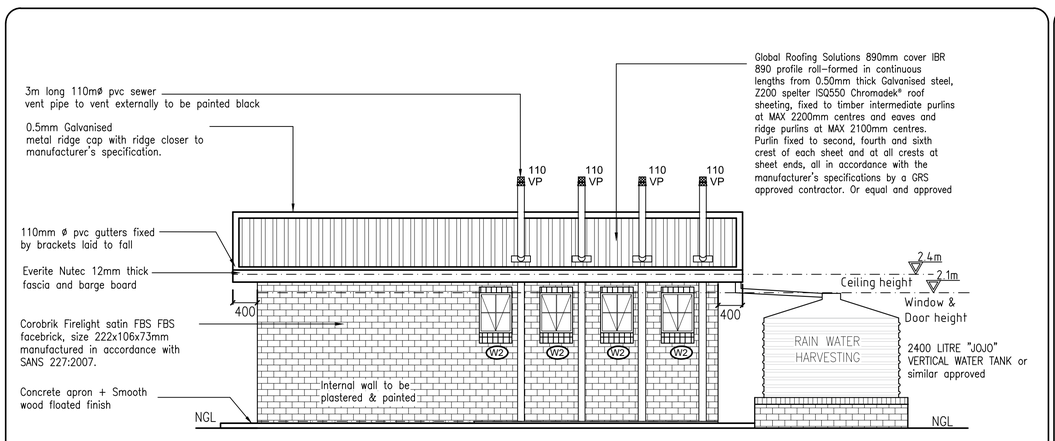
THIS ROOF SHOULD BE ERECTED BY AN ITC CERTIFIED ROOF ERECTOR – CATEGORY A

ALL TRUSS TIMBER TO BE FACE MARKED WITH THE CORRECT SABS GRADE

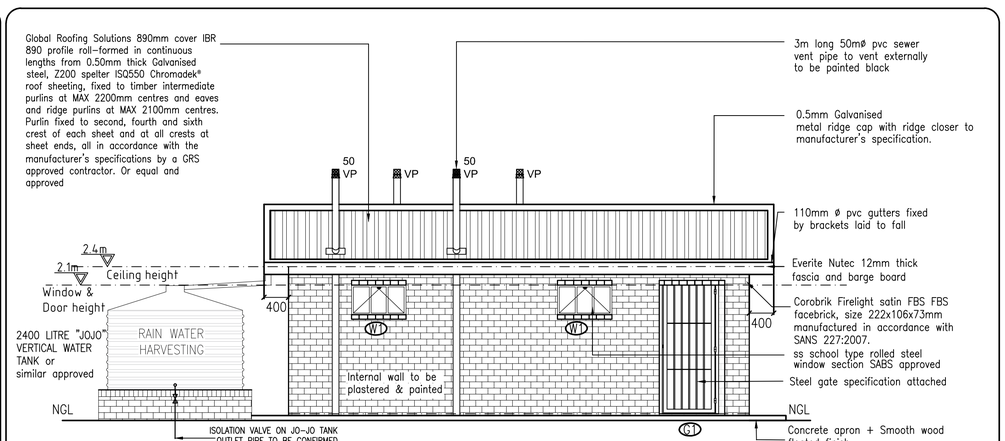


SCALE: 1:50 | DETAIL DESCRIPTION. ROOF DETAIL

*NOTE- ALL 230mm INTERNAL WALLS TO GO TO THE UNDERSIDE OF THE ROOF SHEETING



SCALE: 1:50 | DETAIL DESCRIPTION. BACK ELEVATION



SCALE: 1:50 | DETAIL DESCRIPTION. FRONT ELEVATION

FOR CONSTRUCTION

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CONSULTANT

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Ridgeview Building, 3rd Floor, 1 Nokwe Avenue Ridgeside, Umhlanga Ridge
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+27 (0) 31 204 3800 tel +27 (0) 31 204 3818 fax
www.aecom.com Reg No. 1968/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
1	2022.09.30	ISSUED FOR CONSTRUCTION	FR
0	2020-03-19	FOR CONSTRUCTION	FR
	2019-09-19	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	J.NAIR	N/A	
DRAWN BY	J.NAIR	N/A	
DESIGNED CHECKED BY	F.RANDEREE	N/A	
DRAWING CHECKED BY	F.RANDEREE	N/A	

APPROVAL CONSULTANT

NAME D.NOETZOLD DATE 2022.09.30
PROF REG. No. 21510 SIGNATURE

THE MASTER HELD AT THE **AECOM DURBAN OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

8 BOYS ABLUTIONS BLOCK DRY

DISCIPLINE

ARCHITECTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	A	AF - 550	C	1

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

SCALE As Indicated

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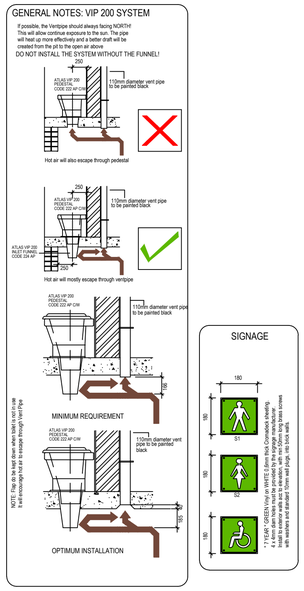
Last Plotted: 2022/09/30 10:23:31
Filename: G:\Shared\Durban\ARCHITECTURE\60491906 - 8B DRY (REV 1).DWG

ISO A1 841mm x 594mm



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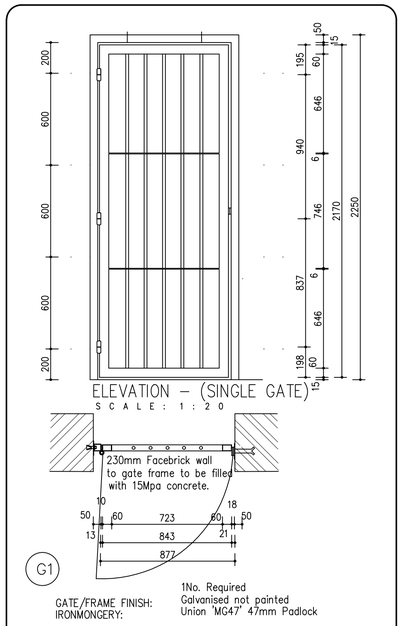

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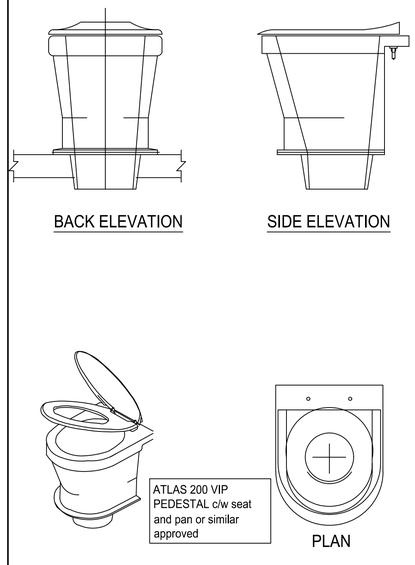
1:20	GATE (G1) DETAILS	x1



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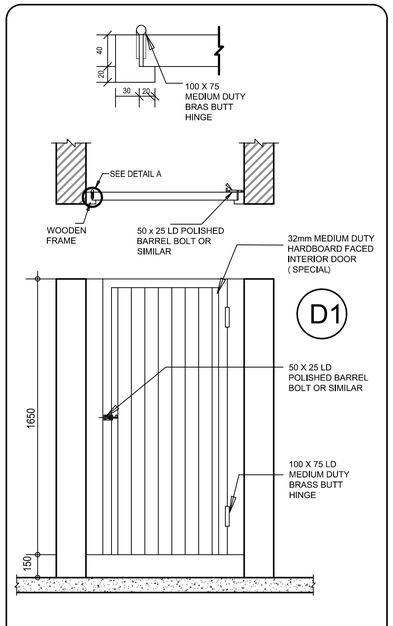
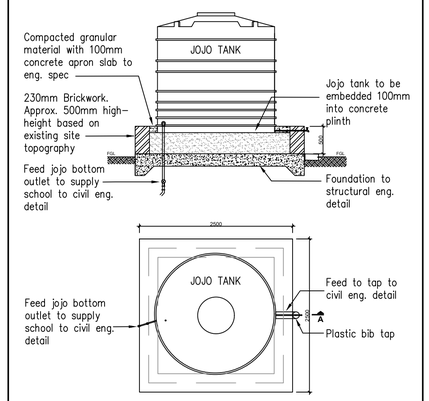
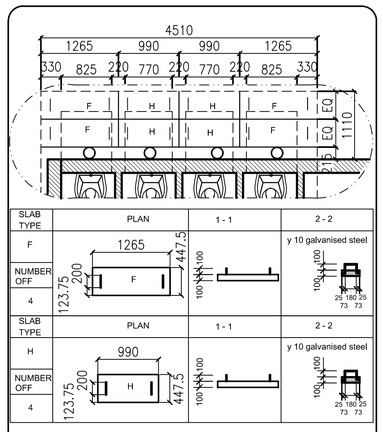
1:10	WC DETAIL	x4



SCALE:	DETAIL DESCRIPTION.	QUANTITY
1:20	CUBICLE (D1) DOOR DETAIL	x4



SCALE:	DETAIL DESCRIPTION.
1:50	WATER TANK STAND DETAIL



SLAB TYPE	PLAN	1 - 1	2 - 2
F	1265, 447.5, 123.75, 200, F	100, 100	y 10 galvanised steel, 100, 100, 25 180 25, 73 73
NUMBER OFF: 4			
SLAB TYPE	PLAN	1 - 1	2 - 2
H	990, 447.5, 123.75, 200, H	100, 100	y 10 galvanised steel, 100, 100, 25 180 25, 73 73
NUMBER OFF: 4			

SCALE:	DETAIL DESCRIPTION.
1:50	SLAB DETAIL (PIT COVER) *ALL TO STRUCTURAL ENGINEERS SPECIFICATIONS

Global Roofing Solutions 890mm cover IBR 890 profile roll–formed in continuous lengths from 0.50mm thick Galvanised steel, Z200 spelter ISQ550 Chromadek® roof sheeting, fixed to timber intermediate purlins at MAX 2200mm centres and eaves and ridge purlins at MAX 2100mm centres. Purlin fixed to second, fourth and sixth crest of each sheet and at all crests at sheet ends, all in accordance with the manufacturer's specifications by a GRS approved contractor. Or equal and approved

Nutec Everite 200mm x 800mm socketless barge boards. Upvc H–profile barge board joiners. Drill for and fix with hot–dipped galvanised screws and washers. 76 x 50mmm trimmer batten fixed underside of purlin ends for barge board fixing.

Nutec Everite fascia boards 12mm thick and 225mm with aluminium H–profile fascia joiners. Drill for and fix with hot –dip galvanised drive screws and washers.

110mm Nutec Everite gutters or similar approved in maximum possible lengths & fixed with concealed brackets laid to fall 1:200 towards outlet. Joints at corners etc, if any are to be accurately formed, sealed & rivetted to achieve a watertight finish. Brackets to be fixed at max 1m centres. 75mm Dia Upvc downpipes with 1NO. to discharge into rain water tank

Reinforced BOE Facebrick lintel

Steel windows with burglar bars to schedule bottom hung

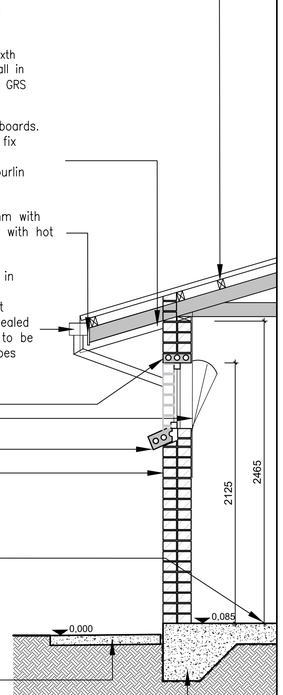
BOE Facebrick window cills with DPC under.

Corobrik Montana Travertine FBS SABS Classification Facebrick lintel or similar approved . Facebrick internally up to 1105mm above finish floor level

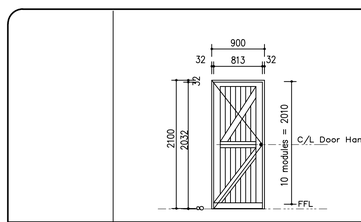
Reinforced concrete slab to structural eng. spec, on compacted fill by civil eng. Soil to be poisoned in accordance with SABS 1165. (Certificate to be provided)

100mm Thick concrete aprons laid to fall of 1:50 to structural eng. detail on compacted fill by civil eng.

Foundation to be concrete raft foundations to structural eng. detail, under all walls. they are to sit on firm compacted ground by civil eng.

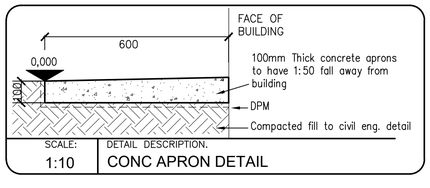


SCALE:	DETAIL DESCRIPTION.
1:25	TYPICAL EAVES DETAIL.

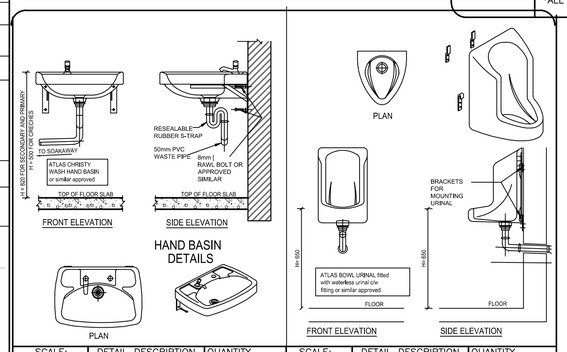


	Refer to plan for handing	
TYPE:	D2	no. of x1
FRAME:	1.2mm pressed metal 1 No. frame suitable for 230mm wall	
F.FINISH:	Galvanised. Not painted.	
DOOR:	2032x813x40mm meranti hardwood doors. tongue and groove boarding with v–joints. SA pine subframe with double 20x225mm top and bottom ledges 20x150mm middle ledge 20x110mm braces	
D.FINISH:	Wood prime, one coat undercoat and two coats gloss	
IRONMONGERY	LOCKS: DORMA D036S Euro–profile cylinder sash lock SS HANDLE: DORMA CB30 Lever handle on rectangular Euro–cylinder backplate 61mm centre.	
	u/s lintol 889, 1457, 1643, 2100	u/s lintol 535, 655, 2100, FFL
TYPE:	W1 NO REQD: 2	W2 NO REQD: 4
FRAME:	Rolled steel window sections, bottom hung openings. SABS approved.	Rolled steel window sections, top hung openings. SABS approved.
GLASS:	4mm sandblasted glass puttied in with steel window putty.	4mm sandblasted glass puttied in with steel window putty.
FITTING:	Approved standard brass fittings completed with window.	Approved standard brass fittings completed with window.
B. BARS	8mmø bars	8mmø bars
FINISH:	Galvanised. No Painting required	Galvanised. No Painting required
NOTES:	Courses adjacent to window jambs are to have cores filled allowing fixing lugs to be built–in	Courses adjacent to window jambs are to have cores filled allowing fixing lugs to be built–in

SCALE:	DETAIL DESCRIPTION.
1:50	DOOR (D2) & WINDOW SCHEDULE



SCALE:	DETAIL DESCRIPTION.
1:10	CONC APRON DETAIL



SCALE:	DETAIL DESCRIPTION.	QUANTITY
1:10	BASIN DETAIL	x4
1:10	BOWL URINAL	x4

F. DRAINAGE / STORMWATER NOTES

1. All drainage work and materials comply with the local authority requirements in accordance with the SABS 0400-1990 National Building Regulations Part P.
2. Walls and foundations are to bridge over all pipes.
3. All pipes under building encased in concrete, and approved by engineer.
4. Vent pipes to secured to the walls outside the ablution facilities - 3m 110mm Ø vent pipe (black - uv) fixed with 3 110mm holder bats - 110mm fly screen used at vent end.
5. DRY toilets: All WC for students Atlas plastic vip 200 pedestal, color granite
6. DRY toilets: All WC for teachers and disabled to be Atlas plastic vip 200 pedestal, color granite
7. DRY urinals: Atlas plastic bowl urinal, colour: granite
8. Atlas plastic Christy wash hand basin with traditional chrome cobra watertech or equal and approved Stella basin cold water tap and cobra watertech or equal and approved dura chrome plated single lever basin mixer (code: du-951) for paraplegic toilet. colour: granite.
9. Close taps to ensure reliable water conservation, which must be able to close at minimum 15kpa pressure.
10. Domestic water supply to be connected to existing water mains where possible.
11. All flushing mechanisms if applicable as per civil engineers design
12. The rain water harvesting tank must be equipped with a fload valve and connected to the main water supply within the school yard, where it is available.
13. All downpipes are pvc. All downpipes sizes in accordance with engineer's approval.
14. - pipes from sinks & urinal outlets to soakaway pit (50mm pvc)
    - pipes from gutters to fill tank (75mm pvc)
    - pipe from tank to sinks (15mm polycop) fitting to be done internally

FOR CONSTRUCTION

AECOM

CONSULTANT

DURBAN
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+27 (0) 31 204 3818 fax
www.aecom.com
Reg No. 1968/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

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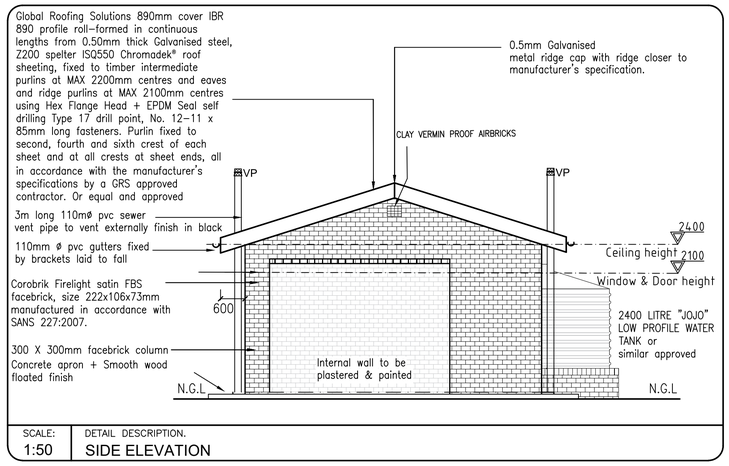
ISO A1 841mm x 594mm



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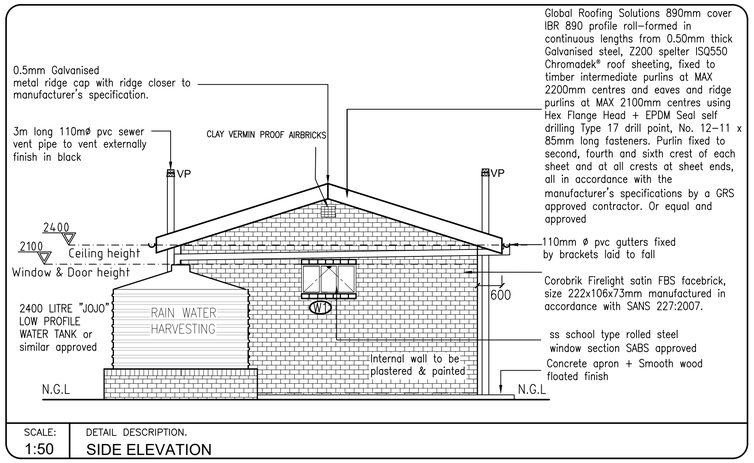
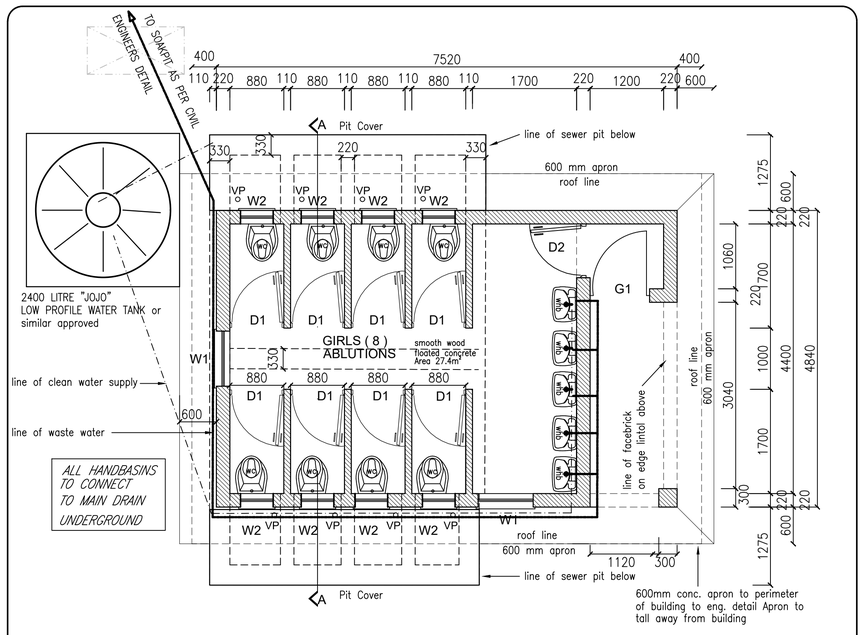


SCALE: 1:50 | DETAIL DESCRIPTION. SIDE ELEVATION

*NOTE- ALL 230mm INTERNAL WALLS TO GO TO THE UNDERSIDE OF THE ROOF SHEETING



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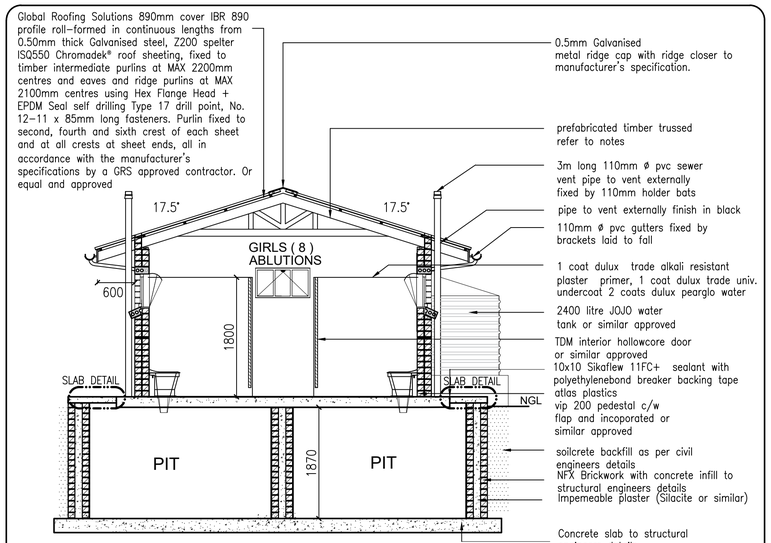

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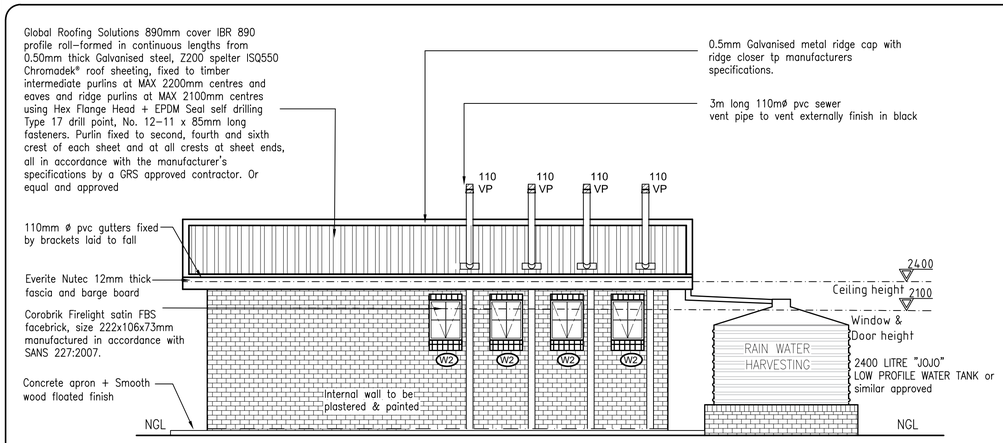

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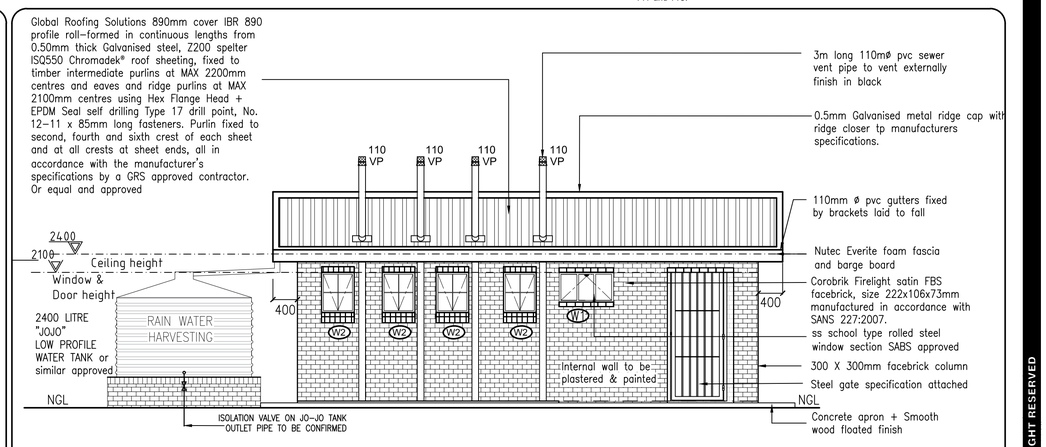

SCALE: 1:50 | DETAIL DESCRIPTION. FRONT ELEVATION

GENERAL NOTES:

1. Quality of materials & workmanship to comply with relevant SABS & BSS specifications. All to conform to the minimum standards as specified in the preambles in the BOQ. All work to comply with NBR.
2. Contractor is responsible for correct setting out of building external & internal walls, with particular reference to boundaries & building lines.
3. Contractor to locate & identify existing services and to protect these from damage for the duration of the work.
4. Any discrepancies were brought to the architect's attention immediately and prior to the commencement of any building operations.
5. All dimensions and levels to be checked on site.
6. This drawing is read in conjunction with all other drawings, schedules and specifications related to this project as well as all engineers' drawings.
7. Drawings are not to be scaled off.
8. All building work and materials to comply with the local authorities requirements and are in accordance with the SABS 0400-1990 National Building Regulations.
9. Unless otherwise stated, any products specified by trade name are installed strictly in accordance to the manufacturer's specifications and instructions.
10. All slabs, beams, columns, foundations, structural steel, structural walls, retaining walls as well as any other structural elements are in accordance with the structural engineer's design, detail and approval.
11. All stormwater design is in accordance with the civil engineer's design, detail and approval.

CONSTRUCTION NOTES:

A. FOUNDATIONS / BACKFILL

1. All to Engineers detail and specification.

B. FLOORS

1. All construction, movement and control joints are in accordance with the structural engineer's design and detail and to the structural engineer's approval.
2. All surface beds are on minimum 250 micron, sabs approved, damp proof membrane (dpm) sheeting is laid on a blinding layer on well compacted soil, all in accordance with the Structural Engineer.
3. The soil is treated and certified by a soil poisoning specialist using approved soil poisoning in accordance with the recommendations of SABS 0124.

C. WALLS / BEAMS

1. All walls are to comply with "Part K" of the National Building Regulations.
2. COROBRICK commons to be used where to receive plaster. COROBRICK engineering Bricks to be used below ground level in foundation walls.
3. Brickforce to every 3rd coursse up to window head height thereafter all courses from window head to underside of wallplate. Galvanised crimp wire wall ties (7 per square metre - laid staggered).
4. External face of inner skin to be painted bitumen paint. 375 micron embossed damp-proof membrane stepped below all window cills.
5. Where plaster is required internally (13 - 16mm thick) ratio must be 1:5 cement:sand mix. Beam filling to underside of roofing sheets.
6. Isolation joints to be square struck 10x10mm, all to structural engineers details.
7. All founding and / or retaining wall to Structural Engineers details.
8. P.C. lintols to be installed over all new openings.
9. All Facebrick on edge lintols built above every window and door opening (unless otherwise specified) to eng. detail.
10. Bearing areas on either side of openings on all lintel lengths shall be a minimum of 300mm.

D. ROOF

1. Global Roofing Solutions 890mm cover IBR 890 profile roll-formed in continuous lengths from 0.50mm thick Galvanised steel, Z200 spelter ISQ550 Chromadek® roof sheeting, fixed to timber intermediate purlins at MAX 2200mm centres and eaves and ridge purlins at MAX 2100mm centres using Hex Flange Head + EPDM Seal self drilling Type 17 drill point, No. 12-11 x 85mm long fasteners. Purlin fixed to second, fourth and sixth crest of each sheet and at all crests at sheet ends, all in accordance with the manufacturer's specifications by a GRS approved contractor. Or equal and approved
2. Pitch: 17.5degrees
3. Colour of sheeting to be matched to existing roof structure on site.
4. Roof sheet to be laid on Sisalation 405 reflective foil laminate on 75mm x 50mm SA Pine purlins on prefabricated timber trusses to Structural Engineers Details and Specifications.
5. Purlin spacings are dependant on both downward loading and negative suction loading caused by wind. The engineer should be consulted to calculate the load (kN/m2) for particular application

E. PAINT

1. All paints, stains, varnishes, etc, are of an approved manufacturer, and used in strict accordance to the manufacturer's instructions.

F. DRAINAGE / STORMWATER NOTES

1. All drainage work and materials comply with the local authority requirements in accordance with the SABS 0400-1990 National Building Regulations Part P.
2. Walls and foundations are to bridge over all pipes.
3. All pipes under building encased in concrete, and approved by engineer.
4. Vent pipes to secured to the walls outside the ablution facilities - 3m 110mm Ø vent pipe (black - uv) fixed with 3 110mm holder bats - 110mm fly screen used at vent end.
5. All WC to be Vaal Aquasave Vitreous China low level suite pan, 6 litre sisco cistern and flush pipe with double flap seat with 1 off 15mm Cobra Fullway ballcock.
6. Vaal Sanitaryware vitreous china "Protea Paraplegic" and matching 9 litre cistern complete with lid, fitments, and purpose-made C.P. side-flush lever or a back inlet exposed flushvalve. The suite is designed to on 6 litres
7. Vaal Sanitaryware vitreous china wall hung "Flatback" urinal.Supplied with 38mm c.p.domical grating (code 8787Z0), c.p. top inlet speader (code 8543Z0), and two hanger brackets (code 8127Z0).
8. Vaal Sanitaryware ceramic fireclay rectangular "Springbok" basin with two tapholes, integrated overflow and chainstay hole.
9. Taps in all wash hand basin must be charlock pvc Pro.
10. Close taps to ensure reliable water conservation, which must be able to close at minimum 15kpa pressure.
11. Domestic water supply to be connected to existing water mains.
12. The rain water harvesting tank must be equipped with a fload valve and connected to the main water supply within the school yard, where it is available.
13. All downpipes are pvc. All downpipes sizes in accordance with engineer's approval.
14. - pipes from sinks & urinal outlets to soakaway pit (50mm pvc)
    - pipes from gutters to fill tank (75mm pvc)
    - pipe from tank to sinks (15mm polycop) fitting to be done internally

G. FIRE NOTES

1. All building work comply with the local authority requirements in accordance with the SANS10400 National Building Regulations.
2. Fire stability of all structural elements and components comply with National Building Regulations Part TT7 and TT9.

AECOM

CONSULTANT

DURBAN
Ridgeview Building, 3rd Floor, 1 Nokwe Avenue Ridgeside, Umhlanga Ridge
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www.aecom.com Reg No. 1968/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

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KZN DEPARTMENT OF
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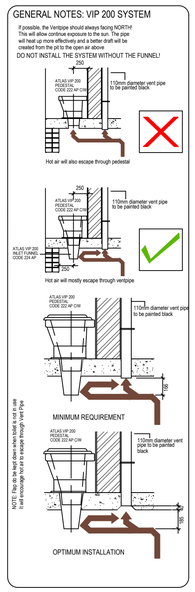
Printed by: Microsoft® Word for Microsoft 365

ISO A1 841mm x 594mm



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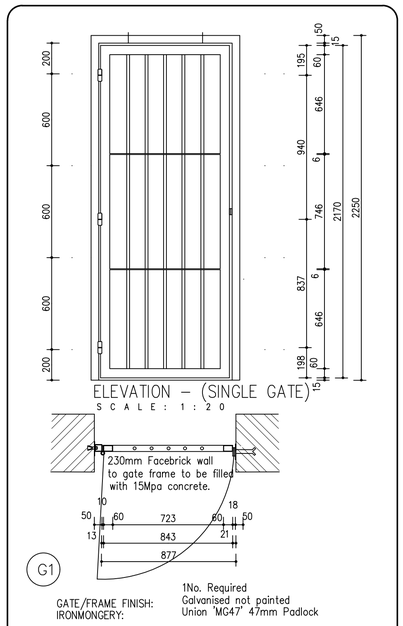
NTS	VIP 200 SYSTEM & SIGNAGE



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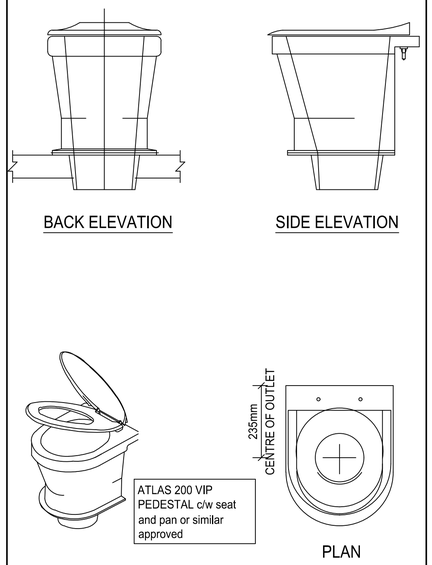
1:20	GATE (G1) DETAILS	x1



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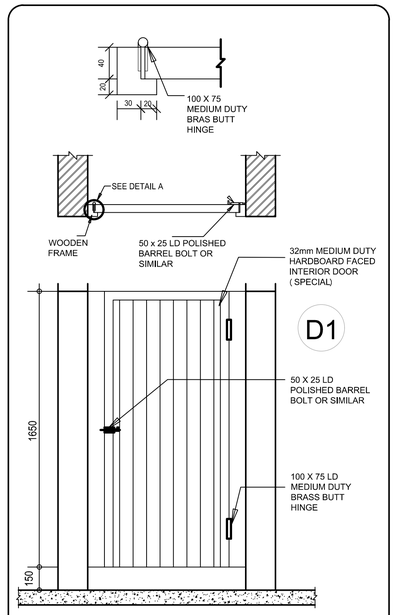
1:10	WC DETAILS	x8



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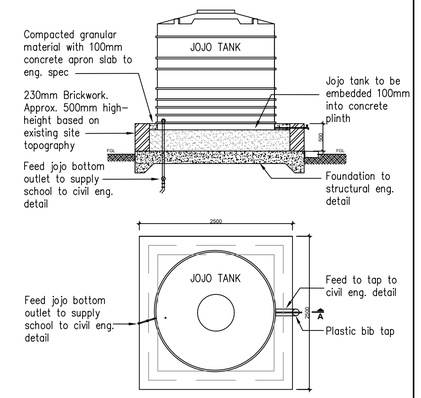
1:20	CUBICLE (D1) DOOR DETAILS	x8



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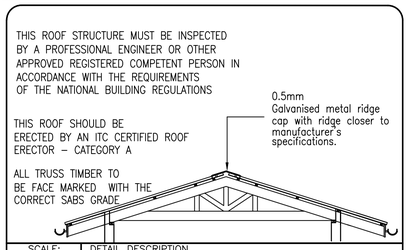
1:50	WATER TANK STAND DETAIL



SCALE:	DETAIL DESCRIPTION.
1:50	ROOF DETAILS

Global Roofing Solutions 890mm cover IBR 890 profile roll–formed in continuous lengths from 0.50mm thick Galvanised steel, Z200 spelter ISQ550 Chromadek® roof sheeting, fixed to timber intermediate purlins at MAX 2200mm centres and eaves and ridge purlins at MAX 2100mm centres using Hex Flange Head + EPDM Seal self drilling Type 17 drill point, No. 12–11 x 85mm long fasteners. Purlin fixed to second, fourth and sixth crest of each sheet and at all crests at sheet ends, all in accordance with the manufacturer's specifications by a GRS approved contractor. Or equal and approved

Nutec Everite 200mm x 800mm socketless barge boards. Upvc H–profile barge board joiners. Drill for and fix with hot–dipped galvanised screws and washers. 76 x 50mmm trimmer batten fixed underside of purlin ends for barge board fixing.

Nutec Everite fascia boards 12mm thick and 225mm with aluminium H–profile fascia joiners. Drill for and fix with hot –dip galvanised drive screws and washers.

110mm Nutec Everite gutters or similar approved in maximum possible lengths & fixed with concealed brackets laid to fall 1:200 towards outlet. Joints at corners etc, if any are to be accurately formed, sealed & rivetted to achieve a watertight finish. Brackets to be fixed at max 1m centres. 75mm Dia Upvc downpipes with 1NO. to discharge into rain water tank

Reinforced BOE Facebrick lintel

Steel windows with burglar bars to schedule bottom hung

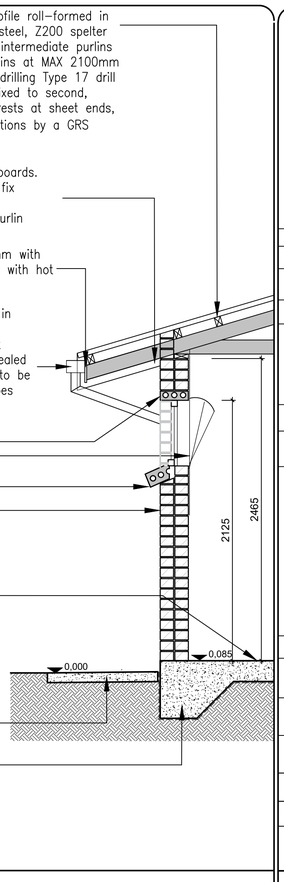
BOE Facebrick window cills with DPC under.

Corobrik Firelight satin FBS
SABS Classification Facebrick lintel or similar approved . Facebrick internally up to 1105mm above finish floor level

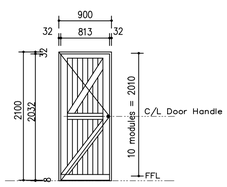
Reinforced concrete slab to structural eng. spec, on compacted fill by civil eng. Soil to be poisoned in accordance with SABS 1165. (Certificate to be provided)

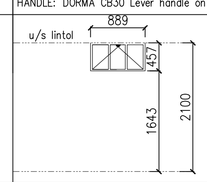
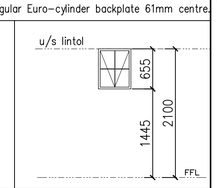
100mm Thick concrete aprons laid to fall of 1:50 to structural eng. detail on compacted fill by civil eng.

Foundation to be concrete raft foundations to structural eng. detail, under all walls. they are to sit on firm compacted ground by civil eng.

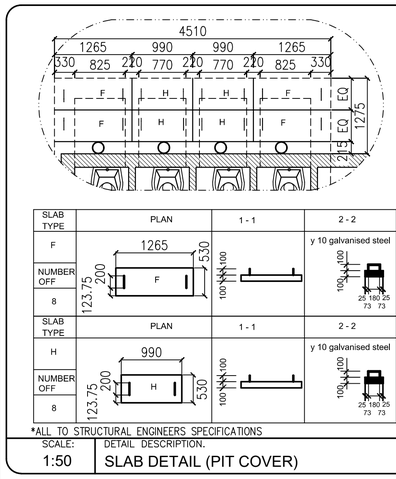


SCALE:	DETAIL DESCRIPTION.
1:25	TYPICAL SKIN SECTION

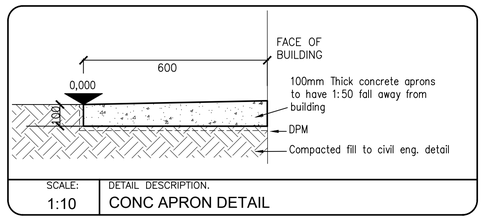


	Refer to plan for handing	
TYPE:	D2	no. of x1
FRAME:	1.2mm pressed metal 1 No. frame suitable for 230mm wall	
F.FINISH:	Galvanised. Not painted.	
DOOR:	2032x813x40mm meranti hardwood doors. tongue and groove boarding with v–joints. SA pine subframe with double 20x225mm top and bottom ledges 20x150mm middle ledge 20x110mm braces	
D.FINISH:	Wood prime, one coat undercoat and two coats gloss	
IRONMONGERY	LOCKS: DORMA D036S Euro–profile cylinder sash lock SS HANDLE: DORMA CB30 Lever handle on rectangular Euro–cylinder backplate 61mm centre.	
		
TYPE:	W1 NO REQD: 2	W2 NO REQD: 8
FRAME:	Rolled steel window sections, bottom hung openings. SABS approved.	Rolled steel window sections, top hung openings. SABS approved.
GLASS:	4mm sandblasted glass puttied in with steel window putty.	4mm sandblasted glass puttied in with steel window putty.
FITTING:	Approved standard brass fittings completed with window.	Approved standard brass fittings completed with window.
B. BARS	8mmø bars	8mmø bars
FINISH:	Galvanised. No Painting required	Galvanised. No Painting required
NOTES:	Courses adjacent to window jambs are to have cores filled allowing fixing lugs to be built–in	Courses adjacent to window jambs are to have cores filled allowing fixing lugs to be built–in

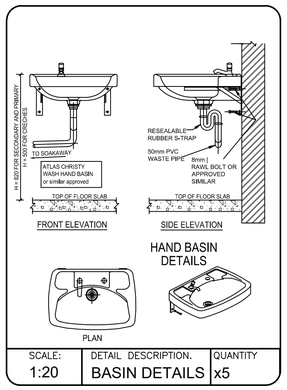
SCALE:	DETAIL DESCRIPTION.
1:50	DOOR (D2) & WINDOW SCHEDULE



SCALE:	DETAIL DESCRIPTION.
1:50	SLAB DETAIL (PIT COVER)



SCALE:	DETAIL DESCRIPTION.
1:10	CONC APRON DETAIL



SCALE:	DETAIL DESCRIPTION.	QUANTITY
1:20	BASIN DETAILS	x5

NOTES

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ISSUE / REVISION

1	2022-09-30	FOR CONSTRUCTION	FR
0	2020-03-19	FOR CONSTRUCTION	FR
I/R	DATE	DESCRIPTION	DRN
	2019-09-19	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	J.NAIR	N/A	
DRAWN BY	J.NAIR	N/A	
DESIGNED CHECKED BY	F.RANDEREE	N/A	
DRAWING CHECKED BY	F.RANDEREE	N/A	

APPROVAL CONSULTANT

NAME	D.NOETZOLD	DATE	2022.09.30
PROF REG. No.	21510	SIGNATURE	

THE MASTER HELD AT THE **AECOM DURBAN OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

8 GIRLS ABLUTIONS BLOCK DRY

DISCIPLINE

ARCHITECTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	A	AF - 601	C	1

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

SCALE: As Indicated

FOR CONSTRUCTION

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Reg No. 1968/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
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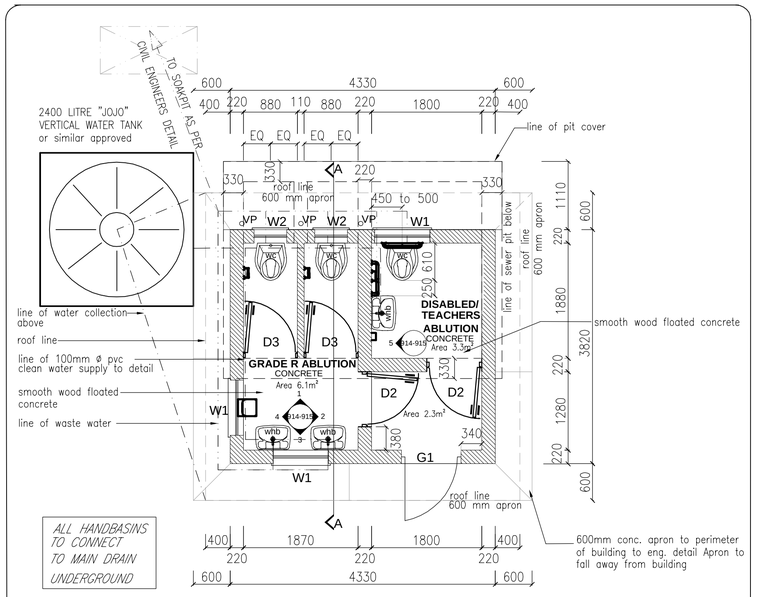

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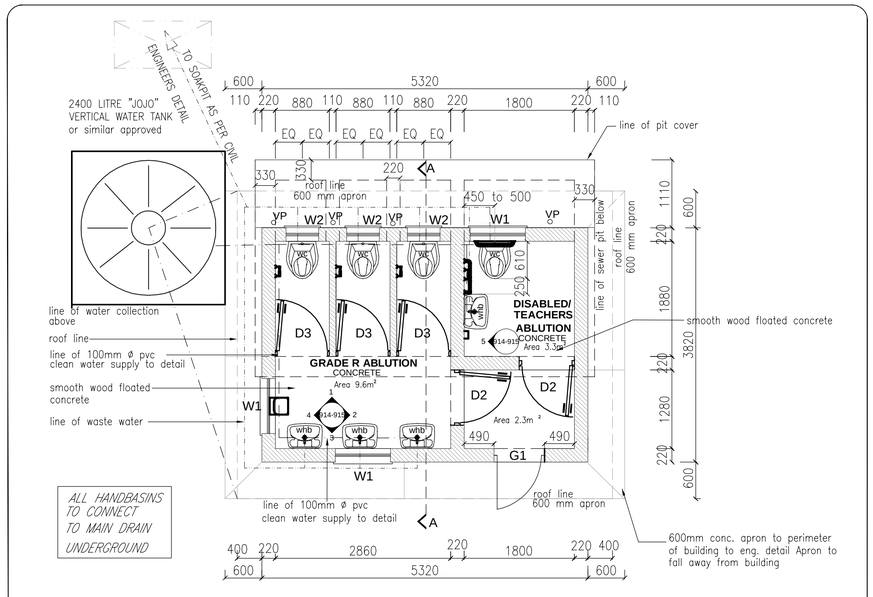
DETAIL DESCRIPTION. FLOOR PLAN - 2R & 1T



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DETAIL DESCRIPTION. FLOOR PLAN - 3R & 1T

GENERAL NOTE SETTING OUT: Windows & WC in cubicles to sit centrally to cubicle.

*ALL INTERNAL 230mm WALLS TO BE TO UNDERSIDE OF ROOF SHEETING.

GENERAL NOTES:

1. Quality of materials & workmanship to comply with relevant SABS & BSS specifications. All to conform to the minimum standards as specified in the preambles in the BOQ. All work to comply with NBR.
2. Contractor is responsible for correct setting out of building external & internal walls, with particular reference to boundaries & building lines.
3. Contractor to locate & identify existing services and to protect these from damage for the duration of the work.
4. Any discrepancies were brought to the architect's attention immediately and prior to the commencement of any building operations.
5. All dimensions and levels to be checked on site.
6. This drawing is read in conjunction with all other drawings, schedules and specifications related to this project as well as all engineers' drawings.
7. Drawings are not to be scaled off.
8. All building work and materials to comply with the local authorities requirements and are in accordance with the SABS 0400-1990 National Building Regulations.
9. Unless otherwise stated, any products specified by trade name are installed strictly in accordance to the manufacturer's specifications and instructions.
10. All slabs, beams, columns, foundations, structural steel, structural walls, retaining walls as well as any other structural elements are in accordance with the structural engineer's design, detail and approval.
11. All stormwater design is in accordance with the civil engineer's design, detail and approval.

CONSTRUCTION NOTES:

A. FOUNDATIONS / BACKFILL

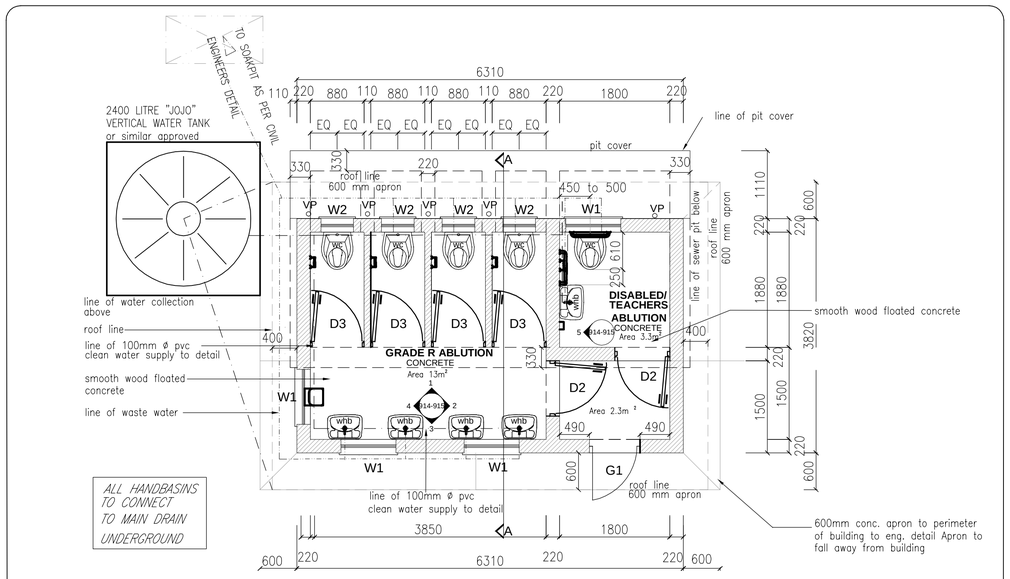
1. All to Engineers detail and specification.

B. FLOORS

1. All construction, movement and control joints are in accordance with the structural engineer's design and detail and to the structural engineer's approval.
2. All surface beds are on minimum 250 micron, sabs approved, damp proof membrane (dpm) sheeting is laid on a blinding layer on well compacted soil, all in accordance with the Structural Engineer.
3. The soil is treated and certified by a soil poisoning specialist using approved soil poisoning in accordance with the recommendations of SABS 0124.

C. WALLS / BEAMS

1. All walls are to comply with "Part K" of the National Building Regulations.
2. COROBRICK commons to be used where to receive plaster. COROBRICK engineering Bricks to be used below ground level in foundation walls.
3. Brickforce to every 3rd course up to window head height thereafter all courses from window head to underside of wallplate. Galvanised crimp wire wall ties (7 per square metre - laid staggered).
4. External face of inner skin to be painted bitumen paint. 375 micron embossed damp-proof membrane stepped below all window cills.
5. Where plaster is required internally (13 - 16mm thick) ratio must be 1:5 cement:sand mix. Beam filling to underside of roofing sheets.
6. Isolation joints to be square struck 10x10mm, all to structural engineers details.
7. All founding and / or retaining wall to Structural Engineers details.
8. P.C. lintols to be installed over all new openings.
9. All Facebrick on edge lintols built above every window and door opening (unless otherwise specified) to eng. detail.
10. Bearing areas on either side of openings on all lintel lengths shall be a minimum of 300mm.



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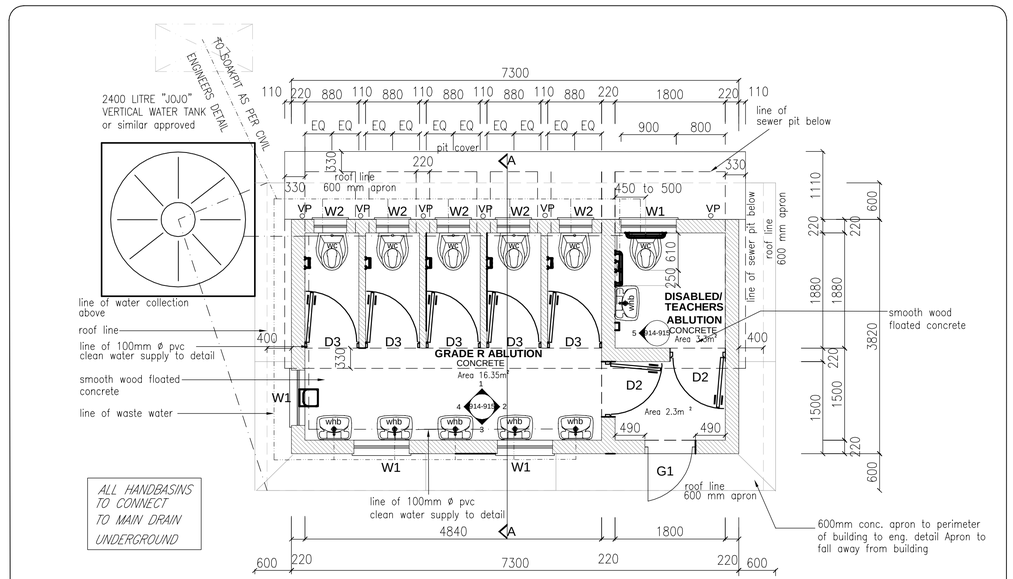
DETAIL DESCRIPTION. FLOOR PLAN - 4R & 1T



SCALE: 1:50

DETAIL DESCRIPTION. FLOOR PLAN - 5R & 1T

FOR CONSTRUCTION

AECOM

CONSULTANT

DURBAN
Ridgeview Building
3rd Floor
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www.aecom.com Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
1	2022.09.30	ISSUED FOR CONSTRUCTION	FR
0	2022.02.18	ISSUED FOR CONSTRUCTION	MMM
I/R	DATE	DESCRIPTION	DRN
	2022-02-18	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	J.NAIR	N/A	
DRAWN BY	J.NAIR	N/A	
DESIGNED CHECKED BY	F.RANDEREE	N/A	
DRAWING CHECKED BY	F.RANDEREE	N/A	

APPROVAL CONSULTANT

NAME	D.NOETZOLD	DATE	2022.09.30
PROF REG. No.	21510	SIGNATURE	

THE MASTER HELD AT THE **AECOM DURBAN OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

GRADE R + 1 TEACHERS ABLUTIONS BLOCK
FLOOR PLANS DRY

DISCIPLINE

ARCHITECTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	A	**AF - 911**	**C**	**1**

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

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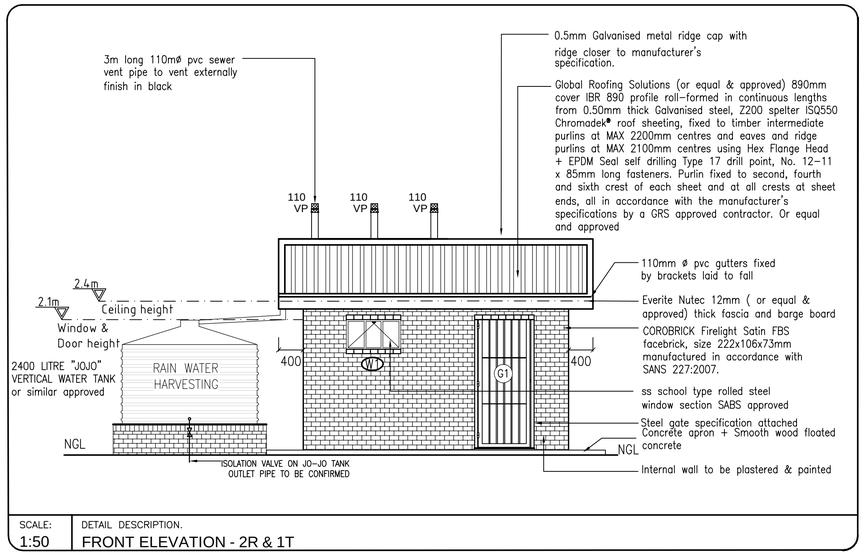

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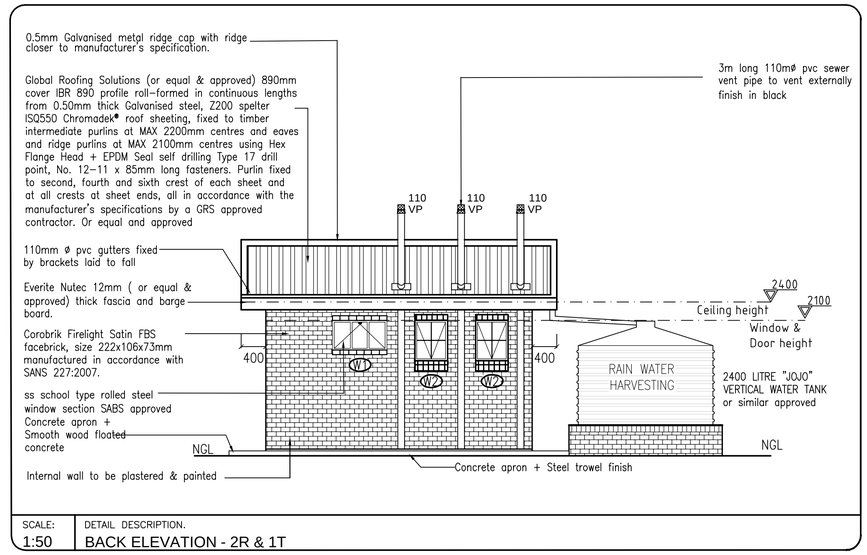
FRONT ELEVATION - 2R & 1T



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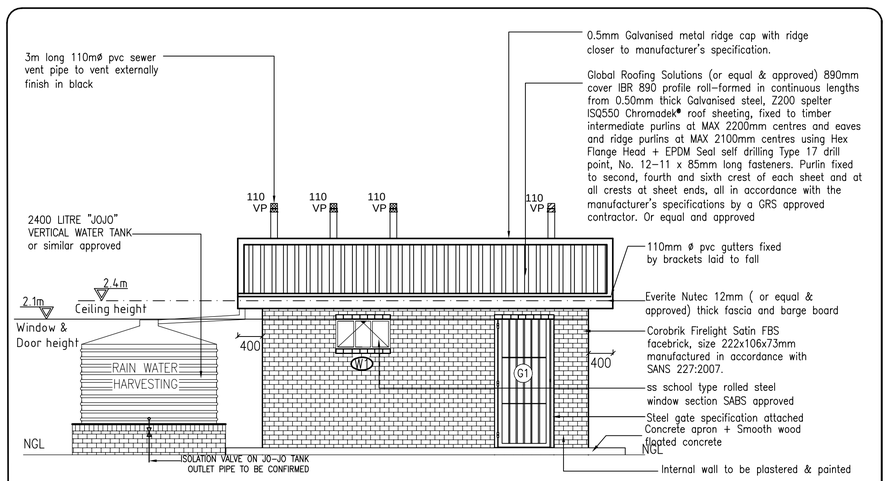

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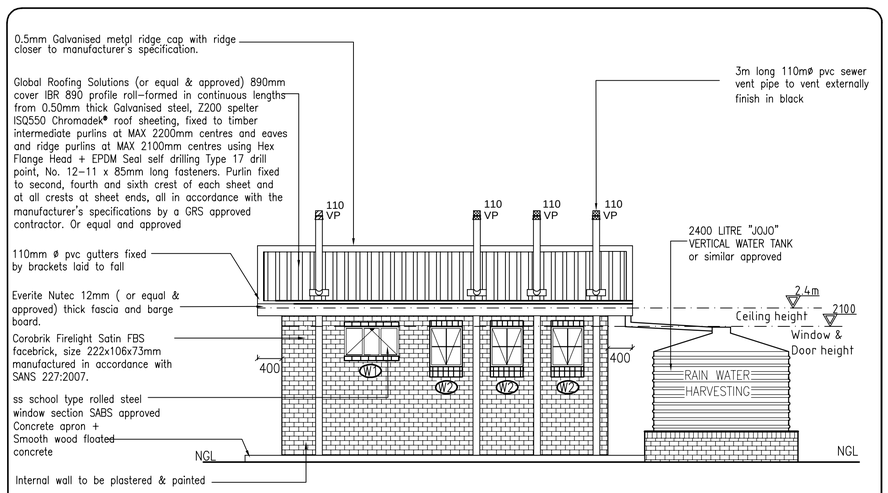

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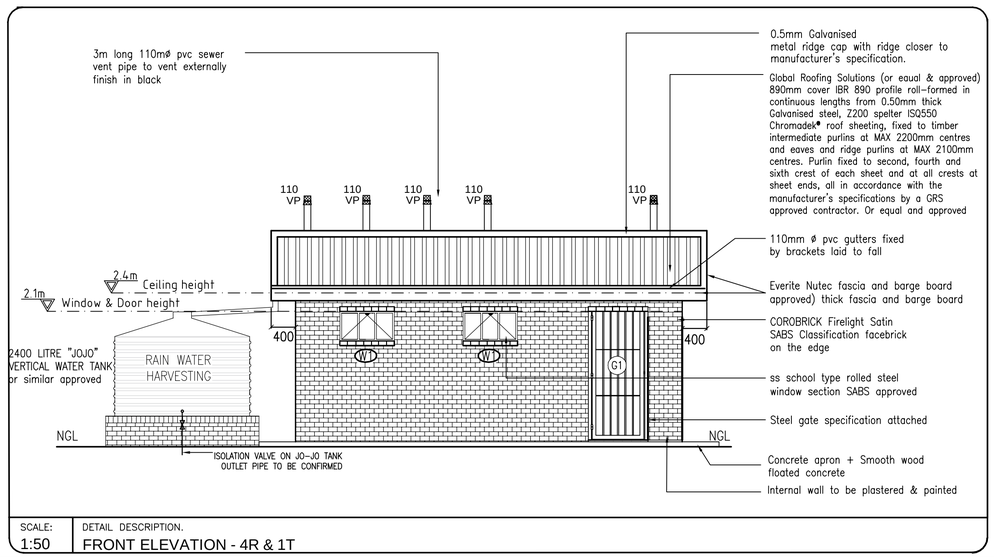

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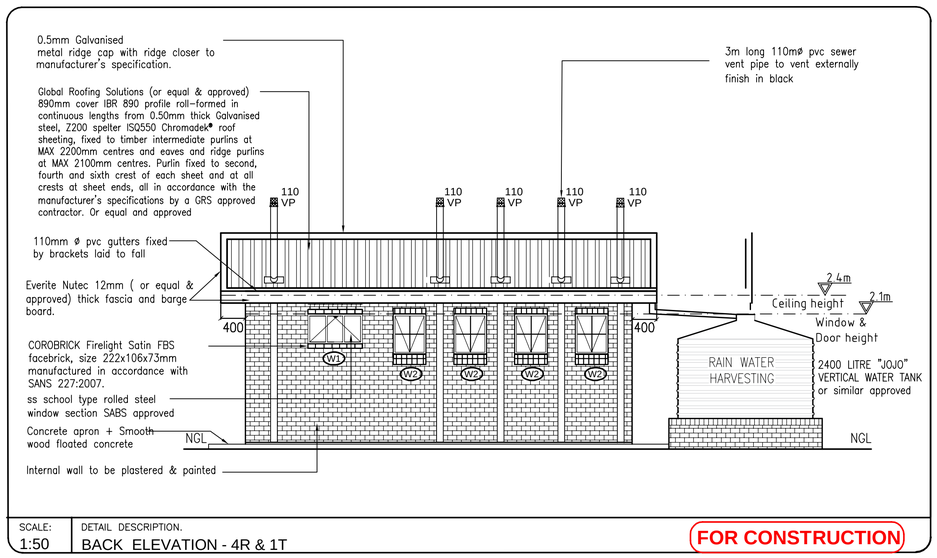

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DETAIL DESCRIPTION.
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CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
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DESIGNED BY	J.NAIR	N/A	
DRAWN BY	J.NAIR	N/A	
DESIGNED CHECKED BY	F.RANDEREE	N/A	
DRAWING CHECKED BY	F.RANDEREE	N/A	

APPROVAL CONSULTANT

NAME	D.NOETZOLD	DATE	2022.09.30
PROF REG. No.	21510	SIGNATURE	

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SHEET TITLE

GRADE R + 1 TEACHERS ABLUTIONS BLOCK
ELEVATIONS - SHEET 1 DRY

DISCIPLINE

ARCHITECTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV.
60491906	01	0000	A	**AF - 912**	**C**	**1**

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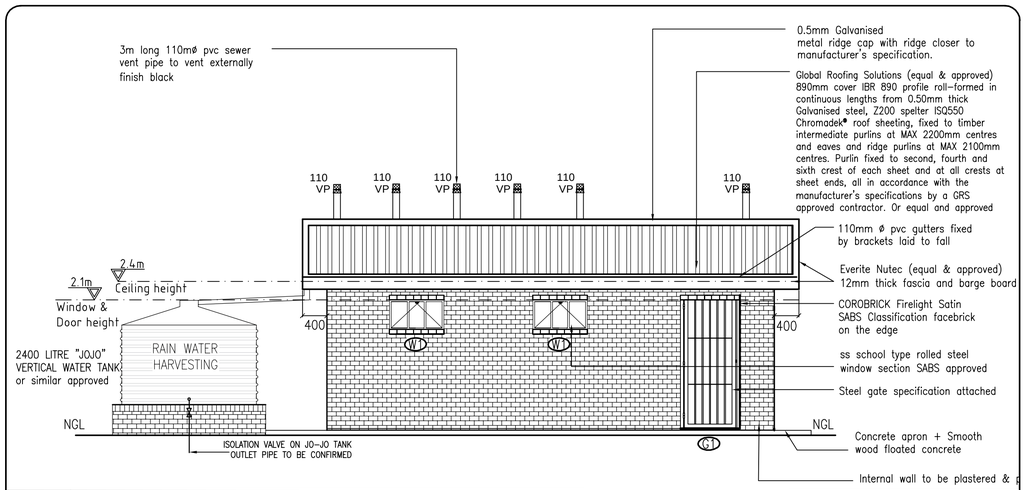
ISO A1 841mm x 594mm



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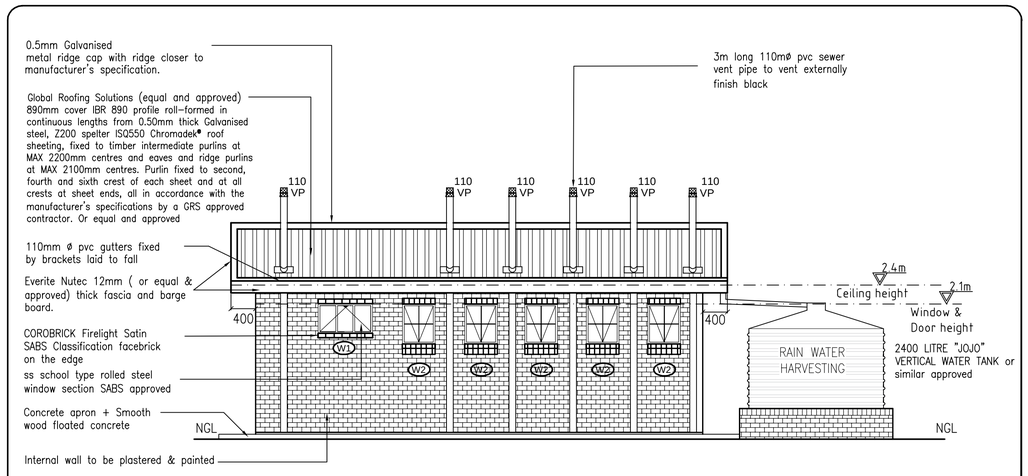

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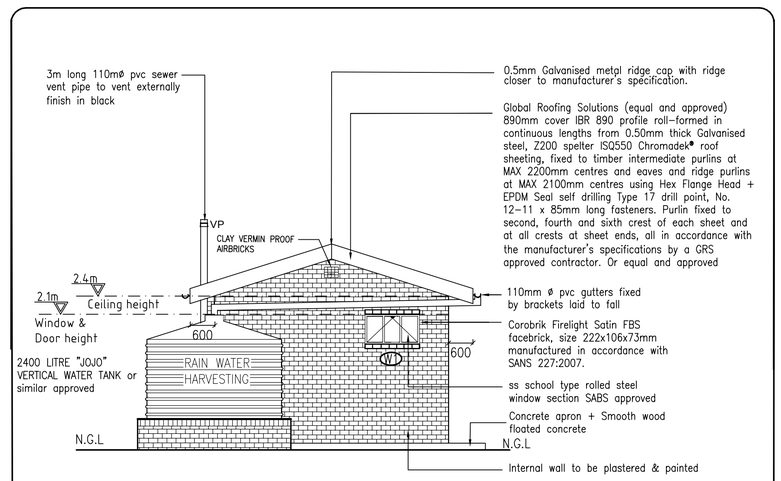
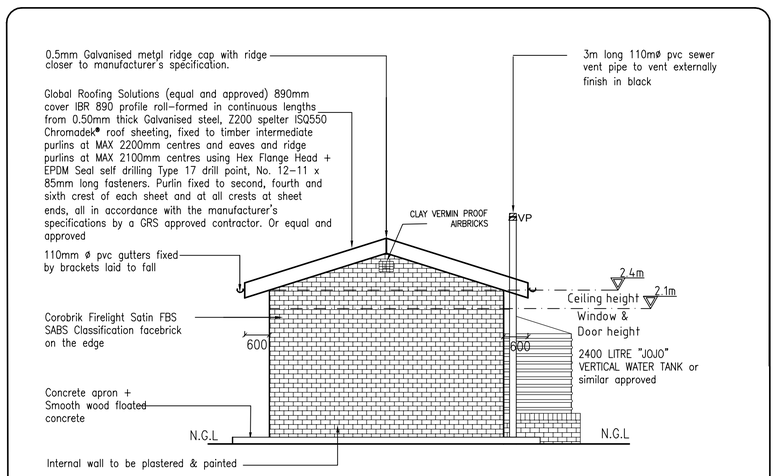
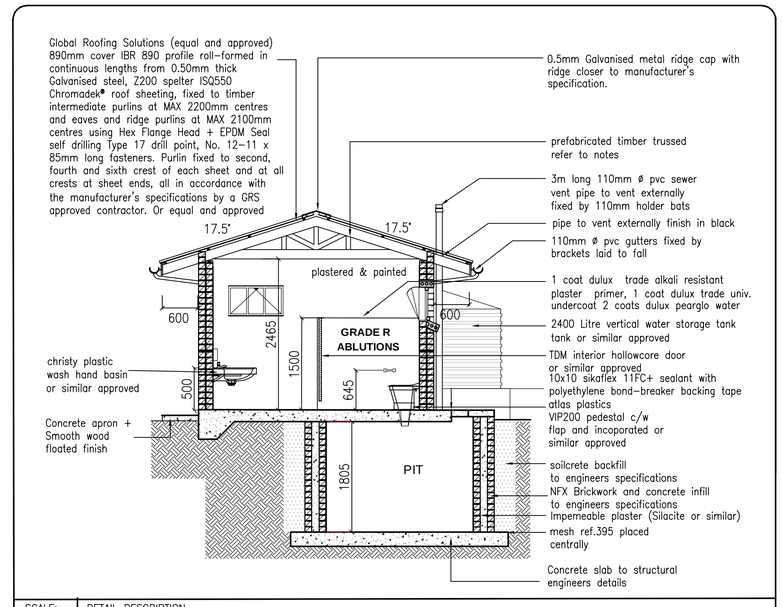


SCALE: 1:50 | DETAIL DESCRIPTION. TYPICAL SIDE ELEVATION 1



SCALE: 1:50 | DETAIL DESCRIPTION. TYPICAL SIDE ELEVATION 2



SCALE: 1:50 | DETAIL DESCRIPTION. TYPICAL SECTION A-A

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Filename: C:\Users\J.NAIR\DOWNLOADS\60491906 - GARAGE R + 1T DRY.DWG

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PROJECT
DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT
KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
1	2022.09.30	ISSUED FOR CONSTRUCTION	FR
0	2022.02.18	ISSUED FOR CONSTRUCTION	MMM
	2022-02-18	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	J.NAIR	N/A	
DRAWN BY	J.NAIR	N/A	
DESIGNED CHECKED BY	F.RANDEREE	N/A	
DRAWING CHECKED BY	F.RANDEREE	N/A	

APPROVAL CONSULTANT

NAME D.NOETZOLD DATE 2022.09.30
PROF REG. No. 21510 SIGNATURE

THE MASTER HELD AT THE **AECOM DURBAN OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

GRADE R + 1 TEACHERS ABLUTIONS BLOCK ELEVATIONS - SHEET 2 DRY

DISCIPLINE

ARCHITECTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	A	**AF - 913**	**C**	**1**

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

SCALE As Indicated

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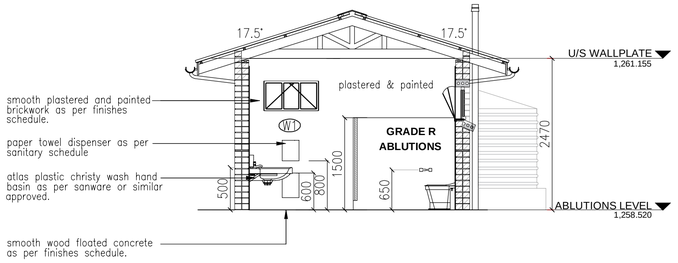
ISO A1 841mm x 594mm



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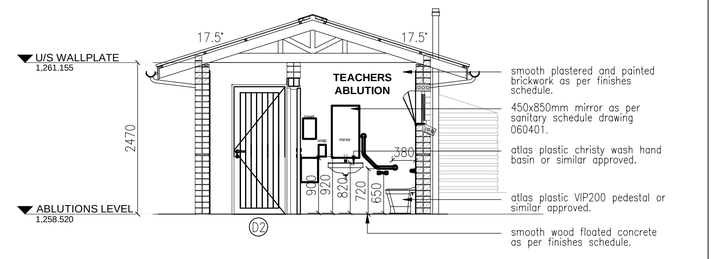
DETAIL DESCRIPTION.
TYPICAL INTERIOR ELEVATION 4



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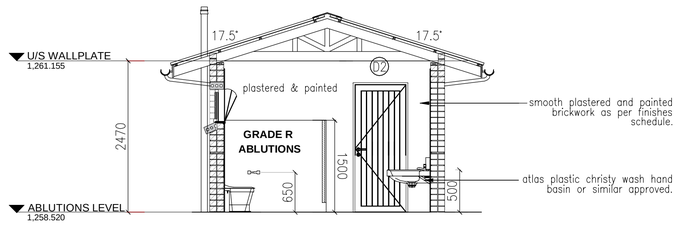
DETAIL DESCRIPTION.
TYPICAL INTERIOR ELEVATION 5



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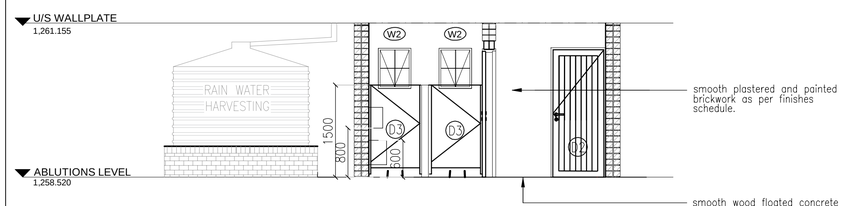
DETAIL DESCRIPTION.
TYPICAL INTERIOR ELEVATION 2



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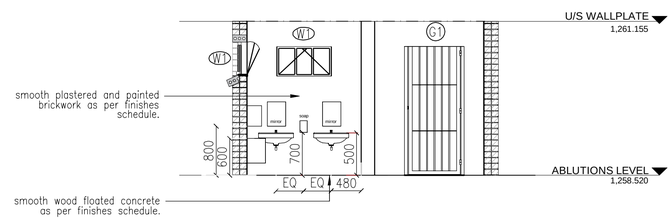
DETAIL DESCRIPTION.
INTERIOR ELEVATION 1 - 2R & 1T



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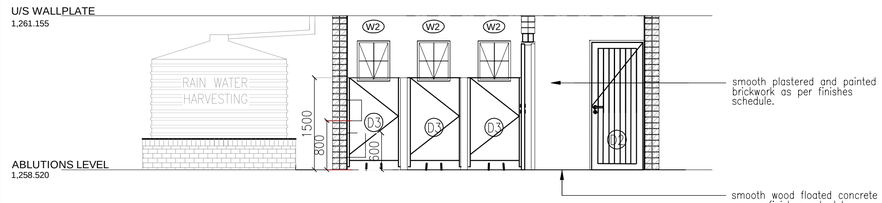
DETAIL DESCRIPTION.
INTERIOR ELEVATION 3 - 2R & 1T



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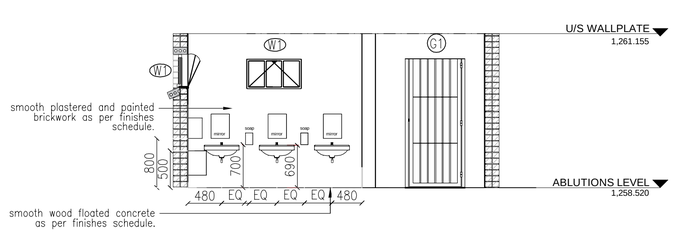
DETAIL DESCRIPTION.
INTERIOR ELEVATION 1 - 3R & 1T



SCALE: 1:50

DETAIL DESCRIPTION.
INTERIOR ELEVATION 3 - 3R & 1T

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public works
Department:
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DRAWING CHECKS

DESIGNED BY	J.NAIR	N/A
DRAWN BY	J.NAIR	N/A
DESIGNED CHECKED BY	F.RANDEREE	N/A
DRAWING CHECKED BY	F.RANDEREE	N/A

APPROVAL CONSULTANT

NAME D.NOETZOLD DATE 2022.09.30

PROF REG. No. 21510 SIGNATURE

THE MASTER HELD AT THE **AECOM DURBAN OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

GRADE R + 1 TEACHERS ABLUTIONS BLOCK
INTERNAL ELEVATIONS - SHEET 1 DRY

DISCIPLINE

ARCHITECTURE

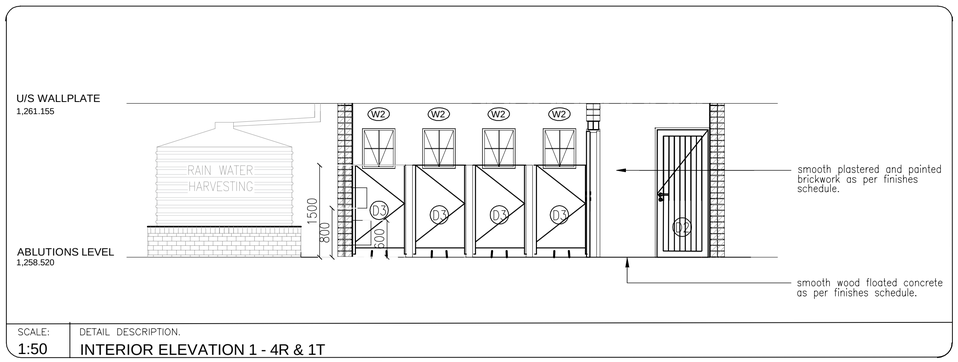
AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	A	AF - 914	C	1

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

SCALE As Indicated

ISO A1 841mm x 594mm



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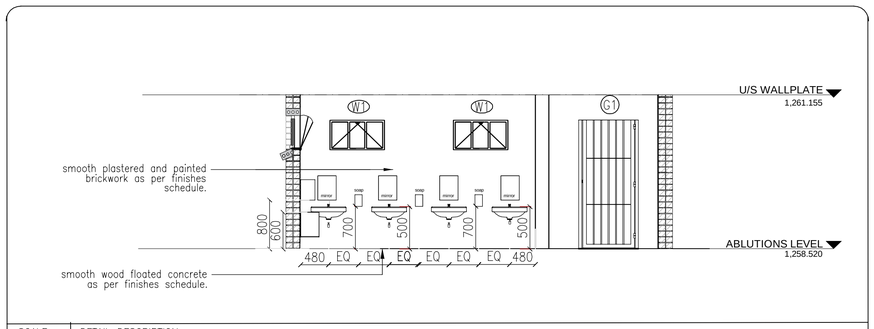

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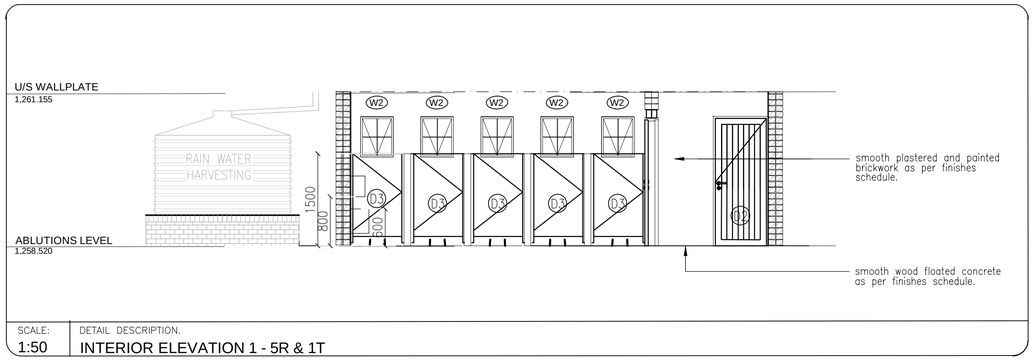

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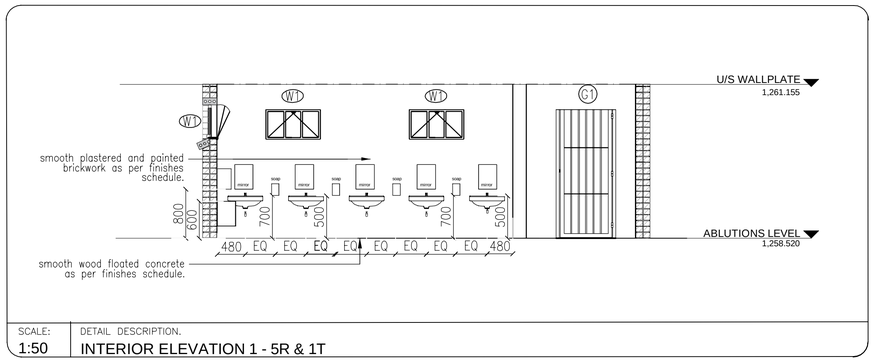

SCALE: 1:50 | DETAIL DESCRIPTION. INTERIOR ELEVATION 1 - 5R & 1T

FOR CONSTRUCTION

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DRAWN BY	J.NAIR	N/A	
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SHEET TITLE

GRADE R + 1 TEACHERS ABLUTIONS BLOCK
INTERNAL ELEVATIONS - SHEET 2 DRY

DISCIPLINE

ARCHITECTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC	TYPE - NUMBER	STATUS	REV
60491906	01	0000	A	**AF - 915**	**C**	**1**

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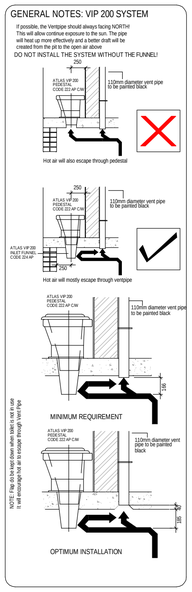
Filename: C:\DATA\BIM\ACCELA\WARE\DOWNLOADS\60491906 - GRADE R + 1T DRY.DWG

ISO A1 841mm x 594mm

GENERAL NOTES: VIP 200 SYSTEM

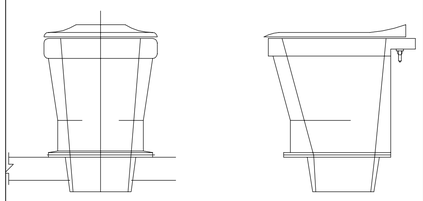
If possible, the Ventpipe should always facing NORTH
This will allow continue exposure to the sun. The pipe
will heat up more effectively and a better draft will be
created from the pit to the open air above
DO NOT INSTALL THE SYSTEM WITHOUT THE FUNNEL!



SIGNAGE

SCALE:	DETAIL DESCRIPTION.
NTS	WC SCHEMATIC SYSTEM & SIGNAGE DETAILS

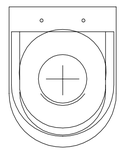
TEACHERS WC



BACK ELEVATION

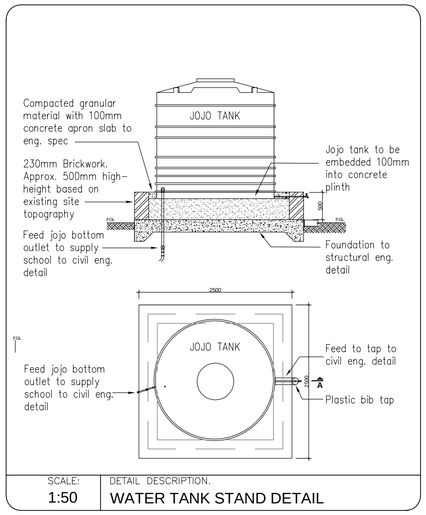
Atlas Bambi Longdrop PEDESTAL c/w seat and pan or similar approved

SIDE ELEVATION

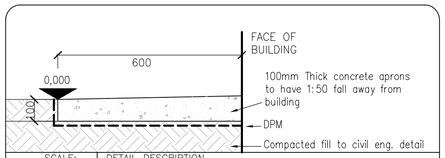


PLAN

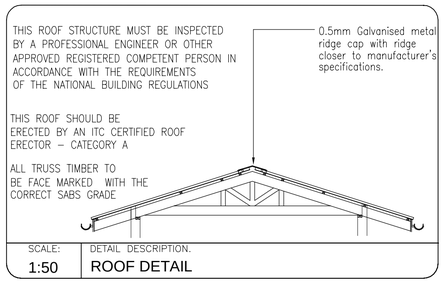
SCALE:	DETAIL DESCRIPTION.	QUANTITY
1:10	WC DETAIL	x3



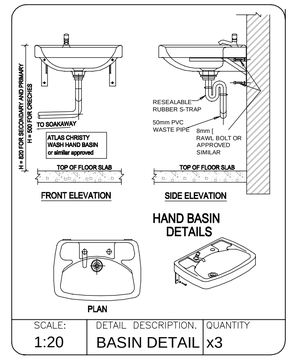
SCALE:	DETAIL DESCRIPTION.
1:50	WATER TANK STAND DETAIL



SCALE:	DETAIL DESCRIPTION.
1:10	CONC APRON DETAIL



SCALE:	DETAIL DESCRIPTION.
1:50	ROOF DETAIL



SCALE:	DETAIL DESCRIPTION.	QUANTITY
1:20	BASIN DETAIL	x3

Global Roofing Solutions 890mm cover IBR 890 profile roll–formed in continuous lengths from 0.50mm thick Galvanised steel, Z200 spelter ISQ550 Chromadek® roof sheeting, fixed to timber intermediate purlins at MAX 2200mm centres and eaves and ridge purlins at MAX 2100mm centres using Hex Flange Head + EPDM Seal self drilling Type 17 drill point, No. 12–11 x 85mm long fasteners. Purlin fixed to second, fourth and sixth crest of each sheet and at all crests at sheet ends, all in accordance with the manufacturer's specifications by a GRS approved contractor. Or equal and approved

Nutec Everite 200mm x 800mm socketless barge boards. Upvc H–profile barge board joiners. Drill for and fix with hot–dipped galvanised screws and washers. 76 x 50mmm trimmer batten fixed underside of purlin ends for barge board fixing.

Nutec Everite fascia boards 12mm thick and 225mm with aluminium H–profile fascia joiners. Drill for and fix with hot –dip galvanised drive screws and washers.

110mm Nutec Everite gutters or similar approved in maximum possible lengths & fixed with concealed brackets laid to fall 1:200 towards outlet. Joints at corners etc, if any are to be accurately formed, sealed & rivetted to achieve a watertight finish. Brackets to be fixed at max 1m centres. 75mm Dia Upvc downpipes with 1NO. to discharge into rain water tank

Reinforced BOE Facebrick lintel

Steel windows with burglar bars to schedule bottom hung

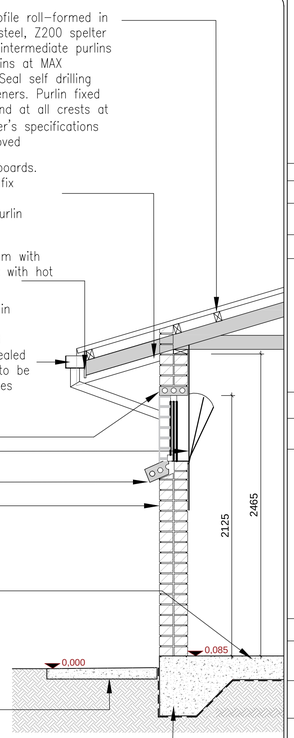
BOE Facebrick window cills with DPC under.

COROBRIC Firelight satin SABS Classification Facebrick lintel or similar approved . Facebrick internally up to 1105mm above finish floor level

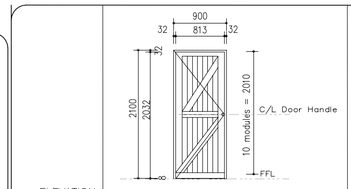
Reinforced concrete slab to structural engineers specifications, on compacted fill by civil engineers. Soil to be poisoned in accordance with SABS 1165. (Certificate to be provided)

Concrete aprons laid to fall of 1:50 to structural engineers details on compacted fill by civil engineers

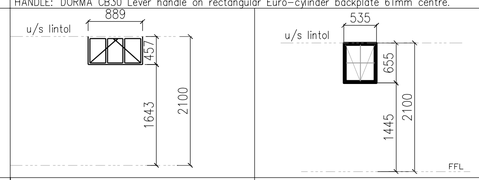
Foundation to be concrete raft foundations to structural eng. detail, under all walls. they are to sit on firm compacted ground by civil eng.



SCALE:	DETAIL DESCRIPTION.
1:25	TYPICAL SKIN SECTION

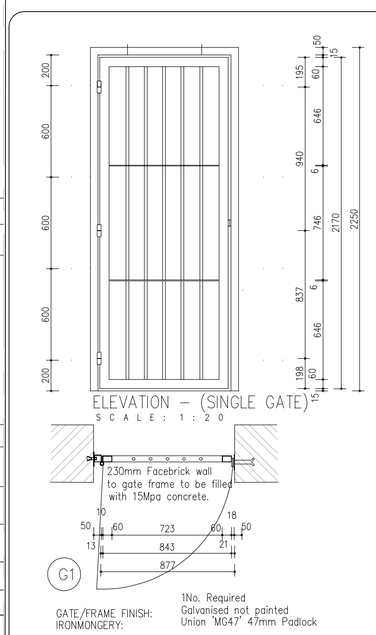


ELEVATION:	Refer to plan for handing
TYPE:	D2
FRAME:	1.2mm pressed metal 1 No. frame suitable for 230mm wall
F.FINISH:	Galvanised. Not painted.
DOOR:	2032x813x40mm meranti hardwood doors. Tongue and groove boarding with v–joints. SA pine sub frame with double 20x225mm top and bottom ledges, 20 x 150mm middle ledge and 20 x 110mm braces
D.FINISH:	Wood prime, one coat undercoat and two coats gloss
IRONMONGERY	LOCKS: DORMA D036S Euro–profile cylinder sash lock SS HANDLE: DORMA CB30 Lever handle on rectangular Euro–cylinder backplate 61mm centre.



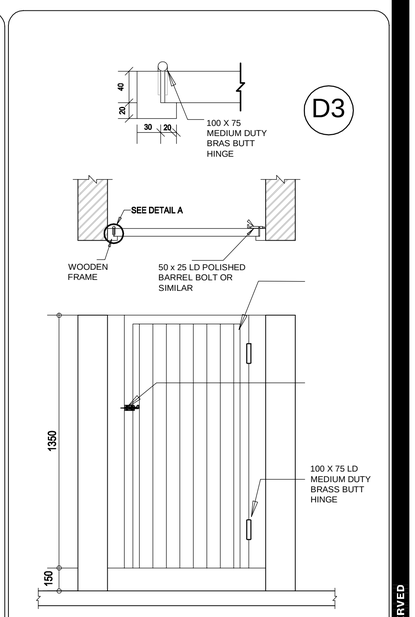
	W1	W2
TYPE:	NO REQD: x3	NO REQD: x2
FRAME:	Rolled steel window sections, bottom hung openings. SABS approved	Rolled steel window sections, top hung openings. SABS approved
GLASS:	4mm sandblasted glass puttied in with steel window putty.	4mm sandblasted glass puttied in with steel window putty.
FITTING:	Approved standard brass fittings completed with window.	Approved standard brass fittings completed with window.
B. BARS	8mmØ bars	8mmØ bars
FINISH:	Galvanised. No Painting required	Galvanised. No Painting required
NOTES:	Courses adjacent to window jambs are to have cores filled allowing fixing lugs to be built–in	Courses adjacent to window jambs are to have cores filled allowing fixing lugs to be built–in

SCALE:	DETAIL DESCRIPTION.
1:50	DOOR (D2) & WINDOW SCHEDULE



GATE/FRAME FINISH: 1No. Required
IRONMONGERY: Galvanised not painted
Union 'MG47' 47mm Padlock

SCALE:	DETAIL DESCRIPTION:	QUANTITY
1:20	GATE G1 DETAIL	x1



SCALE:	DETAIL DESCRIPTION.	QUANTITY
1:20	CUBICLE DOOR (D3) DETAIL	x2

FOR CONSTRUCTION

D. ROOF

1. Global Roofing Solutions 890mm cover IBR 890 profile roll-formed in continuous lengths from 0.50mm thick Galvanised steel, Z200 spelter ISQ550 Chromadek® roof sheeting, fixed to timber intermediate purlins at MAX 2200mm centres and eaves and ridge purlins at MAX 2100mm centres using Hex Flange Head + EPDM Seal self drilling Type 17 drill point, No. 12-11 x 85mm long fasteners. Purlin fixed to second, fourth and sixth crest of each sheet and at all crests at sheet ends, all in accordance with the manufacturer's specifications by a GRS approved contractor. Or equal and approved
2. Pitch: 17.5degrees
3. Colour of sheeting to be matched to existing roof structure on site.
4. Roof sheet to be laid on Sisalation 405 reflective foil laminate on 75mm x 50mm SA Pine purlins on prefabricated timber trusses to Structural Engineers Details and Specifications.
5. Purlin spacings are dependant on both downward loading and negative suction loading caused by wind. The engineer should be consulted to calculate the load (kN/m2) for particular application

E. PAINT

1. All paints, stains, varnishes, etc, are of an approved manufacturer, and used in strict accordance to the manufacturer's instructions.

F. DRAINAGE / STORM WATER NOTES

1. All drainage work and materials comply with the local authority requirements in accordance with the SABS 0400-1990 National Building Regulations Part P.
2. Walls and foundations are to bridge over all pipes.
3. All pipes under building encased in concrete, and approved by engineer.
4. Vent pipes to secured to the walls outside the ablution facilities - 3m 110mm Ø vent pipe (black - uv) fixed with 3 110mm holder bats - 110mm fly screen used at vent end.
5. DRY toilets: All WC for students Atlas plastic bambi longdrop pedestal, color granite.
6. DRY toilets: All WC for teachers and disabled to be Atlas plastic VIP200 pedestal, color granite
7. DRY urinals: Atlas plastic bowl urinal, colour: granite.
8. Atlas plastic Christy wash hand basin with traditional chrome cobra watertech or equal and approved Stella basin cold water tap and cobra watertech or equal and approved dura chrome plated single lever basin mixer (code: du-951) for paraplegic toilet. colour: granite.
9. Close taps to ensure reliable water conservation, which must be able to close at minimum 15kpa pressure.
10. Domestic water supply to be connected to existing water mains where possible.
11. All flushing mechanisms if applicable as per civil engineers design.
12. The rain water harvesting tank must be equipped with a fload valve and connected to the main water supply within the school yard, where it is available.
13. All downpipes are pvc. All downpipes sizes in accordance with engineer's approval.
14. - pipes from sinks & urinal outlets to soakaway pit (50mm pvc)
    - pipes from gutters to fill tank (75mm pvc)
    - pipe from tank to sinks (15mm polycop) fitting to be done internally

G. FIRE NOTES

1. All building work comply with the local authority requirements in accordance with the SANS10400 National Building Regulations.
2. Fire stability of all structural elements and components comply with National Building Regulations Part TT7 and TT9.

NOTES

1. FOR GENERAL NOTES; REFER TO DRAWING:
2. DRAWINGS ARE NOT TO BE SCALED. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORKS. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER / ARCHITECT'S ATTENTION IMMEDIATELY.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SCHEDULES AND SPECIFICATIONS RELATED TO THIS PROJECT.
4. ALL BUILDING WORK AND MATERIALS ARE TO COMPLY WITH LOCAL AUTHORITY'S REQUIREMENTS AND ARE TO BE IN ACCORDANCE WITH SANS 10400 NATIONAL BUILDING REGULATIONS

ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
1	2022.09.30	ISSUED FOR CONSTRUCTION	FR
0	2022.02.18	ISSUED FOR CONSTRUCTION	MMM
	2022-02-18	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	J.NAIR	N/A	
DRAWN BY	J.NAIR	N/A	
DESIGNED CHECKED BY	F.RANDEREE	N/A	
DRAWING CHECKED BY	F.RANDEREE	N/A	

APPROVAL CONSULTANT

NAME	D.NOETZOLD	DATE	2022.09.30
PROF REG. No.	21510	SIGNATURE	

THE MASTER HELD AT THE **AECOM DURBAN OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

GRADE R + 1 TEACHERS ABLUTIONS BLOCK DETAILS DRY

DISCIPLINE

ARCHITECTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	A	**AF - 916**	**C**	**1**

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

SCALE: As Indicated

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Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

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Last Plotted: 2022/09/30 08:22:54
Filename: C:\Users\fr.randeree\AECOM\PROWORK\DATA\60491906 - GRADE R + 1T DRY.DWG
Printed on: % Print Consumer Recycled Content Paper

SANITARY SCHEDULE

SANITARY FITTINGS / ROOM NAME	LEARNERS GIRLS TOILETS – DRY	LEARNERS BOYS TOILETS – DRY	TEACHERS TOILETS – DRY	TEACHERS/DISABLED TOILETS – DRY		
WC (INCL. PARAPLEGIC) (DRY SYSTEM) : ATLAS VIP 200 CODE 222 AP OR OTHER EQUAL & APPROVED LINEAR LOW DENSITY POLYETHYLENE WC PEDESTAL WITH FLAT SEAT AND INLET FUNNEL. COLOUR : GRANITE	●	●	●	●		
URINAL : ATLAS BOWL URINAL (CODE 507AP OR EQUAL & APPROVED) MADE OF POLYETHYLENE, WALL HUNG, COMPLETE WITH BRACKETS AND WASTE FITTINGS. INSTALLATION HEIGHTS – 650MM OF FINISHED FLOOR.		●				
WASH HAND BASINS (INCL. PARAPLEGIC) : ATLAS "CHRISTY" CODE 383 APG OR OTHER EQUAL AND APPROVED POLYETHYLENE WASH HAND BASIN SIZE 570 X 395MM, COLOUR GRANITE FIXED TO WALL ON CAST IRON BRACKETS. INSTALLATION HEIGHTS – 820MM OFF FINISHED FLOOR .	●	●	●	●		
BASIN TAP: PLUMLINE HYDRUS PILLAR TAP CP 15mm, CHROME FINISH, INCLUDING ALL FIXINGS (CODE 031465) MANUFACTURED IN ACCORDANCE WITH SANS 226:2004 TYPE 1 (BS5412)	●	●	●			
BASIN TAP (PARAPLEGIC): PLUMLINE CLINIX PILLAR TAP CP 15mm, CHROME FINISH, INCLUDING ALL FIXINGS (CODE 035566) MANUFACTURED IN ACCORDANCE WITH SANS 226:2004 TYPE 1 (BS5412)				●		
WASTE TRAPS : 50MM PVC "MARLEY" ETP 10 OR EQUAL AND APPROVED.	●	●	●	●		
TOILET ROLL HOLDERS : CHROMIUM PLATED TOILET ROLL HOLDER AS "HALCAST" No. 366	●	●	●	●		
SOAP DISPENSER	●	●	●	●		
MIRROR: 600X600MM 6MM SILVERED FLOAT GLASS COPPER BACKED MIRRORS WITH POLISHED EDGES HOLED FOR AND FIXED WITH CHROMIUM PLATED DOME CAPPED MIRROR SCREWS WITH RUBBER BUFFERS	●	●	●	●		
PARAPLEGIC GRAB RAILS : "CHAIRMAN INDUSTRIES" 32MMØ 300X300X300MM (DOG LEG RAIL WITH 2 FLANGES) STAINLESS STEEL GRADE 304 SATIN POLISHED FINISH SIDE GRAB RAIL (CODE DL2) FIXED TO BRICKWORK STRICTLY TO MANUFACTURER'S SPECIFICATIONS. "CHAIRMAN INDUSTRIES" 32MMØ 750X90MM STAINLESS STEEL GRADE 304 SATIN POLISHED FINISH REAR GRAB RAIL (CODE SR1) FIXED TO BRICKWORK STRICTLY TO MANUFACTURER'S SPECIFICATIONS.				●		

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REG. No. 1966/006628/07

CLIENT: KZN DEPARTMENT OF PUBLIC WORKS

PROJECT DESCRIPTION: DEPARTMENT OF EDUCATION WATER AND SANITATION

APPROVAL - CONSULTANT

NAME	D.NOETZOLD	SIGNATURE
DATE		PROF. REG No. PR. ARCH 21510

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DRAWING TITLE: SANWARE SCHEDULE (DRY) PROGRAMME FOR SCHOOLS

DRAWING STATUS CODES: D=DRAFT F=FINAL R=REPORT P=PRELIMINARY C=CONSTRUCTION T=TENDER A=AS-BUILT/RECORD

FIRST ISSUE DATE	2022-02-28	
SCALE	SHEET	SHEET SIZE
N/A	01 of 01	A4

AECOM DRAWING NUMBER

AECOM PROJ. No.	SUB-No.	WBS	DISC.	NUMBER	STATUS	REVISION
60491906 -	01 -	0000 -	A -	ED - 001 -	C -	00

SANITARY SCHEDULE – GRADE R

SANITARY FITTINGS / ROOM NAME	LEARNERS GRADE "R" TOILETS - DRY	TEACHERS/DISABLED TOILETS - DRY
WC (GRADE R) (DRY SYSTEMS) : ATLAS PLASTIC BAMBI LONG DROP OR OTHER EQUAL & APPROVED LINEAR LOW DENSITY POLYETHYLENE WC PEDESTAL WITH FLAT SEAT AND INLET FUNNEL. COLOUR : GRANITE	●	
WC (PARAPLEGIC) (DRY SYSTEMS) : ATLAS VIP 200 CODE 222 AP OR OTHER EQUAL & APPROVED LINEAR LOW DENSITY POLYETHYLENE WC PEDESTAL WITH FLAT SEAT AND INLET FUNNEL. COLOUR : GRANITE		●
WASH HAND BASINS (GRADE R + PARAPLEGIC): ATLAS "CHRISTY" CODE 383 APG OR OTHER EQUAL AND APPROVED POLYETHYLENE WASH HAND BASIN SIZE 570 X 395MM, COLOUR GRANITE FIXED TO WALL ON CAST IRON BRACKETS. INSTALLATION HEIGHT - 500MM OFF FINISHED FLOOR FOR GRADE R & 820MM FOR PARAPLEGIC.	●	●
BASIN TAP (GRADE R): PLUMLINE HYDRUS PILLAR TAP CP 15mm, CHROME FINISH, INCLUDING ALL FIXINGS (CODE 031465) MANUFACTURED IN ACCORDANCE WITH SANS 226:2004 TYPE 1 (BS5412)	●	
BASIN TAP (PARAPLEGIC): PLUMLINE CLINIX PILLAR TAP CP 15mm, CHROME FINISH, INCLUDING ALL FIXINGS (CODE 035566) MANUFACTURED IN ACCORDANCE WITH SANS 226:2004 TYPE 1 (BS5412)		●
WASTE TRAPS : 50MM PVC "MARLEY" ETP 10 OR EQUAL AND APPROVED.	●	●
TOILET ROLL HOLDERS : CHROMIUM PLATED TOILET ROLL HOLDER AS "HALCAST" No. 366.	●	●
SOAP DISPENSER	●	●
MIRROR: 600X600MM 6MM SILVERED FLOAT GLASS COPPER BACKED MIRRORS WITH POLISHED EDGES HOLED FOR AND FIXED WITH CHROMIUM PLATED DOME CAPPED MIRROR SCREWS WITH RUBBER BUFFERS.	●	●
PARAPLEGIC GRAB RAILS : "CHAIRMAN INDUSTRIES" OR EQUAL AND APPROVED 32MMØ 300X300X300MM (DOG LEG RAIL WITH 2 FLANGES) STAINLESS STEEL GRADE 304 SATIN POLISHED FINISH SIDE GRAB RAIL (CODE DL2) FIXED TO BRICKWORK STRICTLY TO MANUFACTURER'S SPECIFICATIONS. "CHAIRMAN INDUSTRIES" OR EQUAL AND APPROVED 32MMØ 750x90mm STAINLESS STEEL GRADE 304 SATIN POLISHED FINISH SIDE GRAB RAIL (CODE DL2) FIXED TO BRICKWORK STRICTLY TO MANUFACTURER'S SPECIFICATIONS.		●

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CLIENT: KZN DEPARTMENT OF PUBLIC WORKS

PROJECT DESCRIPTION: DEPARTMENT OF EDUCATION WATER AND SANITATION

APPROVAL - CONSULTANT

NAME	D.NOETZOLD	SIGNATURE
DATE	2022.02.18	PROF. REG No. PR. Arch 21510

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DRAWING TITLE: GRADE R SANWARE SCHEDULE (DRY) PROGRAMME FOR SCHOOLS

DRAWING STATUS CODES:
D=DRAFT F=FINAL R=REPORT
P=PRELIMINARY C=CONSTRUCTION
T=TENDER A=AS-BUILT/RECORD

FIRST ISSUE DATE	2022-02-18	
SCALE	SHEET	SHEET SIZE
N/A	01 of 01	A4

AECOM DRAWING NUMBER

AECOM PROJ. No.	SUB-No.	WBS	DISC.	NUMBER	STATUS	REVISION
60491906	01	0000	A	ED - 004	C	01

FINISHES SCHEDULE

FINISHES / ROOM NAME	LEARNERS GIRLS TOILETS DRY/WET	LEARNERS BOYS TOILETS DRY/WET	LEARNERS GRADE R TOILETS DRY/WET	TEACHERS TOILETS DRY/WET	TEACHERS/DISABLED TOILETS DRY/WET	
TERMITE POISON : TREAT GROUND FLOOR UNDER ALL INTERNAL & EXTERNAL WALLS, CONCRETE BEDS AND REINFORCED CONCRETE SLABS WITH POISON AS PER CLAUSE 2.13 OF SPECIFICATION 00G–001E WITH 50MM SAND OVER POISON.	●	●	●	●	●	
INTERNAL & EXTERNAL CONCRETE FLOOR SLABS : CONCRETE FLOOR SLABS TO ENG. DETAIL, WITH WOOD FLOATED CONCRETE FINISH, CAST ON 250 MICRON POLYETHYLENE DAMP PROOF MEMBRANE, ON 50MM SAND ON WELL CONSOLIDATED EARTH FILL TO CIVIL ENG. DETAIL. ALL SIDES OVER LAPS OF MEMBRANE TO BE TAPED OR SEALED WITH APPROVED CONTACT ADHESIVE.	●	●	●	●	●	
EXTERNAL FACEBRICK IN STRETCHER BOND : SEE SECTIONS AND ELEVATIONS – WITH JOINTS AND PERPENDS TO BE 6MM SQUARE DEEP RECESSED COROBRIK FIRELIGHT SATIN FBS	●	●	●	●	●	
INTERNAL PLASTER AND PAINT TO WALLS : ALL WALLS FINISHED WITH ONE COAT PLASTER AND PAINTED WITH ONE COAT DULUX ALKALINE RESISTANT PRIMER, ONE UNIVERSAL UNDERCOAT AND TWO COATS DULUX PEARLGLO WEATHERGUARD PAINT.	●	●	●	●	●	
WHITE GLAZED TILES : 200MM X 200MM SPLASHBACK TILE THREE ROWS ABOVE FITTINGS WITH RETURNS WHERE APPLICABLE.	●	●	●	●	●	
EXTERNAL BRICK ON EDGE WINDOW CILL : ALL JOINTS TO BE FLUSH HALF ROUND POINTED JOINTS 170MM WIDE SLOPING SEE DETAIL SECTION AND CONSTRUCTION DETAIL DRAWINGS.	●	●	●	●	●	
INTERNAL CEMENT PLASTER WINDOW CILLS: 12MM THICK 150MM WIDE EVERITE NUTEC CEMENT CILL PAINTED TO MATCH WALLS	●	●	●	●	●	
ROOF INSULATION : SISALATION 405 RESIDENTIAL GRADE REINFORCED ALUMINIUM FOIL INSULATION, DOUBLE SIDES, LIGHT GRAMMAGE REFLECTIVE FOIL LAMINATE INCORPORATING 6 LAYERS OF ALUMINIUM FOIL. REINFORCING SCRIM, KRAFT PAPER AND POLYETHYLENE TESTED FOR CONFORMANCE WITH SANS 10 177–3 : 2005 AND BS 476 PART 5, 6 & 7 PULLED TAUTLY AND SECURED TO RAFTERS & INCLUDED GALVANISED STRAINING WIRES WHERE REQUIRED.	●	●	●	●	●	
ROOF SHEETING : 0.5MM CHROMADEK OR SIMILAR APPROVED ROOF SHEETING WITH END OVER–LAPS ACCORDING TO MANUFACTURERS SPECIFICATIONS, FASTENED WITH GALVANISED ROOFING SCREWS (BX CLASS 4)	●	●	●	●	●	

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CLIENT: KZN DEPARTMENT OF PUBLIC WORKS

PROJECT DESCRIPTION: DEPARTMENT OF EDUCATION WATER AND SANITATION

APPROVAL - CONSULTANT

NAME	D.NOETZOLD	SIGNATURE
DATE		PROF. REG No. PR. ARCH 21510

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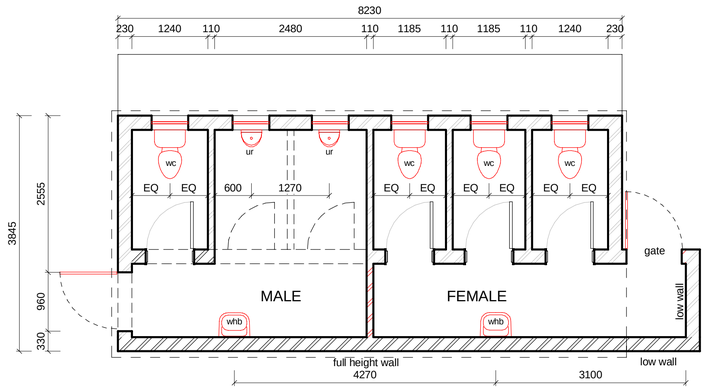
DRAWING TITLE: FINISHES SCHEDULE (WET/DRY) PROGRAMME FOR SCHOOLS

DRAWING STATUS CODES: D=DRAFT F=FINAL R=REPORT P=PRELIMINARY C=CONSTRUCTION T=TENDER A=AS-BUILT/RECORD

FIRST ISSUE DATE	SCALE	SHEET	SHEET SIZE
2022-02-28	N/A	01 of 2	A4

AECOM DRAWING NUMBER

AECOM PROJ. No.	SUB-No.	WBS	DISC.	NUMBER	STATUS	REVISION
60491906 -	01 -	0000 -	A -	EF - 001 -	C -	01



EXISTING 3M3F DRY

SCALE 1 : 50

Legend:

- To be replaced/ New
- Existing
- Demolish

DOPW: DOE SANITATION PROGRAMME

ARCHITECTURE RENOVATIONS SCHEDULE

MHLABA PS (EXISTING 3M3F ABLUTIONS DRY)

1) **Fixtures**- x6 water closets in the staff ablutions to be removed
2) x1 water closet to be added in the new male ablutions (Atlas plastics vip 200 pedestal c/w flap and incorporated or similar and approved)
3) x3 water closets to be added in the new female ablutions (Atlas plastics vip 200 pedestal c/w flap an incorporated or similar and approved)
4) x2 urinals added in the male ablutions (Atlas bowl urinal, code 507AP or similar and approved)
5) X2 wash hand basin to be added in the male and female ablutions(Atlas christy wash hand basin or similar approved)
6) x2 wash hand basin taps- 15mm Cobra watertech star pillar tap with flanged backnut (code111-15)
7) x2 bottle traps - 32x40mm CP Cobra 351 or equal and approved
8) **Walls** - All external walls to receive new coats of paint after walls have been prepared for painting. Walls to receive 1 coat dulux trade alkali resistant plaster primer, 1 coat dulux trade universe undercoat and 2 coats dulux pearglo water, or equal and approved
9) All internal walls to receive new coats of paint after walls have been prepared for painting. Walls to receive 1 coat dulux trade alkali resistant plaster primer, 1 coat dulux trade universe undercoat and 2 coats dulux pearglo water, or equal and approved
10) Add 230mm dividing wall between make and female ablutions, as indicated on plan
11) Make the existing low wall hosting the new wash hand basins full height, wall to go to the underside of the roof sheeting
12) **Floors**- All concrete floors to be made good.
13) **Doors**- x4 doors to be sanded down and prepared for varnish
14) x2 single gates to be added to male and female ablutions, union MG47 47mm padlock galvanised, or equal and approved
15) **Windows-** x6 window frames in ablutions to be replaced with ss school type rolled steel window sections, top hung openings, SABS approved
16) x6 window panes to be removed and replaced with 4mm sandblasted glass puttied in with steel window putty. Approved standard brass fittings completed with window
17) **Roof**- Roof truss to be removed and replaced, this is to be confirmed on site by structural engineer once roof trusses are exposed. Timber truss to be erected by an ITC certified roof erector and inspected by a professional engineer
18) All roof sheeting to be removed and replaced with global roofing solutions 890mm cover IBR 890 profile roll-formed in continuous lengths from 0,50mm thick galvanised steel, Z200 galvanised spelter ISQ550 chromadek roof sheeting, or equal and approved. Colour of sheeting to match existing roof structure on site.
19) All gutters are to be replaced with new 110mm diam pvc gutters
20) All rainwater downpipes to be replaced with new pvc downpipes. All downpipes sizes in accordance with wet services engineers approval
21) All fascias and barge boards to be removed and replaced with new Everite nutec 12mm thick and 225mm with aluminium H-profile fascia joiners , or equal and approved
22) New external 2400L vertical Jojo tank on plinth to be connected to new wash hand basins
23) Allowance for x4 pits to be desludged, to be confirmed on site

FIGURE 1: Exterior image of staff ablution block which has further deteriorated from storm damage. There are currently only two toilets which are functional, and the remaining four have been locked due to no desludging.

FIGURE 3: Interior image of staff cubicles and existing water closets

FIGURE 2: Exterior image of the rear of the staff ablutions showing the pit cover slabs, and the poor condition of the walls and fascia boards

FIGURE 4: Interior image of staff cubicles and the existing roof sheeting showing signs of rust

AECOM

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PROJECT

DEPARTMENT OF EDUCATION- WATER AND SANITATION PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF PUBLIC WORKS

NOTES

1. FOR GENERAL NOTES; REFER TO DRAWING: ***N/A***
2. DRAWINGS ARE NOT TO BE SCALED. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORKS. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER / ARCHITECT'S ATTENTION IMMEDIATELY
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SCHEDULES AND SPECIFICATIONS RELATED TO THIS PROJECT.
4. ALL BUILDING WORK AND MATERIALS ARE TO COMPLY WITH LOCAL AUTHORITY'S REQUIREMENTS AND ARE TO BE IN ACCORDANCE WITH SANS 10400 NATIONAL BUILDING REGULATIONS

ISSUE / REVISION

I/R	DATE	DESCRIPTION	ISS BY
0	26/09/2022	ISSUED FOR CONSTRUCTION	JN

DRAWING BY

DESIGNED BY: F. RANDEREE
DRAWN BY: J. NAIR

APPROVAL CONSULTANT

NAME: D. NOETZOLD DATE: 2022-09-26
PROF REG. No.: 21510 SIGNATURE:

THE MASTER HELD AT THE **AECOM DURBAN OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

BUILDING/FACILITY/ZONE

HARRY GWALA DISTRICT

PROJECT NUMBER

60491906

SHEET TITLE

MHLABA PS- RENOVATION SCHEDULE

DISCIPLINE

ARCHITECTURE

DRAWING NUMBER

PROJECT	SUB No.	WBS	DISC.	TYPE- NUMBER	STATUS	REV
60491906	03	HG15	A	**AF** - **001**	C	**0**

D DRAFT / P PRELIMINARY / E COUNCIL / T TENDER / F FINAL / C CONSTRUCTION / A AS-BUILT, RECORD / X CANCELLED

SCALE 1 : 50 **PAPER SIZE** A1

ISO A1 594mm x 841mm
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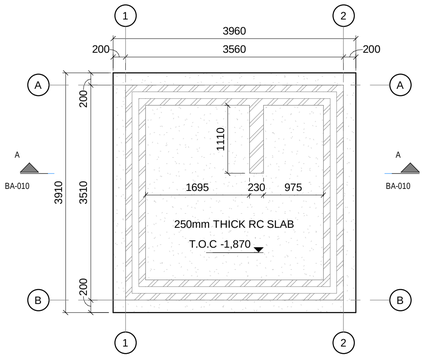
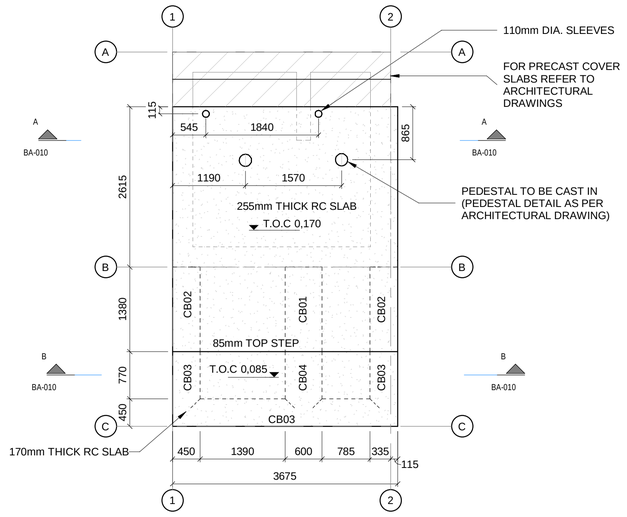


PIT SLAB FOUNDATION LAYOUT

SCALE 1 : 50

NOTE:
- WOOD FLOAT FINISH ON PIT SLAB

CONCRETE INFILL METHOD STATEMENT
- INFILL WALL TO BE CONSTRUCTED IN MAXIMUM HEIGHTS OF 425mm (5 BRICK COURSES).
- EVERY FOURTH BRICK IN THE FIRST COURSE OF CAVITY BRICK WALL TO BE LEFT OPEN.
- ONCE BRICKWORK IS BUILT, THE EXCESS MORTAR IN THE CAVITY IS TO BE CLEANED AFTER EVERY CONSTRUCTION JOINT.
- THESE OPENINGS ARE TO BE CLOSED ONCE THE CAVITY IS POURED.



GROUND FLOOR SLAB LAYOUT

SCALE 1 : 50

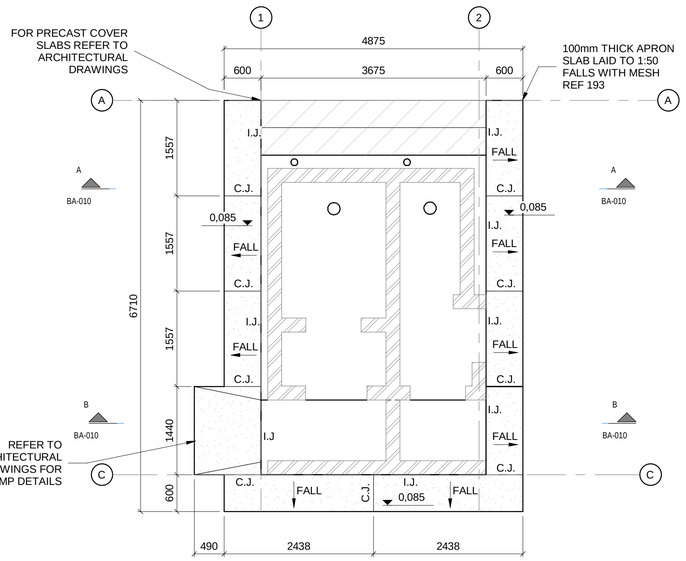
NOTES
- ALL BRICKWORK SHOWN AS LOAD BEARING
- POWER FLOAT FINISH ON FLOOR SLABS

RAFT BEAM SCHEDULE

TYPE MARK	TYPE
CB01	300x500 DEEP RC RAFT BEAM
CB02	300x500 DEEP RC RAFT BEAM
CB03	300x415 DEEP RC RAFT BEAM
CB04	300x415 DEEP RC RAFT BEAM

NOTES:

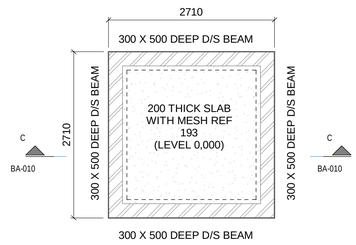
1. SETTING OUT TO BE PROVIDED BY CIVIL ENGINEER
2. JOJO TANKS TO BE POSITIONED AS PER CIVIL ENGINEER'S DRAWINGS
3. SETTING OUT LEVEL 0,000 TO BE DETERMINED FROM CIVIL ENGINEER'S DRAWINGS
4. ALL WORK SHALL BE EXECUTED IN STRICT ACCORDANCE WITH THE LATEST REVISION OF SANS 10400, SANS 2001, OHS ACT AND THE PROJECT SPECIFICATIONS IN THE CONTRACT DOCUMENTATION.
5. ALL DIMENSIONS ARE TO BE CHECKED AGAINST THE ARCHITECT'S DRAWINGS. ANY DISCREPANCIES SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER IN WRITING.
6. NO SCALING OFF DRAWING IS ALLOWED.
7. UNLESS OTHERWISE INDICATED ON DRAWINGS, ALL WATERPROOFING IS ACCORDING TO ARCHITECT'S DETAILS AND SPECIFICATIONS.
8. THE CONTRACTOR SHALL ENSURE THAT WATERPROOFING MATERIALS ARE NOT DAMAGED DURING BACKFILLING OPERATIONS AND FIXING OF STEEL. ANY REPAIR WORK FOR THE CONTRACTOR'S ACCOUNT.
9. THE CONTRACTOR IS RESPONSIBLE TO CONTROL STORM WATER AND DEWATERING ON THE SITE TO PREVENT DAMAGE TO THE STRUCTURE, BANKS, EXCAVATIONS, OR ANY OTHER WORKS FOR THE DURATION OF THE CONTRACT PERIOD.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND MAINTENANCE OF ALL TEMPORARY STRUCTURES.
11. TIMBER ROOFS TO BE DESIGNED BY SUPPLIER AND SHALL COMPLY WITH NHBRC AND RELEVANT CODES. ONLY TREATED TIMBER TO BE USED IN ACCORDANCE WITH NHBRC REGULATIONS
12. PRODUCTS DIFFERENT TO THOSE SPECIFIED MAY ONLY BE USED IF APPROVED BY ENGINEER
13. CERTIFICATES TO PROVE COMPLIANCE SHALL BE SUBMITTED TO ENGINEER
14. UNLESS OTHERWISE SPECIFIED, ALL BACKFILLING BENEATH SURFACE BEDS OR BEHIND RETAINING WALLS SHALL BE COMPACTED TO 95% MOD AASHTO IN LAYERS NOT EXCEEDING 150mm THICK
15. ALL EXCAVATIONS MUST BE INSPECTED AND APPROVED BY THE RESIDENT/GEOTECHNICAL ENGINEER BEFORE PLACING OF ANY CONCRETE FOUNDATION, BLINDING, AND WATERPROOFING OR GEOFABRIC MEMBRANE.
16. LEVELS OF FOUNDATIONS TO BE CONFIRMED BY THE RESIDENT/GEOTECHNICAL ENGINEER ON SITE TO OBTAIN THE SPECIFIED BEARING PRESSURE. WHERE EXCAVATION LEVELS HAVE TO BE LOWERED, THE ENGINEER WILL ISSUE A SITE INSTRUCTION WITH THE CORRECT PROCEDURE TO BE IMPLEMENTED.
17. DESIGN BEARING PRESSURE = 50 kPa.
18. PORTIONS THAT ARE OVER-EXCAVATED BEYOND THE DEPTH REQUIRED BY THE GEOTECHNICAL ENGINEER, TO BE FILLED WITH MASS CONCRETE (15MPa / 19mm) AT CONTRACTOR'S EXPENSE.
19. A 50mm THICK BLINDING LAYER OF 15MPa/19mm SHALL BE CAST UNDER ALL REINFORCED FOUNDATIONS UNLESS INDICATED OTHERWISE ON DRAWINGS. NO BLINDING LAYER NEEDS TO BE CAST FOR UNREINFORCED BRICKWORK AND MASS CONCRETE FOUNDATIONS.
20. MINIMUM CONCRETE STRENGTHS @ 28 DAYS: 30 MPa. THE CONCRETE MIX DESIGN IS TO BE APPROVED BY ENGINEER.
21. CURING OF CONCRETE SHALL BE CARRIED OUT IN ACCORDANCE WITH SANS 1200G. THE CONTRACTOR MUST ENSURE THAT ALL MATERIALS REQUIRED FOR THE CURING PROCESS ARE ON HAND BEFORE STRIPPING ANY FORMWORK, AND THAT THESE MEASURES ARE IMPLEMENTED IMMEDIATELY AFTER THE FORMWORK HAS BEEN REMOVED.
22. CONCRETE CUBE CRUSHING TESTS AS PER SANS 2001-CC1 : 2012 CLAUSE 5
23. FLOOR FINISHES:
    - PIT FLOOR = WOOD FLOATED
    - GROUND FLOOR = WOOD FLOATED
    - JOJO TANK PLINTH = WOOD FLOATED
    - APRON SLAB =WOOD FLOATED
24. SEE ARCHITECT'S DRAWINGS FOR GENERAL LAYOUT OF BRICKWORK. ALL SETTING OUT TO BE DONE FROM ARCHITECT'S DRAWINGS. ALL FOUNDATIONS AND STRIP FOOTINGS ARE PLACED SYMMETRICALLY BELOW BRICKWORK UNLESS OTHERWISE SHOWN.
25. BRICKWORK TO BE BUILT IN ACCORDANCE WITH SANS 2001-CM1:2012, SANS 10400, SANS 10164 AND NHBRC.
26. THE MINIMUM CRUSHING STRENGTH OF ALL LOAD-BEARING BRICKWORK SHALL BE 14 MPa UNLESS SHOWN OTHERWISE
27. THE MINIMUM CRUSHING STRENGTH OF MORTAR SHALL BE AS FOR CLASS II MORTAR IN ACCORDANCE WITH TABLE 1 SANS 10164 PART 1 - 1980
28. ALL BRICK ANCHORS, WALL TIES AND STRAPS SHALL BE HOT-DIP GALVANISED. ALL WALL TIES TO BE POZZI TIES
29. BRICKFORCE
    - BRICKWORK SHALL BE REINFORCED WITH AN APPROVED BRICKFORCE EVERY FOURTH LAYER UNLESS OTHERWISE SPECIFIED ON DRAWINGS.
30. IN ADDITION, CONTINUOUS BRICK FORCE IS REQUIRED IN EVERY LAYER FOR THE FIRST FOUR LAYERS ABOVE AND BELOW THE TOP OF FOUNDATIONS & SLABS, AS WELL AS WINDOWS AND OVER DOOR OPENINGS. MINIMUM LAPS TO BE 300mm.
31. IN CAVITY WALLS, WALL TIES SHALL JOIN THE LEAVES AND SHALL BE EMBEDDED IN MASONRY JOINTS AT RIGHT ANGLES TO THE LEAVES AS THE WORK PROGRESSES.
32. EVERY FOURTH BRICK IN THE FIRST COURSE OF CAVITY BRICK WALL TO BE LEFT OPEN. ONCE BRICKWORK IS BUILT, THE EXCESS MORTAR IN THE CAVITY IS TO BE CLEANED. THESE BRICK OPENING IN THE FIRST COURSE WILL ALLOW FOR THE CLEANING OF EXCESS BRICKWORK MORTAR COLLECTING AT THE BOTTOM OF THE CAVITY. THESE OPENINGS ARE TO BE CLOSED ONCE THE CAVITY IS CLEANED AND BEFORE THE CONCRETE IS POURED. CONCRETE FOR BRICK WORK INFILL TO BE POURED IN MAXIMUM OF 1m HEIGHTS.
33. THERE SHOULD BE 5.0 WALL TIES PER M^2 OF WALLING.
34. ENSURE THAT EACH TIE IS EMBEDDED TO A DEPTH OF AT LEAST 50mm IN THE MORTAR JOINT OF EACH LEAF.
35. FOR CAVITY WIDTHS EXCEEDING 75mm BUT NOT EXCEEDING 150mm. ENSURE THAT WALL TIES USED ARE OF THE VERTICAL TWIST TYPE, OR ANY SIMILAR TYPE HAVING AT LEAST THE EQUIVALENT STRENGTH AND STIFFNESS.
36. CONCRETE BRICKS TO BE KEPT DRY BEFORE BEING USED.



APRON SLAB LAYOUT

SCALE 1 : 50

NOTES
- ALL APRON SLABS TO BE 100mm WITH MESH REF 193
- EXTERNAL BRICKWORK TO BE LOAD BEARING



JOJO TANK PLINTH DETAILS

SCALE 1 : 50

NOTES :
- JOJO TANKS TO BE POSITIONED AS PER CIVIL ENGINEERS DRAWING

FOR CONSTRUCTION

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AECOM

CONSULTANT

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PROJECT

DEPARTMENT OF EDUCATION WATER AND SANITATION PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

1. FOR GENERAL NOTES, REFER TO DRAWING: N/A.
2. DRAWINGS ARE NOT TO BE SCALED. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORKS. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER / ARCHITECT'S ATTENTION IMMEDIATELY
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SCHEDULES AND SPECIFICATIONS RELATED TO THIS PROJECT.
4. ALL BUILDING WORK AND MATERIALS ARE TO COMPLY WITH LOCAL AUTHORITY'S REQUIREMENTS AND ARE TO BE IN ACCORDANCE WITH SANS 10400 NATIONAL BUILDING REGULATIONS

ISSUE / REVISION

0	2022-10-26	ISSUED FOR CONSTRUCTION	NN
I/R	DATE	DESCRIPTION	ISS BY
		INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY:	T.A NGUBANE	N/A
DRAWN BY:	V. GOVENDER	N/A
DESIGN CHECKED BY:	N. BUDREE	N/A
DRAWING CHECKED BY:	T.A NGUBANE	N/A

APPROVAL CONSULTANT

NAME: N. BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

1 FEMALE AND 1 DISABLED ABLUTION BLOCK DRY RAFT PLAN LAYOUTS

DISCIPLINE

STRUCTURES

AECOM DRAWING NUMBER

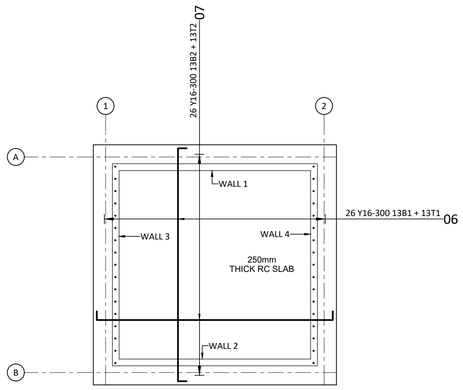
PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	S	**AC-010**	**C**	**0**

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REDRAFT

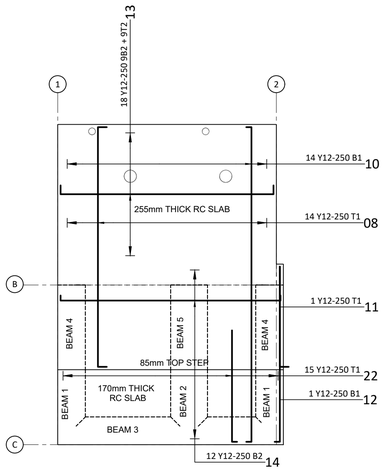
SCALE 1 : 50

ISO A1 594mm x 841mm
Printed on ___% Post Consumer Recycled Content Paper
Last Plotted: 2022/10/19 03:27:20
File name: C:\Users\Thokozane.Ngubane\OneDrive - AECOM\Homework\3D\22\OOP\WOSTOBER 2022\REVIT\60491906 - 01\1 (F1\0).rvt

ISO A1 594mm x 841mm



PIT SLAB FOUNDATION
TOP & BOTT. REINFORCEMENT LAYOUT
SCALE 1:50



GROUND FLOOR SLAB
TOP & BOTT. REINFORCEMENT LAYOUT
SCALE 1:50

MEMBER NAME	MEMBER NUM	MARK	TYPE R Grade250	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
BEAM 4	2	17		10	5	10	1190	72	400	200		
		18	8		3	6	370	38	100	200	100	
		25		12	6	12	1720	38	250	1280	250	

REINFORCEMENT SUMMARY			
Grade250	R 8	R 10	R 12
Total Length (m)	2.22		
Total Weight (kg)	0.88		
Grade450	Y 8	Y 10	Y 12
Total Length (m)		11.90	20.64
Total Weight (kg)		7.34	18.33
Subtotal: (kg)	26.55		

MEMBER NAME	MEMBER NUM	MARK	TYPE R Grade250	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
BEAM 5	1	18	8		3	3	370	38	100	200	100	
		20		12	6	6	1720	38	250	1280	250	
		21		10	5	5	1190	72	400	200		

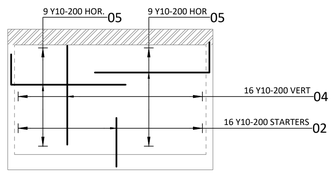
REINFORCEMENT SUMMARY			
Grade250	R 8	R 10	R 12
Total Length (m)	1.11		
Total Weight (kg)	0.44		
Grade450	Y 8	Y 10	Y 12
Total Length (m)		5.95	10.32
Total Weight (kg)		3.67	9.16
Subtotal: (kg)	13.27		

MEMBER NAME	MEMBER NUM	MARK	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
250mm THICK PIT SLAB	1	06	16	26	26	4030	38	150	3810	150	
		07	16	26	26	4080	38	150	3860	150	

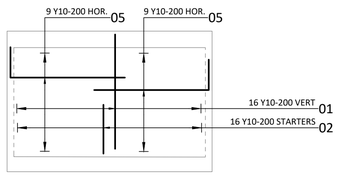
REINFORCEMENT SUMMARY	
Grade450	Y 16
Total Length (m)	210.86
Total Weight (kg)	333.16
Subtotal: (kg)	333.16

MEMBER NAME	MEMBER NUM	MARK	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
255 / 170 GROUND FLOOR SLAB	1	08	12	14	14	4160	38	150	3920	150	
		10	12	14	14	5260	38	90	5140	90	
		11	12	1	1	1760	37	1640	150		
		12	12	1	1	2920	37	2860	90		
		13	12	18	18	3720	38	150	3480	150	
		14	12	12	12	3710	38	90	3600	90	
		22	12	15	15	1880	37	1820	90		

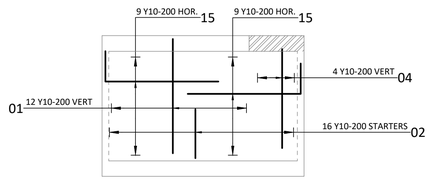
REINFORCEMENT SUMMARY	
Grade450	Y 12
Total Length (m)	276.24
Total Weight (kg)	245.30
Subtotal: (kg)	245.30



WALL 1
REINFORCEMENT LAYOUT
SCALE 1:50



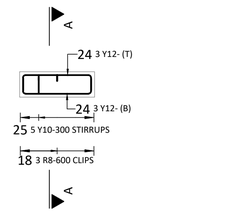
WALL 2
REINFORCEMENT LAYOUT
SCALE 1:50



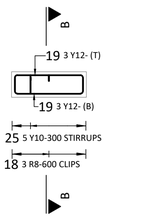
WALLS 3&4 (2 No. OFF)
REINFORCEMENT LAYOUT
SCALE 1:50

MEMBER NAME	MEMBER NUM	MARK	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	REV
WALL 1	1	02	10	16	16	1120	37	350	800	
		04	10	16	16	1610	20	1610		
		05	10	18	18	2340	37	1870	500	
WALL 2	1	01	10	16	16	1970	37	130	1870	
		02	10	32	64	1120	37	350	800	
		05	10	18	18	2340	37	1870	500	
WALL 3&4	2	01	10	12	24	1970	37	130	1870	
		02	10	32	64	1120	37	350	800	
		04	10	4	8	1610	20	1610		
		15	10	18	36	2320	37	1850	500	

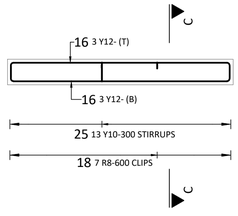
REINFORCEMENT SUMMARY	
Grade450	Y 10
Total Length (m)	446.48
Total Weight (kg)	275.48
Subtotal: (kg)	275.48



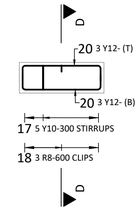
BEAM 1 REINFORCEMENT
2 NO. OFF
SCALE 1:50



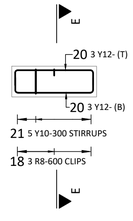
BEAM 2 REINFORCEMENT
1 NO. OFF
SCALE 1:50



BEAM 3 REINFORCEMENT
1 NO. OFF
SCALE 1:50



BEAM 4 REINFORCEMENT
2 NO. OFF
SCALE 1:50



BEAM 5 REINFORCEMENT
1 NO. OFF
SCALE 1:50

MEMBER NAME	MEMBER NUM	MARK	TYPE R Grade250	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
BEAM 1	2	18	8		3	6	370	38	100	200	100	
		24		12	6	12	1560	38	250	1120	250	
		25		10	5	10	1020	72	320	200		

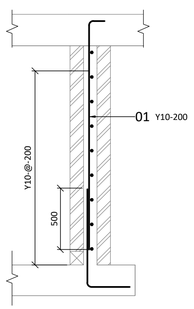
REINFORCEMENT SUMMARY			
Grade250	R 8	R 10	R 12
Total Length (m)	2.22		
Total Weight (kg)	0.88		
Grade450	Y 8	Y 10	Y 12
Total Length (m)		10.20	18.72
Total Weight (kg)		6.29	16.62
Subtotal: (kg)	23.79		

MEMBER NAME	MEMBER NUM	MARK	TYPE R Grade250	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
BEAM 2	1	18	8		3	3	370	38	100	200	100	
		19		12	6	6	1560	38	250	1120	250	
		25		10	5	5	1020	72	320	200		

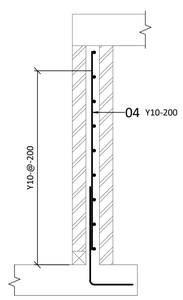
REINFORCEMENT SUMMARY			
Grade250	R 8	R 10	R 12
Total Length (m)	1.11		
Total Weight (kg)	0.44		
Grade450	Y 8	Y 10	Y 12
Total Length (m)		5.10	9.36
Total Weight (kg)		3.15	8.31
Subtotal: (kg)	11.90		

MEMBER NAME	MEMBER NUM	MARK	TYPE R Grade250	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
BEAM 3	1	16		12	6	6	4010	38	250	3580	250	
		18	8		7	7	370	38	100	200	100	
		25		10	13	13	1020	72	320	200		

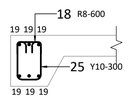
REINFORCEMENT SUMMARY			
Grade250	R 8	R 10	R 32
Total Length (m)	2.59		
Total Weight (kg)	1.02		
Grade450	Y 8	Y 10	Y 12
Total Length (m)		13.26	24.06
Total Weight (kg)		8.18	21.37
Subtotal: (kg)	30.57		



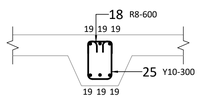
TYPICAL SECTION
THROUGH WALLS WITH SLAB OVER
SCALE 1:25



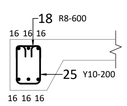
TYPICAL SECTION
THROUGH WALLS WITH NO SLAB OVER
SCALE 1:25



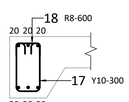
SECTION A-A
SCALE 1:25



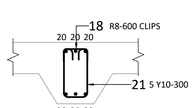
SECTION B-B
SCALE 1:25



SECTION C-C
SCALE 1:25



SECTION D-D
SCALE 1:25



SECTION E-E
SCALE 1:25

NOTE:
COVER FOR SUSPENDED SLAB = 40mm
COVER FOR RAFT BEAMS = 40mm
COVER FOR STRIP FOOTING = 50mm
COVER FOR FOUNDATION SLAB = 50mm
MINIMUM SPLICING = 50Ø
Ø =THE LARGEST DIAMETER BAR BEING SPLICED

MEMBER NAME	MEMBER NUM	MARK	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
STOOLS	1	26	10	8	8	1240	83	350	350	120	
		27	10	16	16	1350	83	400	400	100	

REINFORCEMENT SUMMARY	
Grade450	Y 10
Total Length (m)	31.52
Total Weight (kg)	19.45
Subtotal: (kg)	19.45

FOR CONSTRUCTION

AECOM

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Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION WATER AND SANITATION PROGRAMME FOR SCHOOLS

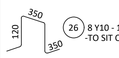
CLIENT

KZN DEPARTMENT OF PUBLICWORKS

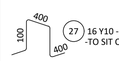
public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTE:
FOR 170mm SLAB USE 60mm COVER BLOCKS STOOLS TO SIT ON B2 TO SUPPORT T2 (5 No OFF STOOLS 1 / m²)

NOTE:
STOOLS FOR 255mm THICK SLAB



NOTE:
STOOLS FOR 250mm THICK SLAB



NOTES

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ISSUE / REVISION

I/R	DATE	DESCRIPTION	ISS BY
0	2022-10-26	ISSUED FOR CONSTRUCTION	VG
		INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY:	T A NGUBANE	N/A
DRAWN BY:	V. GOVENDER	N/A
DESIGN CHECKED BY:	N. BUDREE	N/A
DRAWING CHECKED BY:	T A NGUBANE	N/A

APPROVAL CONSULTANT

NAME: N.BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

1 FEMALE 1 DISABLE ABLUTION BLOCK DRY RAFT REINFORCEMENT LAYOUTS & SCHEDULES

DISCIPLINE

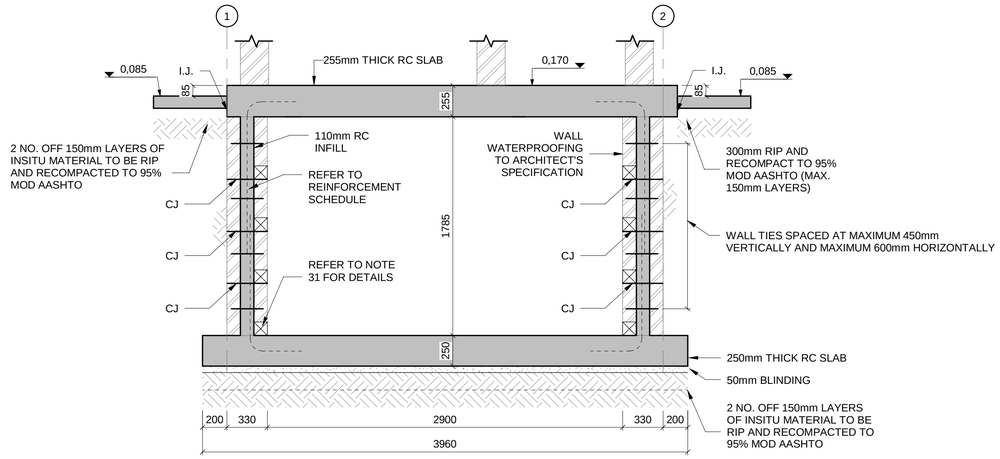
STRUCTURES

AECOM DRAWING NUMBER

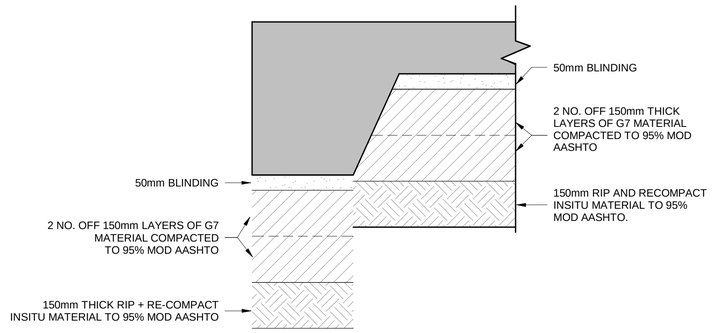
PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	S	AD-010	C	0

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

SCALE As indicated



SECTION A-A
SCALE 1 : 25



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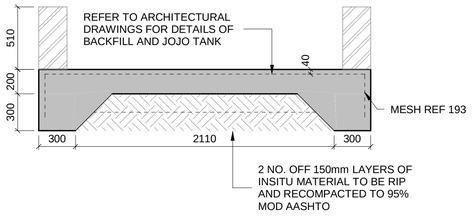

SECTION C-C
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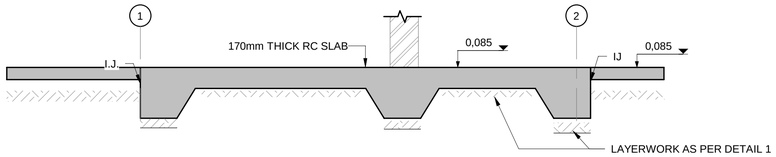

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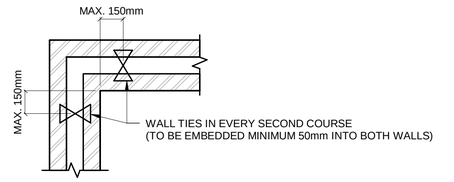
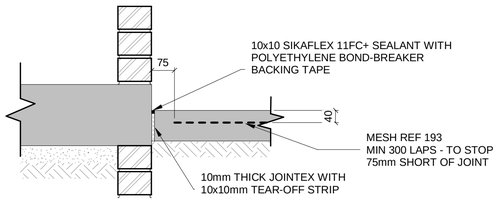
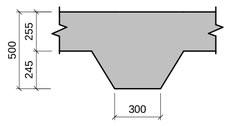


WALL TIE CORNER DETAIL
SCALE 1 : 20



ISOLATION JOINT (I.J)
SCALE 1 : 10



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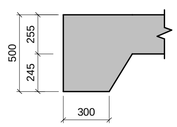
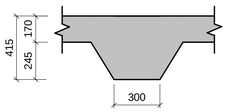
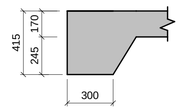


CB02 RAFT BEAM TYPE SECTION
SCALE 1 : 20



CB03 RAFT BEAM TYPE SECTION
SCALE 1 : 20



CB04 RAFT BEAM TYPE SECTION
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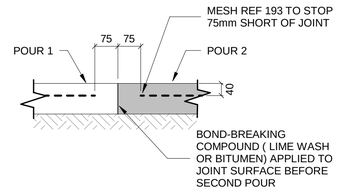

CJ BA-010 | ## CONSTRUCTION JOINT (CJ)
SCALE 1 : 10

FOR CONSTRUCTION

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AECOM

CONSULTANT

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www.aecom.com Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

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ISSUE / REVISION

I/R	DATE	DESCRIPTION	ISS BY
0	2022-10-26	ISSUED FOR CONSTRUCTION	NN

INITIAL ISSUE

DRAWING CHECKS

DESIGNED BY:	T.A NGUBANE	N/A
DRAWN BY:	V. GOVENDER	N/A
DESIGN CHECKED BY:	N. BUDREE	N/A
DRAWING CHECKED BY:	T.A NGUBANE	N/A

APPROVAL CONSULTANT

NAME: N. BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

1 FEMALE AND 1 DISABLED ABLUTION BLOCK DRY
RAFT SECTIONS AND DETAILS

DISCIPLINE

STRUCTURES

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	S	**BA-010**	**C**	**0**

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

SCALE As indicated

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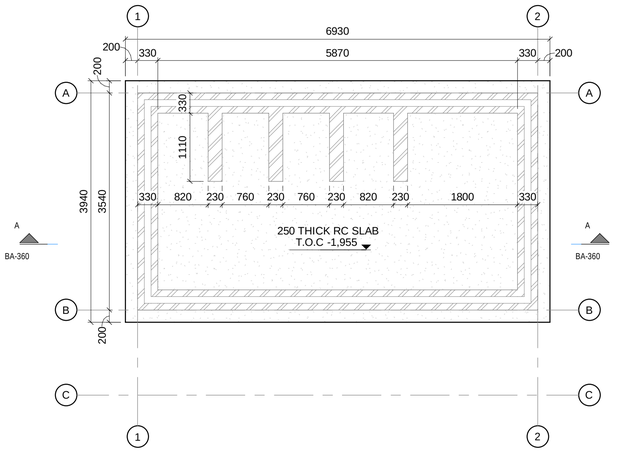
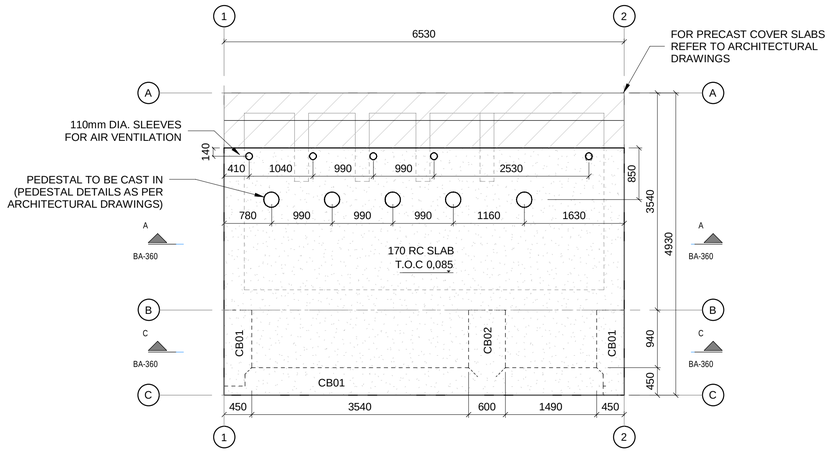


PIT SLAB FOUNDATION LAYOUT

SCALE 1 : 50

NOTE:
- WOOD FLOAT FINISH ON PIT SLAB

CONCRETE INFILL METHOD STATEMENT
- INFILL WALL TO BE CONSTRUCTED IN MAXIMUM HEIGHTS OF 425mm (5 BRICK COURSES).
- EVERY FOURTH BRICK IN THE FIRST COURSE OF CAVITY BRICK WALL TO BE LEFT OPEN.
- ONCE BRICKWORK IS BUILT, THE EXCESS MORTAR IN THE CAVITY IS TO BE CLEANED AFTER EVERY CONSTRUCTION JOINT.
- THESE OPENINGS ARE TO BE CLOSED ONCE THE CAVITY IS CLEANED AND BEFORE THE CONCRETE FOR THE NEXT LIFT IS POURED.



GROUND FLOOR SLAB LAYOUT

SCALE 1 : 50

NOTES:

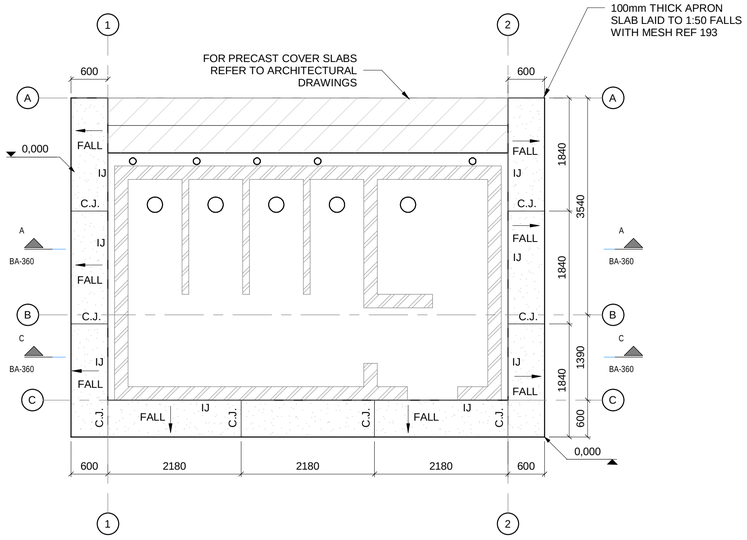
- ALL BRICKWORK SHOWN AS LOAD BEARING
- POWER FLOATED FINISH ON GROUND FLOOR SLAB

FRAMING SCHEDULE

TYPE MARK	TYPE
CB01	300X500 DEEP RC RAFT BEAM
CB02	300X500 DEEP RC RAFT BEAM

NOTES:

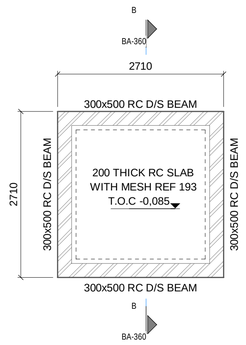
1. SETTING OUT TO BE PROVIDED BY CIVIL ENGINEER
2. JOJO TANKS TO BE POSITIONED AS PER CIVIL ENGINEER'S DRAWINGS
3. SETTING OUT LEVEL 0,000 TO BE DETERMINED FROM CIVIL ENGINEER'S DRAWINGS
4. ALL WORK SHALL BE EXECUTED IN STRICT ACCORDANCE WITH THE LATEST REVISION OF SANS 10400, SANS 2001, OHS ACT AND THE PROJECT SPECIFICATIONS IN THE CONTRACT DOCUMENTATION.
5. ALL DIMENSIONS ARE TO BE CHECKED AGAINST THE ARCHITECT'S DRAWINGS. ANY DISCREPANCIES SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER IN WRITING.
6. NO SCALING OFF DRAWING IS ALLOWED.
7. UNLESS OTHERWISE INDICATED ON DRAWINGS, ALL WATERPROOFING IS ACCORDING TO ARCHITECT'S DETAILS AND SPECIFICATIONS.
8. THE CONTRACTOR SHALL ENSURE THAT WATERPROOFING MATERIALS ARE NOT DAMAGED DURING BACKFILLING OPERATIONS AND FIXING OF STEEL. ANY REPAIR WORK FOR THE CONTRACTOR'S ACCOUNT.
9. THE CONTRACTOR IS RESPONSIBLE TO CONTROL STORM WATER AND DEWATERING ON THE SITE TO PREVENT DAMAGE TO THE STRUCTURE, BANKS, EXCAVATIONS, OR ANY OTHER WORKS FOR THE DURATION OF THE CONTRACT PERIOD.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND MAINTENANCE OF ALL TEMPORARY STRUCTURES.
11. TIMBER ROOFS TO BE DESIGNED BY SUPPLIER AND SHALL COMPLY WITH NHBRC AND RELEVANT CODES. ONLY TREATED TIMBER TO BE USED IN ACCORDANCE WITH NHBRC REGULATIONS
12. PRODUCTS DIFFERENT TO THOSE SPECIFIED MAY ONLY BE USED IF APPROVED BY ENGINEER
13. CERTIFICATES TO PROVE COMPLIANCE SHALL BE SUBMITTED TO ENGINEER
14. UNLESS OTHERWISE SPECIFIED, ALL BACKFILLING BENEATH SURFACE BEDS OR BEHIND RETAINING WALLS SHALL BE COMPACTED TO 95% MOD AASHTO IN LAYERS NOT EXCEEDING 150mm THICK
15. ALL EXCAVATIONS MUST BE INSPECTED AND APPROVED BY THE RESIDENT/GEOTECHNICAL ENGINEER BEFORE PLACING OF ANY CONCRETE FOUNDATION, BLINDING, AND WATERPROOFING OR GEOFABRIC MEMBRANE.
16. LEVELS OF FOUNDATIONS TO BE CONFIRMED BY THE RESIDENT/GEOTECHNICAL ENGINEER ON SITE TO OBTAIN THE SPECIFIED BEARING PRESSURE. WHERE EXCAVATION LEVELS HAVE TO BE LOWERED, THE ENGINEER WILL ISSUE A SITE INSTRUCTION WITH THE CORRECT PROCEDURE TO BE IMPLEMENTED.
17. DESIGN BEARING PRESSURE = 50 kPa.
18. PORTIONS THAT ARE OVER-EXCAVATED BEYOND THE DEPTH REQUIRED BY THE GEOTECHNICAL ENGINEER, TO BE FILLED WITH MASS CONCRETE (15MPa / 19mm) AT CONTRACTOR'S EXPENSE.
19. A 50mm THICK BLINDING LAYER OF 15MPa/19mm SHALL BE CAST UNDER ALL REINFORCED FOUNDATIONS UNLESS INDICATED OTHERWISE ON DRAWINGS. NO BLINDING LAYER NEEDS TO BE CAST FOR UNREINFORCED BRICKWORK AND MASS CONCRETE FOUNDATIONS.
20. MINIMUM CONCRETE STRENGTHS @ 28 DAYS: 30 MPa. THE CONCRETE MIX DESIGN IS TO BE APPROVED BY ENGINEER.
21. CURING OF CONCRETE SHALL BE CARRIED OUT IN ACCORDANCE WITH SANS 1200G. THE CONTRACTOR MUST ENSURE THAT ALL MATERIALS REQUIRED FOR THE CURING PROCESS ARE ON HAND BEFORE STRIPPING ANY FORMWORK, AND THAT THESE MEASURES ARE IMPLEMENTED IMMEDIATELY AFTER THE FORMWORK HAS BEEN REMOVED.
22. CONCRETE CUBE CRUSHING TESTS AS PER SANS 2001-CC1 : 2012 CLAUSE 5
23. FLOOR FINISHES:
    - PIT FLOOR = WOOD FLOATED
    - GROUND FLOOR = WOOD FLOATED
    - JOJO TANK PLINTH = WOOD FLOATED
    - APRON SLAB = WOOD FLOATED
24. SEE ARCHITECT'S DRAWINGS FOR GENERAL LAYOUT OF BRICKWORK. ALL SETTING OUT TO BE DONE FROM ARCHITECT'S DRAWINGS. ALL FOUNDATIONS AND STRIP FOOTINGS ARE PLACED SYMMETRICALLY BELOW BRICKWORK UNLESS OTHERWISE SHOWN.
25. RICKWORK TO BE BUILT IN ACCORDANCE WITH SANS 2001-CM1:2012, SANS 10400, SANS 10164 AND NHBRC.
26. THE MINIMUM CRUSHING STRENGTH OF ALL LOAD-BEARING BRICKWORK SHALL BE 14 MPa UNLESS SHOWN OTHERWISE
27. THE MINIMUM CRUSHING STRENGTH OF MORTAR SHALL BE AS FOR CLASS II MORTAR IN ACCORDANCE WITH TABLE 1 SANS 10164 PART 1 - 1980
28. ALL BRICK ANCHORS, WALL TIES AND STRAPS SHALL BE HOT-DIP GALVANISED. ALL WALL TIES TO BE POZZI TIES
29. BRICKFORCE
    - BRICKWORK SHALL BE REINFORCED WITH AN APPROVED BRICKFORCE EVERY FOURTH LAYER UNLESS OTHERWISE SPECIFIED ON DRAWINGS.
30. IN ADDITION, CONTINUOUS BRICK FORCE IS REQUIRED IN EVERY LAYER FOR THE FIRST FOUR LAYERS ABOVE AND BELOW THE TOP OF FOUNDATIONS & SLABS, AS WELL AS WINDOWS AND OVER DOOR OPENINGS. MINIMUM LAPS TO BE 300mm.
31. IN CAVITY WALLS, WALL TIES SHALL JOIN THE LEAVES AND SHALL BE EMBEDDED IN MASONRY JOINTS AT RIGHT ANGLES TO THE LEAVES AS THE WORK PROGRESSES.
32. EVERY FOURTH BRICK IN THE FIRST COURSE OF CAVITY BRICK WALL TO BE LEFT OPEN. ONCE BRICKWORK IS BUILT, THE EXCESS MORTAR IN THE CAVITY IS TO BE CLEANED. THESE BRICK OPENING IN THE FIRST COURSE WILL ALLOW FOR THE CLEANING OF EXCESS BRICKWORK MORTAR COLLECTING AT THE BOTTOM OF THE CAVITY. THESE OPENINGS ARE TO BE CLOSED ONCE THE CAVITY IS CLEANED AND BEFORE THE CONCRETE IS POURED. CONCRETE FOR BRICK WORK INFILL TO BE POURED IN MAXIMUM OF 1m HEIGHTS.
33. HERE SHOULD BE 5.0 WALL TIES PER M^2 OF WALLING.
34. ENSURE THAT EACH TIE IS EMBEDDED TO A DEPTH OF AT LEAST 50mm IN THE MORTAR JOINT OF EACH LEAF.
35. FOR CAVITY WIDTHS EXCEEDING 75mm BUT NOT EXCEEDING 150mm. ENSURE THAT WALL TIES USED ARE OF THE VERTICAL TWIST TYPE, OR ANY SIMILAR TYPE HAVING AT LEAST THE EQUIVALENT STRENGTH AND STIFFNESS.
36. CONCRETE BRICKS TO BE KEPT DRY BEFORE BEING USED.



APRON SLAB LAYOUT

SCALE 1 : 50

NOTES
- ALL APRON SLABS TO BE 100mm THICK WITH MESH REF 193.
- EXTERNAL BRICKWORK TO BE LOAD BEARING.



JOJO TANK PLINTH DETAILS

SCALE 1 : 50

NOTES:
- JOJO TANKS TO BE POSITIONED AS PER CIVIL ENGINEERS DRAWINGS

FOR CONSTRUCTION

AECOM

CONSULTANT

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www.aecom.com Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

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ISSUE / REVISION

I/R	DATE	DESCRIPTION	ISS BY
0	2022-10-26	ISSUED FOR CONSTRUCTION	SK

INITIAL ISSUE

DRAWING CHECKS

DESIGNED BY: T.A NGUBANE N/A
DRAWN BY: D NAIDOO N/A
DESIGN CHECKED BY: N. BUDREE N/A
DRAWING CHECKED BY: T.A NGUBANE N/A

APPROVAL CONSULTANT

NAME: N. BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

4 GRADE R AND 1 TEACHER ABLUTION BLOCK DRY RAFT PLAN LAYOUTS

DISCIPLINE

STRUCTURES

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	S	AC-360	C	0

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REDLINE

SCALE 1 : 50

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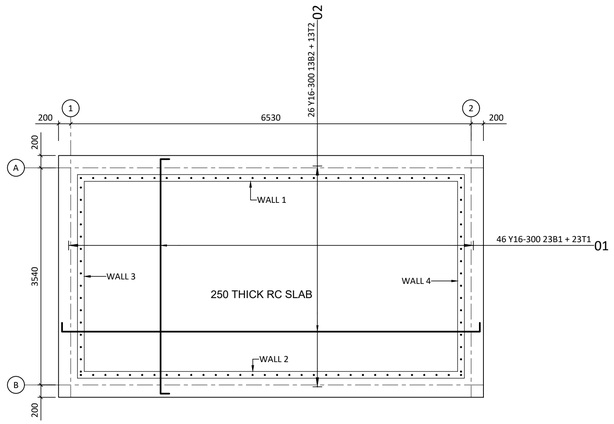
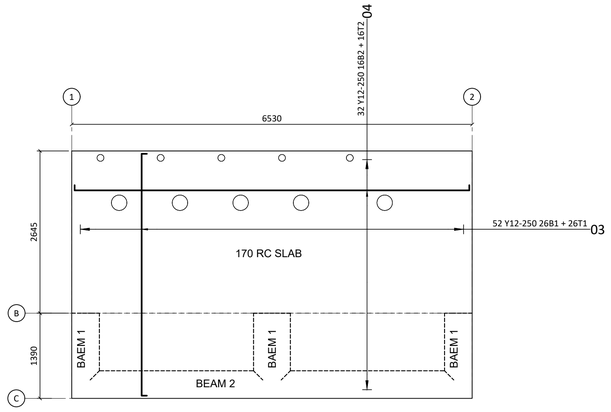


PIT SLAB REINFORCEMENT LAYOUT
SCALE 1:50



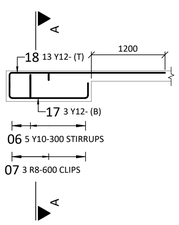
GROUND FLOOR SLAB REINFORCEMENT LAYOUT
SCALE 1:50

MEMBER		MARK	TYPE	NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
NAME	NUM		Y	ELEMENT	TOTAL						
			Grade450								
PIT SLAB REBAR	1	01	16	46	46	4060	38	150	3840	150	
		02	16	26	26	7050	38	150	6830	150	

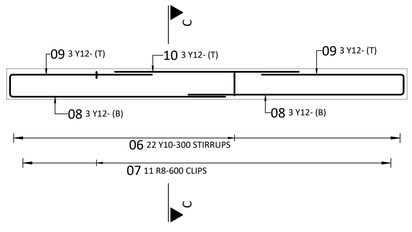
REINFORCEMENT SUMMARY	
Grade450	Y 16
Total Length (m)	370.06
Total Weight (kg)	584.69
Subtotal: (kg)	584.69

MEMBER		MARK	TYPE	NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
NAME	NUM		Y	ELEMENT	TOTAL						
			Grade450								
GROUND FLOOR SLAB REBAR	1	03	12	52	52	4070	38	90	3960	90	
		04	12	32	32	6570	38	90	6450	90	

REINFORCEMENT SUMMARY	
Grade450	Y 12
Total Length (m)	421.88
Total Weight (kg)	374.63
Subtotal: (kg)	374.63



BEAM 1 REINFORCEMENT
3 NO. OFF
SCALE 1:50



BEAM 2 REINFORCEMENT
1 NO. OFF
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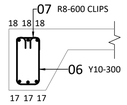
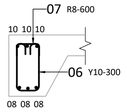


SECTION A-A
SCALE 1:25



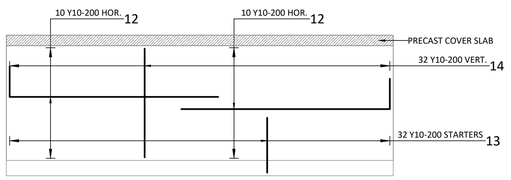
SECTION C-C
SCALE 1:25

MEMBER		MARK	TYPE		NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
NAME	NUM		R	Y	ELEMENT	TOTAL						
			Grade250	Grade450								
BEAM 1	3	06		10	5	15	1160	72	390	190		
		07	8		3	9	360	38	100	190	100	
		17		12	3	9	1730	38	250	1290	250	
		18		12	13	39	2760	37	250	2540		

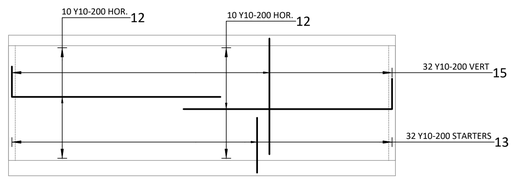
REINFORCEMENT SUMMARY			
Grade250	R 8	R 10	R 12
Total Length (m)	3.24		
Total Weight (kg)	1.28		
Grade450	Y 8	Y 10	Y 12
Total Length (m)		17.40	123.21
Total Weight (kg)		10.74	109.41
Subtotal: (kg)	121.43		

MEMBER		MARK	TYPE		NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
NAME	NUM		R	Y	ELEMENT	TOTAL						
			Grade250	Grade450								
BEAM 2	1	06		10	22	22	1160	72	390	190		
		07	8		11	11	360	38	100	190	100	
		08		12	6	6	3730	37	250	3510		
		09		12	6	6	2540	37	250	2320		
		10		12	3	3	3000	20	3000			

REINFORCEMENT SUMMARY			
Grade250	R 8	R 10	R 12
Total Length (m)	3.96		
Total Weight (kg)	1.56		
Grade450	Y 8	Y 10	Y 12
Total Length (m)		25.52	46.62
Total Weight (kg)		15.75	41.40
Subtotal: (kg)	58.71		



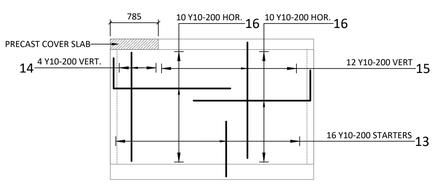
WALL 1 ELEVATION
SCALE 1:50



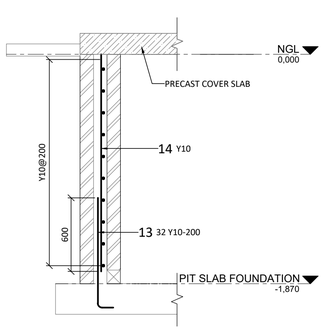
WALL 2 ELEVATION
SCALE 1:50

MEMBER		MARK	TYPE	NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	REV
NAME	NUM		Y	ELEMENT	TOTAL					
			Grade450							
WALL 1 REBAR	1	12	10	20	20	3880	37	3410	500	
		13	10	32	32	1000	37	130	900	
		14	10	32	32	1770	20	1770		
WALL 2 REBAR	1	12	10	20	20	3880	37	3410	500	
		13	10	32	32	1000	37	130	900	
		15	10	32	32	1990	37	130	1890	
WALL 3 & 4 REBAR	2	13	10	16	32	1000	37	130	900	
		14	10	4	8	1770	20	1770		
		15	10	12	24	1990	37	130	1890	
		16	10	20	40	2380	37	500	1910	

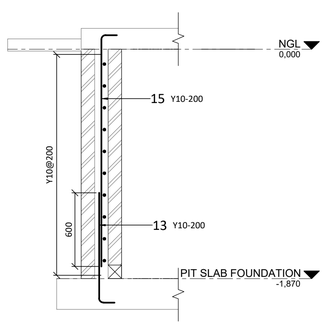
REINFORCEMENT SUMMARY	
Grade450	Y 10
Total Length (m)	528.64
Total Weight (kg)	326.17
Subtotal: (kg)	326.17



WALL 3 & 4 ELEVATION
2 NO. OFF
SCALE 1:50



TYPICAL SECTION
THROUGH WALL WITHOUT SLAB OVER
SCALE 1:25



TYPICAL SECTION
THROUGH WALL WITH SLAB OVER
SCALE 1:25

MEMBER		MARK	TYPE	NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
NAME	NUM		Y	ELEMENT	TOTAL						
			Grade450								
STOOLS	1	11	10	28	28	1110	83	300	100	300	

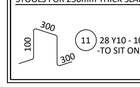
REINFORCEMENT SUMMARY	
Grade450	Y 10
Total Length (m)	31.08
Total Weight (kg)	19.18
Subtotal: (kg)	19.18

NOTE:

COVER FOR PIT SLAB = 50mm
COVER FOR GROUND FLOOR SLAB = 40mm
COVER FOR RAFT BEAMS = 50mm
COVER FOR WALLS = 50mm
MINIMUM SPLICING = 50Ø UNLESS STATED OTHER WISE
Ø = LARGEST DIAMETER BAR OF THE SPLICED

NOTE:
FOR 170mm SLAB USE 60mm COVER BLOCKS
STOOLS
TO SIT ON B2 TO SUPPORT T2 (17 No OFF STOOLS 1 / m²)

NOTE:
STOOLS FOR 250mm THICK SLAB



FOR CONSTRUCTION

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Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLICWORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

1. FOR GENERAL NOTES; REFER TO DRAWING:
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ISSUE / REVISION

I/R	DATE	DESCRIPTION	ISS BY
0	2022-10-26	ISSUED FOR CONSTRUCTION	DN
		INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY: T A NGUBANE N/A
DRAWN BY: D NAIDOO N/A
DESIGN CHECKED BY: N BUDREE N/A
DRAWING CHECKED BY: T A NGUBANE N/A

APPROVAL CONSULTANT

NAME: N.BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM DURBAN OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

4 GRADE R AND 1 TEACHER ABLUTION BLOCK DRY RAFT REINFORCEMENT LAYOUTS & SCHEDULES

DISCIPLINE

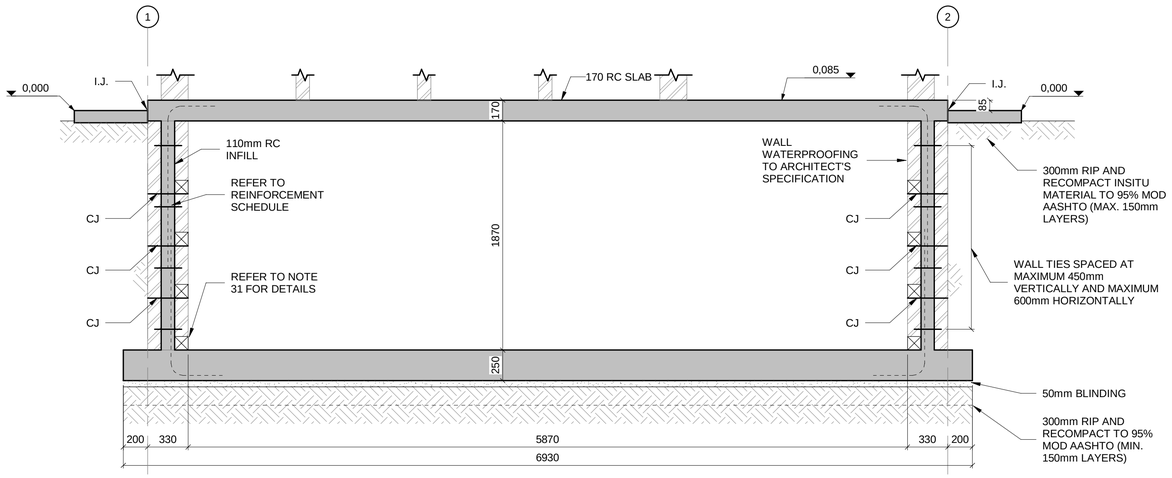
STRUCTURES

AECOM DRAWING NUMBER

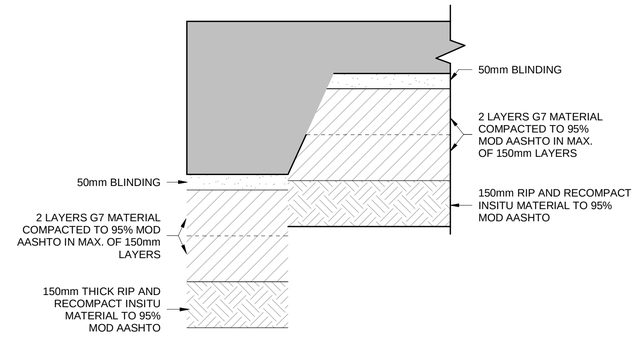
PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	S	AD-360	C	0

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

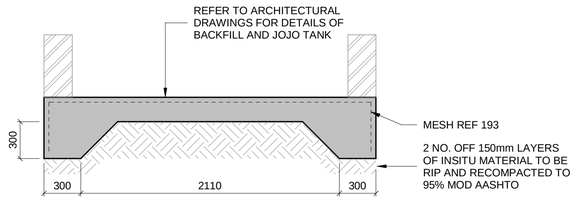
SCALE As indicated



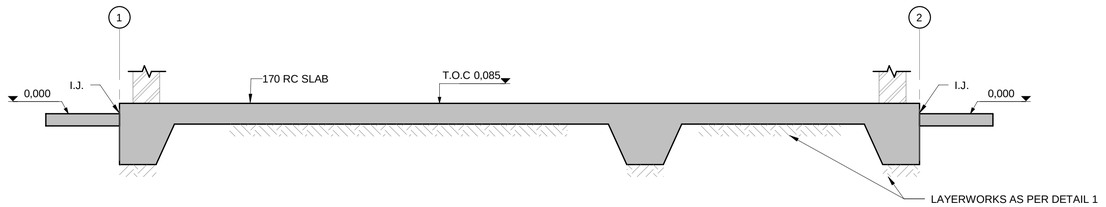
SECTION A-A
SCALE 1 : 25



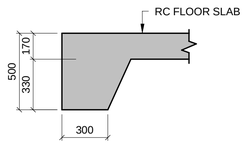
DETAIL 1 LAYERWORKS
SCALE 1 : 10



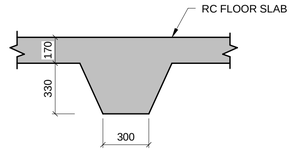
SECTION B-B
SCALE 1 : 25



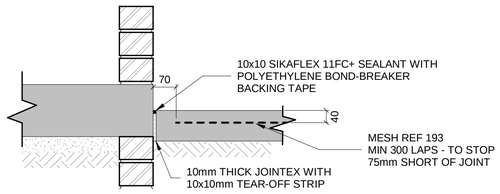
SECTION C-C
SCALE 1 : 25



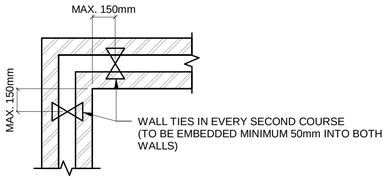
CB01
SCALE 1 : 20



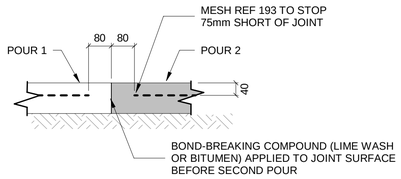
CB02
SCALE 1 : 20



ISOLATION JOINT (I.J.)
SCALE 1 : 10



WALL TIE CORNER DETAIL
SCALE 1 : 20



CJ CONSTRUCTION JOIN (CJ)
BA-360 SCALE 1 : 10

FOR CONSTRUCTION

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AECOM

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PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

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ISSUE / REVISION

0	2022-10-26	ISSUED FOR CONSTRUCTION	SK
I/R	DATE	DESCRIPTION	ISS BY

INITIAL ISSUE

DRAWING CHECKS

DESIGNED BY:	T.A NGUBANE	N/A
DRAWN BY:	D NAIDOO	N/A
DESIGN CHECKED BY:	N. BUDREE	N/A
DRAWING CHECKED BY:	N. BUDREE	N/A

APPROVAL CONSULTANT

NAME: N. BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

4 GRADE R AND 1 TEACHER ABLUTION BLOCK DRY RAFT SECTIONS AND DETAILS

DISCIPLINE

STRUCTURES

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	S	**BA-360**	**C**	**0**

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

SCALE As indicated

ISO A1 594mm x 841mm
Printed on 100% Post-Consumer Recycled Content Paper
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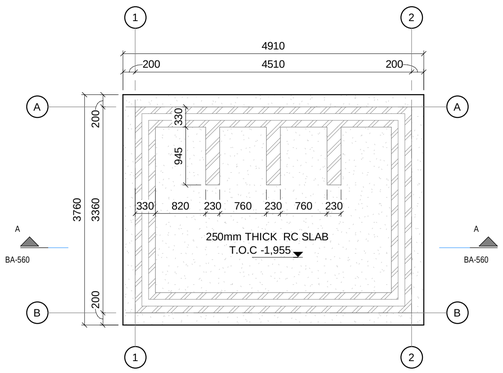
Filename: 60491906 - 360 (4R1T)_detached_detached.rvt

ISO A1 594mm x 841mm

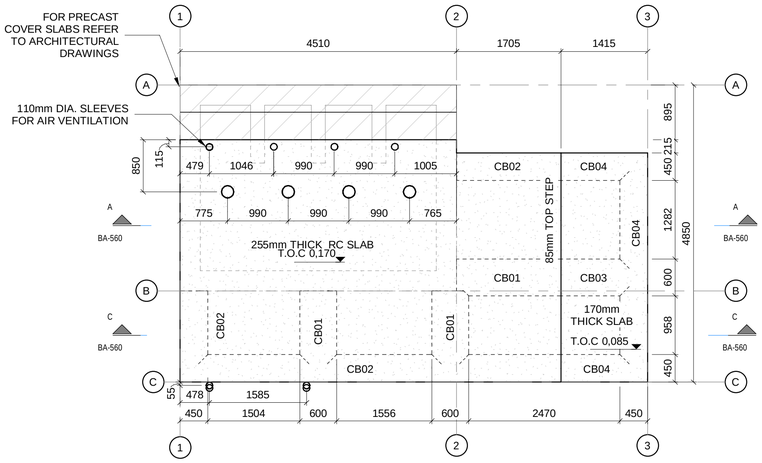


PIT SLAB FOUNDATION LAYOUT

SCALE 1 : 50

NOTE:
- WOOD FLOAT FINISH ON PIT SLAB

CONCRETE INFILL METHOD STATEMENT
- INFILL WALL TO BE CONSTRUCTED IN MAXIMUM HEIGHTS OF 425mm (5 BRICK COURSES).
- EVERY FOURTH BRICK IN THE FIRST COURSE OF CAVITY BRICK WALL TO BE LEFT OPEN.
- ONCE BRICKWORK IS BUILT, THE EXCESS MORTAR IN THE CAVITY IS TO BE CLEANED AFTER EVERY CONSTRUCTION JOINT.
- THESE OPENINGS ARE TO BE CLOSED ONCE THE CAVITY IS CLEANED AND BEFORE THE CONCRETE FOR THE NEXT LIFT IS POURED.



GROUND FLOOR SLAB LAYOUT

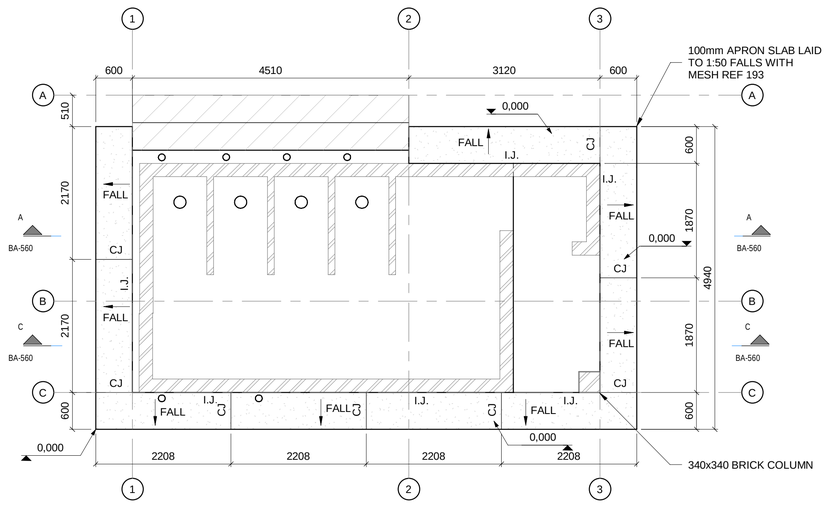
SCALE 1 : 50

NOTES
- ALL BRICKWORK SHOWN AS LOAD BEARING
- WOOD FLOATED FINISH ON GROUND FLOOR SLAB

RAFT BEAM SCHEDULE	
TYPE MARK	**TYPE**
CB01	300X500 DEEP RC RAFT BEAM
CB02	300x500 DEEP RC RAFT BEAM
CB03	300x415 DEEP RC RAFT BEAM
CB04	300x415 DEEP RC RAFT BEAM

NOTES:

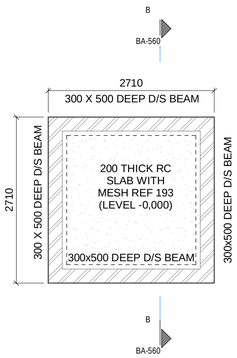
1. SETTING OUT TO BE PROVIDED BY CIVIL ENGINEER
2. JOJO TANKS TO BE POSITIONED AS PER CIVIL ENGINEER'S DRAWINGS
3. SETTING OUT LEVEL 0,000 TO BE DETERMINED FROM CIVIL ENGINEER'S DRAWINGS
4. ALL WORK SHALL BE EXECUTED IN STRICT ACCORDANCE WITH THE LATEST REVISION OF SANS 10400, SANS 2001, OHS ACT AND THE PROJECT SPECIFICATIONS IN THE CONTRACT DOCUMENTATION.
5. ALL DIMENSIONS ARE TO BE CHECKED AGAINST THE ARCHITECT'S DRAWINGS. ANY DISCREPANCIES SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER IN WRITING.
6. NO SCALING OFF DRAWING IS ALLOWED.
7. UNLESS OTHERWISE INDICATED ON DRAWINGS, ALL WATERPROOFING IS ACCORDING TO ARCHITECT'S DETAILS AND SPECIFICATIONS.
8. THE CONTRACTOR SHALL ENSURE THAT WATERPROOFING MATERIALS ARE NOT DAMAGED DURING BACKFILLING OPERATIONS AND FIXING OF STEEL. ANY REPAIR WORK FOR THE CONTRACTOR'S ACCOUNT.
9. THE CONTRACTOR IS RESPONSIBLE TO CONTROL STORM WATER AND DEWATERING ON THE SITE TO PREVENT DAMAGE TO THE STRUCTURE, BANKS, EXCAVATIONS, OR ANY OTHER WORKS FOR THE DURATION OF THE CONTRACT PERIOD.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND MAINTENANCE OF ALL TEMPORARY STRUCTURES.
11. TIMBER ROOFS TO BE DESIGNED BY SUPPLIER AND SHALL COMPLY WITH NHBRC AND RELEVANT CODES. ONLY TREATED TIMBER TO BE USED IN ACCORDANCE WITH NHBRC REGULATIONS
12. PRODUCTS DIFFERENT TO THOSE SPECIFIED MAY ONLY BE USED IF APPROVED BY ENGINEER
13. CERTIFICATES TO PROVE COMPLIANCE SHALL BE SUBMITTED TO ENGINEER
14. UNLESS OTHERWISE SPECIFIED, ALL BACKFILLING BENEATH SURFACE BEDS OR BEHIND RETAINING WALLS SHALL BE COMPACTED TO 95% MOD AASHTO IN LAYERS NOT EXCEEDING 150mm THICK
15. ALL EXCAVATIONS MUST BE INSPECTED AND APPROVED BY THE RESIDENT/GEOTECHNICAL ENGINEER BEFORE PLACING OF ANY CONCRETE FOUNDATION, BLINDING, AND WATERPROOFING OR GEOFABRIC MEMBRANE.
16. LEVELS OF FOUNDATIONS TO BE CONFIRMED BY THE RESIDENT/GEOTECHNICAL ENGINEER ON SITE TO OBTAIN THE SPECIFIED BEARING PRESSURE. WHERE EXCAVATION LEVELS HAVE TO BE LOWERED, THE ENGINEER WILL ISSUE A SITE INSTRUCTION WITH THE CORRECT PROCEDURE TO BE IMPLEMENTED.
17. DESIGN BEARING PRESSURE = 50 kPa.
18. PORTIONS THAT ARE OVER-EXCAVATED BEYOND THE DEPTH REQUIRED BY THE GEOTECHNICAL ENGINEER, TO BE FILLED WITH MASS CONCRETE (15MPa / 19mm) AT CONTRACTOR'S EXPENSE.
19. A 50mm THICK BLINDING LAYER OF 15MPa/19mm SHALL BE CAST UNDER ALL REINFORCED FOUNDATIONS UNLESS INDICATED OTHERWISE ON DRAWINGS. NO BLINDING LAYER NEEDS TO BE CAST FOR UNREINFORCED BRICKWORK AND MASS CONCRETE FOUNDATIONS.
20. MINIMUM CONCRETE STRENGTHS @ 28 DAYS: 30 MPa. THE CONCRETE MIX DESIGN IS TO BE APPROVED BY ENGINEER.
21. CURING OF CONCRETE SHALL BE CARRIED OUT IN ACCORDANCE WITH SANS 1200G. THE CONTRACTOR MUST ENSURE THAT ALL MATERIALS REQUIRED FOR THE CURING PROCESS ARE ON HAND BEFORE STRIPPING ANY FORMWORK, AND THAT THESE MEASURES ARE IMPLEMENTED IMMEDIATELY AFTER THE FORMWORK HAS BEEN REMOVED.
22. CONCRETE CUBE CRUSHING TESTS AS PER SANS 2001-CC1 : 2012 CLAUSE 5
23. FLOOR FINISHES:
    - PIT FLOOR = WOOD FLOATED
    - GROUND FLOOR = WOOD FLOATED
    - APRON SLAB = WOOD FLOATED
    - JOJO TANK PLINTH = WOOD FLOATED
24. SEE ARCHITECT'S DRAWINGS FOR GENERAL LAYOUT OF BRICKWORK. ALL SETTING OUT TO BE DONE FROM ARCHITECT'S DRAWINGS. ALL FOUNDATIONS AND STRIP FOOTINGS ARE PLACED SYMMETRICALLY BELOW BRICKWORK UNLESS OTHERWISE SHOWN.
25. BRICKWORK TO BE BUILT IN ACCORDANCE WITH SANS 2001-CM1:2012, SANS 10400, SANS 10164 AND NHBRC.
26. THE MINIMUM CRUSHING STRENGTH OF ALL LOAD-BEARING BRICKWORK SHALL BE 14 MPa UNLESS SHOWN OTHERWISE
27. THE MINIMUM CRUSHING STRENGTH OF MORTAR SHALL BE AS FOR CLASS II MORTAR IN ACCORDANCE WITH TABLE 1 SANS 10164 PART 1 - 1980
28. ALL BRICK ANCHORS, WALL TIES AND STRAPS SHALL BE HOT-DIP GALVANISED. ALL WALL TIES TO BE POZZI TIES
29. BRICKFORCE
    - BRICKWORK SHALL BE REINFORCED WITH AN APPROVED BRICKFORCE EVERY FOURTH LAYER UNLESS OTHERWISE SPECIFIED ON DRAWINGS.
30. IN ADDITION, CONTINUOUS BRICK FORCE IS REQUIRED IN EVERY LAYER FOR THE FIRST FOUR LAYERS ABOVE AND BELOW THE TOP OF FOUNDATIONS & SLABS, AS WELL AS WINDOWS AND OVER DOOR OPENINGS. MINIMUM LAPS TO BE 300mm.
31. IN CAVITY WALLS, WALL TIES SHALL JOIN THE LEAVES AND SHALL BE EMBEDDED IN MASONRY JOINTS AT RIGHT ANGLES TO THE LEAVES AS THE WORK PROGRESSES.
32. EVERY FOURTH BRICK IN THE FIRST COURSE OF CAVITY BRICK WALL TO BE LEFT OPEN. ONCE BRICKWORK IS BUILT, THE EXCESS MORTAR IN THE CAVITY IS TO BE CLEANED. THESE BRICK OPENING IN THE FIRST COURSE WILL ALLOW FOR THE CLEANING OF EXCESS BRICKWORK MORTAR COLLECTING AT THE BOTTOM OF THE CAVITY. THESE OPENINGS ARE TO BE CLOSED ONCE THE CAVITY IS CLEANED AND BEFORE THE CONCRETE IS POURED. CONCRETE FOR BRICK WORK INFILL TO BE POURED IN MAXIMUM OF 1m HEIGHTS.
33. THERE SHOULD BE 5.0 WALL TIES PER M² OF WALLING.
34. ENSURE THAT EACH TIE IS EMBEDDED TO A DEPTH OF AT LEAST 50mm IN THE MORTAR JOINT OF EACH LEAF.
35. FOR CAVITY WIDTHS EXCEEDING 75mm BUT NOT EXCEEDING 150mm. ENSURE THAT WALL TIES USED ARE OF THE VERTICAL TWIST TYPE, OR ANY SIMILAR TYPE HAVING AT LEAST THE EQUIVALENT STRENGTH AND STIFFNESS.
36. CONCRETE BRICKS TO BE KEPT DRY BEFORE BEING USED.



APRON SLAB LAYOUT

SCALE 1 : 50

- ALL APRON SLABS TO BE 100mm THICK WITH MESH REF 193 PLACED 40mm FROM TOP
- EXTERNAL BRICKWORK TO BE LOAD BEARING



JOJO TANK PLINTH DETAILS

SCALE 1 : 50

NOTES:
- JOJO TANKS TO BE POSITIONED AS PER CIVIL ENGINEERS DRAWINGS

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PROJECT

DEPARTMENT OF EDUCATION WATER AND SANITATION PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

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ISSUE / REVISION

0	2022-10-26	ISSUED FOR CONSTRUCTION	SK
I/R	DATE	DESCRIPTION	ISS BY
		INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY:	N.BUDREE	N/A
DRAWN BY:	T.NGUBANE	N/A
DESIGN CHECKED BY:	T.NGUBANE	N/A
DRAWING CHECKED BY:	N.BUDREE	N/A

APPROVAL CONSULTANT

NAME: N. BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

8 BOYS ABLUTION BLOCK DRY RAFT PLAN LAYOUTS

DISCIPLINE

STRUCTURES

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	S	**AC-560**	**C**	**0**

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

SCALE 1 : 50

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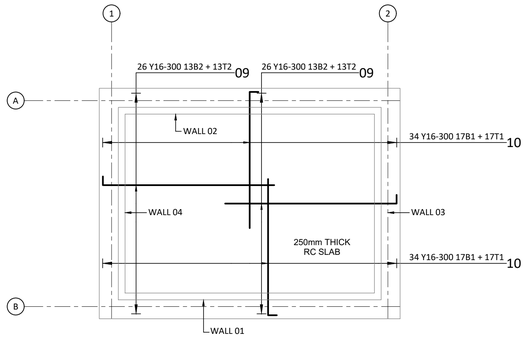
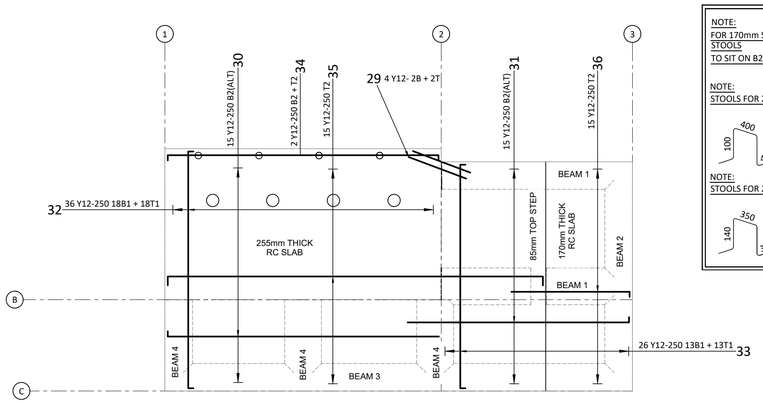
Last Plotted: 2022/10/19 09:12:47
Filename: 60491906 - 560 (BB)_detached.rvt

ISO A1 594mm x 841mm



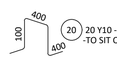
PIT SLAB FOUNDATION
REINFORCEMENT LAYOUT
SCALE 1:50



GROUND FLOOR SLAB
REINFORCEMENT LAYOUT
SCALE 1:50

NOTE:
FOR 170mm SLAB USE 60mm COVER BLOCKS
STOOLS
TO SIT ON B2 TO SUPPORT T2 (5 No OFF STOOLS 1 / m²)

NOTE:
STOOLS FOR 250mm THICK SLAB



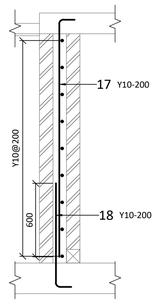
NOTE:
STOOLS FOR 255mm THICK SLAB

MEMBER NAME	MEMBER NUM	MARK	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	REV
250mm THICK PIT SLAB	1	09	16	52	52	2910	37	150	2810	
		10	16	68	68	2340	37	150	2230	

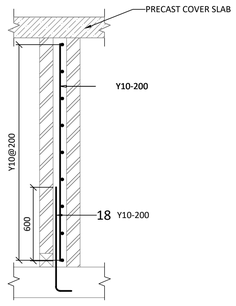
REINFORCEMENT SUMMARY	
Grade450	Y 16
Total Length (m)	310.44
Total Weight (kg)	490.50
Subtotal: (kg)	490.50

MEMBER NAME	MEMBER NUM	MARK	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
255/170mm THICK GROUND SLAB	1	29	12	4	4	1000	20	1000			
		30	12	15	15	4490	37	90	4430		
		31	12	15	15	3680	37	90	3620		
		32	12	36	36	3990	38	90	3880	90	
		33	12	26	26	3780	38	90	3660	90	
		34	12	2	2	4550	38	90	4430	90	
		35	12	15	15	6370	38	150	6140	150	
		36	12	15	15	1990	37	1940	90		

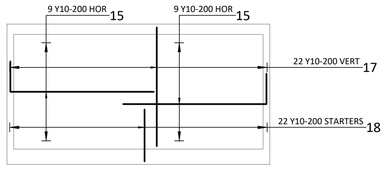
REINFORCEMENT SUMMARY	
Grade450	Y 12
Total Length (m)	502.97
Total Weight (kg)	446.64
Subtotal: (kg)	446.64



TYPICAL SECTION
THROUGH WALLS WITH SLAB OVER
SCALE 1:25



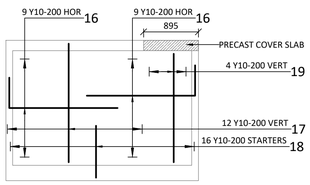
TYPICAL SECTION
THROUGH WALLS WITH NO SLAB OVER
SCALE 1:25



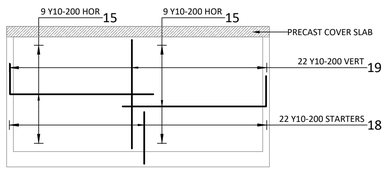
WALL 1
REINFORCEMENT LAYOUT
SCALE 1:50

MEMBER NAME	MEMBER NUM	MARK	TYPE R Grade250	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
BEAM 1 REBAR	2	37		10	6	12	1160	72	390	190		
		38	8		6	12	360	38	100	190	100	
		39		12	3	6	3460	38	250	3020	250	
		46		12	3	6	2250	37	250	2030		
		47		12	3	6	3070	37	250	2860		
		48		10	5	10	980	72	300	190		
BEAM 2 REBAR	1	38	8		7	7	360	38	100	190	100	
		40		12	6	6	4080	38	250	3640	250	
		48		10	13	13	980	72	300	190		
BEAM 3 REABR	1	38	8		13	13	360	38	100	190	100	
		41		10	21	21	1160	72	390	190		
		44		12	3	3	7970	38	250	7530	250	
		48		10	5	5	980	72	300	190		
		49		12	3	3	6550	38	250	6120	250	
		50		12	3	3	2240	37	250	2020		
BEAM 4 REABR	3	38	8		3	9	360	38	100	190	100	
		41		10	5	15	1160	72	390	190		
		43		12	3	9	1830	38	250	1390	250	
		51		12	3	9	2860	37	250	2640		

REINFORCEMENT SUMMARY			
Grade250	R 8	R 10	R 12
Total Length (m)	14.76		
Total Weight (kg)	5.83		
Grade450	Y 8	Y 10	Y 12
Total Length (m)		83.12	169.65
Total Weight (kg)		51.29	150.65
Subtotal: (kg)		207.76	



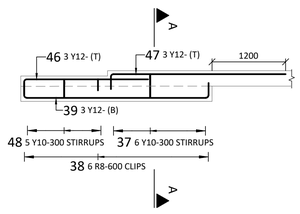
WALL 3&4
REINFORCEMENT LAYOUT(2NO. OFF)
SCALE 1:50



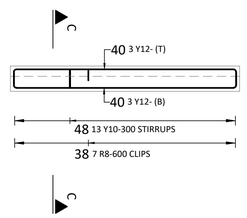
WALL 2
REINFORCEMENT LAYOUT
SCALE 1:50

MEMBER NAME	MEMBER NUM	MARK	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	REV
WALL 1	1	15	10	18	18	2820	37	500	2350	
		17	10	22	22	2040	37	130	1940	
		18	10	22	22	950	37	130	850	
WALL 2	1	15	10	18	18	2820	37	500	2350	
		18	10	22	22	950	37	130	850	
		19	10	22	22	1770	20	1770		
WALL 3&4	2	16	10	18	36	2240	37	500	1770	
		17	10	12	24	2040	37	130	1940	
		18	10	16	32	950	37	130	850	
		19	10	4	8	1770	20	1770		

REINFORCEMENT SUMMARY	
Grade450	Y 10
Total Length (m)	401.30
Total Weight (kg)	247.60
Subtotal: (kg)	247.60



BEAM 1 REINFORCEMENT
2NO. OFF
SCALE 1:50



BEAM 2 REINFORCEMENT
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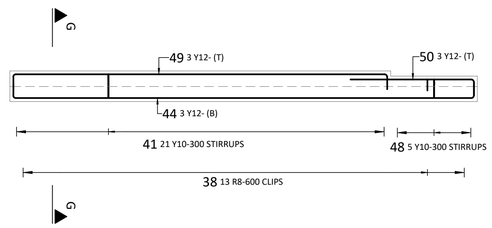
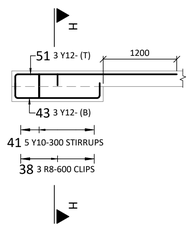


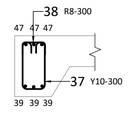
BEAM 3 REINFORCEMENT
1NO. OFF
SCALE 1:50



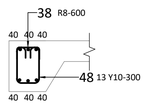
BEAM 4 REINFORCEMENT
3NO. OFF
SCALE 1:25

MEMBER NAME	MEMBER NUM	MARK	TYPE Y Grade450	NUMBER ELEMENT	NUMBER TOTAL	LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
STOOLS	1	20	10	20	20	1650	83	400	100	400	
		45	10	25	25	1490	83	350	140	350	

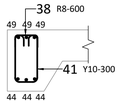
REINFORCEMENT SUMMARY	
Grade450	Y 10
Total Length (m)	70.25
Total Weight (kg)	43.34
Subtotal: (kg)	43.34



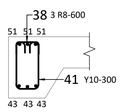
SECTION A-A
SCALE 1:25



SECTION C-C
SCALE 1:25



SECTION G-G
SCALE 1:25



SECTION H-H
SCALE 1:25

NOTE:
COVER FOR SUSPENDED SLAB = 40mm
COVER FOR WALLS = 50mm
COVER FOR BEAMS = 50mm
COVER FOR FOUNDATION SLAB = 50mm
MINIMUM SPLICING = 50Ø UNLESS STATED OTHERWISE
Ø =THE LARGEST DIAMETER BAR BEING SPLICED

FOR CONSTRUCTION

AECOM

CONSULTANT

PIETERMARITZBURG
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8 Montrose Park Boulevard
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PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLICWORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

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0	2022-10-26	ISSUED FOR CONSTRUCTION	DN
		INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY:	T A NGUBANE	N/A
DRAWN BY:	D NAIDOO	N/A
DESIGN CHECKED BY:	N BUDREE	N/A
DRAWING CHECKED BY:	T A NGUBANE	N/A

APPROVAL CONSULTANT

NAME: N BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

8 BOYS ABLUTION BLOCK DRY
RAFT REINFORCEMENT LAYOUTS & SCHEDULES

DISCIPLINE

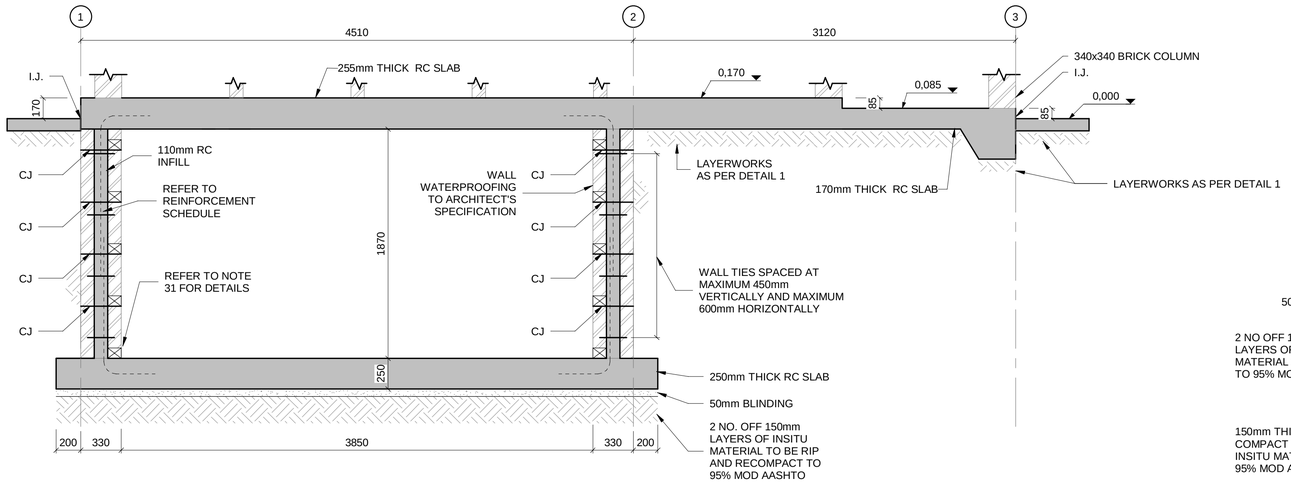
STRUCTURES

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	S	AD-560	C	0

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

SCALE As indicated



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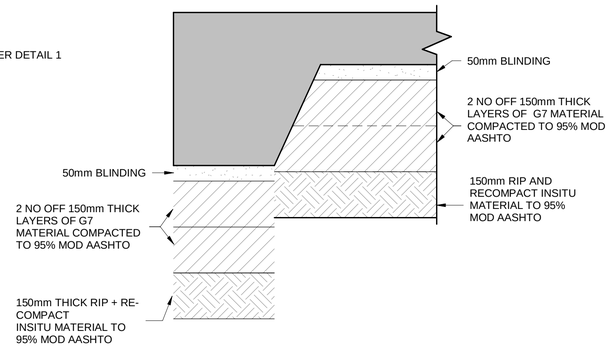

DETAIL 1 LAYERWORKS
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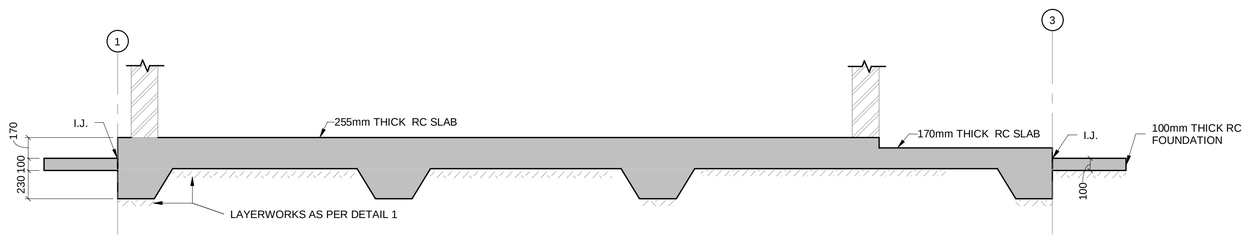

SECTION C-C
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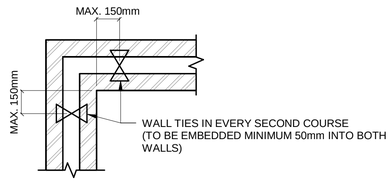
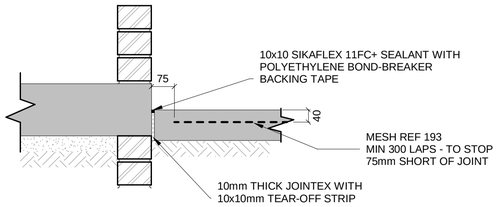
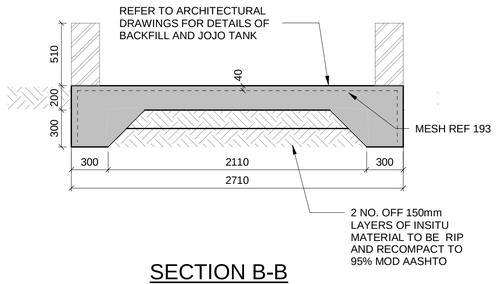


WALL TIE CORNER DETAIL
SCALE 1 : 20



ISOLATION JOINT (I.J.)
SCALE 1 : 10



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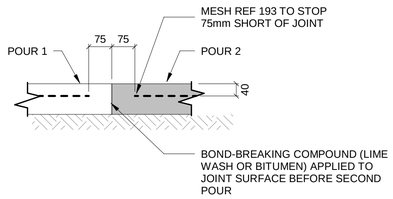

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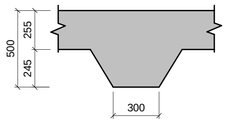
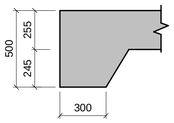


CB01 RAFT BEAM TYPE SECTION
SCALE 1 : 20



CB02 RAFT BEAM TYPE SECTION
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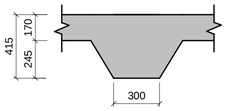

CB03 RAFT BEAM TYPE SECTION
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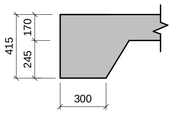

CB04 RAFT BEAM TYPE SECTION
SCALE 1 : 20

CONSULTANT

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www.aecom.com Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF PUBLIC WORKS

public works
Department:
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REPUBLIC OF SOUTH AFRICA

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DESIGNED BY: N.BUDREE N/A
DRAWN BY: T.NGUBANE N/A
DESIGN CHECKED BY: T.NGUBANE N/A
DRAWING CHECKED BY: N. BUDREE N/A

APPROVAL CONSULTANT

NAME: N. BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

8 BOYS ABLUTION BLOCK DRY RAFT SECTIONS AND DETAILS

DISCIPLINE

STRUCTURES

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SCALE As indicated

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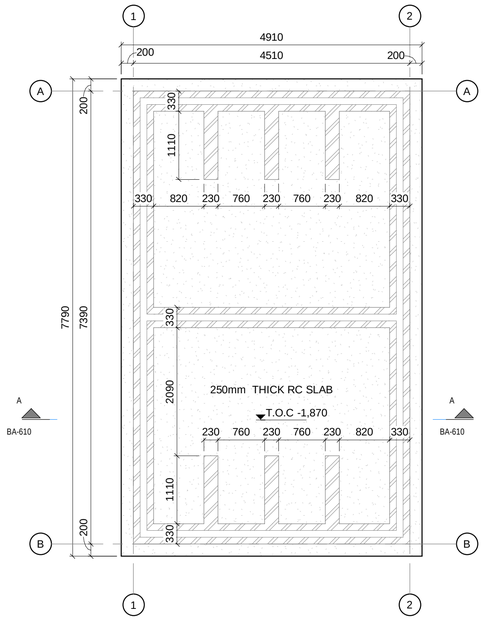
Filename: 60491906 - 560 (BB)_detached_detached.rvt

ISO A1 594mm x 841mm



PIT SLAB FOUNDATION LAYOUT

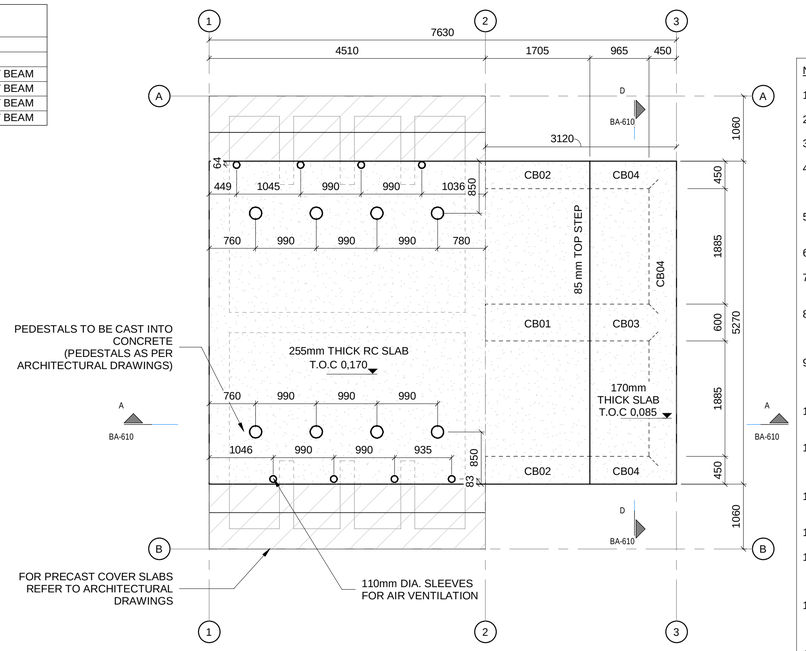
SCALE 1 : 50

NOTE:
- WOOD FLOAT FINISH ON PIT SLAB

CONCRETE INFILL METHOD STATEMENT
- INFILL WALL TO BE CONSTRUCTED IN MAXIMUM HEIGHTS OF 425mm (5 BRICK COURSES).
- EVERY FOURTH BRICK IN THE FIRST COURSE OF CAVITY BRICK WALL TO BE LEFT OPEN.
- ONCE BRICKWORK IS BUILT, THE EXCESS MORTAR IN THE CAVITY IS TO BE CLEANED AFTER EVERY CONSTRUCTION JOINT.
- THESE OPENINGS ARE TO BE CLOSED ONCE THE CAVITY IS CLEANED AND BEFORE THE CONCRETE FOR THE NEXT LIFT IS POURED.

RAFT BEAM SCHEDULE

TYPE MARK	TYPE
CB01	300 X 500 DEEP RC RAFT BEAM
CB02	300 X 500 DEEP RC RAFT BEAM
CB03	300 X 415 DEEP RC RAFT BEAM
CB04	300 X 415 DEEP RC RAFT BEAM



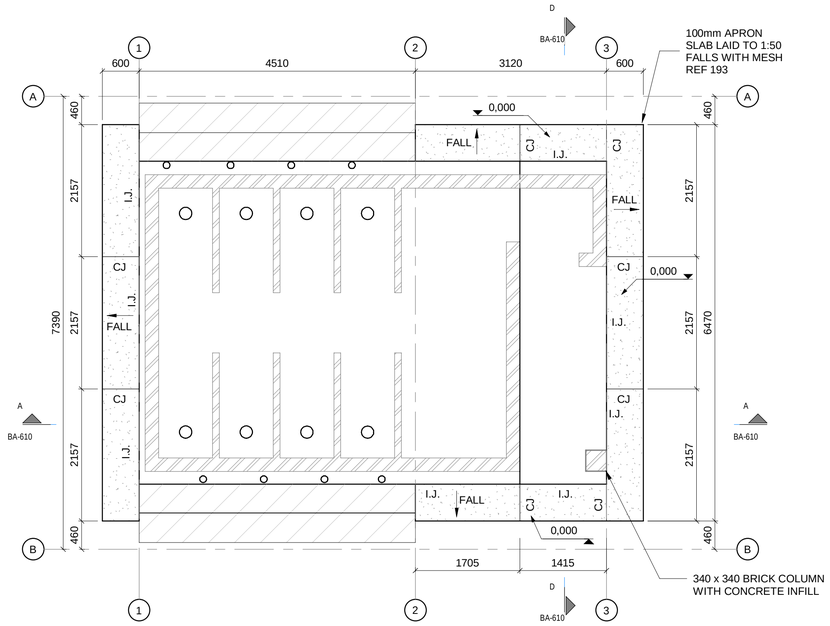
GROUND FLOOR SLAB LAYOUT

SCALE 1 : 50

NOTES:
- ALL BRICKWORK SHOWN AS LOAD BEARING
- WOOD FLOATED FINISH ON FLOOR SLABS

NOTES:

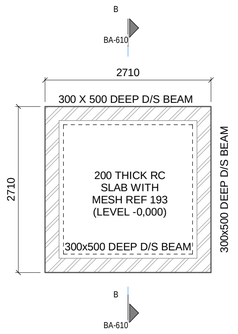
1. SETTING OUT TO BE PROVIDED BY CIVIL ENGINEER
2. JOJO TANKS TO BE POSITIONED AS PER CIVIL ENGINEER'S DRAWINGS
3. SETTING OUT LEVEL 0,000 TO BE DETERMINED FROM CIVIL ENGINEER'S DRAWINGS
4. ALL WORK SHALL BE EXECUTED IN STRICT ACCORDANCE WITH THE LATEST REVISION OF SANS 10400, SANS 2001, OHS ACT AND THE PROJECT SPECIFICATIONS IN THE CONTRACT DOCUMENTATION.
5. ALL DIMENSIONS ARE TO BE CHECKED AGAINST THE ARCHITECT'S DRAWINGS. ANY DISCREPANCIES SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER IN WRITING.
6. NO SCALING OFF DRAWING IS ALLOWED.
7. UNLESS OTHERWISE INDICATED ON DRAWINGS, ALL WATERPROOFING IS ACCORDING TO ARCHITECT'S DETAILS AND SPECIFICATIONS.
8. THE CONTRACTOR SHALL ENSURE THAT WATERPROOFING MATERIALS ARE NOT DAMAGED DURING BACKFILLING OPERATIONS AND FIXING OF STEEL. ANY REPAIR WORK FOR THE CONTRACTOR'S ACCOUNT.
9. THE CONTRACTOR IS RESPONSIBLE TO CONTROL STORM WATER AND DEWATERING ON THE SITE TO PREVENT DAMAGE TO THE STRUCTURE, BANKS, EXCAVATIONS, OR ANY OTHER WORKS FOR THE DURATION OF THE CONTRACT PERIOD.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND MAINTENANCE OF ALL TEMPORARY STRUCTURES.
11. TIMBER ROOFS TO BE DESIGNED BY SUPPLIER AND SHALL COMPLY WITH NHBRC AND RELEVANT CODES. ONLY TREATED TIMBER TO BE USED IN ACCORDANCE WITH NHBRC REGULATIONS
12. PRODUCTS DIFFERENT TO THOSE SPECIFIED MAY ONLY BE USED IF APPROVED BY ENGINEER
13. CERTIFICATES TO PROVE COMPLIANCE SHALL BE SUBMITTED TO ENGINEER
14. UNLESS OTHERWISE SPECIFIED, ALL BACKFILLING BENEATH SURFACE BEDS OR BEHIND RETAINING WALLS SHALL BE COMPACTED TO 95% MOD AASHTO IN LAYERS NOT EXCEEDING 150mm THICK
15. ALL EXCAVATIONS MUST BE INSPECTED AND APPROVED BY THE RESIDENT/GEOTECHNICAL ENGINEER BEFORE PLACING OF ANY CONCRETE FOUNDATION, BLINDING, AND WATERPROOFING OR GEOFABRIC MEMBRANE.
16. LEVELS OF FOUNDATIONS TO BE CONFIRMED BY THE RESIDENT/GEOTECHNICAL ENGINEER ON SITE TO OBTAIN THE SPECIFIED BEARING PRESSURE. WHERE EXCAVATION LEVELS HAVE TO BE LOWERED, THE ENGINEER WILL ISSUE A SITE INSTRUCTION WITH THE CORRECT PROCEDURE TO BE IMPLEMENTED.
17. DESIGN BEARING PRESSURE = 50 kPa.
18. PORTIONS THAT ARE OVER-EXCAVATED BEYOND THE DEPTH REQUIRED BY THE GEOTECHNICAL ENGINEER, TO BE FILLED WITH MASS CONCRETE (15MPa / 19mm) AT CONTRACTOR'S EXPENSE.
19. A 50mm THICK BLINDING LAYER OF 15MPa/19mm SHALL BE CAST UNDER ALL REINFORCED FOUNDATIONS UNLESS INDICATED OTHERWISE ON DRAWINGS. NO BLINDING LAYER NEEDS TO BE CAST FOR UNREINFORCED BRICKWORK AND MASS CONCRETE FOUNDATIONS.
20. MINIMUM CONCRETE STRENGTHS @ 28 DAYS: 30 MPa. THE CONCRETE MIX DESIGN IS TO BE APPROVED BY ENGINEER.
21. CURING OF CONCRETE SHALL BE CARRIED OUT IN ACCORDANCE WITH SANS 1200G. THE CONTRACTOR MUST ENSURE THAT ALL MATERIALS REQUIRED FOR THE CURING PROCESS ARE ON HAND BEFORE STRIPPING ANY FORMWORK, AND THAT THESE MEASURES ARE IMPLEMENTED IMMEDIATELY AFTER THE FORMWORK HAS BEEN REMOVED.
22. CONCRETE CUBE CRUSHING TESTS AS PER SANS 2001-CC1 : 2012 CLAUSE 5
23. FLOOR FINISHES:
    - PIT FLOOR = WOOD FLOATED
    - GROUND FLOOR = WOOD FLOATED
    - APRON SLAB = WOOD FLOATED
    - JOJO TANK PLINTH = WOOD FLOATED
24. SEE ARCHITECT'S DRAWINGS FOR GENERAL LAYOUT OF BRICKWORK. ALL SETTING OUT TO BE DONE FROM ARCHITECT'S DRAWINGS. ALL FOUNDATIONS AND STRIP FOOTINGS ARE PLACED SYMMETRICALLY BELOW BRICKWORK UNLESS OTHERWISE SHOWN.
25. BRICKWORK TO BE BUILT IN ACCORDANCE WITH SANS 2001-CM1:2012, SANS 10400, SANS 10164 AND NHBRC.
26. THE MINIMUM CRUSHING STRENGTH OF ALL LOAD-BEARING BRICKWORK SHALL BE 14 MPa UNLESS SHOWN OTHERWISE
27. THE MINIMUM CRUSHING STRENGTH OF MORTAR SHALL BE AS FOR CLASS II MORTAR IN ACCORDANCE WITH TABLE 1 SANS 10164 PART 1 - 1980
28. ALL BRICK ANCHORS, WALL TIES AND STRAPS SHALL BE HOT-DIP GALVANISED. ALL WALL TIES TO BE POZZI TIES
29. BRICKFORCE
    - BRICKWORK SHALL BE REINFORCED WITH AN APPROVED BRICKFORCE EVERY FOURTH LAYER UNLESS OTHERWISE SPECIFIED ON DRAWINGS.
30. IN ADDITION, CONTINUOUS BRICK FORCE IS REQUIRED IN EVERY LAYER FOR THE FIRST FOUR LAYERS ABOVE AND BELOW THE TOP OF FOUNDATIONS & SLABS, AS WELL AS WINDOWS AND OVER DOOR OPENINGS. MINIMUM LAPS TO BE 300mm.
31. IN CAVITY WALLS, WALL TIES SHALL JOIN THE LEAVES AND SHALL BE EMBEDDED IN MASONRY JOINTS AT RIGHT ANGLES TO THE LEAVES AS THE WORK PROGRESSES.
32. EVERY FOURTH BRICK IN THE FIRST COURSE OF CAVITY BRICK WALL TO BE LEFT OPEN. ONCE BRICKWORK IS BUILT, THE EXCESS MORTAR IN THE CAVITY IS TO BE CLEANED. THESE BRICK OPENING IN THE FIRST COURSE WILL ALLOW FOR THE CLEANING OF EXCESS BRICKWORK MORTAR COLLECTING AT THE BOTTOM OF THE CAVITY. THESE OPENINGS ARE TO BE CLOSED ONCE THE CAVITY IS CLEANED AND BEFORE THE CONCRETE IS POURED. CONCRETE FOR BRICK WORK INFILL TO BE POURED IN MAXIMUM OF 1m HEIGHTS.
33. THERE SHOULD BE 5.0 WALL TIES PER M^2 OF WALLING.
34. ENSURE THAT EACH TIE IS EMBEDDED TO A DEPTH OF AT LEAST 50mm IN THE MORTAR JOINT OF EACH LEAF.
35. FOR CAVITY WIDTHS EXCEEDING 75mm BUT NOT EXCEEDING 150mm. ENSURE THAT WALL TIES USED ARE OF THE VERTICAL TWIST TYPE, OR ANY SIMILAR TYPE HAVING AT LEAST THE EQUIVALENT STRENGTH AND STIFFNESS.
36. CONCRETE BRICKS TO BE KEPT DRY BEFORE BEING USED.



APRON SLAB LAYOUT

SCALE 1 : 50

- ALL APRON SLABS TO BE 100mm THICK WITH MESH REF 193
- EXTERNAL BRICKWORK TO BE LOAD BEARING



JOJO TANK PLINTH DETAILS

SCALE 1 : 50

NOTES:
- JOJO TANKS TO BE POSITIONED AS PER CIVIL ENGINEERS DRAWINGS

CONSULTANT

PIETERMARITZBURG

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Victoria Country Club Estate
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South Africa
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www.aecom.com Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION WATER AND SANITATION PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

1. FOR GENERAL NOTES; REFER TO DRAWING: N/A
2. DRAWINGS ARE NOT TO BE SCALED. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORKS. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER / ARCHITECT'S ATTENTION IMMEDIATELY
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SCHEDULES AND SPECIFICATIONS RELATED TO THIS PROJECT.
4. ALL BUILDING WORK AND MATERIALS ARE TO COMPLY WITH LOCAL AUTHORITY'S REQUIREMENTS AND ARE TO BE IN ACCORDANCE WITH SANS 10400 NATIONAL BUILDING REGULATIONS

ISSUE / REVISION

0	2022-10-26	ISSUED FOR CONSTRUCTION	DN
I/R	DATE	DESCRIPTION	ISS BY
		INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY:	T.A NGUBANE	N/A
DRAWN BY:	D NAIDOO	N/A
DESIGN CHECKED BY:	N. BUDREE	N/A
DRAWING CHECKED BY:	T.A NGUBANE	N/A

APPROVAL CONSULTANT

NAME: N. BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

8 GIRLS ABLUTION BLOCK DRY RAFT PLAN LAYOUTS

DISCIPLINE

STRUCTURES

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	S	AC-610	C	0

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REDSET

SCALE 1 : 50

FOR CONSTRUCTION

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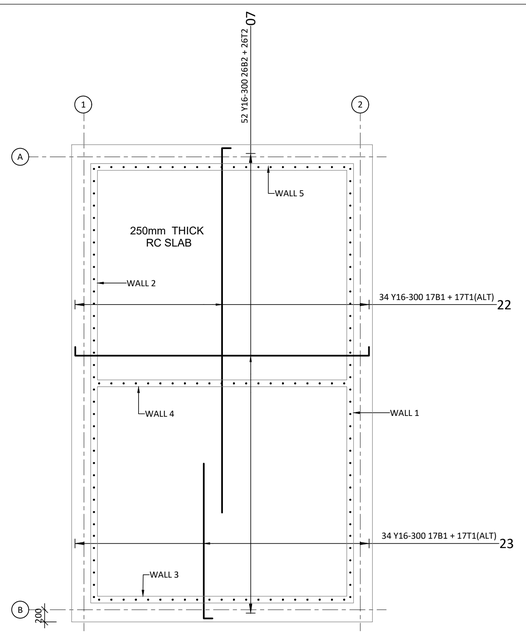
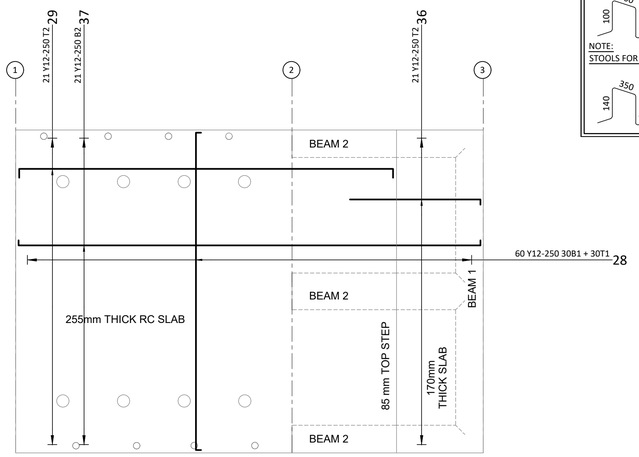
Last Plotted: 2022/10/19 10:24:31
Filename: 60491906 - 610 (BIO)_detached.rvt



PIT SLAB FOUNDATION SLAB
BOTTOM & TOP REINFORCEMENT LAYOUT
SCALE 1:50



GROUND PLAN SLAB
BOTTOM & TOP REINFORCEMENT LAYOUT
SCALE 1:50

NOTE:
FOR 170mm SLAB USE 60mm COVER BLOCKS
TO SIT ON B2 TO SUPPORT T2 (7 No OFF STOOLS 1 / M²)

NOTE:
STOOLS FOR 250mm THICK SLAB

26 38 Y10 - 1000-STOOLS
-TO SIT ON B1 TO SUPPORT T2

NOTE:
STOOLS FOR 255mm THICK SLAB

38 33 Y10 - 1000-STOOLS
-TO SIT ON B1 TO SUPPORT T2

MEMBER		MARK	TYPE	NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
NAME	NUM		Y Grade450	ELEMENT	TOTAL						
250mm THICK PIT SLAB	1	07	16	52	52	5030	38	150	4810	150	
		22	16	34	34	6070	37	150	5960		
		23	16	34	34	2640	37	2530	150		

REINFORCEMENT SUMMARY	
Grade450	Y 16
Total Length (m)	557.70
Total Weight (kg)	881.17
Subtotal: (kg)	881.17

MEMBER		MARK	TYPE	NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
NAME	NUM		Y Grade450	ELEMENT	TOTAL						
170/255mm THICK GROUND SLAB	1	28	12	60	60	5310	38	90	5190	90	
		29	12	21	21	6350	38	150	6110	150	
		36	12	21	21	2190	37	2140	90		
		37	12	21	21	7670	38	90	7550	90	

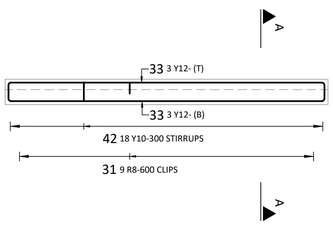
REINFORCEMENT SUMMARY	
Grade450	Y 12
Total Length (m)	659.01
Total Weight (kg)	585.20
Subtotal: (kg)	585.20

MEMBER		MARK	TYPE		NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
NAME	NUM		R Grade250	Y Grade450	ELEMENT	TOTAL						
BEAM 1	1	31	8		9	9	360	38	100	190	100	
		33		12	6	6	5610	38	250	5170	250	
		42		10	18	18	980	72	300	190		
BEAM 2	3	30		10	6	18	1160	72	390	190		
		31	8		6	18	360	38	100	190	100	
		39		12	3	9	2240	37	250	2020		
		40		12	3	9	3070	37	250	2860		
		41		12	3	9	3460	38	250	3020	250	
		42		10	5	15	980	72	300	190		

REINFORCEMENT SUMMARY			
Grade250	R 8	R 10	R 12
Total Length (m)	9.72		
Total Weight (kg)	3.84		
Grade450	Y 8	Y 10	Y 12
Total Length (m)		53.22	112.59
Total Weight (kg)		32.84	99.98
Subtotal: (kg)		136.66	

MEMBER		MARK	TYPE	NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	REV
NAME	NUM		Y Grade450	ELEMENT	TOTAL					
WALL 4	1	01	10	22	22	2040	37	130	1940	
		03	10	22	22	920	37	130	820	
		24	10	18	18	2820	37	500	2350	
WALLS 1&2	2	01	10	27	54	2040	37	130	1940	
		03	10	36	72	920	37	130	820	
		08	10	18	36	4260	37	500	3790	
		21	10	10	20	1770	20	1770		
WALLS 3 & 5	2	03	10	21	42	920	37	130	820	
		21	10	21	42	1770	20	1770		
		44	10	18	36	2820	37	2350	500	

REINFORCEMENT SUMMARY	
Grade450	Y 10
Total Length (m)	695.54
Total Weight (kg)	429.15
Total: (kg)	429.15



BEAM 1 REINFORCEMENT
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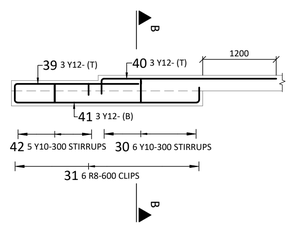
SCALE 1:50



BEAM 2 REINFORCEMENT
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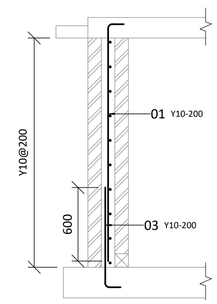
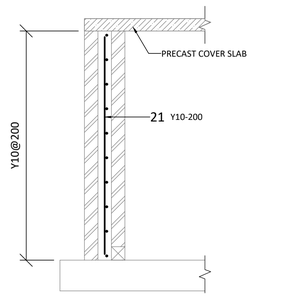
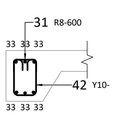
SCALE 1:50



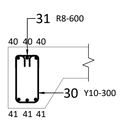
TYPICAL SECTION
THROUGH WALLS WITH SLAB OVER
SCALE 1:25



TYPICAL SECTION
THROUGH WALLS WITH NO SLAB OVER
SCALE 1:25



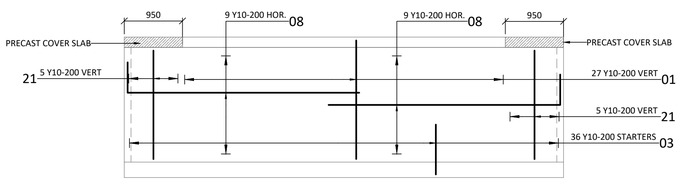
SECTION A-A
SCALE 1:25



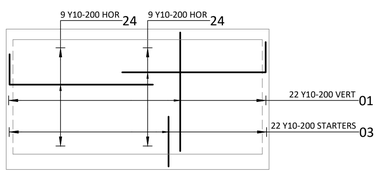
SECTION B-B
SCALE 1:25

MEMBER		MARK	TYPE	NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	C (mm)	REV
NAME	NUM		Y Grade450	ELEMENT	TOTAL						
STOOLS	1	26	10	38	38	1450	83	400	100	400	
		38	10	33	33	1290	83	350	140	350	

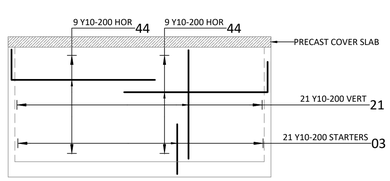
REINFORCEMENT SUMMARY	
Grade450	Y 10
Total Length (m)	97.67
Total Weight (kg)	60.26
Subtotal: (kg)	60.26



WALLS 1 AND 2
(2No OFF)
SCALE 1:50



WALL 4
SCALE 1:50



WALLS 3&5
(2No OFF)
SCALE 1:50

FOR CONSTRUCTION

AECOM

CONSULTANT
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8 Montrose Park Boulevard
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Reg No. 1966/006628/07

PROJECT
DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT
KZN DEPARTMENT OF PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTE:
COVER FOR SUSPENDED SLAB = 40mm
COVER FOR WALLS = 50mm
COVER FOR BEAMS = 50mm
COVER FOR FOUNDATION SLAB = 50mm
MINIMUM SPLICING = 50Ø
Ø = THE LARGEST DIAMETER BAR OF THE SPLICED

NOTES
1. FOR GENERAL NOTES; REFER TO DRAWING:
2. DRAWINGS ARE NOT TO BE SCALED. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORKS. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER / ARCHITECT'S ATTENTION IMMEDIATELY
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ISSUE / REVISION

I/R	DATE	DESCRIPTION	ISS BY
0	2022-10-26	ISSUED FOR CONSTRUCTION	DN
		INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY:	T A NGUBANE	N/A
DRAWN BY:	D NAIDOO	N/A
DESIGN CHECKED BY:	N. BUDREE	N/A
DRAWING CHECKED BY:	T A NGUBANE	N/A

APPROVAL CONSULTANT

NAME: N. BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE
8 GIRLS ABLUTION BLOCK DRY
RAFT REINFORCEMENT LAYOUTS & SCHEDULES

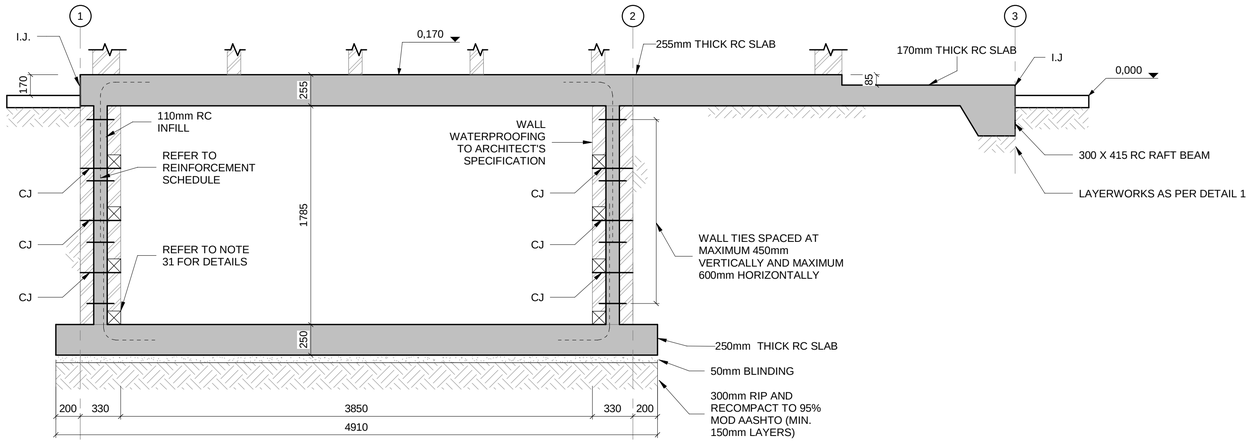
DISCIPLINE
STRUCTURES

AECOM DRAWING NUMBER

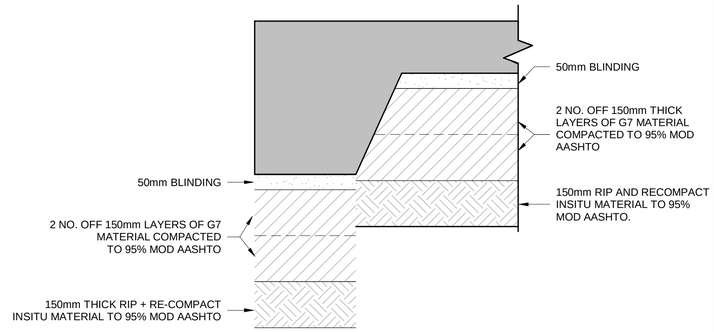
PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	S	AD-610	C	0

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

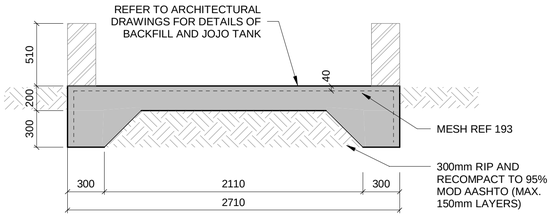
SCALE As indicated



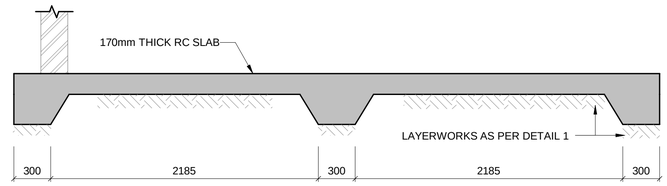
SECTION A-A
SCALE 1 : 25



DETAIL - 1 LAYERWORKS
SCALE 1 : 10



SECTION B-B
SCALE 1 : 25



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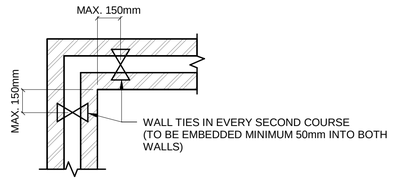
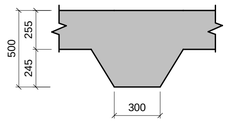


WALL TIE CORNER DETAIL
SCALE 1 : 20



CB01 RAFT BEAM TYPE SECTION
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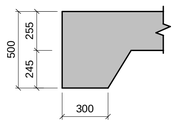
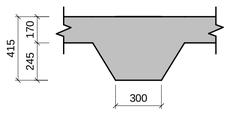


CB02 RAFT BEAM TYPE SECTION
SCALE 1 : 20



CB03 RAFT BEAM TYPE SECTION
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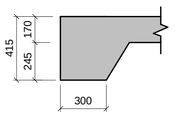

CB04 RAFT BEAM TYPE SECTION
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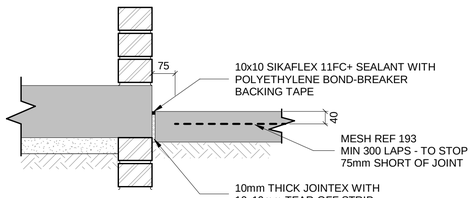
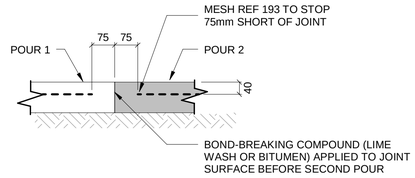


ISOLATION JOINT (I.J.)
SCALE 1 : 10



CJ | CONSTRUCTION JOIN (CJ)
BA-610 | SCALE 1 : 10

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CONSULTANT

PIETERMARITZBURG
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www.aecom.com Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

1. FOR GENERAL NOTES; REFER TO DRAWING: N/A
2. DRAWINGS ARE NOT TO BE SCALED. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORKS. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER / ARCHITECT'S ATTENTION IMMEDIATELY
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SCHEDULES AND SPECIFICATIONS RELATED TO THIS PROJECT.
4. ALL BUILDING WORK AND MATERIALS ARE TO COMPLY WITH LOCAL AUTHORITY'S REQUIREMENTS AND ARE TO BE IN ACCORDANCE WITH SANS 10400 NATIONAL BUILDING REGULATIONS

ISSUE / REVISION

I/R	DATE	DESCRIPTION	ISS BY
0	2022-10-26	ISSUED FOR CONSTRUCTION	DN
		INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY:	T.A NGUBANE	N/A
DRAWN BY:	D NAIDOO	N/A
DESIGN CHECKED BY:	N. BUDREE	N/A
DRAWING CHECKED BY:	T.A NGUBANE	N/A

APPROVAL CONSULTANT

NAME: N. BUDREE DATE:
PROF REG. No.: 20150150 SIGNATURE:

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

8 GIRLS ABLUTION BLOCK DRY RAFT SECTIONS AND DETAILS

DISCIPLINE

STRUCTURES

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	S	**BA-610**	**C**	**0**

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

SCALE As indicated

ISO A1 594mm x 841mm
Printed on 100% Post-Consumer Recycled Content Paper
Last Plotted: 2022/10/19 10:25:41
Filename: 60491906 - 610 (BC) _ detached.rvt

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PORT ELIZABETH Reg No. 1966/006628/07 2 Fort Street, Central
PO BOX 272, Port Elizabeth, 6001, Eastern Cape, South Africa +27 (0) 41 585 2514 tel +27 (0) 41 585 8478fax

2022/10/06 15:52:35 - Last Plotted
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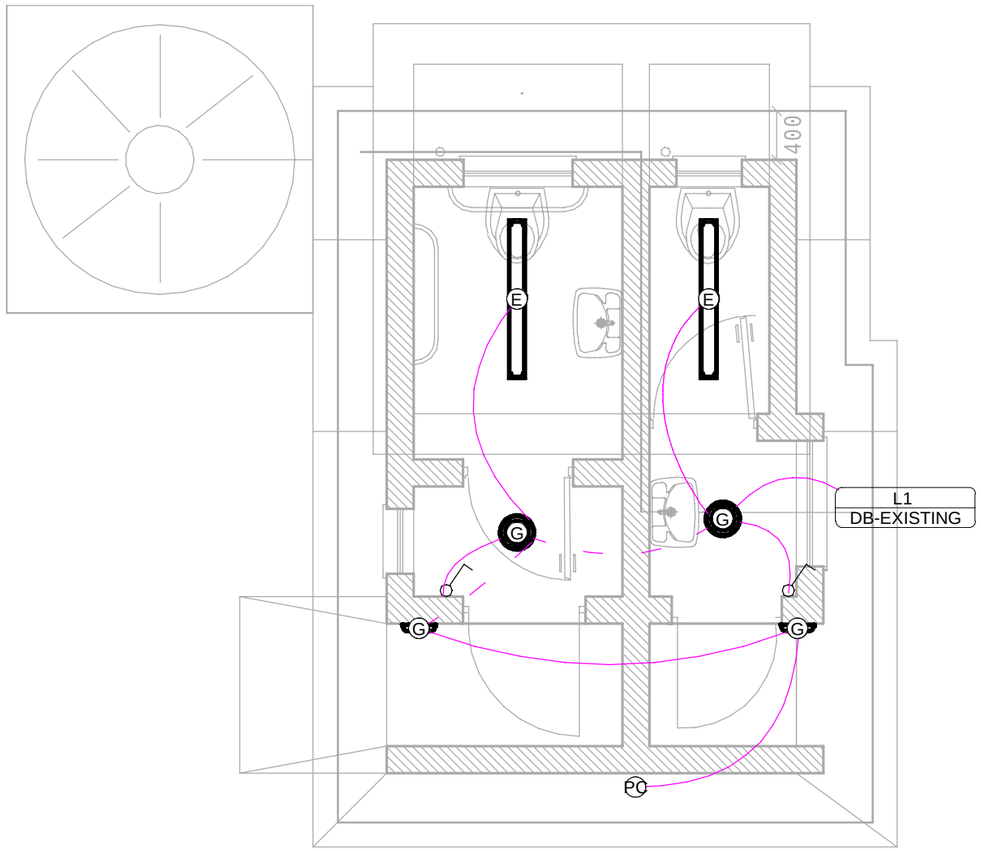

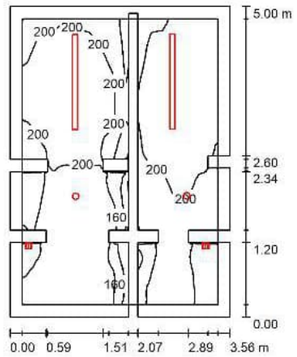

Height of Room: 2.500 m, Light loss factor: 0.80

Values in Lux, Scale 1:65

Surface	ρ [%]	E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0
Workplane	/	191	81	236	0.426
Floor	20	185	104	235	0.563
Ceiling	80	166	78	662	0.468
Walls (10)	80	195	66	1329	/

Workplane:
Height: 0.000 m
Grid: 128 x 128 Points
Boundary Zone: 0.200 m

LEGEND:	
TYPE E -	24W LED SURFACE MOUNTED 1200mm, IP 65, >50 000h (L70B10) SIMILAR TO ALESTA BY RUBICON OR ANY EQUIVALENT APPROVED FITTING.
TYPE G -	18W LED SURFACE MOUNTED BULKHEAD WITH DIE-CAST ALUMINIUM BODY, >50 000h (L70B10) IP65 RATED. SIMILAR TO SOLO BY REGENT LIGHT SOLUTION OR ANY APPROVED EQUIVALENT FITTING.
Lx / DB-	CIRCUIT DESCRIPTION INDICATING CIRCUIT NUMBER AND DISTRIBUTION BOARD
	SINGLE LEVER LIGHT SWITCH.
PC	PHOTO CELL

1 | 00 LEVEL - LIGHTING LAYOUT

AF-800 | SCALE 1 : 50

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PROJECT
DOPW Southern Region
Sanitation Programme - Phase 03
CLIENT

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

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I/R	DATE	DESCRIPTION	ISS BY
0	2022-10-07	ISSUED FOR CONSTRUCTION	T.M

YYYY-MM-DD : INITIAL ISSUE

DRAWING CHECKS

DESIGNED BY:	E. Ntuli	N/A
DRAWN BY:	T. Mdhletshe	N/A
DESIGN CHECKED BY:	B. Rudd	N/A
DRAWING CHECKED BY:	E. Ntuli	N/A

APPROVAL CONSULTANT

NAME: B. Rudd DATE: 2022-10-07
PROF REG. No.: SIGNATURE:

SHEET TITLE
MHLABA JS - 1F1D LIGHTING LAYOUT

DISCIPLINE
ELECTRICAL

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	E	**AF-800**	**C**	**0**

D: DRAFT **P**: PRELIMINARY **T**: TENDER **F**: FINAL **C**: CONSTRUCTION **A**: AS-BUILT, RECORD **R**: REPORT

SCALE As indicated

ISO A3 297mm x 420mm

THE MASTER HELD AT THE **AECOM PORT ELIZABETH OFFICE**
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PORT ELIZABETH Reg No. 1966/006628/07 2 Fort Street, Central
PO BOX 272, Port Elizabeth, 6001, Eastern Cape, South Africa +27 (0) 41 585 2514 tel +27 (0) 41 585 8478fax

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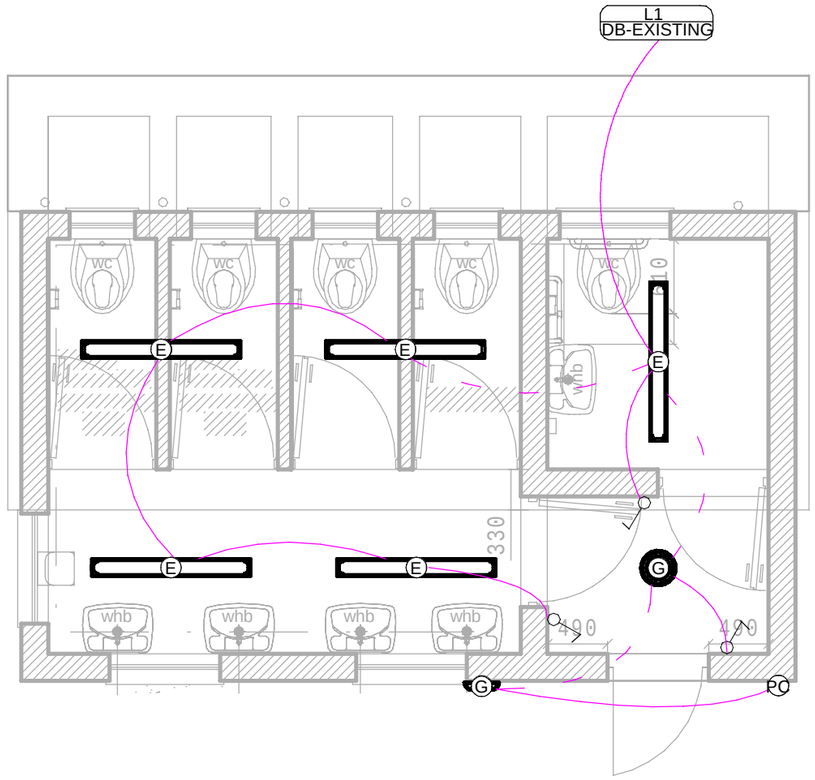
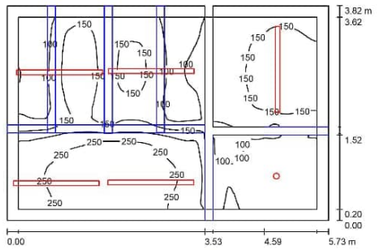
LEGEND:	
TYPE E -	24W LED SURFACE MOUNTED 1200mm, IP 65, >50 000h (L70B10) SIMILAR TO ALESTA BY RUBICON OR ANY EQUIVALENT APPROVED FITTING
TYPE G -	18W LED SURFACE MOUNTED BULKHEAD WITH DIE-CAST ALUMINIUM BODY, >50 000h (L70B10) IP65 RATED. SIMILAR
Lx / DB-	CIRCUIT DESCRIPTION INDICATING CIRCUIT NUMBER AND DISTRIBUTION BOARD
	SINGLE LEVER LIGHT SWITCH
PC	PHOTO CELL





Height of Room: 2.500 m, Mounting Height: 2.500 m, Light loss factor: 0.80

Values in Lux, Scale 1:50

Surface	ρ [%]	E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0
Workplane	/	160	64	292	0.402
Floor	20	154	21	289	0.135
Ceiling	80	132	19	384	0.143
Walls (5)	50	178	20	1040	/

Workplane:
Height: 0.000 m
Grid: 128 x 128 Points
Boundary Zone: 0.200 m

1 GROUND FLOOR LIGHTING LAYOUT..

AF-870 | SCALE 1 : 50

FOR CONSTRUCTION

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ISO A3 297mm x 420mm

AECOM

PROJECT

DOPW Sourthen Region

Sanitation Programme - Phase 03

CLIENT

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

0	2022-10-07	ISSUED FOR CONSTRUCTION	T.M
I/R	DATE	DESCRIPTION	ISS BY

YYYY-MM-DD : INITIAL ISSUE

DRAWING CHECKS

DESIGNED BY:	E. Ntuli		N/A
DRAWN BY:	T. Mdhletshe		N/A
DESIGN CHECKED BY:	B. Rudd		N/A
DRAWING CHECKED BY:	B. Rudd		N/A

APPROVAL CONSULTANT

NAME:	B. Rudd	DATE:	2022-10-07
PROF REG. No.:	20160465	SIGNATURE:	

SHEET TITLE

MHLABA JS - 4R1T LIGHTING LAYOUT

DISCIPLINE

ELECTRICAL

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	E	**AF-870**	**C**	**0**

D: DRAFT **P**: PRELIMINARY **T**: TENDER **F**: FINAL **C**: CONSTRUCTION **A**: AS-BUILT, RECORD **R**: REPORT

SCALE As indicated

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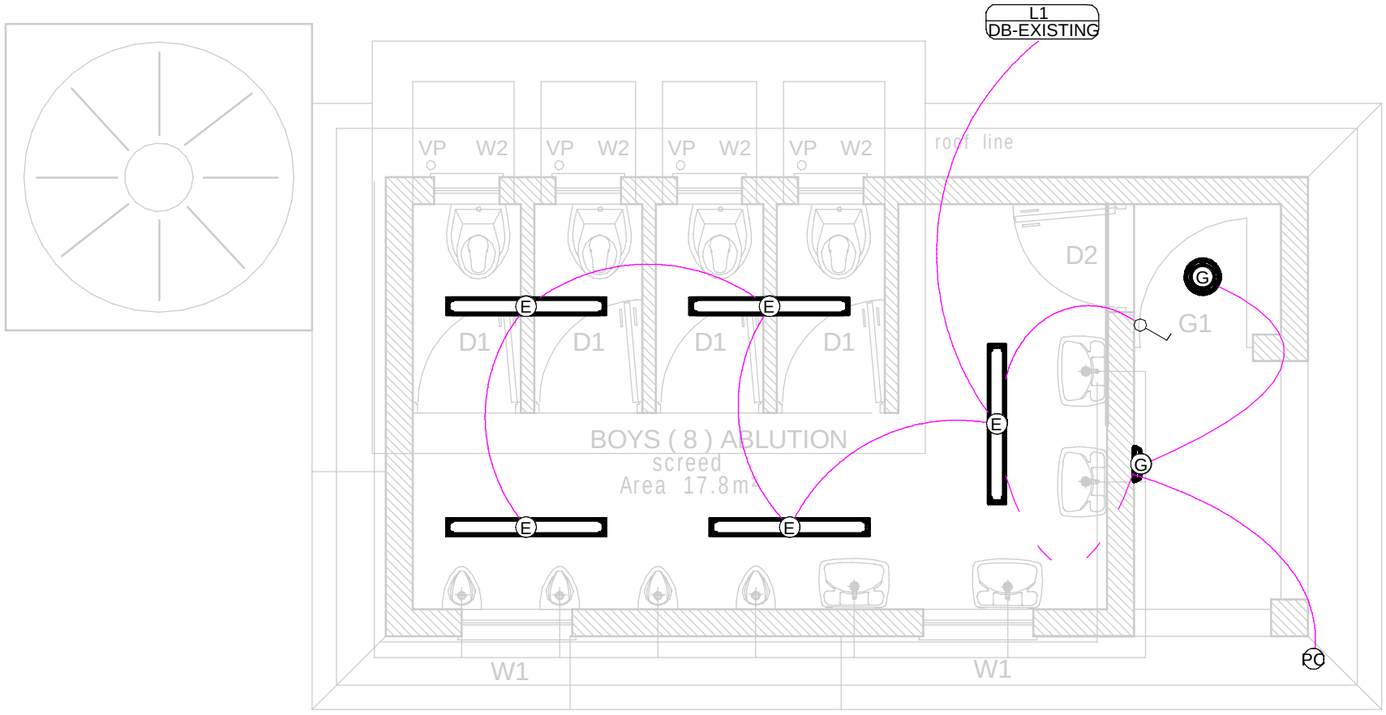
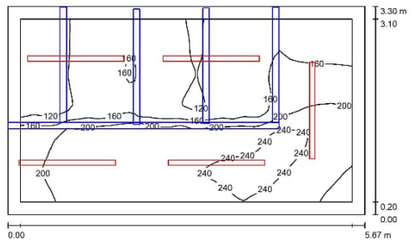


LEGEND:	
TYPE E -	24W LED SURFACE MOUNTED 1200mm, IP 65, >50 000h (L70B10) SIMILAR TO ALESTA BY RUBICON OR ANY EQUIVALENT APPROVED FITTING
TYPE G -	18W LED SURFACE MOUNTED BULKHEAD WITH DIE-CAST ALUMINIUM BODY, >50 000h (L70B10) IP65 RATED. SIMILAR
Lx / DB-	CIRCUIT DESCRIPTION INDICATING CIRCUIT NUMBER AND DISTRIBUTION BOARD
	SINGLE LEVER LIGHT SWITCH
PC	PHOTO CELL



Height of Room: 2.500 m, Mounting Height: 2.500 m, Light loss factor: 0.80 — Values in Lux, Scale 1:43

Surface	ρ [%]	E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0
Workplane	/	177	89	255	0.500
Floor	20	174	82	273	0.472
Ceiling	70	131	74	350	0.566
Walls (4)	50	184	47	673	/

Workplane:
Height: 0.000 m
Grid: 64 x 32 Points
Boundary Zone: 0.200 m

1 GROUND FLOOR LIGHTING LAYOUT

AF-901 SCALE 1 : 50

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ISO A3 297mm x 420mm

AECOM

PROJECT

DOPW Sourthen Region

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

Sanitation Programme - Phase 03

CLIENT

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I/R	DATE	DESCRIPTION	ISS BY
0	2022-10-07	ISSUED FOR CONSTRUCTION	T.M

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DRAWING CHECKS

DESIGNED BY:	E. Ntuli	N/A
DRAWN BY:	T. Mdhletshe	N/A
DESIGN CHECKED BY:	B. Rudd	N/A
DRAWING CHECKED BY:	E. Ntuli	N/A

APPROVAL CONSULTANT

NAME: B. Rudd DATE: 2022-10-07
PROF REG. No.: SIGNATURE:

SHEET TITLE

MHLABA JS - 8B LIGHTING LAYOUT

DISCIPLINE

ELECTRICAL

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	E	**AF-901**	**C**	**0**

D: DRAFT **P**: PRELIMINARY **T**: TENDER **F**: FINAL **C**: CONSTRUCTION **A**: AS-BUILT, RECORD **R**: REPORT

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THE MASTER HELD AT THE **AECOM PORT ELIZABETH OFFICE**
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PO BOX 272, Port Elizabeth, 6001, Eastern Cape, South Africa +27 (0) 41 585 8478fax
2 Fort Street, Central +27 (0) 41 585 2514 tel

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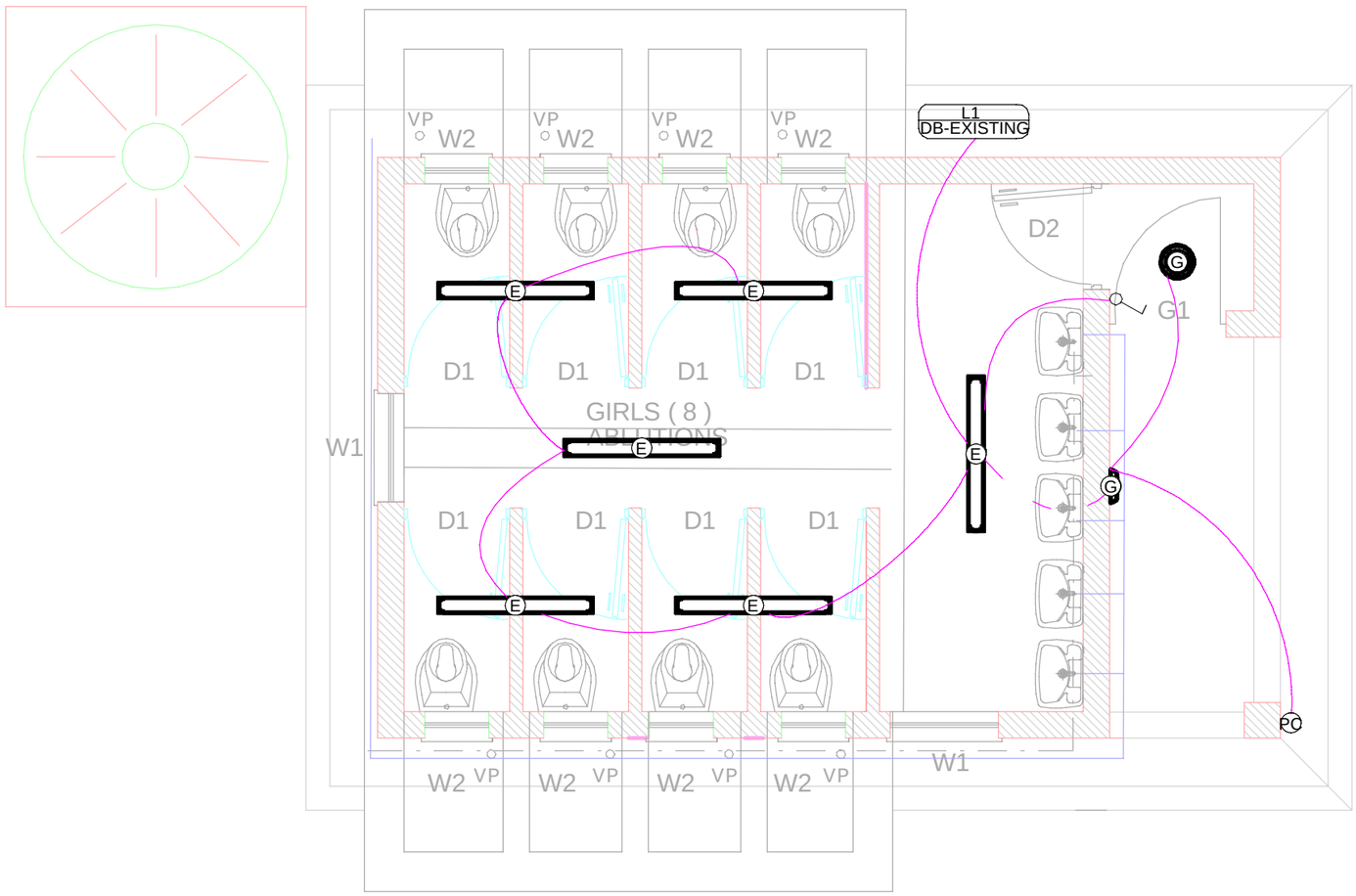

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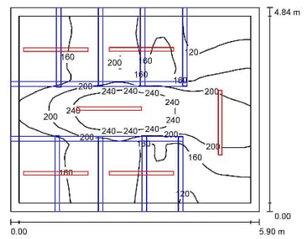
Lx / DB-	CIRCUIT DESCRIPTION INDICATING CIRCUIT NUMBER AND DISTRIBUTION BOARD
	SINGLE LEVER LIGHT SWITCH
PC	PHOTO CELL



Height of Room: 2.500 m, Mounting Height: 2.500 m, Light loss factor: 0.80 — Values in Lux, Scale 1:63

Surface	ρ [%]	E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0
Workplane	/	175	90	281	0.513
Floor	20	170	85	284	0.498
Ceiling	70	156	55	423	0.355
Walls (4)	50	180	44	468	/

Workplane:
Height: 0.000 m
Grid: 32 x 32 Points
Boundary Zone: 0.200 m

1 GROUND FLOOR LIGHTING LAYOUT

AF-902 SCALE 1 : 50

FOR CONSTRUCTION

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PROJECT

DOPW Sourthen Region

Sanitation Programme - Phase 03

CLIENT

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

0	2022-10-07	ISSUED FOR CONSTRUCTION	T.M
I/R	DATE	DESCRIPTION	ISS BY

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DRAWING CHECKS

DESIGNED BY:	E. Ntuli	N/A
DRAWN BY:	T. Mdhletshe	N/A
DESIGN CHECKED BY:	B. Rudd	N/A
DRAWING CHECKED BY:	B. Rudd	N/A

APPROVAL CONSULTANT

NAME: B. Rudd DATE: 2022-10-07
PROF REG. No.: SIGNATURE:

SHEET TITLE

MHLABA JS - 8G LIGHTING LAYOUT

DISCIPLINE

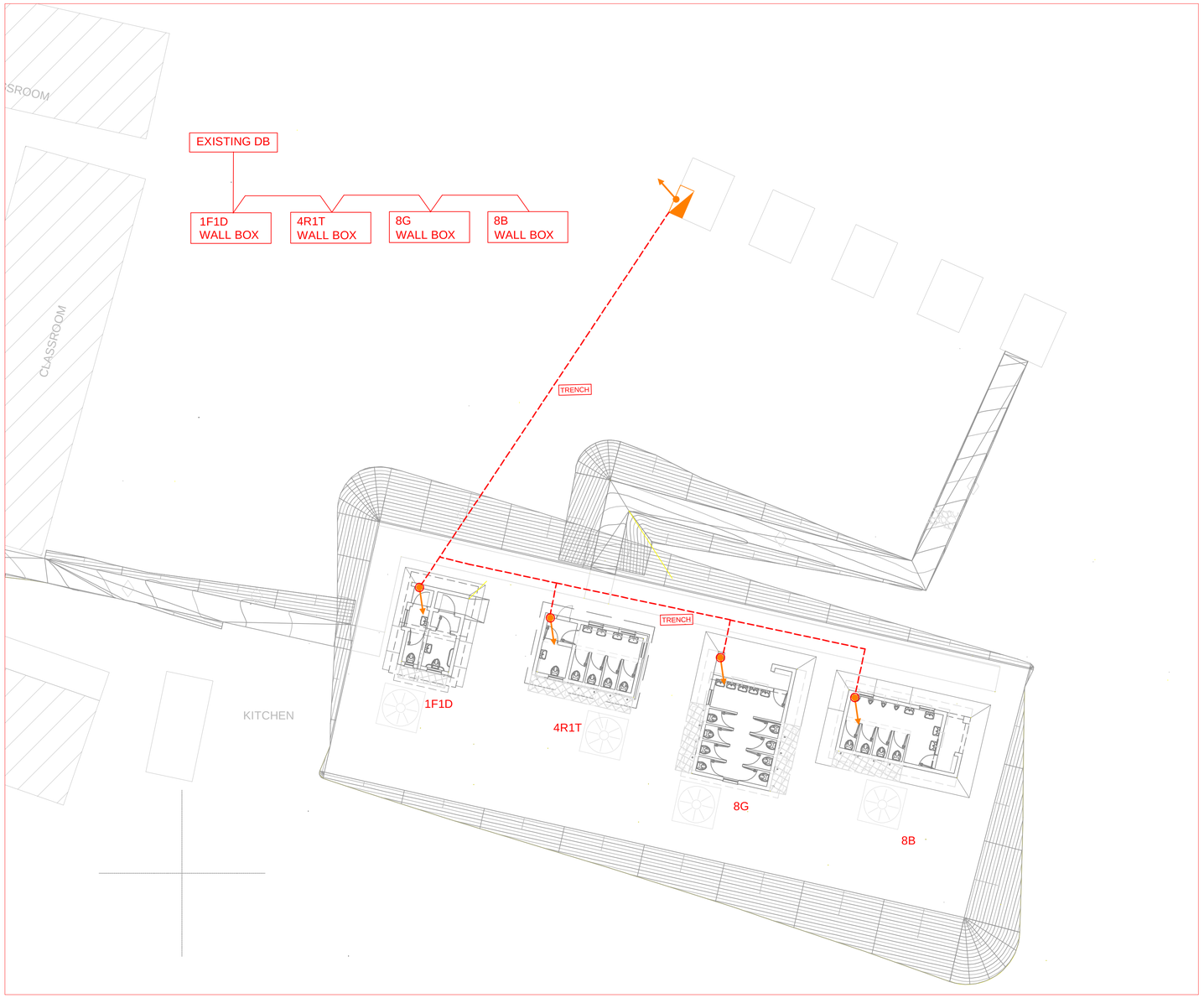
ELECTRICAL

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	E	**AF-902**	**C**	**0**

D: DRAFT **P**: PRELIMINARY **T**: TENDER **F**: FINAL **C**: CONSTRUCTION **A**: AS-BUILT, RECORD **R**: REPORT

SCALE As indicated



Site Specific instructions

DB modifications:
1. Modify existing DB to include 1 x new CBI 10A - C2. Other specification to match existing. 1 x CB feeding ablutions "1F1D, 4R1T, 8B and 8G"

2. Install cover on DB and comply to SANS 10142

Cabling:
1. 2 x 2c x 4mm2 CU 0,6/1kV PVC/ECC/PVC Cable (SANS1507) feeding ablutions "1F1D, 4R1T, 8B and 8G to exit existing DB at top, via 32mm PVC Conduit chased into brick wall.

Containment:
1. 20mm PVC Conduit to be routed internally to contractors detail and exit existing building building via 32mm bosal conduit dropper into 50mm Flexible Corrugated HDPE double walled cable conduit.
2. Sleeves installed in trenching shall be 50mm Flexible Corrugated HDPE double walled cable conduit (SANS 61368-24) into existing trench (measure elsewhere) incl. adaptors and draw wire

Trenching:
1. Trenching soft sand, cable bedding and sifted compacted backfill to 98% MOD ASTM, with cable marker tape 400mm (w)x 650mm (d)

Other Engineering Notes:
1. Cutting through all brick work and concrete shall be made new
2. The contractor shall make them selfs fully aware of the site conditions and consider all installation requirements during pricing accoridnly.
3. The contractor shall make the Engineer fully aware of any site restrictions, deviations to design or other relevant items affecting the electrical installations prior commencing with the works for the Engineers approval
All PVC Conduit to be chased/built into walls.

REF. DRG. NO	REFERENCE DRAWING DESCRIPTION

FOR CONSTRUCTION

AECOM

CONSULTANT

PIETERMARITZBURG
Suite 3 Brookside Offices
8 Montrose Park Boulevard
Victoria Country Club Estate
170 Peter Brown Drive
Pietermaritzburg
3201
South Africa
Tel: +27 (0) 33 347 5085 Fax: +27 (0) 33 347 5094
www.aecom.com Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

LEGEND:

- Cable installed in ceiling void
- Cable installed in trench 400mm(w) x 650mm(d)
- PVC wall box (4x4) 100mm x 100mm
- Cable riser
- Cable dropper

NOTES

1. FOR GENERAL NOTES; REFER TO STANDARD DETAILS:
2. DRAWINGS ARE NOT TO BE SCALED. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORKS. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER / ARCHITECT'S ATTENTION IMMEDIATELY.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SCHEDULES AND SPECIFICATIONS RELATED TO THIS PROJECT.
4. ALL BUILDING WORK AND MATERIALS ARE TO COMPLY WITH LOCAL AUTHORITY'S REQUIREMENTS AND ARE TO BE IN ACCORDANCE WITH SANS 10400 NATIONAL BUILDING REGULATIONS

ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
	2022-10-06	INITIAL ISSUE	TM

DRAWING CHECKS

DESIGNED BY	E. NTULI	N/A
DRAWN BY	T. MDHLETSHE	N/A
DESIGNED CHECKED BY	B. RUDD	N/A
DRAWING CHECKED BY	E. NTULI	N/A

APPROVAL CONSULTANT

NAME B. RUDD DATE
PROF REG. No. SIGNATURE

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

HARRY GWALA DISTRICT
MHLABA'S JUNIOR SCHOOL
EMIS No. 500426758
NEW ABLUTION FACILITIES

DISCIPLINE

ELECTRICAL

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	03	HG15	E	**AC - 002**	**C**	**0**

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

SCALE As Indicated

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ISO A1 841mm x 594mm
Last Plotted: 2022/10/06 12:29:51
Last Plotted By: CHRISTIAN.MACDOOM
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Printed on 100% Post-Consumer Recycled Content Paper

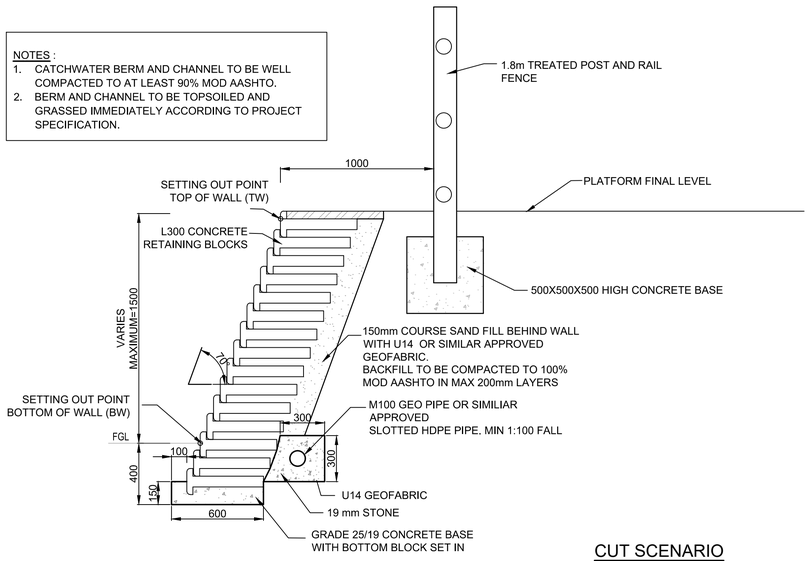
KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS, SOUTHERN REGION-HARRY GWALA-CLUSTER NO.HG15 - EMVUBUKAZI JUNIOR SECONDARY SCHOOL & MHLABA JUNIOR SECONDARY SCHOOL

STANDARD CIVIL DRAWINGS

ISO A1 841mm x 594mm

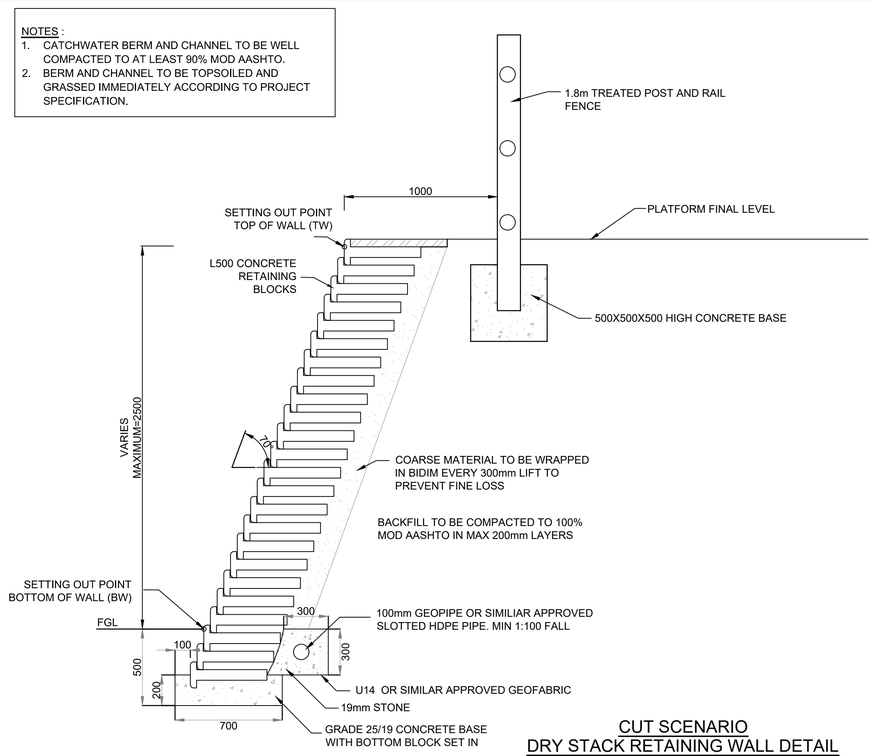
NOTES :
1. CATCHWATER BERM AND CHANNEL TO BE WELL COMPACTED TO AT LEAST 90% MOD AASHTO.
2. BERM AND CHANNEL TO BE TOPSOILED AND GRASSED IMMEDIATELY ACCORDING TO PROJECT SPECIFICATION.



CUT SCENARIO
DRY STACK RETAINING WALL DETAIL
(MAXIMUM HEIGHT OF 1.5m)
WITH CATCHWATER BERM

SCALE 1 : 20

NOTES :
1. CATCHWATER BERM AND CHANNEL TO BE WELL COMPACTED TO AT LEAST 90% MOD AASHTO.
2. BERM AND CHANNEL TO BE TOPSOILED AND GRASSED IMMEDIATELY ACCORDING TO PROJECT SPECIFICATION.



CUT SCENARIO
DRY STACK RETAINING WALL DETAIL
(MAXIMUM HEIGHT OF 2.5m)
WITH CATCHWATER BERM

SCALE 1 : 20

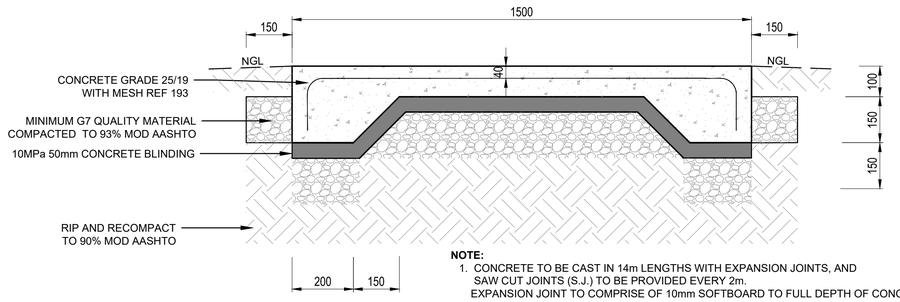
NOTES:
1. ENGINEER TO APPROVE FOUNDING CONDITIONS PRIOR TO CASTING OF CONCRETE.
2. PROVISION OF SUBSOIL DRAINAGE TO BE CONFIRMED ON SITE.
3. STORMWATER BEHIND THE TOP OF THE WALL TO BE MANAGED IN SUCH A MANNER AS TO OBVIATE SCOUR BEHIND OR OVERTOPPING THE WALL.
4. WHERE APPLICABLE, BACKFILL TO BE BENCHED INTO COMPETENT ORIGINAL GROUND.
5. DRYSTACK WALL TO BE CONSTRUCTED WITH A SLOPE OF 70 DEGREES.

NOTES:

1. A 150 mm LAYER OF TOPSOIL IS TO BE REMOVED BEFORE COMMENCEMENT OF EARTHWORKS AND REPLACED UPON COMPLETION.
2. ALL LEVELS SHOWN REFLECT THE TOP OF THE EARTHWORKS AND INCLUDE TOP SOIL.
3. ALL LEVELS TO BE BUILT WITHIN A TOLERANCE OF 50 mm.
4. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND PROTECTING ALL EXISTING SERVICES ON SITE.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE WORKS FROM SURFACE WATER RUNOFF THAT MAY CAUSE EROSION DAMAGE, USING CHANNELS, BERMS, PUMPS etc, AS AND WHEN REQUIRED AND DIRECT GROUND WATER AWAY FROM THE WORKS.
6. COORDINATES ARE IN ACCORDANCE WITH WGS 84 : LO 31.

RETAINING WALL:

1. ENGINEER TO APPROVE FOUNDING CONDITIONS PRIOR TO CASTING OF CONCRETE.
2. BOTTOM ROW OF BLOCKS TO BE SET IN WET CONCRETE OF STRENGTH 25 MPa AT 28 DAYS.
3. ALL BACKFILL TO BE COMPACTED TO 93% MOD AASHTO.
4. BACKFILL TO BE BENCHED INTO COMPETENT GROUND.
5. 170 x 170 mm CLEAN SAND DRAINAGE WEEPHOLES TO BE ALLOWED THROUGH STABILIZATION AT 2 m CENTRES. FIRST ROW 200 mm ABOVE FGL AND REPEAT IN 1 m LIFTS.



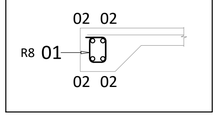
NOTE:
1. CONCRETE TO BE CAST IN 14m LENGTHS WITH EXPANSION JOINTS, AND SAW CUT JOINTS (S.J.) TO BE PROVIDED EVERY 2m. EXPANSION JOINT TO COMPRISE OF 10mm SOFTBOARD TO FULL DEPTH OF CONCRETE.
2. TOP 10mm OF SOFTBOARD TO BE RAKED OUT AND FILLED WITH APPROVED UV RESISTANT POLYSULPHIDE SEALANT.
3. TOP SURFACE TO HAVE WOOD FLOAT FINISH.

CONCRETE WALKWAY FOR VEHICLE CROSSINGS

SCALE 1:10

MEMBER		MARK	TYPE		NUMBER		LENGTH	SHAPE CODE	A (mm)	B (mm)	REV
NAME	NUM		R	Y	ELEMENT	TOTAL					
			Grade250	Grade450							
THICKENING	1	01	8		20	20	650	60	150	100	
		02		10	8	8	1850	20	1850		

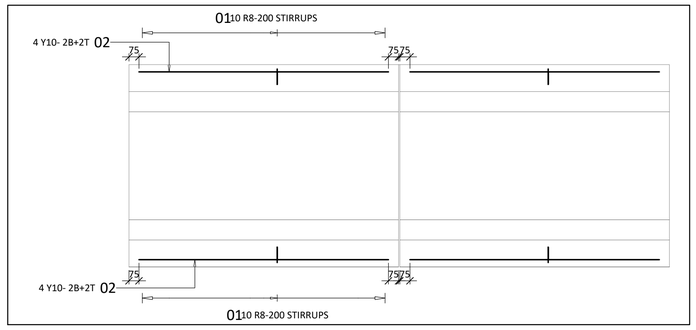
REINFORCEMENT SUMMARY		
Grade250	R 8	R 10
Total Length (m)	13.00	
Total Weight (kg)	5.13	
Grade450	Y 8	Y 10
Total Length (m)		14.80
Total Weight (kg)		9.13
Subtotal: (kg)	14.27	



SECTION

BENDING SCHEDULE

PLAN



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PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
	2019-09-06	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	A. CHETTY	N/A	
DRAWN BY	A. KADER	N/A	
DESIGNED CHECKED BY	K HOFFMAN	N/A	
DRAWING CHECKED BY	A. CHETTY	N/A	

APPROVAL CONSULTANT

NAME D.PILLAY DATE
PROF REG. No. 201270383 SIGNATURE

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

STANDARD DETAILS
TYPICAL DETAILS
SHEET 2

DISCIPLINE

CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	DA - 802	C	

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

SCALE As Indicated

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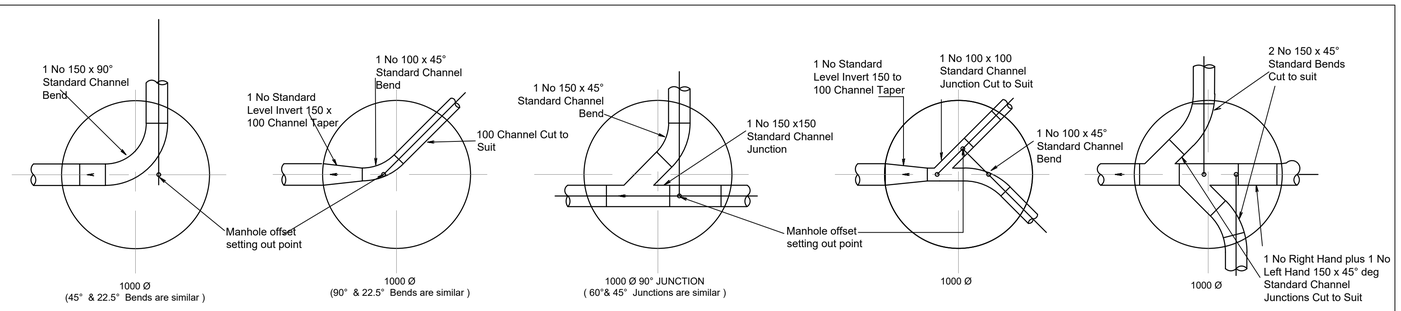
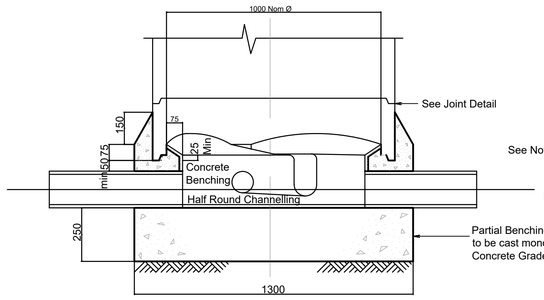
Printed on: _\Tech\Consumer
Plotted by: Consumer Plotter



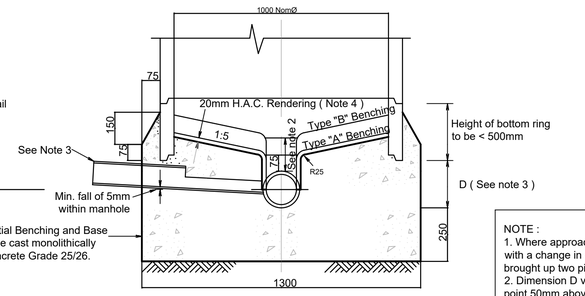
BENDS | TERMINAL BENDS | SINGLE JUNCTION | TERMINAL JUNCTION | DOUBLE JUNCTION

STANDARD CHANNELLING IN PRECAST CONCRETE MANHOLES

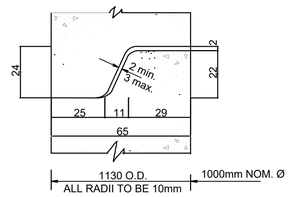
NOT TO SCALE



SECTION OF 1000 DIAMETER MANHOLE



SECTION OF 1000 DIAMETER MANHOLE

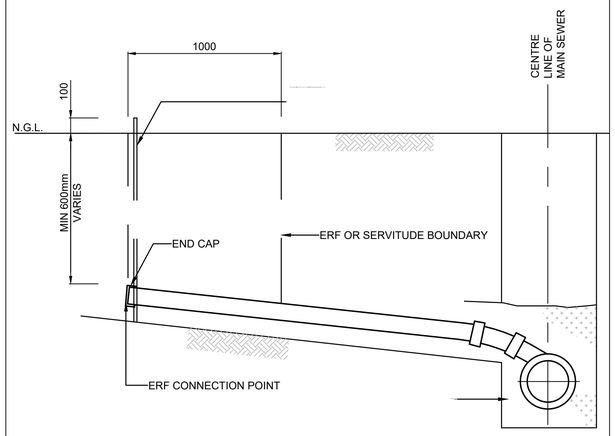


DETAIL OF JOINT

NOTE :
1. Where approach grades into the manhole are 1 : 15 or steeper and associated with a change in direction in the manhole of 30° or more , the benching is to be brought up two pipe diameters above the pipe invert (Type B benching sewers)
2. Dimension D varies with the diameter of the sewer pipes and shall be to a point 50mm above the highest crown of the pipes.
3. Rendering for manhole benching shall consist of one part H.A.C. to two parts sand thoroughly mixed and applied to concrete surfaces while the latter are still green. Rendering shall be at least 20mm thick.

TYPICAL DETAIL: SEWER MANHOLE BENCHING

NTS

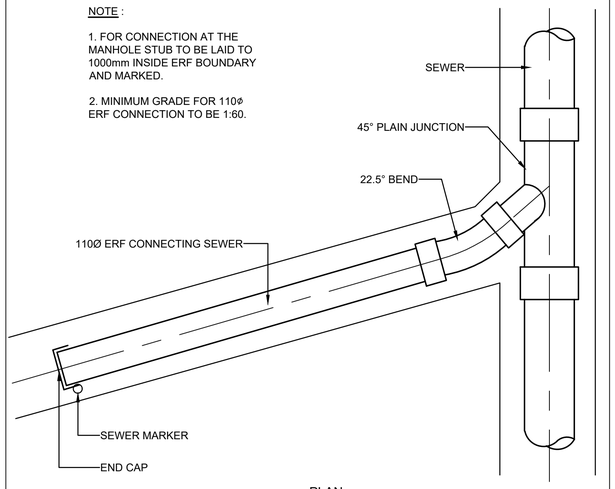


ELEVATION

NOTE :

1. FOR CONNECTION AT THE MANHOLE STUB TO BE LAID TO 1000mm INSIDE ERF BOUNDARY AND MARKED.

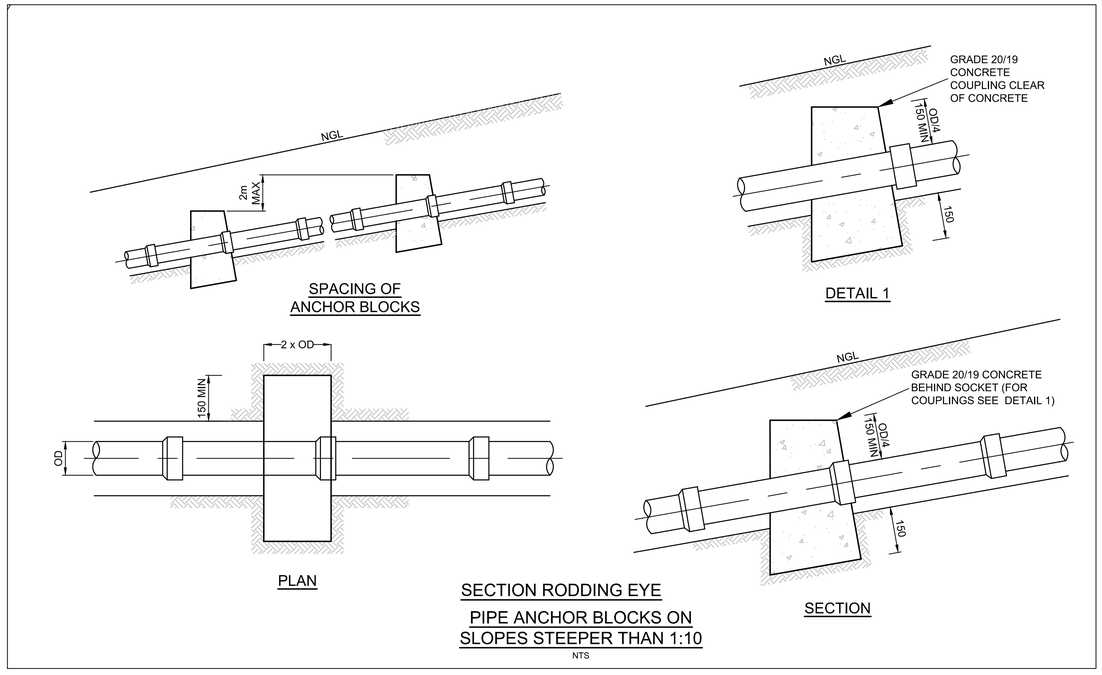
2. MINIMUM GRADE FOR 110ø ERF CONNECTION TO BE 1:60.



PLAN

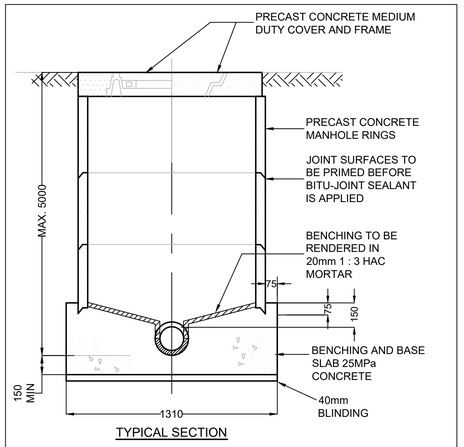
SEWER ERF CONNECTION

NTS



SECTION RODDING EYE
PIPE ANCHOR BLOCKS ON SLOPES STEEPER THAN 1:10

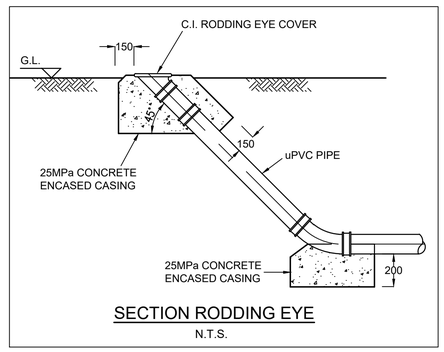
NTS



TYPICAL SECTION

PRECAST CONCRETE SEWER RING MANHOLE DETAIL

NTS



SECTION RODDING EYE

N.T.S.

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PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

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public works
Department:
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REPUBLIC OF SOUTH AFRICA

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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
	2019-09-06	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	A. CHETTY	N/A
DRAWN BY	A. KADER	N/A
DESIGNED CHECKED BY	K. HOFFMAN	N/A
DRAWING CHECKED BY	A. CHETTY	N/A

APPROVAL CONSULTANT

NAME D. PILLAY DATE
PROF REG. No. 201370627 SIGNATURE

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SHEET TITLE

STANDARD DETAILS
SEWER
SHEET 1

DISCIPLINE

CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	DA - 803	C	0

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

SCALE As Indicated

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Last Plotted: 2019/09/05 09:01:19
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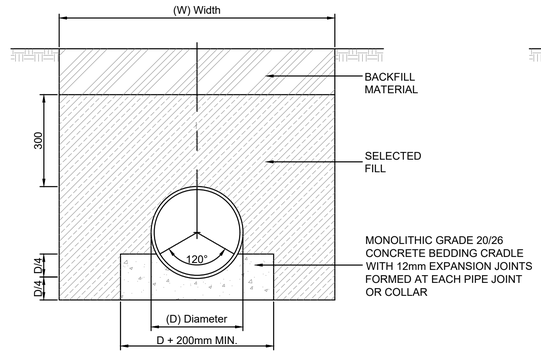
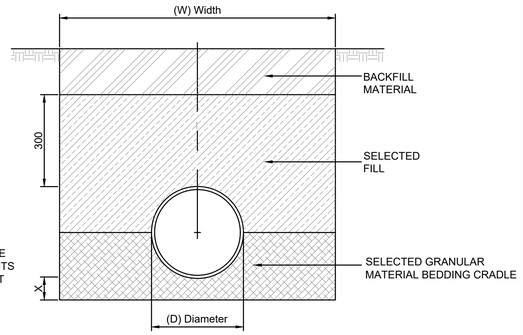
D/4 = 300 MAX. WITH
a) 100 MIN. TRENCH IN SOIL
b) 50 MIN. FOR TRENCH IN ROCK



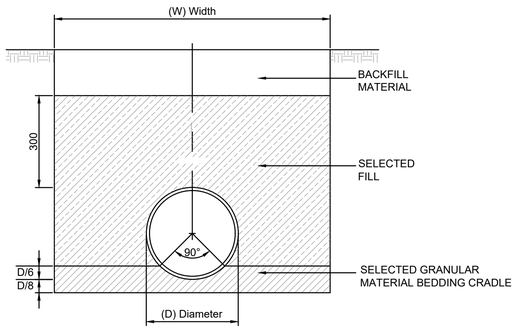
CLASS A

a) IN SOIL
X = D/6: 75 MIN. 200 MAX
b) IN ROCK
X = D/4: 150 MIN. 200 MAX.



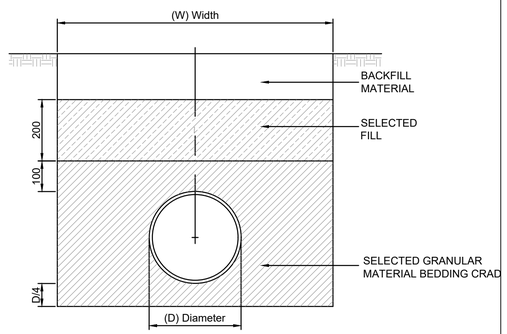
CLASS B

a) IN SOIL
X = D/8: 75 MIN. 200 MAX
b) IN ROCK
X = D/8: 100 MIN. 200 MAX.



CLASS C

D/4: 100 MIN. 200 MAX.

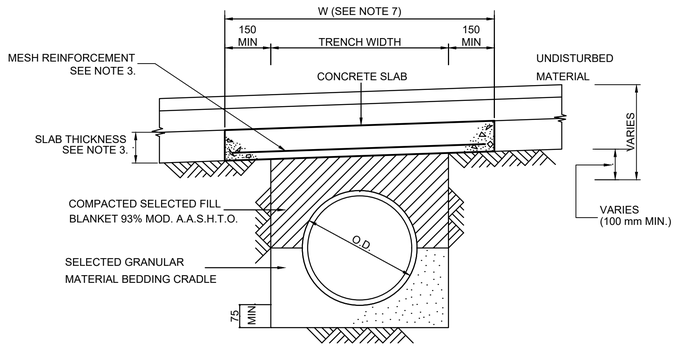


FLEXIBLE PIPE

W = TRENCH PAY WIDTH
D = OUTSIDE DIAMETER OF PIPE

PIPE BEDDING DETAILS

SCALE: 1:10



DETAILS OF PIPE PROTECTION FOR REDUCED DEPTH OF COVER

SCALE: 1:10

NOTES

1. THIS DETAIL APPLIES WHERE COVER IS LESS THEN 300mm IN SERVITUDE AND LESS THAN 600mm IN ROAD RESERVES.
2. CLASS "B" BEDDING IS SHOWN
3. SLAB THICKNESS AND REINFORCING DETAILS WILL BE CONFIRMED BY THE ENGINEER.
4. SLAB TO CONSIST OF GRADE 20/26 CONCRETE.
5. COVER TO REINFORCEMENT IS TO BE 35mm
6. CONSTRUCTION JOINTS ARE TO BE FORMED IN THE SLAB IN INTERVALS NOT EXCEEDING 5.0M.
7. W = TRENCH WIDTH + 300mm IN UNDISTURBED MATERIAL.

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DRAWING CHECKS

DESIGNED BY	A. CHETTY		N/A
DRAWN BY	A. KADER		N/A
DESIGNED CHECKED BY	K. HOFFMAN		N/A
DRAWING CHECKED BY	A. CHETTY		N/A

APPROVAL CONSULTANT

NAME D.PILLAY DATE
PROF REG. No. 201270383 SIGNATURE

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

STANDARD DETAILS
SEWER
SHEET 2

DISCIPLINE

CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	**DA - 804**	**C**	**0**

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

SCALE As Indicated

ISO A1 841mm x 594mm
Printed on: % Third-Consumer
Required Colour Paper
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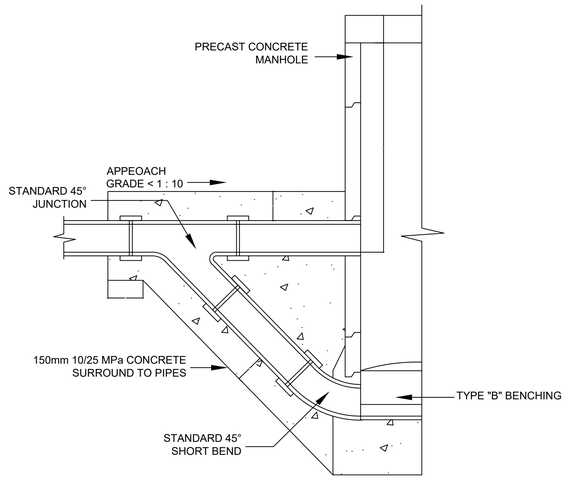
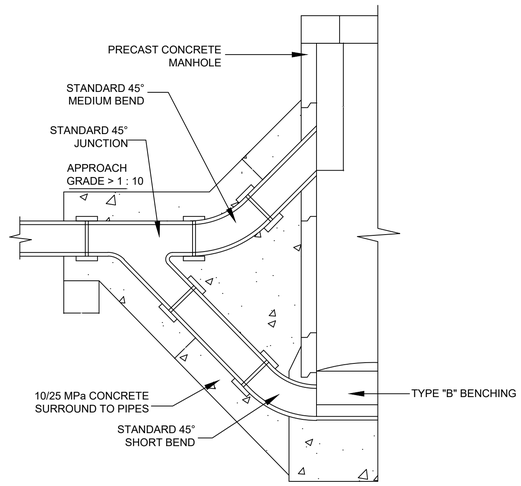
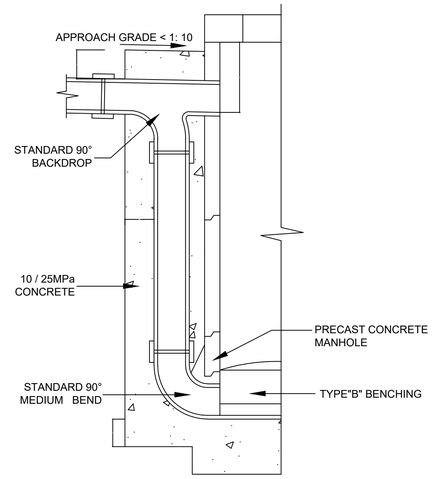


RAMP MANHOLE: TYPE A FOR DROPS BETWEEN 500 AND 1000

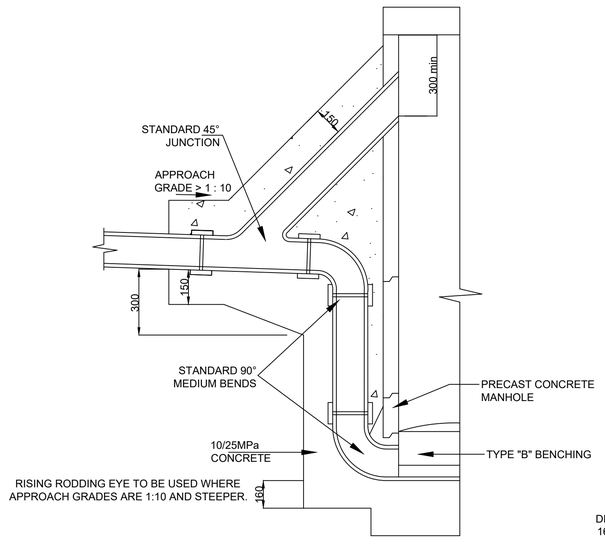


RISING RODDING EYE TO BE USED WHERE APPROACH GRADES ARE 1 : 10 AND STEEPER.

RAMP MANHOLE: TYPE B FOR DROPS BETWEEN 500 AND 1000



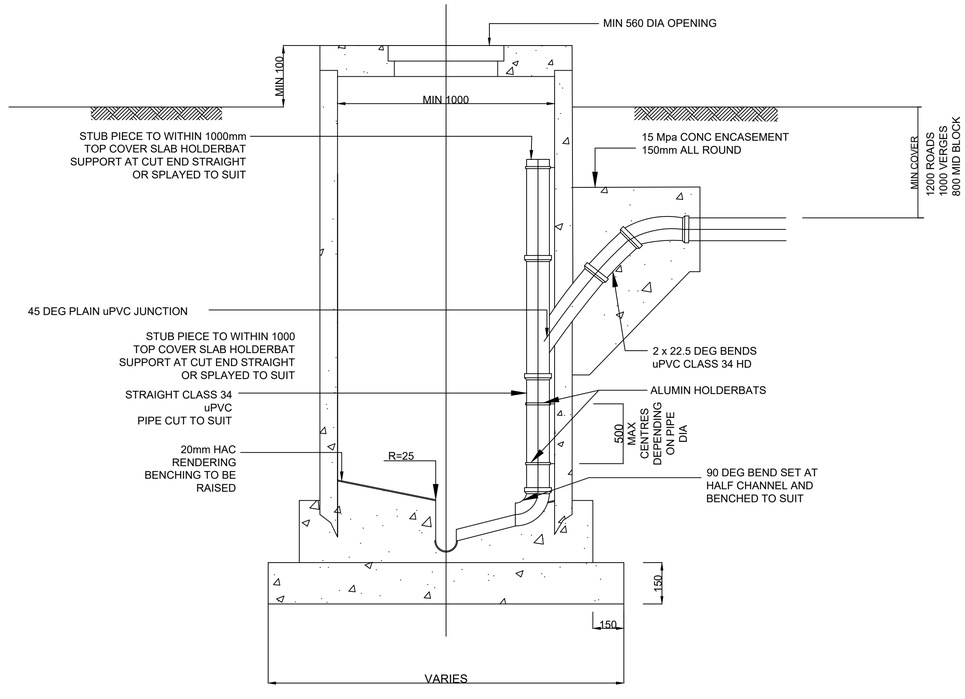
BACKDROP MANHOLE: TYPE A FOR DROPS IN EXCESS OF 1000



RISING RODDING EYE TO BE USED WHERE APPROACH GRADES ARE 1:10 AND STEEPER.

BACKDROP MANHOLE: TYPE B FOR DROPS IN EXCESS OF 1000

TO BE USED IN ROCK OR AT SOLE DISCRETION OF ENGINEER AND FOR 110mm OR 160mm DIA INCOME ONLY AND FOR MANHOLES EXCEEDING 1050mm INTERNAL DIA



STANDARD 90 DEGREE INTERNAL DROP CONNECTION

STANDARD FITTING FOR RAMP AND BACKDROP MANHOLES.
NTS

FOR CONSTRUCTION

AECOM

CONSULTANT

PIETERMARITZBURG
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8 Montrose Park Boulevard
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170 Peter Brown Drive
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www.aecom.com Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES

1. DRAWINGS ARE NOT TO BE SCALED. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORKS. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER / ARCHITECT'S ATTENTION IMMEDIATELY.
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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
	2019-09-06	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	A. CHETTY	N/A
DRAWN BY	A. KADER	N/A
DESIGNED CHECKED BY	K. HOFFMAN	N/A
DRAWING CHECKED BY	A. CHETTY	N/A

APPROVAL CONSULTANT

NAME D. PILLAY DATE
PROF REG. No. 201270383 SIGNATURE

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

STANDARD DETAILS
SEWER
SHEET 3

DISCIPLINE

CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	**DA - 805**	**C**	**0**

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

SCALE As Indicated

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ISO A1 841mm x 594mm
Printed on 100% Post-Consumer Recycled Content Paper
Last Plotted: 2019/09/05 09:48:53
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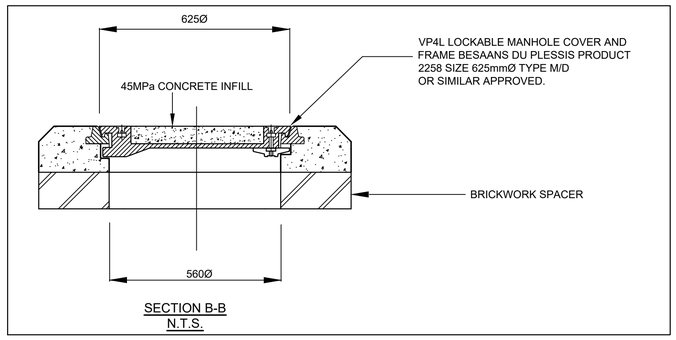
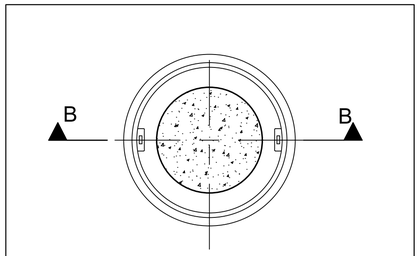
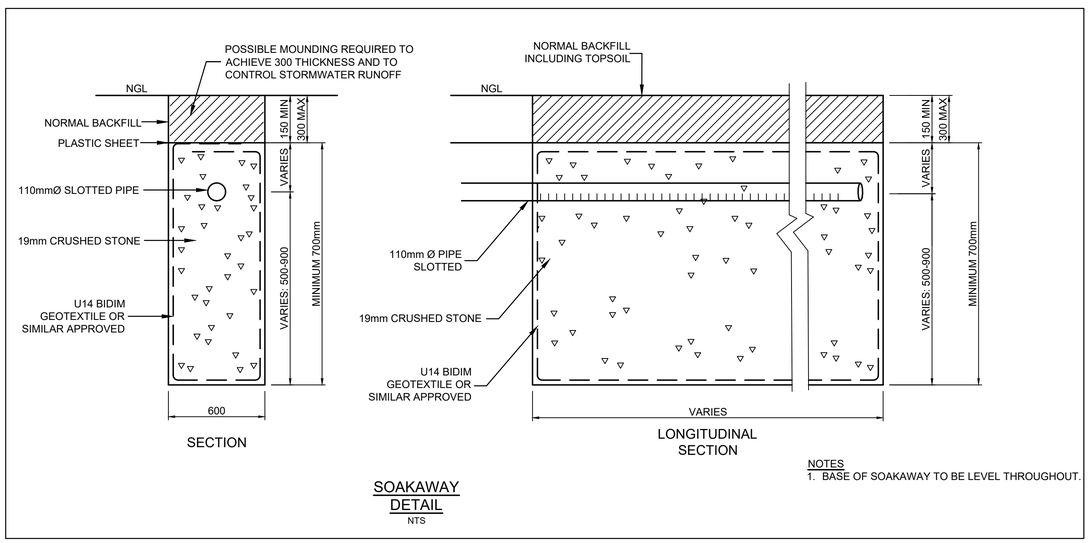


SECTION B-B
N.T.S.



LOCKABLE COVER FOR SEPTIC TANK
PLAN
N.T.S



NOTES
1. BASE OF SOAKAWAY TO BE LEVEL THROUGHOUT.

SOAKAWAY DETAIL
NTS

NOTES:

1. ABLUTION FACILITY LAYOUT SHOWN INDICATIVELY AND IS SUBJECT TO CHANGE ACCORDING TO TYPE AND SIZE OF ABLUTION FACILITY.
2. EXTERNAL DIMENSIONS SHOWN INDICATIVELY AND IS SUBJECT TO CHANGE ACCORDING TO TYPE AND SIZE OF ABLUTION FACILITY.
3. ALL DIMENSION SHOWN IN MILLIMETERS UNLESS OTHERWISE STATED.

AECOM

CONSULTANT
PIETERMARITZBURG
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www.aecom.com Reg No. 1966/006628/07

PROJECT
DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT
KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES
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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
	2019-09-06	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	A. CHETTY	N/A
DRAWN BY	A. KADER	N/A
DESIGNED CHECKED BY	K. HOFFMAN	N/A
DRAWING CHECKED BY	A. CHETTY	N/A

APPROVAL CONSULTANT

NAME D. PILLAY DATE
PROF REG. No. 201270383 SIGNATURE

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE
STANDARD DETAILS
SEWER
SHEET 4

DISCIPLINE
CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	**DA - 806**	**C**	**0**

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

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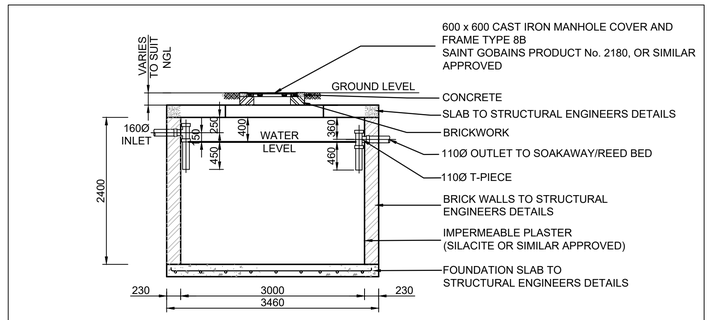

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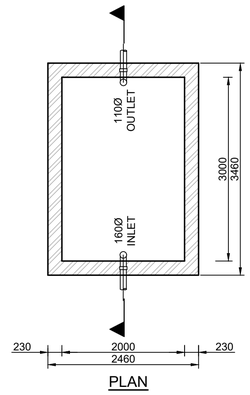
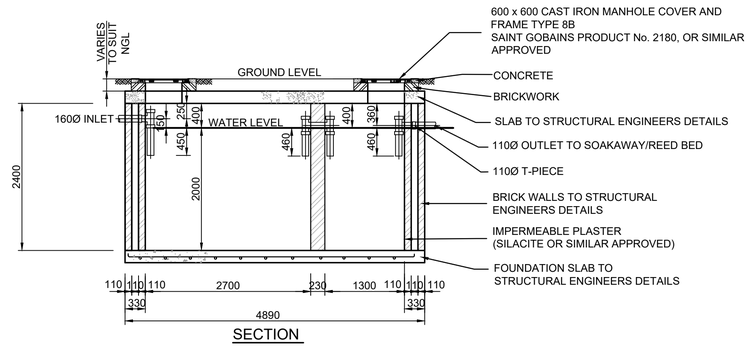


PLAN

2m SEPTIC TANK DETAIL

1:50



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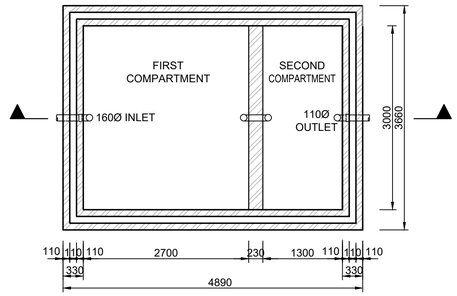
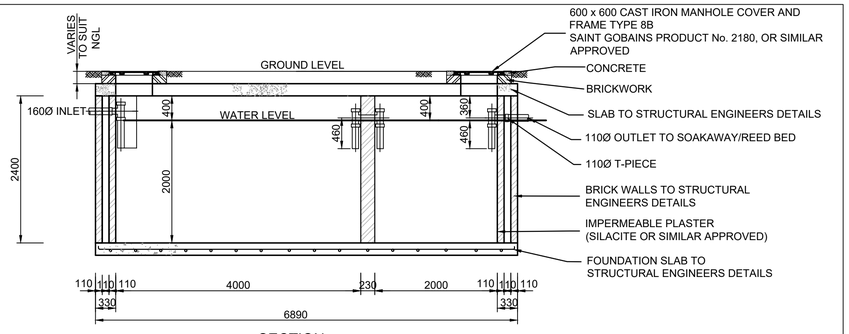


PLAN

4m SEPTIC TANK DETAIL

1:50



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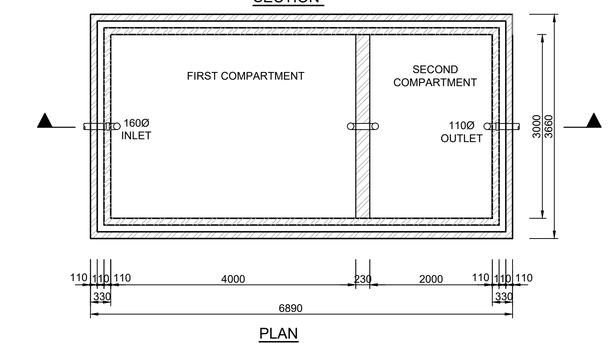
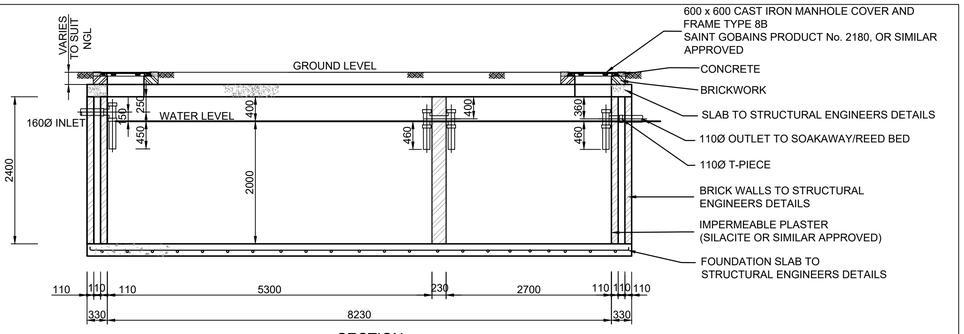


PLAN

6m SEPTIC TANK DETAIL

1:50



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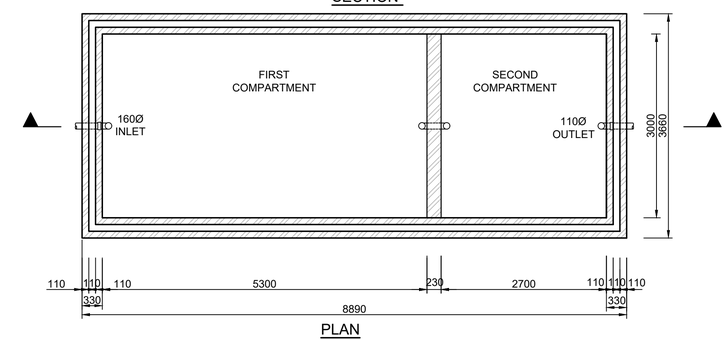

PLAN

8m SEPTIC TANK DETAIL

1:50

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www.aecom.com Reg No. 1966/006628/07

PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA

NOTES:

1. ALL PIPEWORK TO BE CLASS 34 uPVC.
2. INLET TO BE 160Ø.
3. ALL OTHER PIPEWORK TO BE 110Ø
4. ALL DIMENSION SHOWN IN MILLIMETERS UNLESS OTHERWISE STATED.

NOTES

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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
	2019-09-06	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	A. CHETTY	N/A
DRAWN BY	A. KADER	N/A
DESIGNED CHECKED BY	K. HOFFMAN	N/A
DRAWING CHECKED BY	A. CHETTY	N/A

APPROVAL CONSULTANT

NAME D. PILLAY DATE
PROF REG. No. 201270383 SIGNATURE

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

STANDARD DETAILS
SEWER
SHEET 5

DISCIPLINE

CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	DA - 807	C	0

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

SCALE As Indicated

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Preferred Consumer Paper
Last Plotted: 2019/09/05 09:07:15
Last Plotted By: ANDREW.KADER
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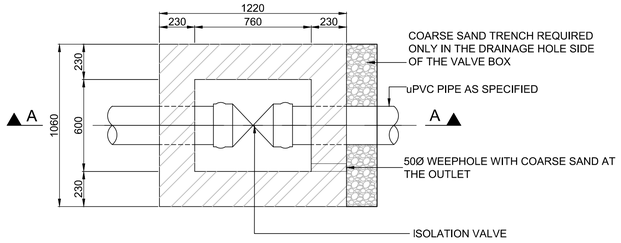
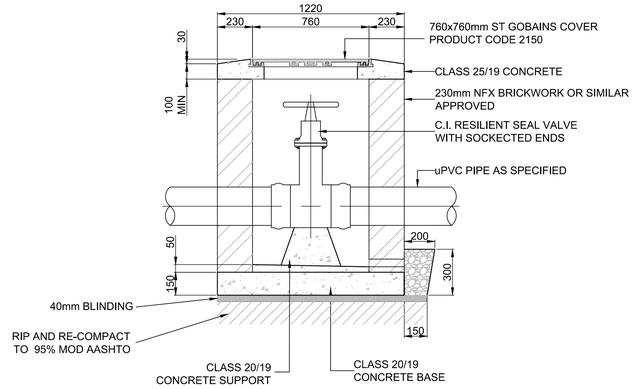


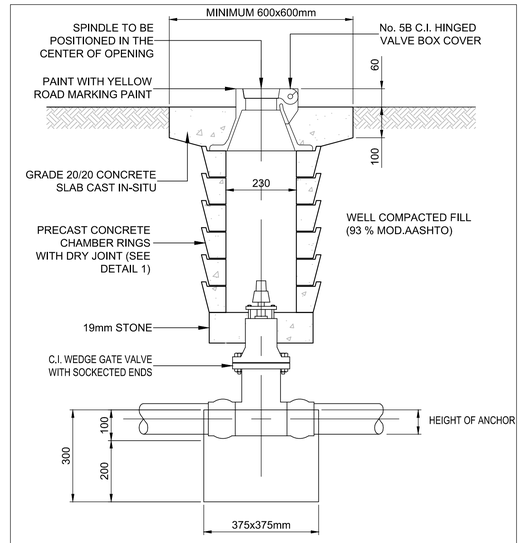
PLAN



SECTION A-A

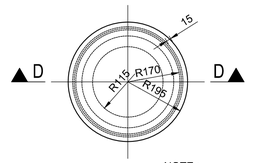
TYPICAL ISOLATING VALVE AND CHAMBER DETAIL PIPE DIAMETER : 160-250mm

SCALE 1 : 20



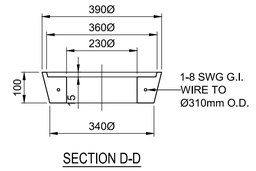
TYPICAL ISOLATING VALVE AND CHAMBER DETAIL PIPE DIAMETER : 50-110mm

SCALE 1 : 10



PLAN

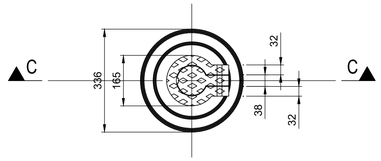
NOTE :
CONCRETE MIX 3:1 UMGENI SAND TO CEMENT DRY MIX. FINISH PRESS AND STRUCK SMOOTH.



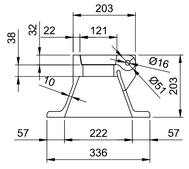
SECTION D-D

STANDARD PRECAST CONCRETE RINGS FOR VALVE CHAMBERS (PIPE DIAMETER : 50-110mm)

SCALE 1 : 10



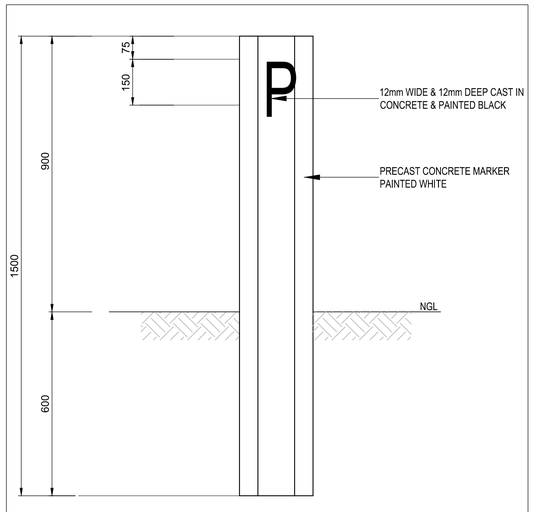
PLAN



SECTION C-C

DETAILS OF VALVE COVER

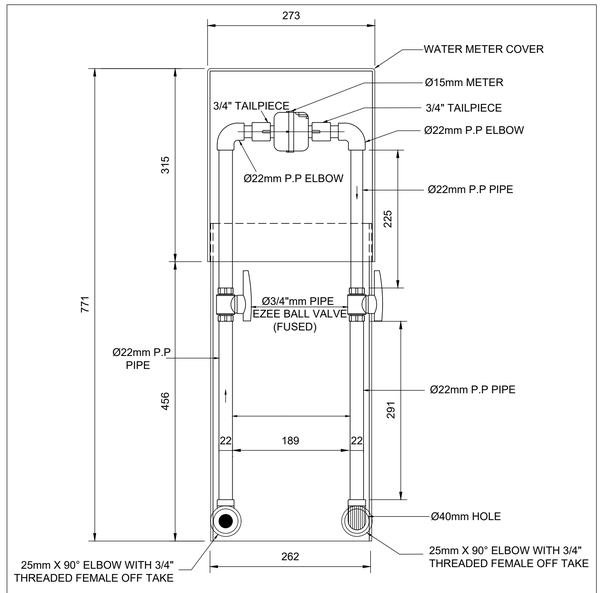
SCALE 1 : 10



ELEVATION

PIPE MARKER

NTS



15mm DOMESTIC METER INSTALLATION

SCALE 1:5

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Suite 3 Brookside Offices
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PROJECT

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KZN DEPARTMENT OF
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public works
Department:
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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
	2019-09-06	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	A. CHETTY	N/A
DRAWN BY	A. KADER	N/A
DESIGNED CHECKED BY	K. HOFFMAN	N/A
DRAWING CHECKED BY	A. CHETTY	N/A

APPROVAL CONSULTANT

NAME D. PILLAY DATE
PROF REG. No. 201270383 SIGNATURE

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SHEET TITLE

STANDARD DETAILS
WATER
SHEET 1

DISCIPLINE

CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV.
60491906	01	0000	C	**DA - 808**	**C**	**0**

D: DRAFT / **P**: PRELIMINARY / **T**: TENDER / **F**: FINAL / **C**: CONSTRUCTION / **A**: AS-BUILT, RECORD / **R**: REPORT

SCALE As Indicated

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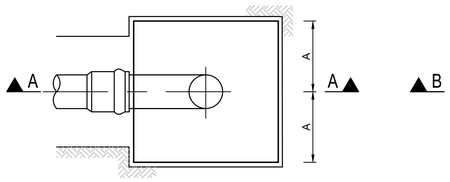
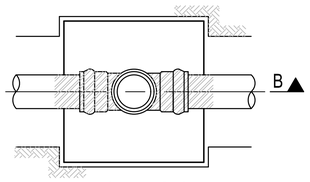
Printed On: % Plot/Consumer
Plotted By: Maryann-Colleen Taylor

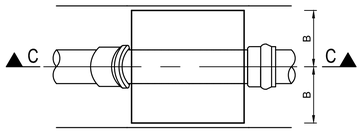
ISO A1 841mm x 594mm



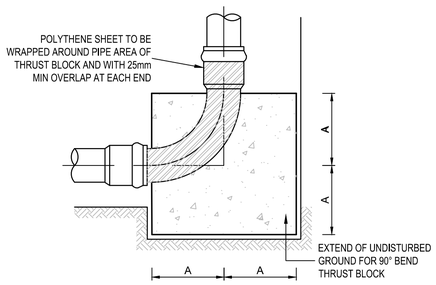
PLAN OF BEND
DOWNWARD THRUST



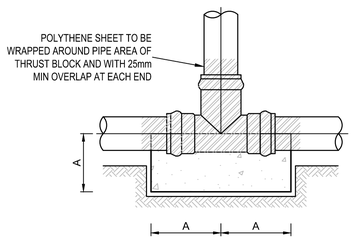
PLAN OF T-JUNCTION
DOWNWARD THRUST BLOCK



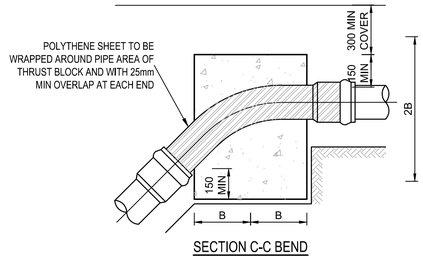
PLAN OF BEND UPWARD
THRUST BLOCK



SECTION A-A BEND



SECTION B-B T-JUNCTION



SECTION C-C BEND

VERTICAL THRUST BLOCKS: BENDS & T-JUNCTIONS MAX. TEST PRESSURE 2400 KPa

NTS

NOTES:
1. DRAWINGS APPLIES TO VERTICAL THRUST BLOCKS FOR PIPE SIZES 50 - 355mm ONLY.

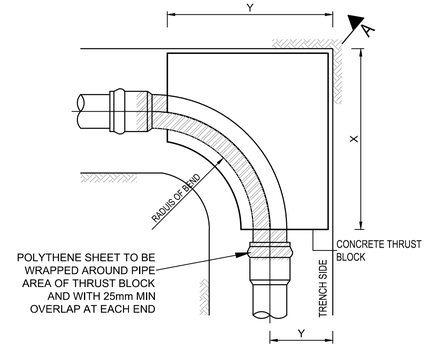
2. MINIMUM DEPTH OF COVER = 800mm

3. ALL CONCRETE TO BE GRADE 20/19 AND CAST AGAINST UNDISTURBED GROUND WHERE SHOWN.

4. THRUST BLOCKS DESIGN PARAMETERS:
UNIT WEIGHT OF CONCRETE = 22kN/m³
UNIT WEIGHT OF SOIL = 18kN/m³
COHESIONLESS SOIL: ANGLE OF FRICTION = 30°
BEARING CAPACITY = 70kN/m²
FACTOR OF SAFETY = 1,5

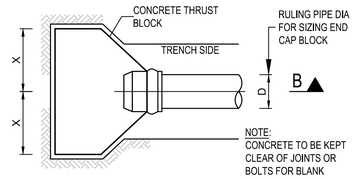
PIPE OD (mm)	DOWNWARD THRUST BLOCK					UPWARD THRUST BLOCK		
	ANGLE OF BEND				T-JUNCTION	ANGLE OF BEND		
	11¼°	22½°	45°	90°		11¼°	22½°	45°
	A	A	A	A	A	B	B	B
50	150	150	175	250	150	225	275	325
63	150	150	175	275	175	250	300	375
75	150	150	175	300	200	275	325	400
90	150	150	175	325	225	275	350	450
110	150	150	200	375	250	325	400	525
125	150	175	225	400	275	350	425	575
140	150	200	250	425	300	375	475	600
160	150	225	275	475	350	400	500	650
200	200	275	350	550	425	450	600	750
250	250	325	425	650	525	525	675	875
315	300	400	550	750	650	625	800	1 025
355	350	470	650	890	800	750	925	1 200

FOR PIPE CLASS 12



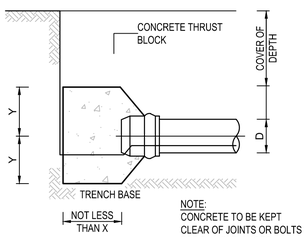
NOTE:
THE CONCRETE TO BE KEPT CLEAR OF JOINTS WHERE POSSIBLE

PLAN OF BEND



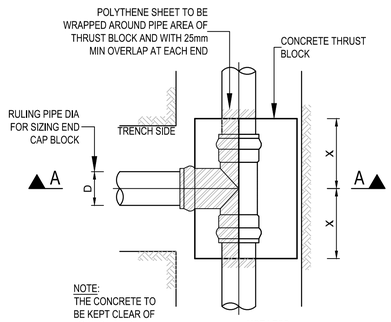
NOTE:
CONCRETE TO BE KEPT CLEAR OF JOINTS OR BOLTS FOR BLANK FLANGES

PLAN OF END CAP
OR BLANK FLANGE

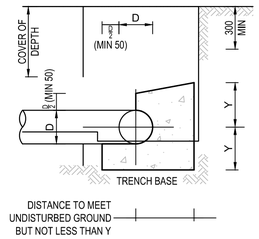


NOTE:
CONCRETE TO BE KEPT CLEAR OF JOINTS OR BOLTS FOR BLANK FLANGES

SECTION B-B



PLAN OF T-JUNCTION



SECTION A-A

HORIZONTAL THRUST BLOCKS: BENDS & T-JUNCTIONS MAX. TEST PRESSURE 2400 KPa

NTS

NOTES:
1. DRAWINGS APPLIES TO VERTICAL THRUST BLOCKS FOR PIPE SIZES 50 - 355mm ONLY.

2. MINIMUM DEPTH OF COVER = 800mm

3. ALL CONCRETE TO BE GRADE 20/19 AND CAST AGAINST UNDISTURBED GROUND WHERE SHOWN.

4. THRUST BLOCKS DESIGN PARAMETERS:
UNIT WEIGHT OF CONCRETE = 22kN/m³
UNIT WEIGHT OF SOIL = 18kN/m³
COHESIONLESS SOIL: ANGLE OF FRICTION = 30°
BEARING CAPACITY = 70kN/m²
FACTOR OF SAFETY = 1,5

PIPE OD (mm)	ANGLE OF BEND								T-JUNCTION OR END CAP	
	11¼°		22½°		45°		90°			
	X	Y	X	Y	X	Y	X	Y	X	Y
50	75	75	100	100	150	125	275	150	150	150
63	75	100	125	125	175	175	325	175	200	175
75	100	100	150	150	200	200	375	200	225	225
90	125	125	175	175	250	225	450	250	275	250
110	150	150	200	200	300	275	525	275	325	325
125	175	150	225	225	325	325	625	325	375	350
140	200	175	250	250	350	350	675	350	400	400
160	225	200	300	275	400	400	775	400	450	450
200	250	250	350	350	500	475	925	475	625	500
250	325	300	450	400	700	500	1 150	575	825	550
315	375	375	575	475	975	550	1 625	600	1 150	600
355	425	450	710	620	1050	625	2 200	710	1 350	680

FOR PIPE CLASS 12

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PROJECT
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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
	2019-09-06	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	A. CHETTY	N/A
DRAWN BY	A. KADER	N/A
DESIGNED CHECKED BY	K. HOFFMAN	N/A
DRAWING CHECKED BY	A. CHETTY	N/A

APPROVAL CONSULTANT

NAME D. PILLAY DATE
PROF REG. No. 201270383 SIGNATURE

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE
STANDARD DETAILS
WATER
SHEET 2

DISCIPLINE
CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	DA - 809	C	0

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SCALE As Indicated

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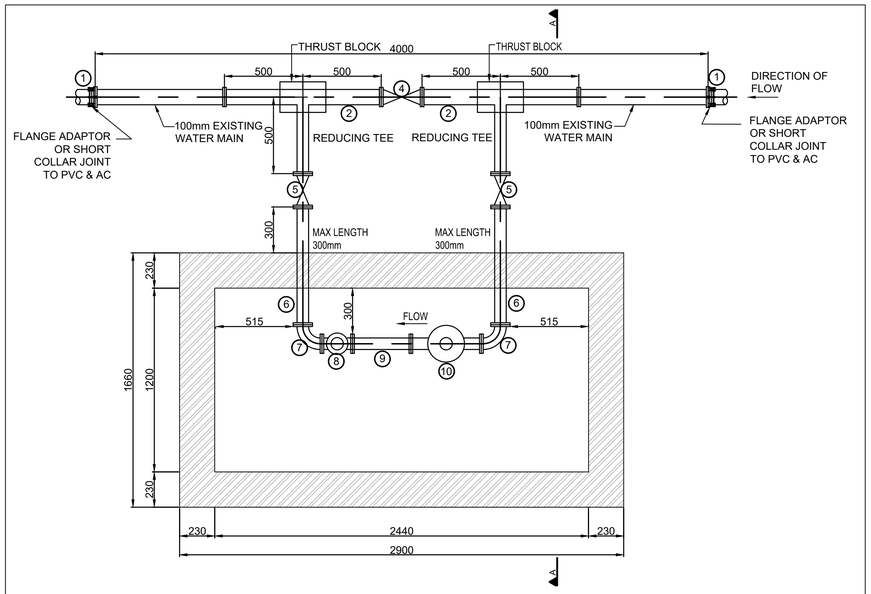
REVISION:0 DRAWING:1 SHEET:2 OF 2 STYLE:AECOM-A1-MONO.CTB



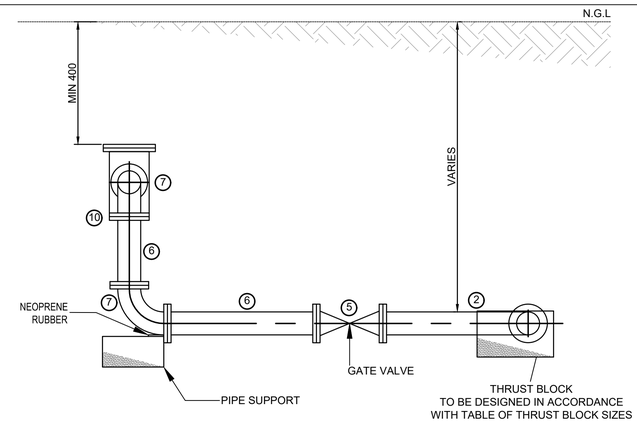
PLAN OF 80Ø METER INSTALLATION OFF 100Ø MAIN

SCALE: 1:20

PIPEWORK SCHEDULE OF DIMENSIONS(mm)			
ITEM NO.	NAME	DIMENSIONS	QTY
1	EXISTING MAIN	100 Ø	-
2	REDUCING TEE(F.A.R)	100Ø X 80Ø	2
3	80mm Ø SPOOL PIECE (F.B.E)	0	0
4	100mm Ø GATE VALVE	254	1
5	80mm Ø GATE VALVE	229	2
6	80mm Ø SPOOL PIECE (F.B.E)	CUT TO SUIT	-
7	90° LONG RADIUS BEND (F.B.E)	114	-
8	80mm Ø METER	200	1
9	80mm Ø SPOOL PIECE (MIN LENGTH)	240	1
10	80mm Ø DIRT BOX	480	1

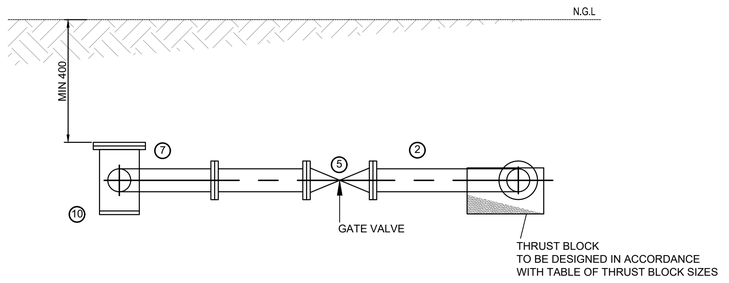
REPAIR OF PIPE COATINGS/LININGS		
COATING/LINING	COLOUR	REPAIR MEDIUM
COPON KSIR88	RED/BLUE	COPON HYCOTE 151
FUSION BONDED EPOXY (F.B.E)	GREEN	COPON HYCOTE 151
FUSION BONDED MEDIUM DENSITY POLYETHYLENE (F.B.M.D.P.E)	BLACK	COPON HYCOTE 151
COPON	RED	COPON HYCOTE 151
SOLVENT FREE/BORNE EPOXY (S.F.E/ S.B.E)	BLUE/RED/GREY	COPON HYCOTE 151
CEMENT MORTAR	GREY	EPIDERMIX 338
RILSAN	BLACK	RILSAN REPAIR KIT

THRUST BLOCK SIZES (in mm) IN NORMAL EARTH FOR HEADS OF 120m						
PIPE SIZE	END CAP	TEE (BRANCH)	90° BEND	45° BEND	22.5° BEND	11.25° BEND
	X Y	X Y	X Y	X Y	X Y	X Y
75	300x200	300x200	350x300	300x250	300x200	300x200
100	300x400	300x400	400x500	350x300	300x200	300x200
150	400x500	400x500	600x600	450x500	400x300	300x250
200	500x600	500x600	700x900	500x800	400x500	350x300



PART SECTION A-A 80Ø DIRT BOX OFF 100Ø MAIN OPTION 1

SCALE: 1:10



PART SECTION A-A 80Ø DIRT BOX OFF 100Ø MAIN OPTION 2

SCALE: 1:10

NOTES

1. EXACT POSITION OF METER INSTALLATION TO BE INDICATED BY ENGINEER.
2. CONTRACTOR TO CONFIRM DIMENSIONS OF ALL NEW STEEL PIPEWORK PRIOR TO FABRICATION AND INSTALLATION.
3. PRIOR TO INSTALLATION ALL FABRICATED PIPEWORK TO BE EXTERNALLY COATED AND INTERNALLY LINED WITH 'RILSAN' OR APPROVED EQUIVALENT.
4. PRIOR TO INSTALLATION AND ASSEMBLY ANY UNCOATED FLANGE FACES TO BE COATED WITH 'COPON KSIR88' TO A MINIMUM DRY FILM THICKNESS OF 300 MICRONS.
5. ONCE THE PIPEWORK HAS BEEN INSTALLED ALL DAMAGED STEEL PIPEWORK TO BE REPAIRED USING AN APPROVED PROCEDURE AS PER TABLE "REPAIR OF PIPE COATINGS/LININGS".
6. ALL GATE VALVES TO BE INSTALLED UNDER SPACER RINGS AND No.5 VALVE COVER AS PER STANDARD PRECAST CONCRETE VALVE CHAMBER DETAILS.
7. THRUST BLOCKPIPE SUPPORTS TO BE INSTALLED UNDER ALL TEES AND VERTICAL 90° BENDS.
8. ALL FLANGE DRILLING TO BE TO SANS 1123 (PN16).
9. WHEN RECOMISSIONING THE PIPELINE, VALVE (4) MUST BE OPENED AND BOTH VALVES (5) SHOULD BE CLOSED FOR 72 HOURS FOR THRUST BLOCK CONCRETE TO CURE.
10. ALL STEEL PIPE TO BE IN ACCORDANCE WITH SANS 719 - MEDIUM BLACK - 6mm THICK.
11. A FULL 4 METER LENGTH OF EXISTING AC PIPE TO BE REMOVED TO ACCOMMODATE THE NEW INSTALLATION. NO REAMING OF AN EXISTING AC PIPE WILL BE PERMITTED.

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PROJECT

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DRAWING CHECKS

DESIGNED BY	A. CHETTY	N/A	
DRAWN BY	A. KADER	N/A	
DESIGNED CHECKED BY	K. HOFFMAN	N/A	
DRAWING CHECKED BY	A. CHETTY	N/A	

APPROVAL CONSULTANT

NAME D. PILLAY DATE
PROF REG. No. 201270383 SIGNATURE

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEA
THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE

STANDARD DETAILS
WATER
SHEET 3

DISCIPLINE

CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	DA - 810	C	0

D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT_RECORD / R: REPORT

SCALE As Indicate

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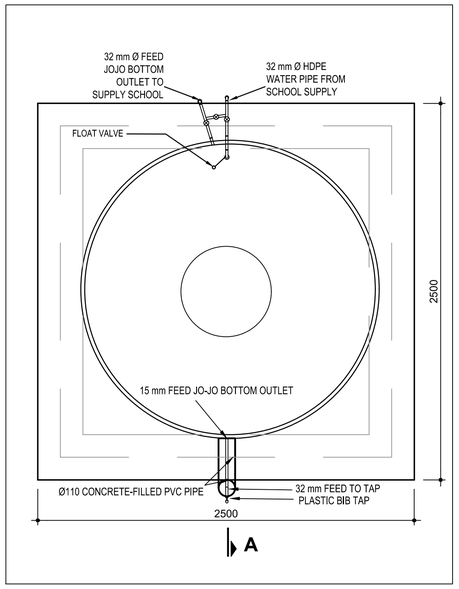
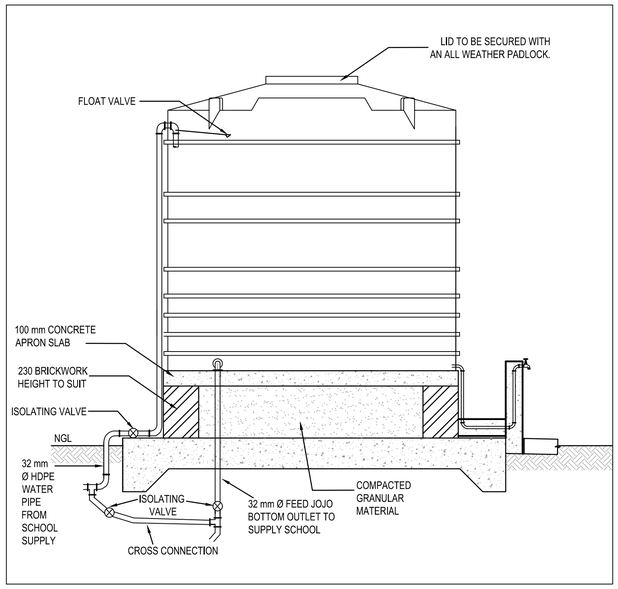
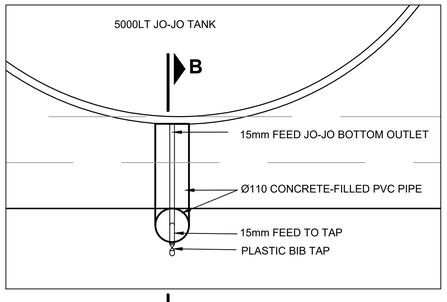


5000L JO-JO TANK
PLAN
NTS



SECTION A-A
NTS



STAND PIPE DETAIL PLAN
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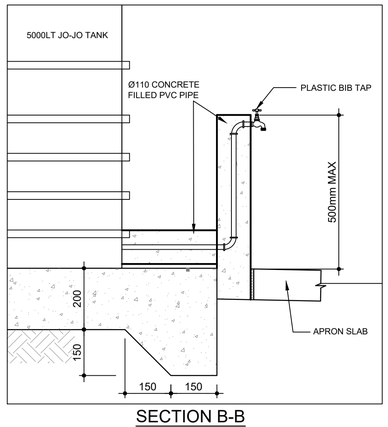

SECTION B-B
NTS

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DESIGNED CHECKED BY	K. HOFFMAN	N/A
DRAWING CHECKED BY	A. CHETTY	N/A

APPROVAL CONSULTANT

NAME D.PILLAY DATE
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STANDARD DETAILS
WATER
SHEET 4

DISCIPLINE
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AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	**DA - 811**	**C**	**0**

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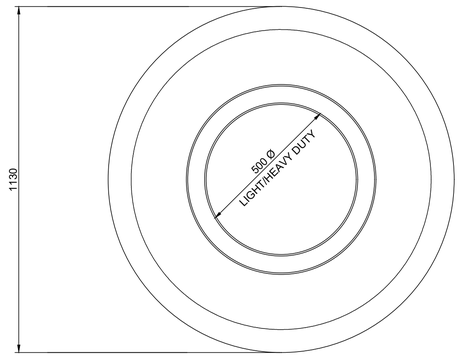
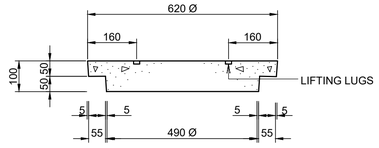
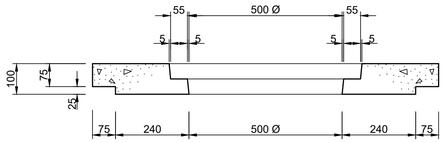


PLAN OF CIRCULAR LIGHT AND HEAVY DUTY FRAME FOR 1000 NOM. DIA. MANHOLE
SCALE : 1:10



SECTION OF CIRCULAR LIGHT DUTY MH COVER
SCALE: 1:10

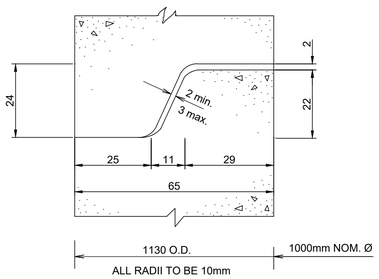


SECTION OF CIRCULAR LIGHT DUTY MH FRAME
SCALE: 1:10

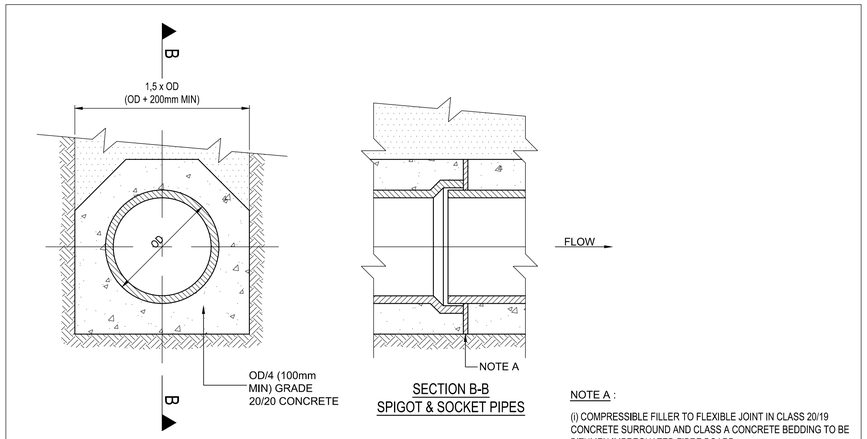
NOTES:

A. GENERAL

1. ALL PRECAST CONCRETE MANHOLE COMPONENTS TO COMPLY WITH THE REQUIREMENTS OF SANS 1294 (WHERE APPLICABLE)
2. LENGTHS OF INDIVIDUAL WALL UNITS ARE TO VARY IN MULTIPLES OF 250mm.
3. MEDIUM DUTY CONCRETE COVERS AND FRAMES ARE TO BE USED ON MANHOLES UNDER VEHICULAR TRAFFIC.
4. FOR DETAILS OF STEEL REINFORCEMENT TO MANHOLE COVERS,COVER SLABS AND FRAMES - SEE STANDARD PRECAST DETAILS LISTED.
5. DIMENSION "D" VARIES WITH THE DIAMETER OF THE PIPES. DIMENSION "D" SHALL BE TO A POINT 50mm ABOVE THE HIGHEST CROWN OF THE PIPES.
6. RENDERING FOR MANHOLE BENCHING SHALL CONSIST OF 1 PART CEMENT TO 3 PARTS SAND THOROUGHLY MIXED AND APPLIED TO CONCRETE SURFACES WHILE THE LATTER ARE STILL GREEN. RENDERING SHALL BE AT LEAST 20mm THICK.
7. THE LENGTH OF PIPE BUILT INTO THE MANHOLE SHALL NOT EXCEED 2.5m.
8.IN LOCATIONS DEFINED BY THE ENGINEER AS SUBJECT TO FLOODING, C.I. MANHOLE COVERS AND JOINTS SEALED WITH BOSTIK BUTYL TAPE OR SIMILAR, SHALL BE USED.



DETAIL OF JOINT
SCALE: 1:1



CONCRETE ENCASEMENT FOR FLEXIBLE PIPE
NTS

SECTION B-B
SPIGOT & SOCKET PIPES

NOTE A :

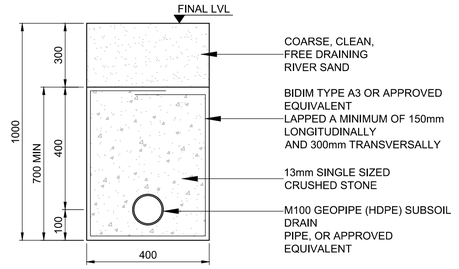
(i) COMPRESSIBLE FILLER TO FLEXIBLE JOINT IN CLASS 20/19 CONCRETE SURROUND AND CLASS A CONCRETE BEDDING TO BE BITUMEN IMPREGNATED FIBRE BOARD.

(ii) SOFTBOARD OR POLYSTYRENE OF THICKNESS 15mm FOR PIPES UP TO 450mm (& 30mm FOR PIPES 450-1200mm).

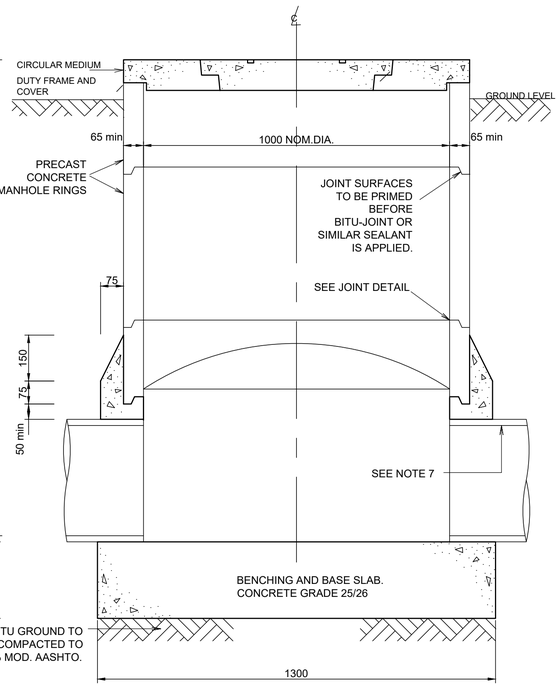
(iii) FLEXIBLE JOINT IN CONCRETE SURROUND EVERY 6m MIN LOCATED AT PIPE JOINTS.

NOTE:

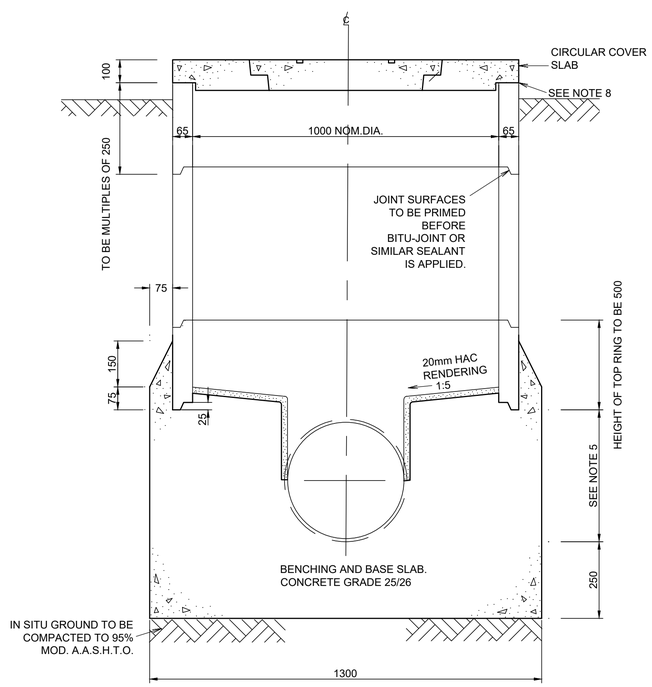
1. WHERE SUBSOIL DRAINS ARE CONSTRUCTED IN UNPAVED AREAS AN IMPERVIOUS MATERIAL SHALL BE USED FOR THE TOP 100mm OF TRENCH BACKFILL.



SUB-SOIL DRAIN DETAIL
SCALE 1:10



SECTION OF 1000 DIA. MANHOLE
SCALE: 1:10



SECTION OF 1000 DIA. MANHOLE
SCALE: 1:10

PRECAST STORMWATER RING MANHOLE DETAILS

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PROJECT
DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT
KZN DEPARTMENT OF PUBLIC WORKS

public works
Department:
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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
	2019-09-06	INITIAL ISSUE	

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DRAWN BY	A. KADER	N/A
DESIGNED CHECKED BY	K. HOFFMAN	N/A
DRAWING CHECKED BY	A. CHETTY	N/A

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NAME D. PILLAY DATE
PROF REG. No. 201270383 SIGNATURE

THE MASTER HELD AT THE **AECOM PIETERMARITZBURG OFFICE** BEARS THE ORIGINAL SIGNATURE OF APPROVAL

SHEET TITLE
STANDARD DETAILS
STORMWATER
SHEET 1

DISCIPLINE
CIVIL INFRASTRUCTURE

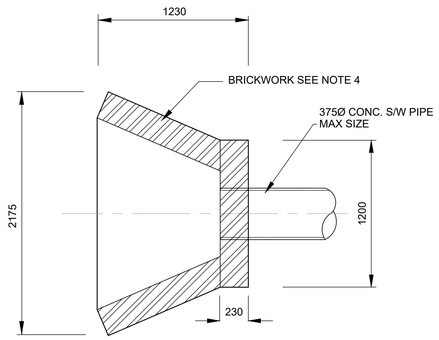
AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	**DA - 812**	**C**	**0**

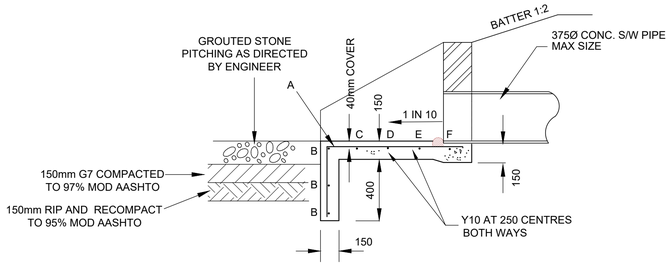
D: DRAFT / P: PRELIMINARY / T: TENDER / F: FINAL / C: CONSTRUCTION / A: AS-BUILT, RECORD / R: REPORT

SCALE As Indicated

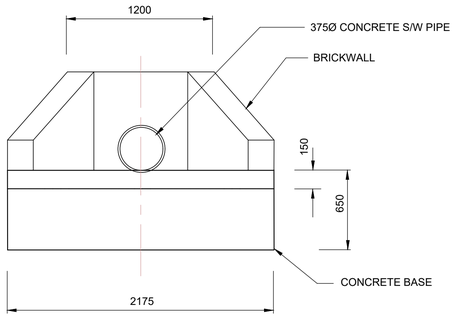
ISO A1 841mm x 594mm
Last Plotted: 2019/09/05 09:17:28
Plotted by: A.KHAN(ZA0000)
SCHOOLS\300 DRAWINGS\340 ENGINEERING - ADA\TYPICAL DETAILS\01_SOUTHERN TYPICAL DETAILS\LATEST REVISIONS\MANHOLE DETAILS.DWG
Printed on 100% Post-Consumer Recycled Content Paper



PLAN



SECTION



ELEVATION

HEADWALL DETAIL FOR PIPE 375Ø AND SMALLER

SCALE 1:25

REINFORCEMENT SCHEDULE FOR HEADWALL

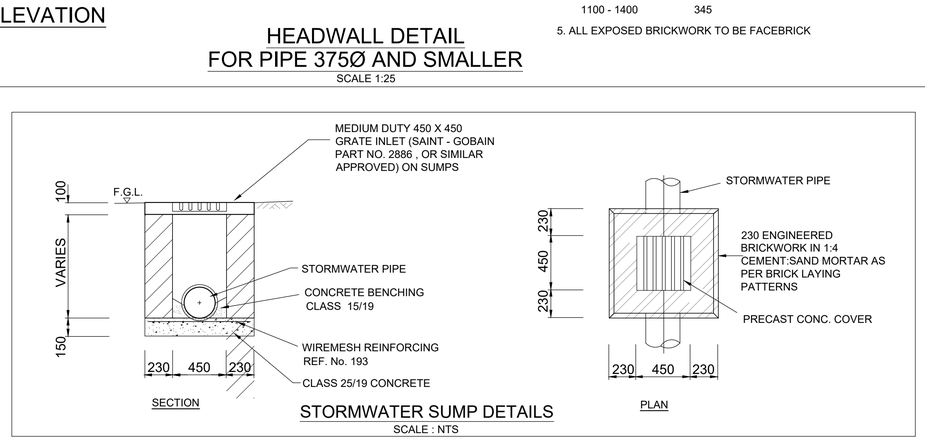
BAR MARK	No. IN EACH	TYPE & DIA.	LENGTH OF EACH BAR	SHAPE CODE	A	B
A	9	Y10	1600	37	450	
B	3	Y10	2050	20		
C	1	Y10	1750	20		
D	1	Y10	1500	20		
E	1	Y10	1300	20		
F	1	Y10	1100	20		

NOTES

1. CONCRETE GRADE 25/19 MPa
2. COVER TO STEEL 40mm MIN.
3. FINISHES:
   BOTTOM AND SIDES - OFF SHUTTER
   TOP - WOOD FLOAT
4. HEADWALL BRICKWORK SIZES (mm)

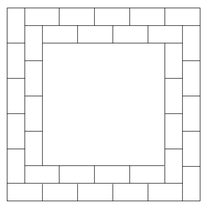
WALL HEIGHT	BRICKWORK
0 - 1100	230
1100 - 1400	345

5. ALL EXPOSED BRICKWORK TO BE FACEBRICK



STORMWATER SUMP DETAILS

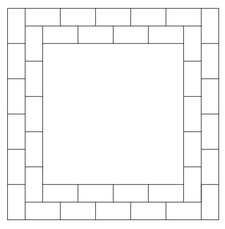
SCALE : NTS



PATTERN A

TO BE USED FOR THE FOLLOWING INTERNAL DIMENSIONS :

805mm
1035mm
1265mm
1495mm



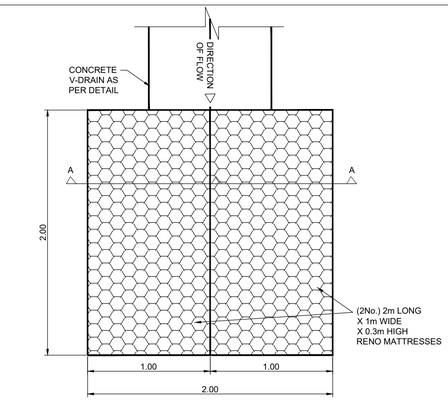
PATTERN B

TO BE USED FOR THE FOLLOWING INTERNAL DIMENSIONS :

820mm
1150mm
1380mm
1610mm

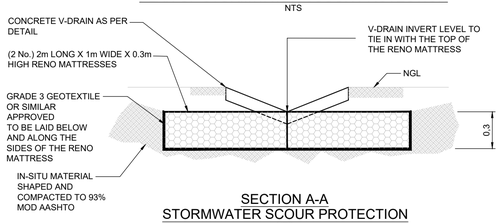
STORMWATER SUMP BRICK LAYING PATTERNS

NTS



PLAN OF STORMWATER SCOUR PROTECTION

NTS

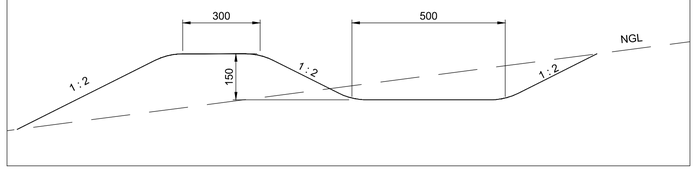


SECTION A-A
STORMWATER SCOUR PROTECTION

NTS

NOTES :

1. CATCHWATER BERM AND CHANNEL TO BE WELL COMPACTED TO AT LEAST 90% MOD AASHTO.
2. BERM AND CHANNEL TO BE TOPSOILED AND GRASSED IMMEDIATELY ACCORDING TO PROJECT SPECIFICATION.

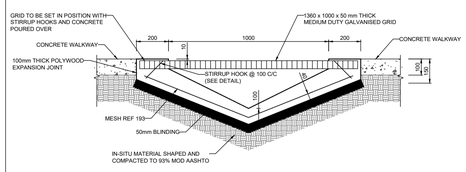


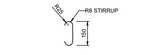
TYPICAL CATCHWATER BERM

SCALE 1:10

NOTE

1. TRANSITION FROM CONCRETE V-DRAIN CROSSING PATHWAY TO BE 1m.
2. CONCRETE CHANNEL TO BE CONSTRUCTED WITH 19/25 CONCRETE AND REINFORCED WITH MESH REF 193. MIN COVER 40mm.
3. CONTRACTOR TO INDENT GRID SLIGHTY (8mm) TO MAKE SURE STIRRUPS ARE FLUSH WITH GRID BEFORE POURING CONCRETE.

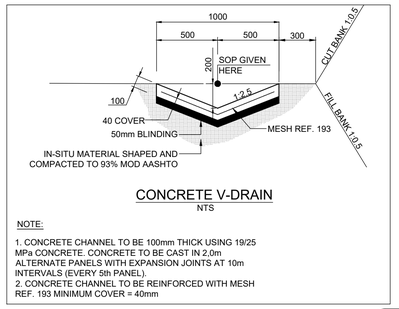




STIRRUP HOOK DETAIL

CONCRETE V-DRAIN CROSSING PATHWAY

NTS



CONCRETE V-DRAIN

NTS

NOTE:

1. CONCRETE CHANNEL TO BE 100mm THICK USING 19/25 MPa CONCRETE. CONCRETE TO BE CAST IN 2.0m ALTERNATE PANELS WITH EXPANSION JOINTS AT 10m INTERVALS (EVERY 5th PANEL).
2. CONCRETE CHANNEL TO BE REINFORCED WITH MESH REF. 193 MINIMUM COVER = 40mm

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PROJECT

DEPARTMENT OF EDUCATION
WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
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public works
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ISSUE / REVISION

I/R	DATE	DESCRIPTION	DRN
	2019-09-06	INITIAL ISSUE	

DRAWING CHECKS

DESIGNED BY	A. CHETTY	N/A
DRAWN BY	A. KADER	N/A
DESIGNED CHECKED BY	K. HOFFMAN	N/A
DRAWING CHECKED BY	A. CHETTY	N/A

APPROVAL CONSULTANT

NAME D.PILLAY DATE
PROF REG. No. 201270383 SIGNATURE

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SHEET TITLE

STANDARD DETAILS
STORMWATER
SHEET 2

DISCIPLINE

CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	DA - 813	C	0

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SCALE As Indicated

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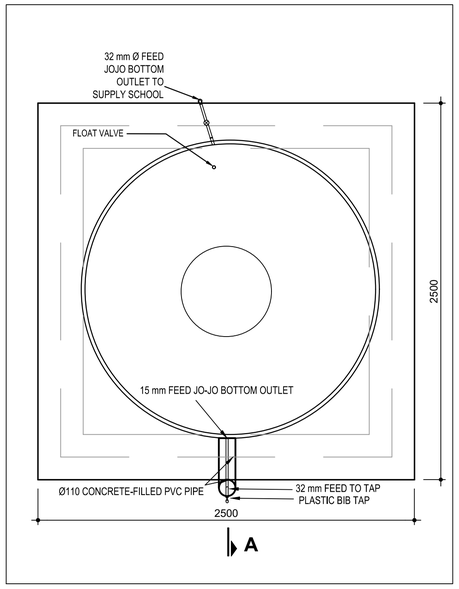
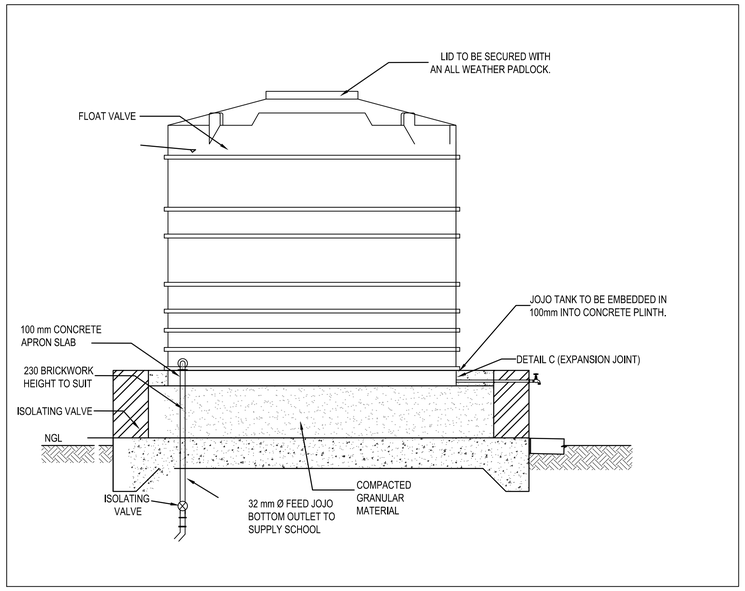


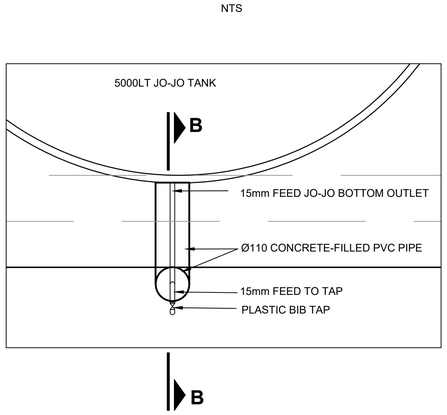
5000L JO-JO TANK PLAN

NTS



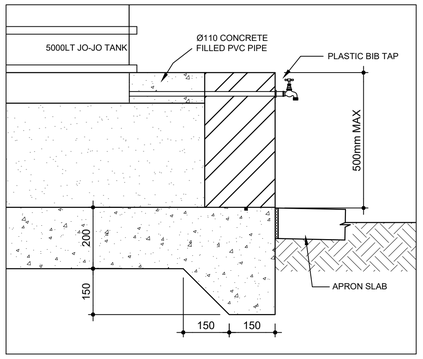
SECTION A-A

NTS



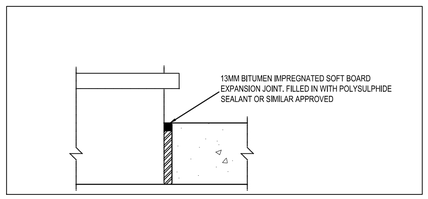
STAND PIPE DETAIL PLAN

NTS



SECTION B-B

NTS



DETAIL C

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PROJECT

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WATER AND SANITATION
PROGRAMME FOR SCHOOLS

CLIENT

KZN DEPARTMENT OF
PUBLIC WORKS

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NOTES

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DESIGNED CHECKED BY	S. RASOOL	N/A
DRAWING CHECKED BY	S. RASOOL	N/A

APPROVAL CONSULTANT

NAME T. RAMLAL DATE

PROF REG. No. 201370627 SIGNATURE

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SHEET TITLE

STANDARD DETAILS
WATER
SHEET 5 (FOR APPROVAL)

DISCIPLINE

CIVIL INFRASTRUCTURE

AECOM DRAWING NUMBER

PROJECT-No.	SUB-No.	WBS	DISC.	TYPE - NUMBER	STATUS	REV
60491906	01	0000	C	DA - 814	C	

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SCALE NTS

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ISO A1 841mm x 594mm

NOTES:

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METERS (m) AND PIPE DIAMETERS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE SPECIFIED.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
3. ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER.
4. ALL DIMENSIONS TO BE CHECKED BEFORE COMMENCEMENT OF WORK ON SITE.
5. LEVELS AND/OR DIMENSIONS ARE NOT TO BE OBTAINED BY SCALING FROM THE DRAWINGS.
6. SETTING OUT DIMENSIONS SHALL BE CONFIRMED ON SITE BEFORE CONSTRUCTION IS COMMENCED.
7. DURING CONSTRUCTION, THE CONTRACTOR SHALL:
   a) PROVIDE TEMPORARY BRACING/SUPPORT AS REQUIRED TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES
   b) IDENTIFY AND PROTECT ALL DRAINAGE SYSTEMS AGAINST CONSTRUCTION LOADINGS.
8. THE CONTRACTOR IS TO EXPOSE AND VERIFY ALL EXISTING SERVICES/ INFRASTRUCTURE ON SITE PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ON SITE, OR THE FABRICATION OF COMPONENTS FOR INSTALLATION ON SITE, OR THE ORDERING OF COMPONENTS FOR INSTALLATION ON SITE. THE CLIENT/EMPLOYER AND THE ENGINEER WILL NOT ENTERTAIN ANY ADDITIONAL PAYMENT CLAIMS FOR NEW COMPONENTS WHICH DO NOT MATCH WITH EXISTING SERVICES, OR WHERE EXISTING SERVICES CANNOT BE CONNECTED INTO DUE TO A LACK OF MATERIAL OR FITMENT COMPATIBILITY IN ANY WAY.
9. UNLESS DRAWINGS ARE IDENTIFIED AS "FOR CONSTRUCTION", THEY SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.
10. ANY PERMITS REQUIRED FOR CONSTRUCTION WORK SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
11. ALL DRAINAGE SYSTEMS SHALL BE CLEAN AND FREE OF DEBRIS AND SILT DURING CONSTRUCTION AND ON COMPLETION OF THE WORKS.
12. MODIFICATION TO THE DRAINAGE DESIGN WHICH MAY IMPACT ON ANY PIT (TYPE, LOCATION OR LEVEL) OR PIPE (TYPE, SIZE, LEVEL OR GRADE) OR INSTALLATION CONDITIONS SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR CONSIDERATION AND APPROVAL PRIOR TO ANY CHANGES BE CARRIED OUT ON SITE.
13. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HEALTH & SAFETY RISK MITIGATION ON SITE.
14. ALL CONSTRUCTION WORK MUST COMPLY WITH THE STANDARDIZED SPECIFICATION FOR CIVIL ENGINEERING CONSTRUCTION (**SANS 1200 SERIES**) AND RELEVANT DoPW STANDARDS.

EARTHWORKS:

1. A 150 mm LAYER OF TOPSOIL IS TO BE REMOVED BEFORE COMMENCEMENT OF EARTHWORKS AND REPLACED UPON COMPLETION.
2. ALL LEVELS SHOWN REFLECT THE TOP OF THE EARTHWORKS AND INCLUDE TOP SOIL.
3. ALL LEVELS TO BE BUILT WITHIN A TOLERANCE OF 50 mm.
4. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND PROTECTING ALL EXISTING SERVICES ON SITE.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE WORKS FROM SURFACE WATER RUNOFF THAT MAY CAUSE EROSION DAMAGE, USING CHANNELS, BERMS, PUMPS etc, AS AND WHEN REQUIRED AND DIRECT GROUND WATER AWAY FROM THE WORKS.
6. ALL FINAL CUT BANKS TO BE CONSTRUCTED AT A SLOPE OF OF 1 V : 2 H AND FILL BANKS AT 1 V : 2 H, UNLESS OTHERWISE SHOWN.
7. AREAS IN CUT ARE TO BE RIPPED AND RECOMPACTED TO MINIMUM 90% MOD AASHTO (100% FOR SAND).
8. FILL MATERIAL TO BE G7 QUALITY OR BETTER COMPACTED IN 150mm LAYERS TO MINIMUM 93% MOD AASHTO.
9. CONTRACTOR WILL BE SUPPLIED WITH BENCHMARK INFORMATION BEFORE CONSTRUCTION COMMENCES.
10. COORDINATES ARE IN ACCORDANCE WITH WGS 84 : LO 31.

RETAINING WALL: (IF REQUIRED)

1. ENGINEER TO APPROVE FOUNDING CONDITIONS PRIOR TO CASTING OF CONCRETE.
2. BOTTOM ROW OF BLOCKS TO BE SET IN WET CONCRETE OF STRENGTH 25 MPa AT 28 DAYS.
3. ALL BACKFILL TO BE COMPACTED TO MINIMUM 93% MOD AASHTO.
4. BACKFILL TO BE BENCHED INTO COMPETENT GROUND.
5. WEEPHOLES TO BE ALLOWED THROUGH STABILIZATION AT 2 m CENTRES.
   FIRST ROW 200 mm ABOVE FGL AND REPEAT IN 1 m LIFTS.
6. PROVISION OF SUBSOIL DRAIN TO BE CONFIRMED ON SITE.
7. DRYSTACK WALL TO BE CONSTRUCTED WITH A SLOPE OF 70 DEGREES.
8. STORMWATER BEHIND THE TOP OF THE WALL TO BE MANAGED IN SUCH A MANNER AS TO OBVIATE SCOUR BEHIND OR OVERTOPPING THE WALL.

STAIRCASE: (IF REQUIRED)

1. STEPS TO BE LG GREEN PRODUCT ST101 OR SIMILAR APPROVED.
2. FIRST STEP TO BE BEDDED INTO 300 mm THICK CONCRETE FOUNDATION.
3. LANDINGS TO BE 1 m LONG WITH MIN 1% SLOPE.
4. G7 MATERIAL TO BE USED FOR ALL FILL UNDER STEPS.
5. RAMP AND LANDINGS TO BE 100 mm THICK ON 150 G7 BEDDING COMPACTED TO 97% MOD AASHTO.

FOR CONSTRUCTION

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1. DRAWINGS ARE NOT TO BE SCALED. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORKS. ANY DISCREPANCIES TO BE BROUGHT TO THE ENGINEER / ARCHITECT'S ATTENTION IMMEDIATELY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SCHEDULES AND SPECIFICATIONS RELATED TO THIS PROJECT.
3. ALL BUILDING WORK AND MATERIALS ARE TO COMPLY WITH LOCAL AUTHORITY'S REQUIREMENTS AND ARE TO BE IN ACCORDANCE WITH SANS 10400 NATIONAL BUILDING REGULATIONS

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KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURES

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DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
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ANNEXURE 1
MODEL PREAMBLE FOR TRADE 2008

The Association of South African Quantity Surveyors
Die Vereniging van Suid-Afrikaanse Bourekenaars

MODEL PREAMBLES FOR TRADES 2008

forming part of
the bills of quantities

Project: Mhlaba JJS

Contract Reference Number: 064404

Effective date November 2008

ISBN 978-0-620-1663-4

EXPLANATORY NOTES AND INSTRUCTIONS ON THE USE OF THESE MODEL PREAMBLES

1. The document

1.1 This document is published by and is available from the Association of South African Quantity Surveyors, P.O. Box 3527, Halfway House, 1685. Telephone (011) 315 4140. E-mail: administration@asaqs.co.za

1.2 The contents of this document are intended to cover workmanship and materials encountered in a significant majority of projects. If a material is not encountered in a significant majority of projects, its preamble will in all likelihood not be included in this document

1.3 By its very nature, this document is a "Model" document and one that is designed to act as a basis upon which to build. It is anticipated that it will be supplemented by a "Supplementary Preambles" document included in the text of the bills of quantities that will include, *inter alia*, the following:

1.3.1 supplementary clauses of a general nature that practitioners may deem necessary to cover their own individual requirements,

1.3.2 additional clauses pertaining to specific materials incorporated in a project and not covered by the Model Preambles,

1.3.3 amendments to anything contained in the Model Preambles. A clause has been incorporated in the "General" section of the document stipulating that anything contained in the "Supplementary Preambles" which is at variance to that which is contained in the Model Preambles, will take precedence over the Model Preambles and apply to the works in hand

1.4 It is intended that this document will be used by reference only in the text of the bills of quantities and will NOT be bound or reproduced therein

2. The basic philosophy

2.1 Wherever possible, reference has been made throughout the preambles to South African National Standards (SANS) to describe materials and methods respectively. It is therefore incumbent on the users of these preambles to have ready access to the relevant Specifications and Codes. Where such Specifications or Codes do not exist, suitable preambles have been compiled

2.2 These preambles have been designed to assist in abbreviating descriptions in the text of the bills of quantities and practitioners are encouraged to make use of this facility. e.g. The description of a stormwater catchpit would read:

"Brick stormwater catchpit size internally 600 x 400 x 1 200mm deep to invert fitted with and including a 450 x 300mm x 59kg cast iron grating and frame"

2.3 Wherever alternatives exist in respect of materials or workmanship, specific choices have been made in these preambles. Should users require different choices to specific items, these should be referred to in the Supplementary Preambles as outlined in clause 1.3

3. Additional notes in the use of these Model Preambles

3.1 **Concrete, Formwork and Reinforcement**

The Project Specification embodied in these preambles was compiled in collaboration with the Authors of SANS 1200G, which forms the basis for the Concrete, Formwork and Reinforcement model preambles

Users of these preambles are advised to submit a copy of the Model Preambles to the Engineers involved in a project for their scrutiny. Any amplifications, amendments, etc required by individual Engineers would then be incorporated in the Supplementary Preambles referred to in item 1.3

3.2 **Roof Coverings**

The roof coverings included in these Model Preambles are limited in their content and therefore any roofing material not included in these Preambles will need to have its full preamble included in the Supplementary Preambles

3.3 **Structural Steelwork**

The comments made under item 3.1 apply equally to Structural Steelwork

Note that the protective treatment of the structural steel covers only the treatment up to and including the primer (and patching after erection). The finishing coats of paint must be fully described and included either in the "Structural Steelwork" or in the "Paintwork" trade, as the practitioner wishes

MODEL PREAMBLES FOR TRADES

CONTENTS

REFERENCE	TRADE	PAGE
A	General	2
B	Alterations	3
C	Earthworks	4
D	Concrete, Formwork and Reinforcement	6
E	Precast Concrete	10
F	Masonry	11
G	Waterproofing	14
H	Roof Coverings etc	15
I	Carpentry and Joinery	17
J	Ceilings, Partitions and Access Flooring	20
K	Floor Coverings, Wall Linings, etc	22
L	Ironmongery	23
M	Structural Steelwork	24
N	Metalwork	25
O	Plastering	29
P	Tiling	31
Q	Plumbing and Drainage	32
R	Glazing	41
S	Paintwork	42
T	Paperhanging	44
U	External Works	45

A. GENERAL

A.1 APPLICATION OF CLAUSES

These Model Preambles for Trades, and any Supplementary Preambles, shall be read in conjunction with and shall form part of the descriptions of items in the bills of quantities

Where descriptions or Supplementary Preambles in the bills of quantities differ from these Model Preambles for Trades, the descriptions or Supplementary Preambles in the bills of quantities shall take precedence. Where supplementary preambles differ from descriptions in the bills of quantities, the descriptions in the bills of quantities shall take precedence

Except where otherwise stated, all preambles contained in any individual Trade Preamble shall apply equally to any work of a similar nature in all other trades

A.2 ABBREVIATIONS

The following abbreviations shall apply:

AASHTO	–	American Association of State Highway and Transportation Officials
AISI	–	American Institute of Steel Industries
BS	–	British Standard
CKS	–	Coordinating Specifications issued by the Central Coordinating Committee under the auspices of the South African Bureau of Standards
CSIR	–	Council for Scientific and Industrial Research
SANS	–	South African National Standards and the number following shall refer to the relevant specification or code of practice as the case may be

A.3 MATERIALS AND WORKMANSHIP

Materials and workmanship shall be the best of their respective kinds. Only new and undamaged materials shall be used in the Works. Materials to be permanently installed into the works shall not be used for any temporary purposes on site. Work shall be to the approval of the Principal Agent and shall be executed in accordance with the relevant manufacturer's written recommendations and instructions where applicable

A.4 PROPRIETARY PRODUCTS

For the purposes of submission of tenders, rates for items described in the bills of quantities by trade names, catalogue references, etc shall be for the particular type and manufacture specified

The approval of the Principal Agent shall be obtained prior to any substitution and where products or materials etc other than those specified are used, adjustments in the rates will be made if necessary

A.5 ASSEMBLING

Rates for manufactured items shall include assembling complete and handing over in proper working order

A.6 REFERENCES IN DESCRIPTIONS

Any references given in brackets at the end of certain descriptions shall refer to the relevant references on the drawings or schedules

A.7 WATER

Water shall be clean and free from injurious amounts of acids, alkalis, organic matter and other substances and shall be suitable for its intended use

A.8 APPLICATION OF THE NATIONAL BUILDING REGULATIONS

All work shall be executed in accordance with the requirements of SANS 10400

A.9 ACCURACY IN BUILDINGS

The dimensional and positional accuracy of the buildings and their component parts shall comply with Grade II requirements of SANS 10155 unless otherwise stated

A.10 REFERENCES TO OTHER DOCUMENTS

References in these "Model Preambles for Trades" to other documents, including SANS, CKS and BS, shall pertain to the latest edition thereof including all amendments thereto at the date for submission of the tender

B. ALTERATIONS

B.1 ALTERATIONS

In taking down and removing existing work the utmost care shall be observed to prevent any structural or other damage to remaining portions of the building. The Contractor shall ensure the stability of all structures during alteration work

Special care shall be exercised during the progress of the work to ensure that any electrical installations, water supply pipes, telephone and other services which may be encountered are not interfered with and notice shall be given to the Principal Agent if any disconnection or alterations become necessary

The Contractor shall take all precautions necessary to prevent any nuisance from dust whilst carrying out the work

B.2 MATERIALS FROM THE ALTERATIONS, CREDIT, ETC

Materials recovered from the alterations (except where described as to be re-used or to be handed over to the Employer) will become the property of the Contractor, who may allow credit in respect thereof where provided for in the bills of quantities. Such materials shall not be re-used in new work without written permission from the Principal Agent

Materials described as “removed” shall be removed from the site immediately.

Materials described as “handed over to the Employer” shall be carefully dismantled where necessary, neatly stored under cover on the site where directed and protected from damage, until required

Materials described as “set aside for re-use” shall be carefully dismantled where necessary, cleaned, neatly stored under cover and protected from damage until required for re-use. Any damage caused to such materials during removal, storage or refixing shall be made good at the Contractor’s expense

B.3 DISPOSAL OF DEBRIS ETC

The Contractor shall be responsible for the removal from the site of all materials, debris and rubbish resulting from the alterations

B.4 MAKING GOOD DAMAGED WORK

The Contractor shall make good in all trades to existing work where damaged or disturbed through the alterations with all necessary new materials to match the existing

B.5 FORMING NEW OPENINGS OR ALTERING OPENINGS IN EXISTING WALLS

Where new openings are formed or openings altered in existing walls, the wall above the opening shall be broken out and a new brick, in situ concrete or prestressed concrete lintel inserted, complete with all necessary reinforcement, formwork, turning piece, etc, the jambs and portions of openings as described shall be built up with new brickwork or blockwork properly toothed and bonded to existing, cavities of hollow walls shall be closed where necessary and finishes shall be made good all round and into reveals

B.6 BUILDING UP OPENINGS

Where existing openings are given in number as built up, the existing surfaces all round shall be prepared as necessary, brickwork or blockwork properly toothed and bonded to existing, wedged up to underside of existing lintel and finishes shall be made good on both sides

C. EARTHWORKS

C.1 DEMOLITIONS

C.1.1 Nature and extent

Descriptions of demolitions give a rough guide only as to the scope of the work. Tenderers are therefore advised to visit the site before submitting a tender and to acquaint themselves with the nature and extent of the work to be done and the value of recoverable materials which are not to be re-used or handed over to the Employer. Unless otherwise stated, loose furniture, kitchen and other equipment, apparatus, machinery, etc shall remain the property of the Employer and the removal thereof does not fall within the scope of this Contract

The Contractor shall completely demolish the buildings etc in a careful, skilful, practical and safe manner down to 150mm below ground level

Demolitions shall include breaking up and removing:

all floors and surface beds;

all external screen walls, steps, ramps, aprons, surface water channels, rainwater sumps, gulleys, etc attached to the building to be demolished;

all services, manholes, etc in ground to a point not less than 1m beyond the perimeter of the building including plugging off ends of all remaining pipes, drains, etc, filling in holes where necessary and ramming and levelling to ground level

Where only a portion of a building is to be demolished, it shall be done without damage to the remaining portion of the building. Any such damage shall be made good by the Contractor at his own expense

C.1.2 Notices etc

The Contractor shall, before commencing work, obtain all necessary authorisation for carrying out the work, by whatever means including the use of pneumatic equipment or blasting, give all necessary notices and pay all charges and fees in connection therewith. He shall also comply with all regulations pertaining to rodent extermination and he shall obtain the requisite Rodent Extermination Clearance Certificate and pay all necessary fees. All receipts and certificates shall be left in the safekeeping of the Principal Agent. All the abovementioned charges and fees shall be paid by the Contractor and included in his prices

The Contractor shall give ample notice to the Principal Agent and Local Authorities regarding any disconnections necessary prior to the removal or interruption of electrical or telephone cables, water and sanitary services etc

C.1.3 Loss

After the handing over of the site to the Contractor, the full risk of any loss or damage to buildings to be demolished shall be the responsibility of the Contractor and he shall take such precautions as he deems necessary against such loss or damage

C.1.4 Materials from the demolitions, credit, etc

Materials recovered from the demolitions will become the property of the Contractor, who may allow credit in respect thereof where provided for in the bills of quantities. Such materials shall not be re-used in any new work without written permission from the Principal Agent

C.1.5 Disposal of debris etc

The Contractor shall be responsible for the removal from the site of all materials, rubble, debris and rubbish resulting from the demolitions

C.2 SOIL INSECTICIDES

The application of soil insecticides shall be carried out in accordance with “The application of soil insecticides for the protection of buildings” - SANS 10124

C.3 FILLING ETC

C.3.1 **Filling generally**

Filling over site shall be spread, levelled, watered and consolidated in layers not exceeding 300mm

Filling under floors and backfilling to excavations shall be suitable inert material, free from clay, vegetable matter, large stones, etc, having a maximum plasticity index of 10, spread, levelled and compacted to a density of at least 90% Mod. AASHTO

C.3.2 **Hardcore**

Hardcore shall be broken stone or other approved hard material graded from 25mm to 75mm with the finer material on top and shall be spread, levelled and consolidated

C.4 EXCAVATIONS

C.4.1 **Classification of excavated material**

“Hard rock” shall mean granite, quartzitic sandstone or other rock of similar hardness, the removal of which requires drilling, wedging and splitting or the use of explosives

“Soft rock” shall mean hard material the removal of which warrants the use of pneumatic tools and includes hard shale, ferricite, compact ouklip and material of similar hardness

“Earth” shall mean all ground other than that classified as “hard rock” or “soft rock” and shall include made-up ground and any loose stones or pieces of concrete not exceeding 0,03m^3 in volume

D. CONCRETE, FORMWORK AND REINFORCEMENT

D.1 SPECIFICATION FOR CONCRETE WORK GENERALLY

All in situ concrete work (plain and reinforced) shall comply with SANS 1200G supplemented by the following Project Specification. Where SANS 1200G and the Project Specification are in conflict, the Project Specification shall take precedence

Wherever the term "Engineer" appears in SANS 1200G or in the following Project Specification this shall be deemed to mean the Principal Agent's representative responsible for this section of the Works

PROJECT SPECIFICATION

The following amplifications, additions and amendments to SANS 1200G shall constitute the Project Specification. Clause numbers refer to either the existing clauses in SANS 1200G or to new clauses, which are related to the existing clauses

1. **SCOPE**
This clause is amended to include:

1.1 This specification does not cover the methods by which the finished structure is to be measured for the purpose of payment and the "Standard System of Measuring Building Work" shall apply

2. **INTERPRETATIONS**

2.1 **SUPPORTING SPECIFICATIONS**
Clause 2.1(b) shall not apply

2.2 **APPLICATION**
This clause shall not apply

4. **PLANT**

4.5 FORMWORK

4.5.2 **Finish**
Unless otherwise stated the quality of all formwork shall be such that the finished surface of the concrete is "Rough" in terms of clause 5.2.1(a)

5. **CONSTRUCTON**

5.2 FORMWORK

5.2.1 **Classification of Finishes**

(a) **Rough**. No treatment of the surface of the concrete will be required after the striking of the formwork. The finish of the concrete need not be more accurate than Degree of Accuracy III

(b) **Smooth**. Imperfections such as small fins, bulges, irregularities, surface honeycombing and surface discolorations shall be made good and repaired by approved methods. The finish of the concrete shall be accurate to Degree of Accuracy II

(c) **Special**

(i) **Smooth and fair**

This class of finish requires the highest standard of concrete work, formwork, accuracy and technique

Concrete placed in any one structure to give this finish shall be made from cement and aggregates from the same source. The grading of the aggregate shall be kept constant

Formwork shall be metal, wrot timber or other approved material in new condition designed and constructed to suit the particular job in hand and with shutter bolts and joints between panels in a regular pattern approved by the Principal Agent. Joints between panels shall be watertight, but the use of sealing tape which will mark the concrete shall not be permitted

Designated joints shall be in the position and of the details shown upon the working drawings. Should the Contractor wish to incorporate further construction joints or amend the position of those shown to suit his own requirements or technique, this may be allowed provided that all design considerations are met, that the prior approval of the Engineer is obtained and that any extra costs are borne by the Contractor

In the case of horizontal construction joints, the top edge of the concrete on the smooth and fair finished side shall be struck true and level with a trowel

Special care shall be taken to ensure that forms are clean and free of all pieces of tying wire, nails and other debris at the time of concreting

The standard of finish shall be such that upon removal of the formwork, no further treatment, other than treatment of bolt holes if required, shall be found necessary to provide a straight, smooth and uniform finish of good quality and consistent colour and texture, free of all honeycombing etc. Any defect shall be made good by either removing and replacing the defective concrete or, in certain instances only, by patching

5.5 CONCRETE

5.5.1.6 **Prescribed mix concrete**

Where prescribed mix concrete is specified the proportions of constituents, the maximum size of coarse aggregate and the estimated minimum compressive strength shall be as specified in the following table:

Class of Concrete	Estimated minimum compressive strength in MPa at 28 days	Maximum nominal size of coarse aggregate in mm	Proportions of Constituents		
			Cement (Parts)	Fine aggregate (Parts)	Coarse aggregate (Parts)
A	7	37,5	1	4	8
B	15	19	1	3	5
C	20	19	1	2,5	3,5

Cement shall comply with SANS 50917-1 of strength 32,5N or higher

Should cement and aggregates be mixed by volume, the contents of a 50kg sack of cement shall be taken to be 0,033m^3

Notwithstanding the requirements contained in SANS 1200G, the Principal Agent may permit certain items of non-structural concrete to be mixed by hand

If the concrete is mixed by hand, it shall first be mixed in a dry state on a clean non-absorbent surface until it is of uniform colour and consistency. Just enough water shall then be added to permit mixing and working, at which stage the concrete shall continue to be mixed until it is of uniform colour and consistency

5.5.1.7 **Strength concrete**

Where strength concrete is specified it shall be designated by its specified strength followed by the size of stone used in its manufacture, eg 30 MPa/19mm

The water/cement ratio shall be as Table 5 of clause 5.5.1.5 for moderate exposure conditions

5.5.1.8 "**No-Fines" concrete**

"No-fines" concrete shall consist of one part cement to eight parts aggregate graded from minimum 6mm to maximum 13mm size

The quantity of water used shall be just sufficient to form a smooth grout which shall completely coat every particle of aggregate and also to ensure that the grout is just wet enough to form a small fillet at each point of contact between the stones. “No-fines” concrete mixed with excessive water, which results in a thin grout, which drops off the aggregate, will be rejected

“No-fines” concrete shall be placed in its final position within 20 minutes of mixing and shall be placed in continuous horizontal layers. Concrete shall be spade worked sufficiently to ensure that it fills the forms but vibrating, tamping or ramming will not be permitted

5.5.3.2 **Ready-mixed concrete**

The use of ready-mixed concrete and the acceptability of test results from a central concrete production facility shall be subject to the written approval of the Engineer

6. **TOLERANCES**

Degree of Accuracy II shall apply for all work unless otherwise stated

7. **TESTS**

7.1 FACILITIES AND FREQUENCY OF SAMPLING

7.1.2 **Frequency of sampling**

7.1.2.5 The frequency of sampling shall be as directed by the Engineer, but not less than one set of cubes from every 50m³ cast

8. **MEASUREMENT AND PAYMENT**

This clause shall not apply

D.2 AGGREGATES OF LOW DENSITY

Aggregates of low density shall comply with SANS 794

D.3 HOLLOW BLOCKS, PREFABRICATED BLOCK BEAMS AND PLANKS, ETC

Blocks, block beams, planks, etc shall be fixed and supported in such a manner that no movement can take place before or during the casting of concrete. No broken components shall be used

D.4 SUPERVISION

A competent and experienced foreman shall superintend personally the whole of the concrete construction and pay special attention to:

(a) The quality, testing and mixing of materials,
(b) The placing and compaction of concrete,
(c) The construction and removal of formwork and
(d) The sizes and position of reinforcement

The Contractor shall obtain the permission of the Principal Agent before commencing concreting of foundations or reinforced structure

No inspection, approval, authorisation to proceed, comment or instructions following from such an inspection, or failure of the Principal Agent to comment on any particular aspect of the work, shall be deemed to relieve the Contractor in any way from his obligation to ensure through his own supervision that the work is constructed in every way in accordance with the Drawings, Specification and Conditions of Contract, nor relieve him from his obligations to make good any fault or defect, nor shall it be deemed that there is any obligation on the Principal Agent to inspect all or any part of the Works or that such inspection is necessarily complete in every respect

D.5 GENERAL

Concrete

Rates for concrete work shall include all “construction joints” other than “designated joints” as defined in SANS 1200G clause 2.4.3 which are measured separately, and for the design of strength concrete mixes and all testing of concrete and materials other than compressive strength testing of concrete samples taken from concrete being placed in the Works. The Contractor shall only be entitled to payment for those samples and compressive strength tests called for by the Engineer and which pass the test requirements

Surface beds cast in panels shall be cast in panels approximately 9m^2

Formwork

Formwork to slabs and beams shall be cambered where required
Rates for formwork to soffits shall include propping not exceeding 3,5m high unless otherwise described. Formwork to walls and columns is not exceeding 3,5m high above bearing level unless otherwise described

Reinforcement

Standard welded steel fabric reinforcement shall be as included in Table 1 of SANS 1024 and shall have 300mm wide laps.

The mass of binding wire is not included in the mass of the reinforcement and the cost thereof shall be included in the rates for the reinforcement

E. PRECAST CONCRETE

E.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Precast concrete paving slabs SANS 541

Cement, water, aggregates and reinforcement shall be as described under D. CONCRETE, FORMWORK AND REINFORCEMENT

E.2 CONCRETE

Concrete shall be as described under D. CONCRETE, FORMWORK AND REINFORCEMENT and unless otherwise stated shall be prescribed mix concrete Class C but with coarse aggregate of an appropriate size

E.3 MOULDS

Before each casting, moulds shall be coated with a suitable release agent which will not in any way discolour the surface of the finished product or impair its strength. Where items are described as “finished smooth from the mould” or as “precast terrazzo”, moulds shall be made to a high degree of accuracy and shall be such as to leave even and smooth surfaces

E.4 FINISHES TO BLOCKS

Where described as “precast terrazzo”, such surfaces shall have a facing of terrazzo described under O. PLASTERING. The facing shall be poured into the moulds in a wet state (not dry pressed) and thoroughly worked up against finished faces to ensure that it finishes smooth from the mould

Projections shall be rubbed off and faces shall be of even colour and free from blemishes, cracks and other imperfections. Salient angles shall be arris rounded

E.5 CASTING ETC

Items shall be suitably cured, shall not be handled whilst still green and shall not be built in within 21 days of casting

E.6 REINFORCEMENT

Unspecified reinforcement required for manufacturing, handling and erection purposes and for reinforcing projecting and other unwieldy portions of blocks shall be provided by the Contractor at his discretion

E.7 BEDDING, JOINTING AND POINTING

Blocks shall be bedded and jointed solidly in Class I mortar as described under F. MASONRY and shall be pointed with slightly keyed joints

Blocks finished with “precast terrazzo” shall have joints raked out and pointed with slightly keyed joints in tinted waterproofed mortar composed of one part cement and three parts sand to match terrazzo facing

E.8 GENERAL

Precast concrete work shall include reinforcement required for manufacturing, handling and erection purposes, steel rod or wire hooks and/or mortices for lewis bolts required for handling and transporting, any necessary temporary propping and strutting and bedding, jointing and pointing

F. MASONRY

F.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Burnt clay masonry units	SANS 227
Limes for use in building	SANS 523 {Slaked (hydrated) limes}
Aggregates from natural sources – fine aggregates for plaster and mortar	SANS 1090
Concrete masonry units	SANS 1215
Prestressed concrete lintels	SANS 1504
Burnt clay paving units	SANS 1575
Metal ties for cavity walls	SANS 28
Common cement	SANS 50197-1 (Class 32,5N)
Masonry cement	SANS 50413-1 (Class 22,5X)
Concrete masonry construction	SANS 10145
The structural use of masonry	SANS 10164-1
Masonry walling	SANS 10249
Concrete floors	SANS 10109-1&2

F.2 SAND

Sand shall be washed where necessary and screened through a 2,4mm mesh sieve

F.3 BURNT CLAY BRICKS

Burnt clay bricks shall be of nominal size 222 x 106 x 73mm unless otherwise stated

Common bricks shall be General Purpose bricks

Extra hard burnt bricks shall be General Purpose (Special) bricks

Facing bricks shall exhibit a liability to efflorescence not in excess of “Slight” and water absorption when tested in conformity with the requirements of SANS 227 shall not exceed 14%

Particular care shall be taken to preserve arrisses and faces of facing and paving bricks during transit and handling

F.4 CONCRETE BRICKS

Concrete bricks shall have a nominal compressive strength of 8 MPa

F.5 QUARRY TILES ETC

Quarry, cement and similar tiles shall be of approved manufacture, even in shape and size, free from cracks, twists or blemishes and uniform in colour

F.6 WIRE TIES

Wire ties shall be of galvanized steel of the single wire type for solid walls and either the “Butterfly” or Modified PWD type for hollow walls. Ties shall be of sufficient length to allow not less than 75mm of each end to be built into brickwork or embedded in concrete

F.7 BRICKWORK REINFORCEMENT

Brickwork reinforcement shall be manufactured from hard drawn steel wire conforming to BS 785 and shall consist of two 2,8mm diameter main wires with 2,5mm diameter cross wires at 300mm centres welded at intersections

Brickwork reinforcement shall be lapped not less than 300mm at end joints and for a length equal to the width of the widest reinforcement at intersections

F.8 MORTAR

Mortar shall comply with the following table:

1	2	3	4
Mortar Class	Minimum compresive strength MPa	Cement:sand (common cement)	Cement:sand (masonry cement)
I	10	1:4 or 50kg to 130 litres	1:3 or 50kg to 100 litres
II	5	1:6 or 50kg to 200 litres	1:5 or 50kg to 170 litres
III	1,5	1:9 or 50kg to 300 litres	1:6 or 50kg to 200 litres

Mortar shall be Class II unless otherwise specified

Mortar plasticizers may only be used with the approval of the Principal Agent

The materials shall be mixed dry until of uniform colour, water added and the mixture turned over until the ingredients are thoroughly incorporated

Mortar shall be produced in such quantities as can be used before commencement of set and no mortar that has set shall be used

F.9 COMPO MORTAR

Compo mortar shall be Class III mortar in accordance with clause F.8 but with a lime content of 80 litres

The lime and sand shall be mixed dry until of uniform colour, water added and the mixture turned over until the ingredients are thoroughly incorporated. Immediately before use, the cement shall be mixed in and the requisite amount of water added. Compo mortar shall be produced in such quantities as can be used before commencement of set and no compo mortar that has set shall be used

F.10 BRICKWORK

Wherever practicable, brickwork shall be built in stretcher bond. Unless legitimately required to form bond, no false headers shall be used. English bond shall only be used where specifically so indicated or where stretcher bond is not practicable

Brickwork, unless otherwise described, shall be built in Class II mortar

Bricks shall be laid on a solid bed of mortar and all joints shall be grouted up solid

The brickwork shall be carried up in a uniform manner, no part being raised more than 1,2m above adjoining work

Where necessary, bricks shall be wetted before being laid and the course of bricks last laid shall be well wetted before laying a fresh course upon it

Walls in thicknesses of more than one skin shall have at least five wire ties per square metre. Linings to concrete, unless otherwise specified, shall be tied to the concrete with at least five wire ties per square metre

Hollow walls, unless otherwise specified, shall be built of two half brick skins with cavity between, tied together with at least five wire ties per square metre. The cavities shall be kept free of all rubbish, mortar droppings and projecting mortar. Mortar joints to brickwork shall be not less than 8mm or more than 12mm thick

F.11 BLOCKWORK

Unless otherwise described, all blockwork shall be built in stretcher bond. Whole blocks shall be used except where bats or closers are required to form bond. Blockwork, unless otherwise described, shall be built in Class II mortar

Solid blocks shall be laid on a solid bed of mortar and all joints shall be grouted up solid

Hollow blocks shall be laid in shell bedding, ie only the inner and outer shells of the blocks shall be covered with mortar. Vertical joints shall be similarly formed

The blockwork shall be carried up in a uniform manner, no part being raised more than 1,2m above adjoining work

Clay blocks shall be wetted before being laid and the course of blocks last laid shall be well wetted before laying a fresh course upon it

F.12 CENTRES AND TURNING PIECES

Centres and turning pieces to soffits of arches and lintels shall be left in position for not less than 14 days

F.13 FACE BRICKWORK

Face brickwork shall be built in stretcher bond, unless otherwise specified, to a true and fair face. Perpends shall be vertically aligned

Facing bricks shall be mixed to ensure that the proper blending of bricks within the colour range of each facing brick being used is obtained

F.14 PAVINGS, SILLS, COPINGS, ETC

Clay bricks and tiles shall be wetted before fixing and shall be solidly bedded and jointed in Class I mortar and pointed with slightly keyed joints

G. WATERPROOFING

G.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Bituminous damp-proof courses	SANS 248 (Type FV)
Polyolefin film for damp- and waterproofing in buildings (walls, sills, etc)	SANS 952 (Type B)
Polyolefin film for damp- and waterproofing in buildings (floors and basements)	SANS 952 (Type C)
Mastic asphalt for roofing	SANS 297
Mastic asphalt for damp-proof courses and tanking	SANS 298
Bituminous roofing felt	SANS 92 (Type 60)
Polyolefin film for damp- and waterproofing in buildings (flat roofs)	SANS 952 (Type A)
Chloroprene rubber sheet (for waterproofing)	SANS 580
Sealing compounds for the building industry, two-component, polysulphide base	SANS 110 (Type 2 - Gun Grade)
Sealing compounds for the building and construction industry, two- component, polyurethane base	SANS 1077
The waterproofing of buildings (including damp-proofing and vapour barrier installation)	SANS 10021

G.2 WATERPROOFING TO ROOFS, BASEMENTS, ETC

Waterproofing to roofs, basements, etc shall be carried out by workmen who are experienced in this type of work

G.3 DAMP-PROOF COURSE TO WALLS

All joints in damp-proof course to walls shall be lapped a minimum of 150mm except at junctions and corners where the lap shall equal the full thickness of the wall

H. ROOF COVERINGS ETC

H.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Concrete roofing tiles	SANS 542
Clay roofing tiles	SANS 632
Sawn softwood timber battens	SANS 1783-4
Fibre-cement sheets (flat and profiled)	SANS 685
Aluminium alloy corrugated and troughed sheets	SANS 903
Continuous hot-dip zinc-coated carbon steel sheet of commercial, lock-forming and drawing qualities	SANS 3575
Continuous hot-dip zinc-coated carbon steel sheet of structural quality	SANS 4998
Polyolefin film for damp- and waterproofing in buildings	SANS 952
Metal roofing tiles	SANS 1022
Glass-reinforced polyester (GRP) laminated sheets (profiled or flat)	SANS 1150
Fasteners for roof and wall coverings in the form of sheeting	SANS 1273
Materials for thermal insulation of buildings	SANS 1381-1&4
Expanded polystyrene thermal insulation boards	SANS 1508
Fixing of concrete interlocking roofing tiles	SANS 10062
Roof and side cladding	SANS 10237
Sheet zinc	BS 849
Sheet lead	BS 1178
Sheet aluminium	BS 1470
Sheet copper	BS 2870

H.2 GALVANIZED STEEL PROFILED SHEETS ETC

Galvanized steel profiled sheets, ridge and hip coverings, etc shall be coated with a minimum of 275 g zinc per m^2 and shall be free of white rust

H.3 GALVANIZED SHEET IRON

Galvanized sheet iron shall be rolled steel sheet coated on both sides with a minimum of 275 g of zinc per m^2 and shall be free from white rust

H.4 NAILING AND SCREWING

Where nailing and screwing is required:

- galvanized iron nails and screws shall be used for galvanized sheet iron and sheet zinc
- copper or copper alloy nails and screws for sheet copper and sheet lead
- aluminium alloy or stainless steel nails and screws for sheet aluminium

H.5 LAPS

Sheet metal flashings shall have minimum 100mm laps and linings to valleys, secret gutters, etc minimum 225mm laps

H.6 GENERAL

Rates for profiled sheet roofing and rolled edges, ridge and hip coverings, flashing pieces, etc of metal, fibre-cement, plastic, etc shall include fixing accessories

I. CARPENTRY AND JOINERY

I.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Sawn softwood timber : General requirements	SANS 1783-1
Sawn softwood timber : Stress-graded structural timber and timber for frame wall construction	SANS 1783-2
Sawn softwood timber : Brandering and battens	SANS 1783-4
Softwood flooring boards	SANS 629
Hardwood furniture timber	SANS 1099
Hardwood block and strip flooring	SANS 281
Wooden ceiling and panelling boards	SANS 1039
Laminated timber (glulam)	SANS 1460
Gypsum plasterboard	SANS 266
Fibreboard products	SANS 540
Wood-wool panels (cement bonded)	SANS 637
Fibre-cement sheets (flat and profiled)	SANS 685
Fibre-cement boards	SANS 803
Plywood and composite board	SANS 929
Wooden ceiling and panelling boards	SANS 1039
Particle boards	SANS 50312-1to7
Decorative laminates	SANS 4586
Wooden doors	SANS 545
Fire doors	SANS 1253
Materials for thermal insulation of buildings	SANS 1381-1,2,4&6
Expanded polystyrene thermal insulation boards	SANS 1508
Mild steel nails	SANS 820
Metal screws for wood	SANS 1171
Wood-preserving creosote	SANS 539

Softwood shall bear the relevant SABS mark and shall be ordered in the sizes in which it will be used as no scantlings of marked timber will be allowed. Should SABS marked timber be unavailable, the Principal Agent's prior permission shall be obtained before using unmarked timber

I.2 HARDWOODS

All hardwoods shall be specially selected, well seasoned, free from sapwood and well kiln dried. Meranti shall be Red or Medium Brown Meranti, even in grain and colour, selected from "Standard and Better" quality from Malaysia

I.3 INFECTION AND PRE-TREATMENT OF TIMBER

All timber used on the site, whether for permanent or temporary work, shall be free of borer or other beetle and termite infection. If the work under this contract falls within an area designated under Government Notice R2577 of 197812-29, permanent softwood fixed in the building shall be treated against borer etc in accordance with Government Notice R451 of 1969-03-28 using Class B or C preservative

When treated timbers are cut, the cut surfaces shall be effectively brushed with at least two coats of preservative solution

I.4 CONSTRUCTION IN GENERAL

Where applicable, construction methods shall comply with SANS 10082. Wood and laminate flooring shall be installed in accordance with SANS 10043. Roof trusses shall be manufactured, erected and braced in accordance with SANS 10243

I.5 STRUCTURAL TIMBER

Timbers generally shall be in single lengths and jointing of timbers will only be permitted when the required length is unobtainable. Only the absolute minimum of joints to obtain a particular length will be permitted and such joints are to be evenly spaced along the length of the timber

Finger-jointing of structural timber will be permitted, in which case it shall be manufactured in accordance with SANS 10096

I.6 PLATE NAILED TIMBER ROOF TRUSSES

Plate nailed timber roof trusses shall be of approved design and manufacture and constructed with softwood structural timber by a truss Fabricator holding a current Certificate of Competence awarded by the Institute of Timber Construction

Each roof truss shall have all its members accurately cut and closely butted together and rigidly fixed by CSIR approved patented galvanized metal spiked connectors, precision pressed on both sides of each intersection by an approved method, all in accordance with the manufacturer's instructions

The design, manufacture and transportation of the roof trusses, bracing, etc shall be under the control of a registered Structural Engineer in accordance with SANS 1900, SANS 10160 and SANS 10163, who shall, after erection, provide a certificate confirming that the design, manufacture, transportation, erection and bracing has been carried out in accordance with this specification

The design shall include for all live loads, wind loads and for dead loads imposed by roof covering, purlins, ceilings, etc

Fully detailed shop drawings of all trusses etc, indicating sizes, bracing, loading, etc, shall be submitted to the Principal Agent for approval prior to fabrication

Unless specific erection instructions are given, erection shall be carried out in accordance with the procedures and recommendations of the manual "The Erection and Bracing of Timber Roof Trusses" published by the Institute for Timber Construction and the Council for Scientific and Industrial Research or as detailed by the designer

Roof trusses and bracing shall include design and preparation of shop drawings

I.7 TONGUED AND GROOVED BOARDING

Tongued and grooved boards for floors, panelling, etc shall be in long varying lengths with joints tightly cramped up and secret nailed. Flooring boarding shall be flush jointed with staggered heading joints and machine sanded after fixing

I.8 JOINERY

Skirtings, cornices, rails, etc shall be in single lengths wherever practicable and shall have splayed heading joints where
necessary. Skirtings shall be trenched at back

All horns of door frames shall be checked and splayed back where frames are fixed projecting or flush with surface and built in

Heads of screws in exposed faces of hardwood joinery shall be sunk and match pelleted

Joinery shall have arris rounded angles and shall be blocked and planted on

I.9 VENEERS

All face veneers shall be of kiln dried timber, free from knots, cracks, patchwork, sapwood and other defects, selected and glued, dried and machine-sanded to a smooth finish. All veneers shall be applied under hydraulic pressure

I.10 DOORS

Flush doors shall have solid timber edge strips with concealed edges. Where doors are to be finished with a transparent finish, the veneer and the edge strips shall be timber of the same species and as far as possible of matching colour. Unless otherwise described all flush doors shall be of interior quality, but where exterior quality doors are specified the glue used shall be of the WBP type

Framed and ledged batten doors described as filled in with V-jointed boarding shall be filled in flush on one side with tongued and grooved vertical boarding, V-jointed on one or both sides and of the thickness stated. The boarding shall be in narrow widths, closely cramped up, rebated or tongued on outer edges and housed to grooves in stiles and rails and twice countersunk brass screwed at each intersection with ledges and braces and the inner edges of the abutting stiles and rails shall be chamfered to form a V-joint at junction with the board

Unless otherwise described double doors shall have rebated meeting stiles

I.11 FIXING

All nails and screws shall be of the size, length and type appropriate to their respective uses. All screws for hardwood joinery work shall be brass

Items described as “plugged” shall be screwed to fibre, plastic or metal plugs at not exceeding 600mm centres. Where items are described as “bolted”, the bolts have been given separately

I.12 ADHESIVES

Adhesives shall comply with BS 1204 and 4071 where applicable. Adhesives used in the manufacture of external joinery exposed to excessive moisture (eg kitchen and laboratory worktops) shall be of the WBP type

J. CEILINGS, PARTITIONS AND ACCESS FLOORING

J.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Gypsum plasterboard	SANS 266
Fibreboard products	SANS 540
Gypsum cove cornice	SANS 622
Wood-wool panels (cement-bonded)	SANS 637
Sawn softwood timber : Brandering and battens	SANS 1783-4
Sawn softwood timber : Timber for frame wall Construction	SANS 1783-2
Fibre-cement boards	SANS 803
Plywood and composite board	SANS 929
Wooden ceiling and panelling boards	SANS 1039
Materials for thermal insulation of buildings	SANS 1381-1&4
Expanded polystyrene thermal insulation boards	SANS 1508
Raised access flooring	SANS 1549

J.2 TONGUED AND GROOVED BOARDING

Tongued and grooved boarding for ceilings shall be in long varying lengths, V-jointed one side and with joints tightly cramped up and secret nailed

J.3 CEILINGS ETC

J.3.1 **Brandering**

Brandering for ceilings and eaves soffit coverings shall be symmetrically arranged with necessary smaller panels. Main branders shall be at right angles to roof timbers, with cross branders cut in between and branders shall be fixed with galvanized wire nails driven in on skew alternately in opposite directions

J.3.2 **Ceiling boards**

Ceiling boards shall be in long lengths symmetrically arranged with necessary smaller panels, closely butted and secured at 150mm centres to brandering with galvanized or cadmium-plated clout-headed nails

J.4 GYPSUM SKIM PLASTER

Gypsum skim plaster shall be pure gypsum plaster finished with a steel trowel

J.5 EXPOSED TEE-SYSTEM SUSPENDED CEILINGS

The ceiling panels shall be as described in the items and the panels shall be stiffened at back as recommended by the manufacturer to prevent bowing or sagging

The exposed surfaces of all ceiling panels and supporting members shall be uniform in colour and free from surface blemishes

The suspension grid system shall be an approved patent suspension system comprising 38mm galvanized steel main and cross tee bearers spaced in both directions at centres to suit sizes of ceiling panels used, with the cross bearers fitted between and notched to form flush fit with main bearers. The exposed flange of the tees shall be 25mm wide, covered with a rolled aluminium cap painted a low sheen satin white. Cornices etc shall be as described in the items and shall be finished to match the exposed tees

The main tee bearers shall have holes for cross tees at 300mm centres and holes for hangers at 50mm centres. In addition, main and cross tee bearers shall be holed as necessary for and provided with timber wedges or steel clips where recommended by the manufacturer to prevent ceiling panels from lifting

The web of the exposed cross tee bearers shall extend to form a positive interlock with the main tee bearers and the lower flange shall be cut back to provide a joint free appearance

All hangers shall be galvanized and shall be at centres to meet the requirements of the specification with one end fixed to the suspension grid main bearers and the other end fitted with suitable galvanized fixing cleat securely fixed to the structure. Fixing points shall be agreed to by the Principal Agent before any power shot fixings are made. Hangers shall not be suspended from air-conditioning ducts. Where recommended by the manufacturer, hangers shall be of the rigid type

Component parts and fixings shall be non-corrosive and able to withstand atmospheric pollution. Surfaces of aluminium which are in contact with other materials when fixed, particularly metals, shall be suitably insulated to prevent electrolytic corrosion

Ceilings shall comprise hangers, suspension grid system and ceiling panels, shall be constructed in a manner suitable for carrying air-conditioning diffusers and light fittings in the positions required, shall be set out to layouts approved by the Principal Agent and shall have the standard suspension systems modified as necessary to work around any pipes or light fittings

J.6 FLUSH PLASTERED SUSPENDED CEILINGS

Gypsum plasterboard panels of the specified thickness generally in 1200mm widths and in long lengths shall be fixed grey side down with self-tapping screws to the suspension system with the joints between boards loosely butt jointed and covered with 50mm wide strips of self-adhesive fibre tape

The plasterboard panels shall be finished with gypsum skim plaster trowelled to a smooth polished surface to the thickness etc recommended by the manufacturer

The suspension system shall be an approved patent concealed suspension system consisting of galvanized mild steel bearers suspended on approved non-rusting metal hangers spaced generally at 1200mm centres or to suit layout of air-conditioning ducts and other services etc above ceiling with one end bolted to the bearer and the other end fitted with a galvanized fixing cleat securely fixed to the structure as required

Fixing points shall be agreed to by the Principal Agent before any power shot fixings are made. Hangers shall not be suspended from air-conditioning ducting

Ceilings shall comprise hangers, suspension system, ceiling panels and plaster finish, shall be constructed in a manner suitable for carrying air-conditioning diffusers and light fittings in the positions required, shall be set out to layouts approved by the Principal Agent and shall have the standard suspension system modified as necessary to work around any pipes or light fittings

K. FLOOR COVERINGS, WALL LININGS, ETC

K.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Semi-flexible vinyl floor tiles	SANS 581
Resin modified vinyl floor tiles	SANS 586
Flexible vinyl flooring	SANS 786
Hardwood block and strip flooring	SANS 281
Wood mosaic flooring	SANS 978
Textile floor coverings (pile construction)	SANS 1375
Textile floor coverings (needle-punched construction)	SANS 141
Carpet underlays	SANS 1419
The installation of wood and laminate flooring	SANS 10043
The installation of resilient thermoplastic and similar flexible floor covering materials	SANS 10070
The installation of textile floor coverings	SANS 10186
Sheet linoleum (calendered types), cork, carpet and linoleum tiles	BS 810
Solid rubber flooring	BS 1711
Felt backed linoleum	BS 1863

K.2 LAYING OF MATERIAL

Floor tiles shall be laid with continuous joints in both directions

Patterned floor coverings shall be matched at joints

K.3 GENERAL

Floor coverings, wall linings, skirtings, nosings, etc shall include all preparatory work to screeded or plastered surfaces etc, priming coats and adhesives

Floor coverings and wall linings shall be dressed around and into corners. Wood block and wood mosaic flooring shall be sanded with a sanding machine and sealed with a coat of approved penetrating sealer

Plastic handrails shall have welded and polished butt joints

L. IRONMONGERY

L.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Locks, latches and associated furniture for doors. (Domestic type)	SANS 4
Kitchen cupboards: Built-in and free-standing	SANS 1385
Single action closers	SANS 1510
Padlocks	SANS 1533
Fasteners	SANS 1700
Chalk writing boards for schools	CKS 36

L.2 KEYS

Locks shall have the minimum possible number of interchangeable keys. Cylinder locks and locks described as "en suite" shall be clearly marked with consecutive numbers and each key shall be punched with the corresponding number of the relative lock

L.3 FIXING

Unless otherwise described, ironmongery is to be fixed to wood

Items described as "plugged" shall be screwed to fibre, plastic or metal plugs

Screws, bolts, etc for fixing of ironmongery shall be of matching metal and finish, except for aluminium ironmongery or ironmongery fixed to aluminium in which cases stainless steel screws may be used

All necessary preparation of pressed steel door frames for the fixing of ironmongery to the frames has been included with the pressed steel door frames

L.4 KITCHEN CUPBOARDS

Steel cupboards shall be finished with baked enamel. Tops of floor cupboards shall have laminated plastic covering

Cupboards shall be fitted with all necessary hinges, handles, catches, etc. Cupboards shall be securely fixed with all necessary screws and fibre, plastic or metal plugs

Where cupboards are described as a "series", tops shall be continuous and cupboards shall be bolted or screwed together, including bolts, screws, holes, etc

M. STRUCTURAL STEELWORK

M.1 SPECIFICATION

All structural steelwork shall comply with SANS 1200H or 1200HA as applicable. Structural fasteners shall comply with
SANS 1700

Whenever the term “Engineer” appears in SANS 1200H or 1200HA or in the following Project Specification this shall be deemed to mean the Principal Agent’s representative responsible for this section of the Works

M.2 PROJECT SPECIFICATION INCORPORATING AMPLIFICATIONS, ADDITIONS AND AMENDMENTS TO SANS 1200H AND 1200HA

The following amplifications, additions and amendments to SANS 1200H and SANS 1200HA shall apply and clause numbers refer to either the existing clauses in the relevant SANS or to new clauses which are related to the clauses therein

SANS 1200H

3.1.1 **Weldable structural steel**

Weldable structural steel shall comply with SANS 1431

5.1.2 **Contractor provides shop details**

The Contractor shall be responsible for the preparation of all shop detail drawings

5.1.3 **Engineer provides shop details**

This clause shall not apply

5.3.9 **Protective treatment**

Structural steelwork shall be cleaned and prepared by wire brushing in accordance with SANS 10064 and all surfaces shall be primed as specified to a minimum dry film thickness of 30 micrometres before leaving the workshop. Upon delivery to the site and again after erection all bared surfaces shall be made good with similar primer

8. **Measurement and payment**

This clause shall not apply

SANS 1200HA

5.2.10 **Protective treatment**

Structural steelwork shall be cleaned and prepared by wire brushing in accordance with SANS 10064 and all surfaces shall be primed as specified to a minimum dry film thickness of 30 micrometres before leaving the workshop. Upon delivery to the site and again after erection all bared surfaces shall be made good with similar primer

5.3.7 **Repairs to paint and site painting**
This clause shall not apply

8. **Measurement and payment**

This clause shall not apply

N. METALWORK

N.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Fasteners	SANS 1700
Expanded metal	SANS 190-1&2
Windows and doors made of rolled mild steel sections	SANS 727
Hot-dip galvanized zinc coatings on fabricated iron and steel articles	SANS 121
Strongroom and vault doors	SANS 949
Anodized coatings on aluminium (for architectural applications)	SANS 999
Steel door frames	SANS 1129
Mushroom- and countersunk-head bolts and nuts	SANS 1143
Welding of metalwork	SANS 1044
Adjustable glass-louvred windows	CKS 413
Aluminium sheet and strips	BS 1470
Aluminium extruded tube and hollow sections	BS 1474
Aluminium bars and sections	BS 1476

N.2 STEEL

Steel shall be mild steel of approved commercial quality. Steelwork shall be cleaned and prepared by wire brushing in accordance with SANS 10064 and given one coat of primer as specified before leaving the workshop

N.2.1 **Galvanizing of steel**

Steelwork described as “galvanized” shall be galvanized by means of the hot-dip process after fabrication. Where welding on site is unavoidable, such welded joints shall be cleaned down and cold galvanized to approval

N.3 STAINLESS STEEL

Stainless steel shall be AISI Type 304 stainless steel and shall be buffed to an even satin finish. Stainless steel screws shall be used for fixing stainless steel

N.4 ALUMINIUM

Aluminium extrusions shall be of 6063-T6 alloy and temper. Aluminium sheet and strips shall be of 1200-H4 alloy and temper.
Joints in all aluminium members shall be formed in an approved manner so that the joints are practically invisible. Screw heads, pins, rivets, etc shall be concealed as far as possible. 300 Series stainless steel screws and bolts shall be used for jointing and fixing aluminium work

The surfaces of all aluminium which are in contact with other materials when fixed shall be suitably insulated with a non-absorbent insulating material to prevent corrosion. All aluminium work shall be suitably protected against damage, deterioration or discolouration caused by mortar droppings, paint, etc by taping with removable tape, covering with temporary casings or by covering with motor oil

N.4.1 **Anodizing of aluminium**

Aluminium described as “anodized” shall be treated with Grade 25 coating thickness for exterior use or Grade 15 for interior use as specified, to the required finish. All alloys to be anodized shall be suited to anodizing

N.5 BOLTS AND NUTS

Nuts shall be of at least the strength grade appropriate to the grade of bolt or other threaded element with which they are used

N.6 SCREWING OF METALWORK TO STEEL, WOOD, CONCRETE, ETC

Metalwork described as “screwed” to steel, wood, etc or “plugged” to brickwork, concrete, etc shall be fixed at not exceeding 500mm centres, with necessary holes, countersinking, threading, screws, set screws, self-tapping screws and fibre, plastic or metal plugs

N.7 BOLTING OF METALWORK

Where metalwork is described as “bolted” to steel, wood, brickwork, concrete, etc the bolts are measured elsewhere

N.8 WELDING OF METALWORK

All welds shall be cleaned and filed or ground off smooth to approval. All welded joints shall be continuous

N.9 METALWORK GENERALLY

Metalwork shall have all sharp edges ground smooth. Tubular and pipe work shall include running joints. Rails etc described as “continuous” shall be in long lengths with welded joints

N.10 PRESSED STEEL DOORS, FRAMES, ETC

N.10.1 **Door frames**

Frames shall project not less than 20mm into floor finish. Except where described as galvanized, frames shall be primed as specified before leaving the factory. Frames are to jambs and heads of openings. Frames for single doors shall be provided with two 100mm steel butt hinges and an adjustable striking plate for a mortice lock and frames for double doors shall be provided with four 100mm steel butt hinges. Butt hinges shall be steel butts with loose pins, welded to frames. Where necessary mortar caps shall be welded to frames and back plates shall be welded on behind tappings for screws

N.10.2 **Cupboard door frames**

Cupboard door frames shall be as described in N.10.1, but with thresholds of unequal channel section, two 100mm steel butt hinges to hanging stiles, two 75mm steel butt hinges to hanging stiles above transoms, necessary striking plates for mortice locks and keeps for barrel bolts

N.10.3 **Combination doors and frames**

Combination doors and frames shall be manufactured of 1,6mm thick steel plate. Frames shall be as described in N.10.1. Doors shall be standard design and required profile, with a 44mm wide edge all round, vertical reinforcing ribs pressed in and with two reinforcing rails welded on. The door shall be provided with two lever mortice lock with lock box welded to inside. Doors shall be welded to steel butts

N.10.4 **Transformer room doors and frames**

Transformer room doors and frames shall be manufactured of 1,6mm thick steel plate. Frames shall be as described in N.10.1. Doors shall be of standard design with a 44mm wide edge all round, vertical reinforcing ribs pressed in and with three reinforcing rails welded on. Single doors shall be fitted with a padlock cleat and two 100mm brass pintle hinges and double doors shall be fitted with a padlock cleat, two 150mm bolts and four 100mm brass pintle hinges. Each leaf shall be fitted with a louvered ventilation panel of standard design backed with 6mm mesh galvanized wire vermin proof screen

N.10.5 **Sizes**

The frame widths given refer to unfinished wall thicknesses

N.10.6 **Glazing beads**

Where specified, glazing beads shall be 12 x 12mm standard metal glazing beads mitred at angles and countersunk screwed on at not exceeding 300mm centres with self-tapping screws

N.11 STEEL WINDOWS, DOORS, ETC

N.11.1 **Windows, doors, etc**

All fittings to windows, doors, etc shall be chromium plated. Fixed lights and opening sashes shall be in single squares. Windows etc of single unit construction shall have weather bars at transoms above opening sashes

Composite windows not of single piece construction shall be coupled with standard coupling mullions and transoms that correspond with the window section used

Kicking plates and panels shall be 1,6mm metal plate fixed with standard metal glazing beads mitred at angles and countersunk screwed on at not exceeding 300mm centres with self-tapping screws

Except where described as galvanized, windows, doors, burglar bars, etc shall be primed as specified before leaving the factory

N.11.2 **Burglar bars and flyscreens**

Where windows are described as fitted with burglar bars or flyscreens, these shall be standard type fitted over opening sashes

N.12 ADJUSTABLE LOUVRE UNITS

Adjustable louvre units shall be suitable for hand or longarm operation

Louvre units shall include glass louvres with polished edges and installation, including holes, screws, rivets, preparation of openings, etc

N.13 ALUMINIUM WINDOWS AND DOORS

The foregoing preambles “N.4 – ALUMINIUM” shall apply to aluminium windows, doors, etc in all respects in so far as they are applicable. Aluminium windows and doors shall be manufactured from extruded aluminium members of 6063T6, 6261-T6 or 6082-T6 alloy and temper

Ancillary members such as sills, flashings, infill panels and the like formed from flat sheet material shall be of an appropriate alloy selected from 1200, 3004 or 5251 complying with BS 1470 of a temper suitable for the method of forming and a composition suitable for anodizing or painting as required

Windows, doors, etc shall be of an approved standard system, manufactured by an approved firm experienced in this type of work, and shall meet with the minimum recommended performance requirements as set out by the Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA) in the latest edition of the Selection Guide

The fittings for all opening sashes shall be substantial and, unless otherwise described, shall be of high quality aluminium alloy finished to match the windows, doors, etc on which they occur. Samples of all fittings shall be supplied to the Principal Agent for approval

Top, side and bottom hung opening sashes shall be hung on two aluminium hinges with 300 Series stainless steel pins, nylon bushes and stainless steel washers. Side hung sashes shall have fasteners and sliding stays, top hung sashes shall have peg stays and bottom hung sashes shall have spring catches and concealed arms

Projected out sashes shall have aluminium fasteners and concealed arms of a non-corrosive material compatible with aluminium

The frames which are to be built into openings in brickwork shall be fitted with the manufacturer’s standard type fixing lugs, not less than 20 x 3 x 150mm long, screwed to frame and placed one near each corner and intermediately not more than 450mm apart to sides, top and bottom and where fixed to concrete reveals, wood sub-frames or to preformed openings in brickwork shall have countersunk holes for screws, one near each corner and intermediately not more than 450mm apart to sides, top and bottom

N.13.1 **Glazing beads**

Where so described, openings and sashes of windows and doors shall be fitted with approved channel section aluminium glazing beads sufficient in size and profile to suit the method of glazing employed, finished to match the windows, doors, etc and neatly mitred. Screws where necessary shall be of aluminium or 300 Series stainless steel and have pan or raised heads finished to match the beads

N.13.2 **Finishes**

Windows, doors, etc described as “anodized” shall be treated with Grade 25 coating thickness. Windows, doors, etc described as “factory painted” shall have an electrostatically applied oven baked polyester paint coating not less than 25 micrometres thick

N.13.3 **General**

Aluminium windows, doors, etc shall include glass as described, fixing in position, sealing and protection against damage, deterioration or discolouration by taping with removable tape or covering with temporary casings or motor oil and removing same on completion

N.14 STRONGROOM AND RECORD ROOM DOORS

Strongroom and record room doors shall not be built in as the work proceeds, but shall be fixed later in the openings provided. The Contractor shall ensure that the lock or other important parts of the door are not tampered with. Should any such tampering occur, the Contractor will be held responsible and at the Principal Agent’s discretion shall provide a new door or lock and keys at his own expense. The keys shall not be delivered together with the doors to the building site. The Contractor shall arrange for the manufacturer to send the keys direct to the Principal Agent per registered post. If these instructions are not complied with, a new lock and keys shall be provided by the Contractor at his own expense

N.15 STEEL ROLLER SHUTTERS

Roller shutters shall be of approved manufacture comprising curtain, vertical channel guides and top mechanism. The curtain shall be constructed of 1mm thick machine-rolled galvanized interlocking slats with mild steel end locks spot welded to alternate strips. The bottom shall be provided with a galvanized rail riveted on and vertical edges shall slide in galvanized channel guides formed of steel not less than 2,5mm thick bolted to sides of openings

The mechanism shall be covered in a galvanized sheet iron box. The ungalvanized sections shall be primed as specified before leaving the factory

O. PLASTERING

O.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Common cement	SANS 50197-1(Class 32,5N)
Masonry cement	SANS 50413-1(Class 225X)
Limes for use in building	SANS 523 {Slaked (hydrated) limes}
Aggregates from natural sources – Fine aggregates for plaster and mortar	SANS 1090

O.2 PREPARATORY WORK

Surfaces shall be clean and free of oil and thoroughly wetted directly before any plastering or other in situ finishes are commenced. Concrete surfaces shall be slushed with a mixture of one part cement and one part coarse sand or otherwise treated to form a proper key. Preparatory coats shall be thoroughly scored and roughened to form a proper key

O.3 FINISH

All coats of paving and plastering shall be executed in one operation without any blemishes

O.4 SCREEDS

Screeds shall be composed of one part cement and four parts sand

O.5 CEMENT RENDER

Cement render shall be composed of one part cement and three parts sand finished with a steel trowel to a smooth polished surface and cured for at least seven days after laying

Cement render finish shall be divided into panels not exceeding $6m^2$ with V-joints and deep trowel cuts

O.6 GRANOLITHIC

Granolithic shall be composed of one part cement, one part fine sand, two parts coarse sand and one part granite or other approved stone aggregate that will pass through a 5mm sieve, finished with a steel trowel to a smooth polished surface and cured for at least seven days after laying

Coloured granolithic shall be carried out in two coats in one operation and shall be tinted to the required colour with approved colouring pigment mixed into the finishing coat. Under no circumstances is the pigment to be sprinkled on and trowelled in after the granolithic is laid

Granolithic shall be divided into panels not exceeding $6m^2$ with V-joints and deep trowel cuts

O.7 TERRAZZO

Terrazzo shall be applied in two coats. The undercoat shall be composed of one part cement and three parts sand and shall be finished with a wooden float. The finishing coat shall be composed of one part cement and two parts marble or stone aggregate of a colour and size to obtain the required colour and texture and shall be at least 12mm thick, and applied before the undercoat has dried out. The finishing coat shall be compacted by tamping or rolling until superfluous water has been expelled, finished with a steel trowel and cured for at least seven days after laying. The finished surface shall show at least 80% of the aggregate

Surfaces described as “polished” shall be polished by machine using various grades of abrasive and grouting with tinted cement as necessary between polishings

Surfaces described as “polished” shall be polished by machine using various grades of abrasive and grouting with tinted cement as necessary between polishings

Surfaces described as “brushed” shall be brushed with a steel wire brush on the day the terrazzo has been laid to expose the aggregate as required

Where required, brass or other dividing strips shall be embedded in the undercoat to finish flush with the finished surface

Three sample blocks, each size 300 x 300mm, as separately measured shall be prepared for approval by the Principal Agent and kept in an accessible place on the site until the completion of the contract

O.8 SKIRTINGS

Skirtings shall not exceed 25mm thick and shall have a fair edge with arris or rounded external angle at top edge or V-joint to finish flush with plaster and coved or square junction with floor finish

O.9 THICKNESS OF PLASTER

All plaster, other than skim plaster, shall be not less than 10mm and not more than 20mm thick

O.10 CEMENT PLASTER

Cement plaster shall comply with the following table:

1	2	3
Plaster Class	Cement:sand (common cement)	Cement:sand (masonry cement)
I	1:4 or 50kg to 130 litres	1:3 or 50kg to 100 litres
II	1:6 or 50kg to 200 litres	1:5 or 50kg to 170 litres
III	1:9 or 50kg to 300 litres	1:6 or 50kg to 200 litres

O.11 COMPO PLASTER

Compo plaster shall be composed of one part cement, two parts lime and nine parts sand

O.12 GYPSUM SKIM PLASTER

Gypsum skim plaster shall be pure gypsum plaster finished with a steel trowel

O.13 TWO COAT PLASTER WITH GYPSUM FINISH

Two coat plaster with gypsum finish shall comprise an undercoat of Class II cement plaster finished with a wooden float and a finishing coat of gypsum skim plaster

O.14 ROUGH-CAST PLASTER

Rough-cast plaster shall be applied in two coats. The undercoat shall be composed of one part cement and five parts sand finished with a wooden float. The finishing coat shall be composed of one part cement and three parts stone aggregate that will pass through a 4mm sieve. The finishing coat shall be flicked on with a machine before the undercoat has set to obtain an even texture

O.15 FINE ROUGH-CAST PLASTER

Fine rough-cast plaster shall be as for rough-cast plaster but the finishing coat shall be composed of one part cement and three parts coarse sand

0.16 GENERAL

Rates for plastering described as being on vertical surfaces of brickwork or blockwork shall include concrete columns, beams and lintels flush with the face of the wall

P. TILING

P.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Glazed ceramic wall tiles and fittings	SANS 22
Ceramic wall and floor tiles	SANS 1449
Common cement	SANS 50197-1(Class 32,5N)
Masonry cement	SANS 50413-1(Class 22,5X)
Aggregates from natural sources – Fine aggregates for plaster and mortar	SANS 1090
The design and installation of ceramic tiling	SANS 10107

P.2 TILES, MOSAICS, ETC

Tiles, mosaics, etc shall be even in shape and size, free from cracks, twists or blemishes and uniform in colour

P.3 PREPARATORY WORK

Surfaces shall be clean and free of oil and thoroughly wetted directly before any tiling is commenced. Concrete surfaces shall be slushed with a mixture of one part cement and one part coarse sand or otherwise treated to form a proper key

P.4 CERAMIC WALL AND FLOOR TILING

Where tiles are fixed to plaster or screeds with an adhesive, the adhesive shall be as recommended by the manufacturer of the tiles. Joints shall be straight, continuous and flush pointed with an approved grouting compound

P.5 GENERAL

Tiling described as “on walls” is on brick walls or block walls unless otherwise stated and shall include concrete columns, beams and lintels flush with the face of the wall

Q. PLUMBING AND DRAINAGE

Q.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Sheet metal

Sheet zinc	BS 849
Sheet aluminium	BS 1470
Sheet copper	BS 2870

Rainwater systems

Unplasticized poly(vinyl chloride) (PVC-U) components for external rainwater systems	SANS 11

Pipes and fittings

Steel pipes : Pipes suitable for threading and of nominal size not exceeding 150mm	SANS 62
Plain-ended solid drawn copper tubes for Potable water	SANS 460
Malleable cast iron fittings threaded to ISO 7-1	SANS 4
Polyethylene (PE) pipes for water supply – Specifications	SANS 4427
Cast iron fittings for asbestos cement pressure pipes	SANS 546
Vitrified clay sewer pipes and fittings	SANS 559
Reinforced concrete pressure pipes	SANS 676
Concrete non-pressure pipes	SANS 677
Cast iron pipes and pipe fittings for use above ground in drainage installations	SANS 746
Unplasticized poly(vinyl chloride) (PVC-U) sewer and drain pipes and pipe fittings	SANS 791
Fibre-cement pipes, couplings and fittings for sewerage, drainage and low-pressure irrigation	SANS 819
Pitch-impregnated fibre pipes and fittings and jointing	SANS 921
Unplasticized poly (vinyl chloride) (PVC-U) pressure pipe systems	SANS 966-1
Unplasticized poly(vinyl chloride) (PVC-U) soil, waste and vent pipes and pipe fittings	SANS 967
Rubber joint rings (non-cellular)	SANS 974-1
Copper-based fittings for copper tubes	SANS 1067-1&2
Fibre-cement pressure pipes and couplings	SANS 1223
Polypropylene pressure pipes	SANS 1315
Non-metallic waste traps	SANS 1321-1&2
Vent valves for drainage installations	SANS 1532
Heavy duty cast iron pipe fittings for drainage and gas and water supplies	BS 78

Lead pipes	BS 602
Cast iron pressure pipes for use in drainage and gas and water supplies	BS 1211
Stainless steel pipes for use with compression fittings	BS 4127
Sanitary fittings etc	
Stainless steel sinks with draining boards (for domestic use)	SANS 242
Stainless steel wash-hand basins and wash troughs	SANS 906
Stainless steel sinks for institutional use	SANS 907
Stainless steel stall urinals	SANS 924
Acrylic sanitary ware : Baths	SANS 1402-1
Glazed ceramic sanitary ware	SANS 497
WC flushing cisterns	SANS 821
Flush valves for WC flushing cisterns	SANS 1509
Taps, valves etc	
Water taps (metallic bodies)	SANS 226
Water taps (plastic bodies)	SANS 1021
Single control mixer taps	SANS 1480
Float valves	SANS 752
Plastic floats for ball valves	SANS 1006
Functional control valves and safety valves for Domestic hot and cold water supply systems	SANS 198
Cast iron gate valves for waterworks	SANS 664
Automatic shut-off flush valves for water closets and urinals	SANS 1240
Check valves (flanged and wafer types)	SANS 1551-1&2
Fire extinguishers	
Portable refillable fire extinguishers	SANS 1910
Portable rechargeble fire extinguishers : Halogenated hydrocarbon type extinguishers	SANS 1151
Water heaters and fire hose reels	
Fixed electric storage water heaters	SANS 151
Fire hose reels (with semi-rigid hose)	SANS 543
Drainage covers, gratings, etc	
Cast iron surface boxes and manhole and inspection covers and frames	SANS 558
Cast iron gratings for gullies and stormwater drains	SANS 1115
The installation of polyethylene and poly (vinyl chloride) (PVC-U and PVC-M) pipes	SANS 10112
Water supply and drainage for buildings	SANS 10252-1&2

Cast iron step irons BS 1247

Q.2 GENERAL

Q.2.1 Excavations

Excavations shall be deemed to be in “earth”. Backfilling to excavations shall be executed in 300mm thick layers, watered and compacted. Surplus excavated material shall be spread and levelled over site as directed

Q.2.2 Concrete

Unreinforced concrete shall be Class B prescribed mix concrete and reinforced and precast concrete shall be Class C prescribed mix concrete

Q.2.3 Brickwork

Brickwork shall be of extra hard burnt bricks built in Class I mortar

Q.2.4 Plaster

Plaster shall be 1:3 cement plaster finished smooth with a steel trowel. All angles shall be rounded

Q.2.5 Diameters of pipes etc

Diameters stated for pipes, traps, valves, etc are internal diameters except PVC, polyethylene, stainless steel and copper pipes and traps for which external diameters are stated

Q.3 SHEET METAL WORK

Q.3.1 Galvanized sheet iron

Galvanized sheet iron shall be rolled steel sheet coated on both sides with Class Z275, unless otherwise specified, zinc coating complying with SANS 3575/4998. Sheets shall be free from white rust

Q.4 EAVES GUTTERS

Q.4.1 Galvanized sheet iron gutters

Galvanized sheet iron gutters shall have beaded edges and all joints shall be riveted and soldered. Angles shall be strengthened with 50 x 0,6mm galvanized sheet iron strips soldered on over the internal faces of mitres

Gutters shall be fixed with falls to outlets on 30 x 3mm galvanized mild steel brackets, bent to the shape of gutters, with front ends taken up to the underside of beaded edge of gutter and each screwed to roof timbers or bolted to fibre-cement fascias with 6mm galvanized gutter bolts. Gutters shall be bolted to brackets at front with 6mm galvanized gutter bolts, one to each bracket

Brackets shall be positioned at joints of gutters and intermediately at not exceeding 1,25m centres

Q.4.2 Fibre-cement gutters

Fibre-cement gutters shall have spigot and socket joints. Gutters shall be fixed with falls to outlets on standard aluminium alloy brackets, screwed or bolted to roof timbers or fascias

Q.4.3 Unplasticized polyvinyl chloride (UPVC) gutters

Gutters shall be fixed with falls to outlets on brackets as supplied by the manufacturer, screwed or bolted to roof timbers or fascias

Q.4.4 Aluminium gutters

Aluminium gutters shall be roll formed on site to required lengths and profiles from 3003H14-3SH4 alloy strip not less than 0,7mm thick factory coated on both sides with baked enamel and two coats of silicone modified polyester to a total minimum thickness of 20 micrometres. Angles, stopped ends, etc shall be prefabricated units pop riveted to gutters with joints sealed with mastic. The guttering shall be in continuous lengths between angles, stopped ends, etc

Q.5 RAINWATER PIPES

Q.5.1 Galvanized sheet iron pipes

Galvanized sheet iron pipes shall have seams at the back and shall be jointed with soldered slip joints. Pipes shall be fixed to walls etc with galvanized mild steel holderbats spaced at not exceeding 2m centres with tails driven in or cut and pinned in 1:3 cement mortar

Q.5.2 Fibre-cement pipes

Fibre-cement pipes shall have spigot and socket joints. Pipes shall be fixed to walls etc with standard aluminium alloy holderbats with tails driven in or cut and pinned in 1:3 cement mortar

Q.5.3 Unplasticized polyvinyl chloride (UPVC) pipes

Pipes shall be fixed to walls etc with patented UPVC or aluminium clips and holderbats as supplied by the manufacturer of the pipe

Q.5.4 Aluminium pipes

Aluminium pipes and fixing straps shall be formed from 3003H14-3SH4 alloy strip not less than 0,7mm thick factory coated on both sides as described for aluminium gutters. Pipes shall be in continuous lengths with formed angles, offsets, shoes, etc. Pipes shall be fixed to walls etc with 20 x 0,6mm straps at not exceeding 1,5m centres screwed to 25 x 75 x 100mm hardwood chamfered and oiled blocks plugged to walls

Q.6 STORMWATER CHANNELS

In-situ concrete stormwater channels shall be constructed of unreinforced concrete with segmental channel formed in top. Channels shall be laid to falls on a well rammed earth bottom and finished smooth on exposed surfaces

Precast concrete channels shall be of 25 MPa concrete, generally in 1m lengths, finished smooth from the mould on exposed surfaces, laid to falls on a well rammed earth bottom, jointed in 1:3 cement mortar and pointed with keyed joints

Q.7 JOINTS

Joints of pipes not covered by SANS shall be as follows:

Pipes	Joints
Fibre-cement, concrete, pitch-impregnated fibre and vitrified clay pipes for use under ground in non-pressure pipe lines	Flexible joints in accordance with the manufacturer's instructions
Cast iron for use above ground	Spigot and socket joints with tarred rope yarn and caulking compound or Plain ended joints with stainless steel couplings with neoprene rubber sleeves
Cast iron for use below ground	Spigot and socket joints with tarred rope yarn and caulking compound
Galvanized mild steel	Joints of screwed galvanized steel sockets or bolted galvanized iron flanges Screwed joints with plastic jointing tape or hemp Flanged joints which shall be bolted and provided with rubber gaskets and with flanges screwed to pipes
Joints between pipes of different materials shall be as follows:	
Between cast iron and mild steel	Spigot and socket joints with tarred rope yarn and caulking compound
Between cast iron and clay	Spigot and socket joint with semi-dry cement caulking and 1:2 cement mortar fillet
Between mild steel or copper and clay	Spigot and socket joint with either bitumen or semi-dry cement caulking and 1:2 cement mortar fillet

Q.8 FIXING OF PIPES

Pipes shall be fixed as follows:

Q.8.1	Galvanized mild steel (except those stated in Q.8.3)	To walls with galvanized mild steel brackets for pipes not exceeding 80mm diameter and with galvanized cast iron hinged holderbats with brass pins or bolts for pipes exceeding 80mm diameter; both types with tails cut and pinned in 1:3 cement mortar To woodwork with screw-on type galvanized mild steel holderbats
Q.8.2	Copper and stainless steel	To walls with brass holderbats or screw-on type two- piece spacing clips for pipes not exceeding 75mm diameter and with purpose made holderbats for pipes exceeding 75mm diameter; both types with tails cut and pinned in 1:3 cement mortar To woodwork with screw-on type brass holderbats
Q.8.3	Cast iron and galvanized mild steel for soil, waste and vent pipes	To walls with hinged cast iron holderbats with brass bolts and with tails cut and pinned in 1:3 cement mortar To woodwork with screw-on type galvanized mild steel holderbats
Q.8.4	Polyethylene, polypropylene and patented UPVC or unplasticized polyvinyl chloride	To walls, woodwork, etc with aluminium clips and holderbats as supplied by the manufacturer of the pipes
Q.8.5	Fibre-cement	To walls with aluminium alloy holderbats with tails cut and pinned in 1:3 cement mortar

Q.8.6	Pipes fixed to ceilings	Fixed with holderbats and standard or purpose made hangers, with extended hangers for pipes to falls

Q.9 PIPES LAID IN GROUND

Q.9.1 **Water pipes etc**

Water pipes, gas pipes, etc laid in ground shall be at least 400mm deep from the crown of the pipe to the finished surface

Q92 **Drain pipes**

Excavations taken out too deep shall be filled in with selected soil and compacted. Backfilling to sides and up to 300mm above plastic pipes shall be free from stone or hard substances which will not pass a 10mm mesh

Q.10 CLEANING EYE LIDS

Cleaning eye lids for drain pipe fittings shall be fixed and sealed as follows:

Pipe fittings	**Method of sealing and fixing**
Fibre-cement	Sealed with synthetic rubber or bituminous mastic packing and fixed with screws
Vitrified clay	Polypropylene lid sealed with synthetic rubber packing and pressed into position
Polypropylene and unplasticized polyvinyl chloride	Sealed with synthetic rubber packing and screwed on or pressed into position
Cast iron	Sealed with tallow or putty and fixed with non-ferrous metal screws
Galvanized malleable cast iron and cast brass	Sealed with synthetic rubber packing and screwed in

Q.11 CLEANING EYES

Cleaning eyes shall consist of cast iron frames and lids with letters “CE” (or “SO”) cast in lids. The lids shall be secured with non-ferrous metal screws. Frames shall be jointed to vertical drain pipes. Cleaning eyes shall be encased in unreinforced concrete taken up to ground level and plastered on exposed surfaces

Q.12 INSPECTION EYE MARKER SLABS

Inspection eye marker slabs shall be 350 x 350 x 50mm thick precast concrete finished smooth from the mould, with letters “IE” (or “IO”) formed in top and placed flush in ground or paving

Q.13 GULLEYS

Gulleys shall be built up of traps, vertical piping and gulley heads with loose gratings, all encased in unreinforced concrete to finish flush with gulley head top and taken up to at least 50mm above surrounding finished surfaces. The outer top edge of the concrete encasing shall be splayed and the exposed surfaces plastered

Q.14 DISHED GULLEYS

Dished gulleys shall be built up of traps, vertical piping and gulley heads with loose gratings, all encased in unreinforced concrete and with dished unreinforced concrete hopper size 450 x 450mm overall around gulley head with rounded kerb 50mm wide to front and sides and 25mm wide at back, 100mm high above top of dishing and the hopper plastered on exposed surfaces. Top of hopper shall be taken up to at least 50mm above surrounding finished surfaces

Q.15 SUMPS, CATCHPITS, INSPECTION CHAMBERS, ETC

Q.15.1 **Rainwater sumps**

Rainwater sumps shall be built with half-brick sides on 100mm thick unreinforced concrete bottom, plastered internally on walls and with 80mm high unreinforced concrete kerb at top rebated for grating or cover and plastered on exposed surfaces

Q.15.2 **Stormwater catchpits and inspection chambers**

Brick catchpits and inspection chambers shall be built with one-brick sides on 150mm thick unreinforced concrete bottom projecting 100mm beyond walls all round, plastered internally on walls and with 100mm thick reinforced concrete cover slab with opening rebated for frame of grating or cover and plastered on exposed surfaces

Precast concrete catchpits and inspection chambers shall be constructed in accordance with the applicable details shown on Drawing LE-1 of SANS 1200LE. Precast concrete manhole sections and slabs shall comply with SANS 1294 and pipes shall be SC type and in accordance with SANS 677

Q.15.3 **Sewer inspection chambers**

Brick inspection chambers shall be built as for brick stormwater inspection chambers and with the bottom of the chamber well benched around half round channels, bends, junctions, etc up to sides of chamber in unreinforced concrete finished smooth

Precast concrete inspection chambers shall be constructed in accordance with the applicable details shown on Drawing LD-5 of SANS 1200LD. Precast concrete manhole sections and slabs shall comply with SANS 1294 and the pipes shall be SC type in accordance with SANS 677

Q.15.4 **Stormwater drain junction boxes**

Junction boxes shall be formed of 150mm thick unreinforced concrete bottom and sides to suit the various sizes of the drain pipes and built after the pipes have been laid, with the sides taken up slightly higher than the highest pipe and finished level on top for and covered with a 75mm thick loose precast concrete slab

Q.15.5 **Step irons**

Where inspection chambers exceed 1,2m deep, cast iron step irons shall be provided, built into the wall at 300mm centres and staggered regularly in vertical rows spaced at 200mm centres horizontally

Q.16 STOPCOCK AND METER BOXES

Stopcock and meter boxes shall be built with half-brick sides with a cast iron box and lid complying with SANS 558 set in 75mm wide unreinforced concrete kerb for the full depth of the cast iron box and plastered on exposed surfaces

Q.17 VALVE CHAMBERS

Valve chambers shall be built with half-brick sides with 100mm thick unreinforced concrete kerb to top with rebate for cover and frame to finish flush with adjacent paving or finished ground level and plastered on exposed surfaces

Q.18 CAST IRON COVERS, GRATINGS, ETC

All cast iron covers, gratings, frames and surface boxes shall be coated with preservative solution. Frames shall be cast into concrete. Covers, except covers to stormwater drainage or electrical cable inspection chambers, shall be set in grease

Q.19 CONCRETE ENCASING

Concrete encasing for pipes, bends, traps, gulleys, grease traps, etc shall be unreinforced concrete not less than 100mm thick all round

Q.20 SANITARY FITTINGS

Q.20.1 General

Glazed ceramic, acrylic and porcelain enamelled sanitary fittings and component parts shall be white. Accessories for sanitary fittings shall be chromium plated brass

Waste outlets for baths, basins, etc shall comprise chromium plated brass waste union with grating, rubber washers and locknut, fitted with rubber or vulcanite plug on a chromium plated brass chain and stay

Q.20.2 Stainless steel sanitary fittings

Stainless steel sinks and draining boards, basins, wash troughs and urinals shall be AISI Type 304 satin finished stainless steel. All stainless steel fittings shall be treated on the back with a vermin proof sound deadening coating. Sinks, basins and wash troughs shall be provided with 40mm diameter screwed waste outlets

Q.20.3 Precast concrete wash troughs

Reinforced precast concrete wash troughs shall have a sloping front with ribbed rubbing surface and shall be finished smooth on exposed faces with top edges and inner angles rounded. Each compartment shall be fitted with a 40mm diameter waste outlet. Wash troughs shall each be supported on two reinforced precast concrete pedestals finished smooth on exposed faces

Q.20.4 Steel baths

Steel baths shall be porcelain enamelled internally and painted externally and fitted with waste outlet and overflow grating with coupling

Q.20.5 Acrylic resinous baths

Acrylic resinous baths shall be fitted with waste outlet and overflow grating with coupling

Q.20.6 Acrylic resinous wash hand basins

Acrylic resinous wash hand basins and vanity units shall have a smooth high gloss finish, with outlet openings, soap recesses, tap-holes and integral overflow and shall be fitted with waste outlet and overflow grating with coupling

Q.20.7 Glazed ceramic sanitary fittings

Sinks shall be provided with integral weir overflows

Washdown closet pans shall have washdown action and be provided with smooth finished injection moulded polypropylene heavy duty double flap seats fixed with non-ferrous bolts. Urinal channels shall be provided with outlet gratings fitted in bitumen

Q.20.8 Flush and sparge pipes

Flush pipes for high level cisterns shall be of plastic or drawn galvanized steel

Flushpipes for low level cisterns shall be of plastic

Flush and sparge pipes for urinals with high level cisterns shall be of chromium plated copper piping and of the sizes recommended by the manufacturer of the urinal

Q.21 INSTALLATION OF SANITARY FITTINGS

Sanitary fittings shall be installed as follows:

Q.21.1 Precast concrete wash troughs

Precast concrete wash troughs shall be bedded on top of pedestals which shall be bedded on floors in 1:3 cement mortar

Q.21.2 Stainless steel wash troughs and wash hand basins

Stainless steel wash troughs and wash hand basins shall be fixed to walls on a pair of galvanized mild steel gallows brackets bolted to wall with 6mm diameter expanding bolts

Q.21.3 **Acrylic resinous wash hand basins**

Acrylic resinous wash hand basins shall be fixed to walls on a pair of standard painted cast iron brackets screwed to underside of basin and bolted to wall with 6mm diameter expanding bolts

Q.21.4 **Ceramic wash hand basins**

Ceramic wash hand basins shall be fixed to walls on a pair of standard painted steel or cast iron brackets bolted to wall with 6mm diameter expanding bolts

Q.21.5 **Acrylic resinous baths**

Acrylic resinous baths shall be bedded in 1:5 cement mortar on three cross rows of bricks or bedded solid on a layer of dry river sand and fixed to wall with galvanized steel brackets under edges (in the middle of the sides against walls) bolted to wall with 6mm diameter expanding bolts and sealed along top against wall finishes with patent mildew resistant silicone rubber

Q.21.6 **Washdown closet pans and cisterns**

Washdown closet pans shall be bedded on floors in 1:3 cement mortar. Cisterns shall be fixed to walls with 6mm diameter expanding bolts

Q.21.7 **Ceramic urinals**

Ceramic stall and slab urinals shall be bedded on floors and against walls in 1:3 cement mortar. Slabs, channels, treads, etc shall be jointed in 1:3 cement mortar and pointed in white cement

Ceramic bowl urinals shall be fixed to walls on standard steel brackets bolted to wall with 6mm diameter expanding bolts. Cisterns shall be fixed to walls on standard brackets bolted to wall with 6mm diameter expanding bolts

Q.21.8 **Stainless steel urinals**

Stainless steel stall and slab urinals shall be bedded on floors in 1:3 cement mortar and with backs and sides against walls filled in with fine unreinforced concrete. Cisterns shall be fixed as cisterns for ceramic urinals

Q.22 FIRE HOSE REELS

Fire hose reels shall each be fitted with a 30m long hose of internal diameter not less than 19mm with a 4,8mm internal diameter chromium plated brass nozzle

Q.23 FIRE EXTINGUISHERS

All fire extinguishers shall be fully charged

Q.24 TESTS

Sewerage pipe lines, sanitary plumbing including fittings and hot and cold water supply and fire service shall be tested to the approval of the Principal Agent and Local Authority

The Contractor shall provide all testing apparatus, material and labour required for the tests and inspections

R. GLAZING

R.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Glass in building	SANS 50572-1 to 5
Glazing putty for wooden and metal window frames	SANS 680
Silvered glass mirrors for general use	SANS 1236
Safety and security glazing materials for buildings	SANS 1263-1 to 3
Sealing compounds for the building industry, one Component, silicone-rubber based	SANS 1305
The installation of glazing materials in buildings	SANS 10137
Work on glass for glazing	SANS 1817

R.2 PUTTY ETC

Glazing putty shall be Type I for wooden sashes and Type II for steel sashes. Putty for glazing to unpainted hardwood shall be tinted to match the colour of the wood

Back putty shall not exceed 3mm thick. Putty shall not be painted until it has formed a surface crust, and if the putty does not form a surface crust it shall be replaced

Butyl putty shall be used where glass is to be fixed in aluminium sashes with glazing beads

Non-setting compounds shall be used where laminated glass is fixed in sashes with glazing beads

S. PAINTWORK

S.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Decorative paint for interior use	SANS 515
Decorative high gloss enamel paints	SANS 630
Primers for wood (for external work)	SANS 678
Primers for wood (for internal work)	SANS 678
Zinc phosphate primer for steel	SANS 1319
Undercoats for paints (except emulsion paint)	SANS 681
Aluminium paint	SANS 682
Varnish for interior use	SANS 887
Emulsion paints	SANS 1586

Materials for paintwork shall be delivered to the site in unopened containers and applied in accordance with the manufacturer's instructions. Materials shall be suitable for application to the surfaces concerned. Undercoats shall be as
recommended by the manufacturer of the finishing coats

S.2 PREPARATORY WORK

S.2.1 **Plastered surfaces etc**

Plastered surfaces shall be thoroughly inspected and, if necessary, washed down and brushed in order to remove any traces of efflorescence and allowed to dry completely before any paint finish is applied. Before any paint is applied, holes, cracks and irregularities in plaster and other surfaces shall be filled with a suitable filler and finished smooth. Unfinished concrete surfaces shall have all projections rubbed off and shall be thoroughly cleaned with a spirits-of-salts solution (1 part concentrated spirits-of-salts to 4 parts water)

S.2.2 **Metal surfaces**

Metal surfaces shall be sanded, where necessary, washed with a suitable cleaning agent and left smooth

Protective coatings applied by manufacturers to galvanized metal surfaces shall be removed with a suitable agent and the surfaces washed down

Rust, grease and defective factory primers on metal surfaces, as well as pitch on cast iron pipes, shall be removed

S.2.3 **Wood surfaces**

Knots in woodwork shall be treated with knotting. Minor blemishes shall be filled with a suitable filler. Wood surfaces shall be sanded smooth

S.3 APPLICATION OF PAINT

Primers to wood surfaces shall be applied by brush. Primers to other surfaces may be applied by roller with the approval of the Principal Agent. Undercoats and finishing coats may be applied by brush or roller

Paint shall not be sprayed on except in the case of cellulose and other special paints where spray painting is the accepted method of application

Before subsequent coats of paint are applied the previous coat shall be properly dry and shall be sanded down where necessary

S.4 COLOUR SCHEME

A colour scheme comprising colours and the blending of colours approved by the Principal Agent shall be used for the paintwork. The tints of the undercoats shall closely match the finishing coat but nevertheless differ sufficiently to indicate the number of undercoats. Colour samples of the finishing coats shall be provided in all cases

S.5 GENERAL

Paintwork shall include the preparation of surfaces, filling, stopping, sanding and priming of nail heads and screws. Where windows, sashes, etc are to be painted, the rebates of the openings to be glazed shall be primed

T. PAPERHANGING

T.1 PREPARATORY WORK

Plaster surfaces to be papered shall be dry, thoroughly cleaned down, filled with a suitable filler as necessary to obtain a smooth surface and painted thereafter with a single coat of emulsion paint

Wood surfaces to be papered shall be knotted, stopped and sanded

T.2 PAPERHANGING

Wallpaper shall be hung in vertical long lengths. Vertical joints shall be close-fitted and plumb and the paper shall be tightly fitted to skirtings, ceilings, door frames, windows, etc. Horizontal joints will not be allowed

U. EXTERNAL WORKS

U.1 GENERAL

U.1.1 Excavations

Excavations shall be deemed to be in “earth”

U.2 LANDSCAPING

U.2.1 Topsoil

Topsoil shall vary between sandy loamy soil and sandy clayey soil with an ideal composition of 15% to 25% clay, 10% silt/sludge and 65% to 75% sand, with a minimum ratio of organic material of 2%. All material shall be free of harmful deposits as well as unwanted seeds

U.2.2 Compost

Compost shall be composed of properly decayed organic material, free from harmful deposits, salts, seeds and other waste material and shall have a pH of more than 4 and less than 7

U.2.3 Mulch

Mulch shall be approved organic material free from small particles of bark residue, fungus, disease, etc

U.2.4 Lime

Lime shall be agricultural lime of an approved manufacture

U.2.5 Fertilizer

Fertilizer shall be of the type specified, mixed thoroughly into the soil as prescribed. No fertilizer shall be added more than two weeks prior to planting

U.2.6 Backfilling

Backfilling in plant and tree holes shall be composed of two parts topsoil to one part compost mixed thoroughly together and compacted by foot in 100mm layers. Fertilizer shall only be added if prescribed

U.2.7 Pebbles

Pebbles shall be smooth with a uniform colour and form and ranging in size from 50mm to 75mm diameter. Removal of pebbles from river beds shall be done selectively to avoid any major disruption to the ecology of the river and environment

U.2.8 Plant material

U.2.8.1 General

All plant material (plants, shrubs, trees, etc) shall be obtained from a registered nursery and shall be free from damaged parts, parasites, fungus, other plant diseases or insects. No container-bound plants will be acceptable

U.2.8.2 Trees

The height of trees described in the bills of quantities shall be measured from the top of the root ball to the top of the tree. Where trees are pruned, such prune wounds shall not be more than 25mm in diameter and be sealed with an approved sealing compound

U.2.8.3 Shrubs and small plants

Shrubs and small plants shall meet the requirements for height and spread as specified. Thin or sparsely branched plants shall not be accepted. Branches shall be well spread with ample young branches and the plant as a whole shall be growing well

U.2.8.4 Groundcover

Groundcover shall be dense and healthy and shall comply with the minimum requirements for leaf density as specified

Formal grass shall be planted as runners in 50mm deep drills at 150mm centres unless otherwise described

U.2.9 **Cultivation and preparation of planting areas etc**

All surface rocks and stones larger than 50mm shall be removed before commencing cultivation and preparation. The entire area shall be ripped and rotavated using approved machinery by breaking up the earth to a depth of 300mm at 600mm centres in both directions, unless otherwise described, and then levelled. Where fertilizer or compost is specified, it shall be worked into the topsoil after ripping and rotavation to a depth of 300mm and finished to final levels

All fertilizer to areas to be grassed shall be strewn on the final layer before final finishing is commenced and worked mechanically into the top 150mm soil

U.2.10 **Planting procedure**

Holes for shrubs and groundcover shall be as follows:

Shrubs – 500 x 500 x 500mm deep

Groundcover – 300 x 300 x 300mm deep (if not planted in drills)

Holes for trees shall be square, of adequate size to accommodate the root system and suitable for the height of the tree

All plant material shall be watered thoroughly before careful removal from the container and planted in the prescribed planting medium with the top of the soil in the container finishing level with the surrounding area. Water dams size 800mm diameter x 150mm deep and 500mm diameter x 150mm deep shall be formed around trees and shrubs respectively and all planting material shall be watered immediately after planting. Trees, shrubs, etc shall be properly staked or stayed, depending on their size, on the prevailing windy side with patent tree ties

U.2.11 **Maintenance**

All planted areas shall be maintained for a period of three months after practical completion as defined in the contract with the exception of hydroseeded areas which shall be maintained for 12 months after an acceptable cover has been obtained

This maintenance shall consist of keeping clear of weeds and litter, loosening soil where necessary every two weeks, replacing damaged, diseased or dead plants, pruning, cutting and mowing as necessary and watering so as to keep the plant material in a healthy growing condition

U.3 ROADWORK

U.3.1 **Filling**

Filling under roads etc shall be of inert material having a maximum plasticity index of 10, free from large stones etc spread, levelled, watered and compacted in layers not exceeding 200mm thick to a density of 98% Mod AASHTO

U.3.2 **Preparation of sub-grade**

The sub-grade shall be prepared by scarifying for a depth of 150mm and compacting to a density of 98% Mod. AASHTO, including trimming to the correct levels and grades

U.3.3 **Base course**

The base course shall consist of crusher run stone compacted to a density of 98% Mod. AASHTO and finished to the correct levels and grades

U.3.4 **Weed killer**

The completed sub-grade shall be treated with an approved total weed killer

U.3.5 **Bituminous premix road surfacing**

Before spreading the premix material, the base course shall be swept clean and free from all dust, dirt and loose particles, lightly wetted and sprayed with a prime coat of cutback bitumen complying with SANS 308 at the rate of 1 litre/m^2

The material shall consist of semi-gap graded crushed stone aggregate having the following grading:

Sieve size (mm)	% By mass passing sieve
13,2	100
4,75	45-60
2,36	42-55
1,18	40-52
0,3	25-45
0,075	5-12

The aggregate shall be mixed with bituminous road tar binder complying with SANS 748 at the rate of 1m3 of stone to 120 litre of emulsion at atmospheric temperature

The binder shall be added to the stone and mixed until the stone is uniformly coated. Thereafter 5% of clean, dry quartzitic sand shall be added and mixed until evenly distributed through the mixture

The premix shall be applied only after the primer has dried out completely and shall be spread immediately after mixing and rolled on the same day

Spreading shall be done evenly over the prepared base course to a loose depth sufficient to ensure the consolidated thickness specified

Rolling shall commence as soon as the binder has set sufficiently, followed after three days by a final rolling

U.3.6 **Precast concrete block road surfacing**

Paving blocks shall be precast concrete blocks complying with SANS 1058

Blocks shall be laid to true levels and grades on and including a 25mm thick layer of river sand with joints exceeding 2mm and not exceeding 6mm wide

After laying, the paving shall be compacted by means of a vibrating plate compactor, with joints between the blocks filled in, after compaction, by sweeping in fine sand

Infill areas at edges of paving constituting less than 25% of a full block unit and of 25mm minimum dimension shall be filled with Class C prescribed mix unreinforced concrete with top surface trowelled smooth to match blocks. Smaller areas shall be filled with 1:4 cement mortar

U.3.7 **Precast concrete kerbs and channels**

Precast concrete kerbs and channels shall comply with SANS 927, generally in 1m lengths and finished smooth from the mould on exposed surfaces. Kerbs and channels shall be bedded on and jointed in 1:3 cement mortar and pointed with keyed joints. Bases to kerbs shall be Class B prescribed mix unreinforced concrete

U.3.8 **Process control tests**

The Contractor shall be responsible for carrying out all necessary process control tests on the density and moisture content of the compacted sub-grade, base course, etc to ensure that the required compaction is being attained

U.4 FENCING ETC

U.4.1 **Materials**

Materials and workmanship shall comply with the following specifications and requirements :

Wooden poles, droppers, guardrail posts and spacer blocks	SANS 457-2&3
Zinc-coated fencing wire	SANS 675
Prefabricated concrete components for fencing	SANS 1372
Chain-link fencing and its wire accessories	SANS 1373

Fasteners	SANS 1700
Anti-intruder fences	CKS 451
Metal droppers and standards	CKS 451

U.4.2 **Galvanized wire**

All galvanized wire shall be zinc coated wire with Class B zinc coating. Straining wire shall be 4mm diameter galvanized mild steel wire. Tie wire shall be 1,6mm diameter galvanized mild steel wire

U.4.3 **Plastic coated wire**

Plastic coated straining wire shall be 3,15mm diameter Class C galvanized mild steel wire plastic coated to an overall diameter of 3,95mm

Plastic coated tie wire shall be 1,8mm diameter Class C galvanized mild steel wire plastic coated to an overall diameter of 2,5mm

U.4.4 **Galvanized barbed wire**

Galvanized barbed wire shall be 2,5mm diameter mild steel double strand reverse twist zinc coated barbed wire with Class A zinc coating

U.4.5 **Galvanized wire mesh**

Galvanized wire mesh shall be 50mm mesh chain link netting of 2,5mm diameter Class C galvanized mild steel wire

U.4.6 **Plastic coated wire mesh**

Plastic coated wire mesh shall be 50mm mesh chain link netting of 2,5mm diameter Class C galvanized mild steel wire plastic coated to an overall diameter of 3,25mm

U.4.7 **Galvanized welded wire mesh**

Galvanized welded wire mesh shall be fabricated from pre-galvanized wires to rectangular pattern welded together at each intersection using a welding method which forms a zinc oxide protective coating at each intersection

U.4.8 **Razor wire**

Razor wire shall be fabricated from 2,5mm diameter galvanized high tensile steel wire fitted with razor barbs formed of 0,5mm galvanized steel strip clipped on at 37,5mm centres

U.4.9 **Metal droppers and standards**

Droppers shall be of ridged T-section mild steel with a mass of not less than 0,55kg/m. Standards shall be of I- section mild steel with a mass of not less than 3kg/m or of ridged edge Y-section mild steel with a mass of not less than 2,5kg/m, and shall be driven 600mm deep into the ground

Droppers and standards shall have either galvanized, sprayed metal or painted finish as described in the items and in accordance with CKS 451. In addition, those surfaces of standards embedded in the ground shall be coated with bitumen

U.4.10 **Metal posts and stays**

Posts and stays shall comply with CKS 451 and shall be of black galvanized mild steel tubing as specified

Straining posts shall be of 108mm outside diameter x 3mm wall thickness tubing, each with a 300 x 300 x 5mm thick mild steel sole plate and a steel cap welded on

Intermediate posts shall be of 50mm outside diameter x 2,5mm wall thickness tubing, each with a 230 x 230 x 5mm thick mild steel sole plate and a steel cap welded on
Stays for straining posts shall be of 50mm outside diameter x 2,5mm wall thickness tubing, each with a 230 x 230 x 5mm thick mild steel sole plate welded on and fixed raking with top end flattened, bent, holed and bolted to straining post with and including a 5mm diameter galvanized mild steel bolt with nut and washer

Posts and stays shall have either galvanized or painted finish as described in the items and in accordance with CKS 451. In addition, sole plates and portions of posts and stays embedded in ground shall be coated with bitumen

U.4.11 **Timber posts, stays and droppers**

Timber posts shall be 125mm diameter, timber stays shall be 100mm diameter and timber droppers shall be 30mm diameter

U.4.12 **Prestressed concrete posts and stays**

Prestressed concrete posts and stays shall be finished smooth from the mould and uniformly stressed by means of high tensile longitudinal prestressing wires with concrete cover to wires of not less than 20mm

Corner and straining posts shall be 100 x 100mm and intermediate posts and stays shall be 75 x 75mm. Stays shall be fixed raking with top end splayed and glued to posts with a suitable epoxy compound

U.4.13 **Bolts, nuts and washers**

Straining eye bolts, hinge bolts, bolts, nuts and washers shall be galvanized

U.4.14 **Precast concrete fencing**

Precast concrete fencing over sloping terrain shall be stepped to suit terrain, including the use of increased lengths of posts as necessary, excavation, etc

U.4.15 **Concrete bases**

Bases in ground for posts, stays, etc shall be of Class B prescribed mix concrete with tops 100mm below surface of ground

Sizes of concrete bases for posts, stays, etc shall be as follows:

Straining and gate posts	–	450 x 450 x 700mm deep
Intermediate posts	–	300 x 300 x 600mm deep
Stays	–	600 x 300 x 500mm deep

U.4.16 **Security overhangs**

Where fencing is described as having a security overhang, the posts and standards shall have angular (single arm) extension arms

Extension arms shall be attached to the posts and standards by welding in the case of steel and by spiking in the case of timber

Concrete extension arms shall be cast integrally with the post or standard

Barbed wire to security overhangs shall be tightly strained and wired at each intersection with extension arms and shall have barbed wire braces at 450mm centres between standards, posts, etc wired onto the barbed wire and the top straining wire

U.4.17 **Gates**

Gates shall be formed of 40mm outside diameter x 2,5mm wall thickness mild steel tubular framework with welded joints, strongly braced as necessary and filled in with wire mesh as described above, properly strained and securely bound to framework with tie wire

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 2
GENERAL ELECTRICAL SPECIFICATION

GENERAL ELECTRICAL SPECIFICATION

(ALL IN CONTRACTS)

1. CONDUIT AND CONDUIT ACCESSORIES

1.1 Conduit

Conduit shall be of steel galvanised internally and externally, either solid drawn, or welded and not less than 20 mm diameter, with all rough edges removed. All tube ends removed. All tube ends are to be reamed. With screwed conduit one threaded end is to be fitted with a coupling and the other end is to be protected against damage.

UPVC conduit may only be used if permitted by the Head : Works and only in those areas which he may specify. In this case this conduit shall be according to SABS 950.

Conduit accessories, which are secured to the conduit by means of lugs, screws or setscrews, are not acceptable.

General requirements of conduiting to SABS IEC 60614 (1).

Metal conduits shall be fully in accordance with SABS 1065 PART I.

1.2 Conduit Accessories

All conduit accessories shall be galvanised both internally and externally and comply with SABS 1065 – PART II.

All screwed conduit fittings shall be of malleable cast iron.

Where fittings are fitted with covers, the covers shall be of galvanised pressed steel secured with brass screws.

1.3 Flexible Conduit

Flexible conduit shall be of the plastic covered metal type complete with brass connectors to the approval of the Head : Works.

2. INSTALLATION OF CONDUIT

2.1 General

Except where cables are specified for certain circuits, the installation(s) shall be tubed throughout in steel conduit. Split conduit is not permitted. All conduits shall, wherever possible, or unless otherwise specified or agreed, be concealed in the structural work.

Except where agreed or otherwise specified or indicated on the drawings, all conduit to points shall run via the ceiling and floor slabs or roof space. In damp situations and where exposed to the weather, the conduits shall be so installed as to avoid, as far as possible, the condensation of moisture within them. All running joints are to be painted with an approved metal primer.

Mechanical and Electrical continuity must be maintained throughout the installation. Each length of conduit and every conduit fitting must be inspected for defects and all sharp edges or burrs must be removed before it is installed. All joints are to be tightly fitted together.

Running joints with long threads, where used, are to be fitted with a lock nut and the running thread shall not be longer in length than a coupling and lock unit.

In conduits smaller than 32 mm elbows and normal bends are not to be used but conduits are to be set to the required angles.

Flexible connections between conduit and appliance or other equipment shall be by means of flexible tubing (see Par 1.3).

No wiring shall be drawn into conduits until the conduits have been installed.

Where more than one socket outlet is connected on a circuit, the conduit shall be looped from the one outlet box to the following outlet box.

All switch-boxes, socket outlet boxes and any other purpose made metal box including distribution board trays shall be suitable treated against corrosion before installation with "Rustodian" or other approved metal primer.

All conduits shall be securely fixed into chases, and all flush switch and socket outlet boxes must be firmly embedded in cement mortar.

The Contractor shall make himself familiar with the positions of all fittings, such as blackboards, pinning boards, cupboards, shelving, worktops, etc, before commencing the conduit installation. The position of switches and socket outlets as indicated on the drawings are approximate only. The Contractor must verify that the final position of these will not be covered by the installation of the fittings referred to above, or come midway between the junction of any dados and upper wall finishes.

No extras will be entertained for moving switches or socket outlets as a result of the Contractor's failure to verify the final positions of the fittings or type of wall finish.

2.2 **In Roof Spaces**

The conduit in roof spaces shall be installed parallel or at right angles to the roof truss members and shall be secured at centers not exceeding 1,2 m by means of galvanised saddles nailed to the timbers with galvanised clout nails. Crampets will not be allowed.

Crossing of conduits is to be avoided wherever possible. Where unavoidable, one conduit must be neatly set over the other. Where a number of conduits have to run back to the distribution board or switchboard, they shall run parallel to the distribution board or switchboard, and at saddle distance to each other wherever possible.

Conduit runs from distribution boards shall terminate in fabricated sheet steel draw boxes installed in the roof above the distribution boards. Each draw box shall be fabricated from 1,6 mm galvanised sheet steel with welded corners and

suitably treated against corrosion with "Rustodian" or other approved primer and finished in aluminium paint.
Each draw box is to be fitted with slip-on lid with a 13 mm skirt. The box shall be 75 mm deep, shall be rectangular in shape and the size of conduits entering or leaving the box. Conduits shall be fixed to the box by means of couplings and brass male bushes or lock nuts and brass bush-nuts.

Conduit droppers shall be neatly cut into timber wall plates and set to face the right direction. All sets must be uniform. Conduits may be set at angles only where droppers or ceiling points are within 230 mm of roof members.

No conduits are to be run over the top of gangplanks or trapdoors.

Draw-in boxes with metal covers shall be provided where required and shall be installed near the gangplanks, if any. All inspection conduit fittings in open roof spaces shall face upwards to facilitate wiring and to permit easy inspection. Three-way conduit boxes shall be used for tee-off purposed in open roof spaces. Inspection tees are not to be used except where otherwise agreed or specified.

All conduits extended into a roof space with a roof clearance of more than 900 mm shall be set onto the beam and extended into the roof for a distance where there is sufficient clearance. Under flat roofs or where there is less than 900 mm clearance, the conduit shall be installed as specified for tubing in concrete slabs, right angle bends should be kept to a minimum and the shortest route taken.

Where false ceilings occur they shall be tubed as called for in the detailed specification. Conduits in restricted spaces and run as for concrete slabs must however, be installed in a neat and orderly manner.

Conduits to ceiling points for all types of fittings must be firmly supported and shall terminate in a back entry conduit box. The conduit box shall be taken through to the face of the ceiling and finish flush. Where the ceiling brandering interferes with the installation of the ceiling point specified, the Contractor must trim the brandering to allow the conduit box to be taken through to the face of the ceiling as specified. Luminaires must be bonded to the conduit box by means of metal threaded screws.

2.3 **In Concrete Slabs**

In order not to delay building operations, the Contractor must ensure that all conduits and conduit fittings, which are to be cast in concrete, are laid in good time. The Contractor shall have a competent Electrical Artisan standing by during casting of concrete, etc, to ensure that the conduit boxes are not damaged during casting of concrete.

Draw boxes, expansion joints boxes and round conduit boxes are to be provided where necessary.

Deep type conduit boxes shall be used for side entering conduits and normal shallow boxes may be used for back entry conduits. No elbows, bends or sharp sets will be allowed in concrete slabs except in cases of conduits of 40 mm diameter or when larger sweeping bends will be permitted.

Common drawn and/or inspection boxes shall be used where there is more than one circuit involved. They shall be installed in lavatories, storerooms, or other inconspicuous places. Covers shall be of hardboard neatly finished to match the finished ceiling or wall surface, and shall be fitted parallel to the wall or ceiling. All boxes, etc. are to be securely fixed to the shuttering to prevent displacement when concrete is cast. All conduits must be laid off the deck, supported and secured at regular intervals and installed as close as possible to the neutral axis of concrete beams and slabs.

Expansion joints shall be shown on layout drawings and shall consist of a metal box in which one conduit is fixed and the other capable of movement with the building's expansion and contraction. Earth continuity of these joints shall be maintained by means of stranded copper conductors bonded to the conduits in the box as shown on the drawing.

Earth conductors and clamps buried in concrete are not permitted.

Conduits must be spaced sufficiently apart to allow for proper concreting. All joints shall be painted with an approved metal primer after completion of the tubing installation, prior to the concreting. All exposed parts of the conduit installation shall be suitably, protected against corrosion at the discretion of the Head : Works.

Before any concrete slab is cast, all conduit droppers to switchboards shall be neatly spaced and rigidly fixed.

2.4 **Surface Work**

All conduit must be plumbed and leveled and only straight lengths shall be used.

In cases where doorframes are out of plumb, or fittings, beams etc, are out of level, the conduit shall be run parallel with the doorframes, fittings, beams etc.

No threads shall be visible when the conduit installation is complete, except on running couplings.

Running couplings shall only be used where unavoidable and shall be fitted with a sliced coupling as a lock nut.

No inspection or normal bends are to be used on surface work, except with the approval of the Works Inspector and where conduits of 32 mm diameter or larger are used. Conduits shall be set uniformly and inspection couplings shall be used where necessary.

Fittings, tees, boxes, couplings, etc, are to be cut into the surface to allow the conduit to fit flush against the surface or alternatively spacer bar saddles may be used. Conduit is to be bedded into any irregularities to avoid gaps between the surface and the conduit.

Double sets, where used, shall be parallel with no twists and shall be as short as possible. All conduits, which terminate at metal trays, boxes, industrial switches and plugs shall do so by means of couplings and male bushes. No couplings will be permitted in droppers of lengths less than 3.6 m.

Where crossings of conduits is unavoidable, purpose made metal boxes shall be used. The length of the box is to be 8 times the diameter of the largest conduit, the width one and half times the sum of the diameter of al the conduits, and the depth one and half times the diameter of the largest conduit with a minimum depth of 50 mm. The box shall be fitted with a neatly fitting cover and the finish shall be in keeping with the general layout. Where a number of conduits are to be installed in parallel they shall be evenly spaced and grouped under one purpose made saddle. Conduit spacing shall not exceed 10 mm. The purpose made saddle shall be made of 25 x 2 mm galvanised steel strip or other approved material, formed to suit the curvature of the various conduits and shall be drilled and fixed by means of screws between. Saddles shall be spaced at intervals not exceeding 1.8 m, except for conduit droppers, which shall be saddled centrally between ceiling and accessory box. All saddles are to be secured to the wall by means of black japan or brass rounded head screws. Distribution boards, draw boxes, industrial switches and plugs, etc, shall be neatly recessed into the surface of plastered walls to avoid double sets or alternatively spacer bar saddles may be used. On face brick walls the conduit shall be tightly set into the switch or plug.

In situations where there are not ceilings, the conduits are to be run along the wall plates and tie beams.

No wiring is to be carried out until the tubing has been inspected and approved.

Where spacer bar saddles are used, these shall be installed at centers of 1 m for horizontal and 1.5 m for vertical runs.

All conduits shall be painted with an approved enamel paint to match the background colour.

2.5 Future Extensions

In roof spaces with a minimum clearance of 900 mm, switch and plug drips for future use are to be set 300 mm in the correct direction and shall be threaded and fitted with plugged couplings. Where the roof over a slab is to be removed for future expansions, conduits for future use are to terminate 40 mm above tie beams and shall be threaded and fitted with plugged couplings.

Where future extensions are to be below slabs, all switch, socket outlet and other conduit droppers are to terminate 130 mm below slabs or beams with conduit ends threaded and fitted with plugged couplings.

Where provision is made for future extensions to a concrete slab, all conduits required for future use are to project 130 mm from the slab. Conduit projections are to be painted with an approved anti-corrosive paint and must be fitted with plugged couplings.

All switch, plug and other outlet boxes required for future use shall be fitted with approved blank cover plates.

Unused lighting outlet boxes are to be fitted with round hardboard or plastic covers with brass cover screws, which shall fit flat on the finished ceiling.

2.6 Fixing of Conduits

Conduits shall be fixed to switch and socket outlet boxes by means of couplings and brass male bushes or lock nuts and brass bush nuts. Couplings and male bushes to be used on all surface work. 2.7 **Chases and Building Work**

Except where otherwise specified conduits, switch boxes, plug boxes and distribution boards are to be built into the brick walls by the Contractor. It will, however, remain the responsibility of the Contractor to ensure that the above-mentioned boxes and distribution boards are correctly built in and are firmly bedded and cemented into the walls, plumb and square.

The Contractor shall, unless otherwise specified, do all necessary chasing and cutting of bricks. All electrical materials (e.g. conduits up to 40 mm for UG cables, conduits, conduit boxes, distribution boards etc) must be supplied by the Contractor who must arrange to have these on site, and positioned when required for the building work. A competent Electrical Artisan must be in attendance and ensure that the conduits etc are correctly installed and positioned.

The Contractor is to ensure that tubing installed in chases is securely nailed and covered by a layer of 5:1 mixture of coarse sand and cement, finished flush with brickwork and that switch and plug boxes finish flush with the finished wall surface.

The Contractor is to ensue that below distribution boards connected by means of under-ground cables, a 230 mm wide by 115 mm deep cavity in the wall from the cable pipe to the distribution board is to be provided by the Contractor, or alternatively, cable sleeves as specified.

3. PLUGGING OF WALLS

Only approved plastic plugs shall be used to secure conduit or equipment up to 5kg mass. The use of round-headed screws only will be permitted.

Heavier equipment shall be secured by means of approved expansion bolts.

Wood plugs and any plugs in the joints in brick walls are not permitted.

4. FIXING TO CONCRETE CEILINGS

Ceilings mounted equipment other than luminaires shall be secured to concrete ceilings by means of expansion bolts, shot bolts or “Robot” tools bolts or as expressly specified for the service.

5. WIRING

5.1 PVC Insulated Single Core Medium Voltage Conductor

The conductor is to be of high conductivity copper wire insulated with Polyvinyl Chloride. The cable shall be finished in the required colours and shall be in accordance with SABS 1507 and 1574.

Circuit wiring shall be of the Loop-in system and no wiring joints in the conduit or conduit fittings will be permitted. Not more than two conductors of a kind will be allowed at any outlet point. the end strands of cables, whether single or looped which have to be connected to terminals of switched, plugs, lamp-holders, fittings

and distribution boards, etc, are to be tightly twisted together. Cutting away of wire strands of any cable will not be allowed. Only one circuit in any one conduit will be permitted unless otherwise specified.
Conductor sizes shall be as follows except where otherwise specified:

Lighting circuits	1,5 mm^2	
Bells circuits	1,5 mm^2	
Clock circuits	1,5 mm^2	
Incinerator circuits	2,5 mm^2	
Ironing circuits	2,5 mm^2	with 2,5 mm^2 insulated earth wire
Plug circuits	4,0 mm^2	with 2,5 mm^2 insulated earth wire
Geyser circuits	4,0 mm^2	with 2,5 mm^2 insulated earth wire
Heater circuits	4,0 mm^2	with 2,5 mm^2 insulated earth wire
Stove	10 mm^2	with 6,0 mm^2 insulated earth wire
Motor circuits		
Up to 4kW single phase	4,0 mm^2	with 2,5 mm^2 insulated earth wire
Up to 11kW three phase	4,0 mm^2	with 2,5 mm^2 insulated earth wire

To avoid deformation of PVC insulated cables at temperatures in excess of 57° C, they shall not be brought directly on to the terminals of appliances such as electric heaters, or any other electrical appliances or apparatus (including luminaires) which have a temperature in excess of 57° C. They shall terminate in a suitable terminal box as near to the appliance or fittings as possible and connect up from thereon, with heat resistant conductor.

6. MOUNTING AND POSITIONING OF LUMINAIRES

Luminaires and installation to comply with SABS 1464 Parts 1 to 22 and IEC 598-1 and IEC 60598 as applicable.

The contractor shall, in the case of board and acoustic tile ceilings (i.e. as opposed to concrete slabs), ensure that the luminaires are symmetrically positioned with regard to the ceiling pattern.

The layout of the luminaires as indicated on the drawings shall be adhered to as far as possible. The exact positions must be confirmed on site with the Head : Works.

Except where otherwise specified, pendant luminaires are to be mounted with the bottom of the fittings 2,5 m above finished floor level, mounted on either metal discs or wood blocks.

Under no circumstances shall cover strips be cut to accommodate wood blocks. Wood blocks must be neatly slotted to fit over cover strips and are to be secured by a minimum of two screws, which shall penetrate at least 25 mm into solid wood. Ceiling cover strips shall be neatly cut to accommodate fluorescent luminaires.

Where ceilings are raked, all incandescent luminaires are to be mounted on shaped leveling wood blocks securely fixed to the ceiling. Batten holders shall be secured to woodblocks by suitable brass screws. Fluorescent luminaires are to be mounted direct on raked ceiling without leveling blocks.

Fluorescent luminaires to be mounted on concrete ceilings shall be screwed to the outlet boxes and additionally supported by means of 50 x 6 mm expansion bolts. The bolts are to be ¾ of the length of luminaires apart.

Where a number of luminaires are installed end to end, outlet points must be provided after every second luminaire unless otherwise indicated on the drawing. The luminaires are to be joined together by means of 20 mm conduit nipples, lock nuts and male brass bushes, and the wiring led through the channels of the luminaires. The Contractor shall ensure that all such rows are correctly lined up and that the rows are parallel with the relevant building line.

The luminaires are to be jointed together by means of 20 mm conduit nipples, lock nuts and male brass bushes, and the wiring led through the channels of the luminaires. The Contractor shall ensure that all such rows are correctly lined up and that the rows are parallel with the relevant building line.

Incandescent luminaires are to be screwed directly to outlet boxes in concrete slabs and in board ceilings. In board ceilings the conduit box and the conduit shall be secured to the timberwork of the ceiling in such a manner that it shall support any incandescent luminaire, which is designed to be fixed to a normal conduit box.

Fluorescent luminaires shall be secured to board ceilings by means of the conduit box and 6 mm bolts passing through the boards and brandering.

7. BATTEN HOLDERS

B.C. batten holders shall be of brass or moulded plastic reinforced type complete with shade ring. The batten holders shall comply with SABS IEC 60238 and SABS IEC 61184. All lamp holders are to have brass terminals with screw type connection.

8. LAMP HOLDERS

Edison screw lamp holders	:	SABS IEC 60238
Bayonet lamp holders	:	SABS IEC 61184
Lamp holders for tubular fluorescent lamps	:	SABS IEC 60400

B.C. screwed lamp holders shall be of brass 20 mm E.T. complete with shade ring and shall comply with SABS IEC 60238 and SABS IEC 61184 with screw type connection terminals.

9. SWITCHES AND SOCKET OUTLETS

Switches SABS IEC 60669 as applicable and socket outlets SABS IEC 60884 as applicable shall be of the most modern manufacture and bear the SABS mark.

Flush switch and plug cover plates shall, unless otherwise specified, be of anodized aluminium of thickness not less than 0,9 mm, satin or other approved finish as directed and otherwise to be fully in accordance with SABS IEC 1084 for cover plates and SABS 1085 for wall boxes.

10. POSITIONS OF SWITCHES AND SOCKET OUTLETS

Except where otherwise specified, lighting switches and socket outlets are to be installed 1,4 m above finished floor level.

All mounting heights specified are to be measured from finished floor level to the bottom of the outlet box. Where the lower portion of the wall consists of face brickwork and the upper portion of plastered finish, switches and socket outlets are to be mounted in the plastered surface, provided that the lower edge of the plasterwork does not exceed a height of 1,5 m above finished floor level in which case the switches or socket outlets are to be installed in the face brick dado.

Where socket outlet and switch boxes have been installed with fixing lugs below finished wall surface, only approved distance pieces required to compensate for the recess shall be used. The lengths of distance pieces are not to exceed 15 mm.

Unless otherwise approved, light switches adjacent to doors are to be installed at the lock side of the door. Where the lock position is not indicated on the drawings, its position shall be ascertained before the switch box is installed. Switches are to be installed 150 mm from the reveal, or centrally if there is a fitting near the door.

All switch and socket outlet boxes shall be installed plumb, and built into the wall with a 1:1 mixture of cement and sand.

Industrial type switches and socket outlets shall be neatly recessed into the surface of plastered walls to avoid sets or alternatively spacer bar saddles may be used.

Deep type boxes may be used where switches or socket outlets are back to back, but where one side only is to be utilized at the time and the other is for future use, the side for future use shall be suitably covered with a metal cover plate.

11. LOW TENSION SWITCHBOARDS

Low Voltage switch gear and control gear to comply with SABS 1473 and SABS IEC 60947 and SABS 60349.

Where switchboards are to be installed in switch rooms or switch cupboards, the Contractor must ensure that the boards are manufactured to suit the dimensions of the rooms or cupboards.

Low tension switchboards shall be specified in detail for each service, but shall generally conform to the following:

They are to be of strong and rigid construction, with suitable angle, channel or folded steel framework. They are to be flush fronted and totally enclosed with sheet steel panels suitably formed at the edges and reinforced to prevent distortion. Unless otherwise directed, all front panels must be at least 2 mm thick and all other panels at least 1.6 mm thick. Panels are to be secured to the framework with studs and chromium plated dome nuts (self-tapping and similar screws are not permitted).

Switches, etc, are to be mounted on metal frames within the boards to give flush front panels. Equipment of normally surface mounted types such as energy meters, time switches and contractors, are to be mounted on inner metal trays

behind hinged front panels. In the case of supply authority meters the hinged front panels must have transparent inserts.

All metal work of the boards must be thoroughly degreased, primed with PA 10 self etching primer and finished with one coat of undercoat and two coats of electrical orange high gloss enamel, unless otherwise specified. All accessible current carrying parts, bus-bars, connecting strips, collector bars, etc, are to be adequately insulated in phase colours and suitably braced to withstand projected fault currents.

Connecting strips and collector bars must be of sufficient cross sectional area to carry full rated current of the switches served, irrespective of the fuse of trip rating.

The complete distribution board including bus-bars must be suitably constructed to withstand fault currents specified.

Connections to bus-bars are to be made by means of lugs suitably bolted and locked with high tensile bolts and connections to lugs must be effected by means of a crimping tools.

Incoming and outgoing bus-bar studs, where required, must be suitably insulated where they pass through panels of the board, and firmly supported within the board.

Where applicable, incoming and outgoing collector bars for cables in parallel must so arrange that the multiple cable ends can be connected to the bars with reasonably short tails which do not have to cross.
Cable supports must be placed at suitable heights having regard to the bending radius of the cables concerned and convenience in making off.

Wall-mounting and floor-standing back to wall type boards must be provided with full easy access to all equipment and wiring without any necessity of disconnecting or removing of any of the equipment mounted in the board.

Clear visible indication of all switch positions must be provided and the switches must be clearly labeled as directed by the Head : Works.

The details of construction proposed, and the Head : Works must approve all equipment of switchboards: Works before manufacture is commenced.

12. DISTRIBUTION BOARDS

12.1 Approval

The Head : Works must approve the details of construction proposed and all equipment within distribution boards: Works before manufacture is commenced.

12.2 Flush Mounting Distribution Boards

These shall be generally manufactured in accordance with SABS 1765. The board shall consist of two panels fitted side by side with common bonding tray and attached to a common architrave. One panel shall accommodate all single phase MCB's and the second panel shall accommodate the main isolator, main bus-bars and the triple pole MCB's. Chassis shall be of rigid channel section rust proofed

steel with clip-on trays for the single pole MCB's. The main isolator is to be mounted at the bottom of the second panel with the triple pole circuit breakers above.

12.3 **Surface Mounting Distribution Boards**

These shall be generally manufactured in accordance with SABS 1765, with two panels as for flush boards. 12.4 **Single Phase Distribution Boards**

Single Phased boards shall be generally constructed as three phase boards except they shall have a single panel. Single phase boards shall be mounted with the bottom of the architrave 1,5 m above finished floor level unless specifically directed otherwise.

12.5 **Distribution Board – In Roof Spaces**

Where distribution boards are installed below a roof space, a minimum of 2 x 20 mm and 1 x 25 mm spare conduits are to be run from the distribution board into the roof space.

13. **METER BOXES**

The meter box shall be mounted with the top 1,7 m above finished ground level. Surface mounted meter boxes shall be secured by at least 4 x 10 mm expansion bolts.

Service cables entering the meter box shall be protected by means of a suitably sized galvanised pipe extended 450 mm below the ground surface and securely saddled to the wall and bonded to the meter box.

14. **CONNECTIONS TO OUTLETS**

14.1 **General**

Where connectors are used to connect to the wiring of luminaires and other appliances, the connectors shall comply with SABS Specification 1239.

14.2 **Connection to Stoves**

14.2.1 **General**

The connection to an electric stove, unless otherwise specified shall consist of 2 x 10 mm^2 conductors and a 6 mm^2 insulated earth wire in 25 mm conduit. The stove shall be controlled by a 60 Amp micro gap switch of approved make and the connection shall be by means of a 45 Amp 3 pin stove plug of the "Cape Town" type. Cable ends, which are to be connected to the stove, shall be equipment with suitable soldered or crimped lugs. The connection between the stove plug and stove shall be by means of flexible conduit.

Except for high school domestic science unit kitchens (see Clause 14.2.2), the conduit shall be chased into the wall and fitted with a switchbox for housing the micro gap switch and a 25 mm circular conduit box over which the stove plug will be mounted. The stove plug shall be fitted with an adaptor plate and shall be

screwed directly to the conduit box by means of round head metal screws. The plug outlet shall face downward.

The stove plug and switch shall be mounted 430 mm and 1,4 m respectively above finished floor level unless otherwise specified or indicated on the drawings. 14.2.2 **Stove Connections in High School Domestic Science Unit Kitchens**

Connections to stoves in High School Domestic Science Unit Kitchens, where the stoves are situated in front of a fitting, shall be generally as specified in Clause 14.2.1 except that the 25 mm diameter conduit shall be run in the floor slab, from the distribution board to a position to the right of the stove. A pedestal, which is complete with a 45 Amp 3 pin "Cape Town" type cooker plug, mounted on the back, shall be fitted over the conduit and securely bolted to the floor by means of expansion bolts. The plug circuit, which passes through the pedestal, is to be on a separate circuit.

14.3 Connections to Hot-water Cylinders

The connections to hot-water cylinders not exceeding 3kW loading shall consist of 2 x 4 mm^2 PVC conductors and 1 x 2,5 mm^2 earth wire in a 20 mm diameter conduit from the distribution board. The conduits shall be chased in the wall and shall terminate at the side of the cylinder in a box over which is to be mounted a double pole isolator with pilot light.

The final connection between the isolator and cylinder shall be by means of silicone heat resistant conductors in 20 mm diameter flexible conduit.

Connections to roof mounted hot-water cylinders shall generally be as specified above with an isolator with pilot light mounted adjacent.

14.4 Connections to Power Points

Connections to electric motors and fixed apparatus to vibration shall, unless otherwise specified or indicated on the drawings, have final connections consisting of conduit and flexible tubing or reinforced hose in accordance with Clause 1.3 of this specification and PVC cables and earth wire of the required size.

An isolator shall protect all fixed apparatus and where necessary a starter fitted with a no-volt coil and overload protection adjacent to such apparatus.

Power points for connection of fixed apparatus to be installed by others, shall terminate in an approved type wall mounted switch unless otherwise specified.

The minimum conductor size for all power points shall be 4 mm^2 unless otherwise specified.

14.5 Underground Service Connection

This clause refers to underground service connections not provided by the Supply Authority.

The service cable and earth wire to be connected at the supply point in accordance with Clause 15.8 of this specification, and unless otherwise specified, shall be aid 600 mm below ground level throughout and otherwise fully in accordance with

Clause 15 and all applicable sub-clauses thereof. Cable entries to meter boxes shall be in accordance with Clause 13 and other entries shall be by pipe or duct as directed.

14.6 **Connections to Outbuildings**

Connections to outbuildings shall be made by means of underground cable only, laid in accordance with Clause 15 and all applicable sub-clauses.

Where the cable is run from the roof space of the main building, it shall be enclosed in suitably sized galvanised pipe built into the wall or run surface as directed. Surface run pipes shall be securely saddled at 1,8 m centers. Where the cable connects to the conduit in the roof space, a suitable joint box shall be provided or alternatively the cable may be taken through the roof space, a suitable joint box shall be provided or alternatively the cable may be taken through the roof space with fixings at regular intervals, and down to the main board. At the outbuildings, the cable shall be enclosed in a suitably sized galvanised sleeve pipe built into the wall or run surface and terminated in the distribution board tray.

14.7 **Connection and Mounting of Cable Fed Street/Site Lighting**

Street/site lights shall in all cases, except where otherwise specified, be fed by underground cable. Unless otherwise directed, a suitable terminal board shall be provided in the base of the lighting pole for the connection of the incoming and outgoing cables, the feeds from the terminal board to the fitting shall be as specified.

"Surfix" cable and compression glands shall be installed between terminal board and cross arm/bracket mounted luminaires. The terminal board shall also accommodate a miniature circuit-breaker in the phase connection to the fitting. Poles intended for mounting directly in ground are to be provided with a 300 x 300 mm base plate.

15. **UNDERGROUND CABLES**

1000 volt PVC SWA and 110 Volt PILCA cable and accessories shall be in accordance with the relevant SABS specifications to SABS 1507.

The storage, transportation, handling and laying of underground cables shall be according to the manufacturer's requirements and the Contractor shall have adequate and suitable equipment and labour to ensure that no damage is done to cables during such operation. All cable pipes and ducts entering buildings are to be sealed against the ingress of vermin, water, etc.

15.1 **Trenching**

Cables, unless otherwise specifically directed, shall be laid at a depth of 600 mm below ground level. Trenches shall not be less than 300 mm wide for one to three cables, and the width shall be increased where more than three cables are to be laid together so that the cables may be placed at least 75 mm throughout the run.

The Contractor shall take all necessary precautions to prevent trenching work being in any way a hazard to the public and to safeguard all structures, roads, sewer works, or other property from risk of subsidence and damage.

15.2 **Cable Joints**

Joints in underground cable runs will not be permitted unless unavoidable and at the discretion of the Head : Works. Where cable joints are unavoidable, the cable jointer is to work efficiently and cleanly and so that each end of the cables to be joined may have a minimum of 0,9 m of slack disposed in a loop without stress. Back-filling under joints must be firmly tamped to prevent any subsequent settling.

15.3 **Bedding**

In trenches made in intermediate, hard rock, or boulder material, the cables shall be laid on a 75 mm thick bed of earth and be covered with a 150 mm layer of earth before the trench is filled in. The Contractor to supply all earth required for trench filling.

15.4 **Laying**

Cables shall be removed from the cable drum in such a way that no twisting, tension or mechanical damage is caused, and must be adequately supported at short intervals during the whole operation. Particular care must be exercised where it is necessary to draw cables through pipes and ducts, to avoid abrasion, elongation or distortion of any kind. The ends of such pipes and ducts shall be sealed to approval after the drawing in of the cables.

15.5 **Back Filling**

Back filling after bedding (see Clause 15.3) is to be carried out with a proper grading of the material to ensure settling without voids, and the material is to be tamped down after the addition of every 150 mm. The surface is to be made good a required.

Back filling of cable trenches must not be commenced until after the cable trenches and laid cable(s) have been inspected by the Head : Works. Where a Contractor fails to observe this requirement he may, at the discretion of the Head : Works, be required to re-open such cable trenches for inspection at his own expense.

15.6 **Protection of Cables**

Where so directed by the Head : Works, concrete or other warning covers shall be placed over cables above the top bedding layer. Cable pipes when directed are to be installed at road and other crossings.

15.7 **Marking of Cables**

Cable marking tape is to be supplied by the Contractor and is to be laid 150 mm below ground over a cable run and as may be directed by the Head : Works to give early indication of underground cable runs.

15.8 **Joints and Termination of Cables**

Joints in underground cables and terminations shall be made by means of "Scotch Cast" or other approved epoxy-resin pressure type jointing kits. Low tension PVC cables are to be made off with sealing glands and materials designed for this purpose, which must be of approved make.

15.9 **Sealing of Paper Insulated Cable Ends**

Where cables are cut and not immediately made off, the ends must be sealed without delay. If cables are cut and the ends not immediately made off or sealed, the cable may be rejected and the Contractor will be required to replace it at his own expense.

15.10 **Earth Wires**

Except where specifically directed otherwise, earth continuity conductors are to be run with all underground cables constituting part of a low tension distribution system. Such earth continuity conductors shall be bare copper wire of a cross sectional area in accordance with the Code of Practice 0142 but shall not be less than 4 mm^2 nor more than 70 mm^2. The earth continuity conductor is to be bonded to the cable armouring, and to the lead sheath if any, at each termination, as well as to the local earth bard. The earth wire must be secured to the cable at 1,8 m centers.

15.11 **Opening Up of Existing Cables**

Where it is necessary to expose existing buried cables for any purpose, or to excavate in the vicinity of existing buried cables, pipes, etc, every care is to be exercised and only labourers experienced in such work, and duly warned by the Contractor, shall be employed thereon.

15.12 **Definitions for Classifying of Excavation**

(a) Soft Excavation – shall be excavation in material that can be efficiently removed by a back-acting excavator of flywheel power approximately 0,10kW per millimeter of tinned-bucket width, without the assistance of pneumatic tools such as paving breakers, or that can be efficiently loaded without prior ripping or stockpiling by a rubber tyred front-end loader approximately 15T mass and a flywheel power of approximately 100kW.

(b) Intermediate Excavation – shall be excavation in material that requires a back-acting excavator of flywheel power exceeding 0,10kW per millimeter of tinned-bucket width and the assistance of pneumatic tools prior to removal by equipment equivalent to that specified in (a) above.

(c) Hard Rock Excavation – shall be excavation in material that cannot be efficiently removed without blasting or without wedging and splitting prior to removal.

(d) Class A Boulder Excavation – shall be excavation in materials containing more than 40% by volume of boulders of sizes between 0,03 cubic meter and 20 cubic meter in a matrix of softer material or smaller boulders.

Note: (1) Excavation of solid boulders or lumps of size exceeding 20 cubic meter will be classified as hard rock excavation.

(2) Excavation of fissured or fractured rock will not be classed as boulder excavation but as hard rock intermediate excavation according to the nature of the material.

(e) Class B Boulder Excavation – shall be excavation of boulders only in a material containing 40% or less by volume of boulders of size between 0,03 cubic meter and 20 cubic meter in a matrix of softer material or smaller boulders.

Note: Those boulders that required individual drilling and blasting in order to be loaded by a back-acting excavator as specified in (a) above, or by a track type front-end loader, will each be separately classed as Class B Boulder Excavation.

16. EARTHING

16.1 Main Earthing

The type of main earthing shall be as required by the Supply Authority, if other than the Head : Works and in any case as directed by the Head : Works who may require additional earthing to meet test standards.

Where required, an earth mat is to be provided, the minimum size, unless otherwise specified, being constructed from copper straps 950 x 25 x 3 mm at 230 mm centers and braced at all intersections. Alternatively or additionally earth rods or trench earths may be required, as the Head : Works may direct, and installed according to his instructions.

All earth electrodes and connections thereto must be approved "in-situ" by the Head : Works before back-filling.

The electrical installation shall not be earthed by means of the lightning arrester earth electrode, if such is included in the installation, but may be bonded thereto.

16.2 Earthing in Installations

The installation shall be effectively earthed in accordance with the relevant sections of the Code of Practice 0142 and the requirements of the Supply Authority.

All hot and cold water and waste pipes are to be effectively bonded by means of 12 x 1,5 mm solid copper tape (perforated tape or wire will not be permitted), clamped by means of brass bolts and nuts. Bonding tapes exceeding 75 mm in length must be fixed to the wall by means of No. 6 x 20 mm brass screws and plastic plugs not exceeding 150 mm centers. Main earth copper tapes where installed less than 2,5 m from ground level, must be run in 20 mm diameter conduit securely saddled to the wall.

Gutters and down pipes are to be bonded by means of 6 mm round headed brass bolts, with nuts and washers. Self-tapping screws are not permitted.

Connections from the earth bar or terminal on the main board must be made to a visible cold water main, the incoming service conductor, if any, and the earth mat or plate (where such is required) by means of either 12 x 1,5 mm solid copper tape or bare 25 mm^2 copper wire, or such larger conductor as the Head : Works may direct. From each distribution board separate earth conductors are to be taken to the main earth bar or terminal on the main board. Each conductor shall consist to stranded copper conductors drawn into the conduit together with the distribution

board feeders. The size of the earth conductors to be in accordance with the requirements of the Code of Practice 0142 or as specified.
Earthing clips shall be made of not less than 0,9 mm thick copper strips not less than 12 mm wide. They are to be complete with 25 x 7,7 mm brass bolts, washers and nuts and must be constructed so that the clips will fit firmly to the conduit without any additional packing.

Adjustable earth clips are not permitted.

17. EXISTING BUILDINGS

17.1 Occupied Buildings

Where work is to be carried out in occupied buildings the Contractor must arrange to carry out the installation with as little interruption to services and discomfort to the occupants as possible.

17.2 Temporary Connections

Temporary connections shall be provided where necessary for continuity of services, and as directed by the Head : Works. The contractor must ensure that such connections are both electrically safe and free from physical hazard.

17.3 Old Materials

Unless otherwise specified all existing materials removed by the Contractor shall remain the property of the Head : Works and are to be handed to the Head : Works.

17.4 Making Good

Any damage which may be done to the plaster work, floors, ceilings, wood and paint work, furniture and other equipment in the building, etc, during the progress of the electrical installation shall be repaired and made good by the Contractor to the satisfaction of the Head : Works.

18. COMPLETION

18.1 Balancing of Load

The Contractor is required to balance the load as equally as possible over multi-phase supplies.

18.2 Tests

The installation shall be tested by the Contractor as the service progresses or as required by the Head : Works and upon completion, for earth continuity and insulation. The final test before the taking over of the installation shall be made in the presence of the Head : Works.

The mandatory "Certificate of Compliance" shall be issued by the Contractor to the Supply Authority, with a copy to the Head : Works prior to first delivery being taken.

18.3 **Labelling**

All circuits and apparatus on switchboards shall be suitably correctly labeled by means of engraved plastic labels (white lettering on black), which are to be either bolted or screwed to the equipment panel, or fitted in channeling provided below the switch gear.

Sub-circuits are to be numbered and a legend detailing the circuits is to be framed and fitted to the door of the distribution board.

All other equipment is to be individually labeled to indicate the function.

All switchboards are to be fitted with a label on which the designation of the board is clearly indicated.

A separate engraved label depicting the origin and cable/conductor size shall be fixed below the main switch.

18.4 **Finishes**

Covers for all boxes, expansion boxes, etc, shall be finished to match the paint work of the ceiling or wall surface or as specified.

18.5 **Site Drawing**

On all completed new work or where specifically called for in the Tender Document, the Contractor shall, on completion of the works, submit to the Head : Works, a marked up site plan indicating the exact underground cable reticulation.

19. POWER DUCTING FOR SCHOOL SCIENCE LABORATORIES

The ducting shall be "Ductline 3" supplied by Messrs. Lascon Lighting, 102 Malbourne Road, P.O. Box 2479, Durban 4000: Telephone 031-2075081 or other approved.

20. SPEAKER AND MICROPHONE OUTLETS

Speaker and microphone outlets are to conform to the following details:

1. Speaker outlet – To have one flat and one round pin.

2. Microphone outlet – To have one round pin only.

Both female and male parts to be supplied and installed by the Contractor.

21. BELLS AND BUZZERS

21.1 **Bells**

Bells for schools and hostels shall be 220 Volt AC or 24 Volt DC as specified for the service. They are to be of robust construction encased in a sturdy cast metal weather-proof case. They are to operate on the frequency of the supply. They shall have an adjustable stabilizing spring, gold-silver contact points and 150 mm gongs.

21.2 **Doorbells, Buzzers and Bell Transformers**

These will be as specified for each service.

21.3 **Bell Pushes**

Except where otherwise specified, bell pushes shall be of the flush type suitable for mounting in a standard 100 x 50 mm box. They shall be clearly marked as a bell push and shall be fitted with satin finished anodized aluminium cover plates.

22. **SIGNAL TIMERS**

22.1 **Primary Schools**

The timer shall be designed to automatically signal the start and finish of school periods by the switching of a bell circuit and is to comply with the following specification:

1. The mechanism may be synchronous motor or quartz movement driven with a 24 hour dial or digital time read-out suitable for operation on a 220V 50Hz supply and is to be provided with a spring or battery reserve of a least 24 (twenty four) hours.

2. The unit is preferably to have minute to minute timing for a 24 (twenty four) hour period although 5 (five) minute intervals are acceptable, and is to be provided with Weekend lockout. Signal periods shall be adjustable from 5 – 45 seconds.

3. The unit shall be housed in a metal or plastic case with detachable front cover suitable for wall mounting.

4. Timers with punch tape programming are not acceptable.

22.2 **High Schools and Colleges**

Timers for these institutions shall generally be as for Primary Schools but are to have at least 3 (three) separate programmes and be fitted with three push buttons for independent manual operations for testing of each programme, plus an on/off switch for each programme, which does not affect the running of the clock.

23. **CLOCKS**

Electric clocks shall be of the quartz electronic battery operated type, with a dial of 250 mm diameter. The dial shall be white, with distinctive minute markings and chapters shall be black Arabic figures. Time adjustment shall be simple. Where mains operated electronic clocks are specified, these shall be of the synchronous self starting type, suitable for a 200 – 250 V 50 Hz AC supply

24. **TIME SWITCHES**

The time switch shall consist of a single pole switch with silver to silver or other approved contacts operated by a quartz movement with a 24 hour reserve.

A suitable 24 hour, night and day dial, with hour indicator and two adjustable strikers, one OFF and one ON must be provided. The whole mechanism is to be totally enclosed in a dust proof case.
The current rating shall be required and the switch is to be suitable for operation on 220 volt 50 Hertz AC supply. Time switches used for under floor heating are to be fitted with weekend cut-out.

25. **MOULDED CASE CIRCUIT BREAKERS (INCLUDING MINIATURE)**

Circuit breakers shall be of the size and type as directed and specified for the service. They shall comply with SABS Specification 156 and SABS IEC 60947-2.

26. **SWITCHES: ON-LOAD FAULT MAKING (CIRCUIT BREAKER TYPE) WITHOUT TRIPS**

The switches shall be triple pole, hand operated, panel mounting air break type, having continuous current rating as specified and suitable for operation of 380 – 440 Volt 50 Hz AC system.

The contacts are to be of silver alloy and the switch mechanism shall be of the quick-make, quick-break type.

27. **SWITCHBOARD EQUIPMENT**

Switchboard equipment such as switches, circuit breakers, etc, shall be as directed and specified in the detail specification for the service.

Circuit breaker equipment of SABS IEC 60934.

28. **FUSE-SWITCH UNITS (WITH HRC FUSES)**

The fuse-switch unit is to be of the double pole, or triple pole or triple pole with neutral link type, and of the required current rating, as specified for the service and must be in accordance with BS EN 60947-3.

The fuse links must be fully isolated when the switch is in the open position, and interlocks must be provided to prevent the switch being operated with the cover open.

The fuse links shall comply with SABS Specification 172 and SABS IEC 60269-1 to 4.

29. **BUS-BAR COPPER**

Bus-bar copper must be fully in accordance with Tables A1 and A2 of SABS 1473-2 and SABS IEC 60439-2.

30. **SPECIFICATION COMPLIANCE**

The complete installation shall comply with the requirements of this specification. Should any differences or contradictions exist between this Specification and the detailed requirements for a specific installation, then the detailed requirements shall take precedence.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 3
LIGHTNING PROTECTION SPECIFICATIONS

LIGHTNING PROTECTION INSTALLATION

GENERAL SPECIFICATION

1. SATISFACTORY INSTALLATION

The whole of the installation shall be carried out in accordance with:

(a) The latest S.A.B.S. Code of Practice for the Protection of Structures against Lightning - S.A.B.S. 03 ; SABS IEC 61024 (1) , 61024 (1 -1); SABS IEC 61312 (1) ; SABS IEC 61662 & NRS 042.

(b) The KwaZulu-Natal Department of Works General Electrical Specification.

(c) The Municipal By-Laws and any other special requirements as deemed necessary by the Local Supply Authority;

(d) Local Fire Regulations.

2. S.A.B.S. APPROVED DRAWINGS

SABS Approved drawings are not required for this project.

3. TEST ON COMPLETION

Upon completion of the lightning protection system, the following tests shall be witnessed by an appointed representative of the Employer. The results shall be recorded on suitable test certificates which must be signed by both the Contractor and the Employers representative. A sketch must be included on each test certificate indicating the positions of each earth electrode in relation to some permanent reference point. It must also indicate the positions at which tests were carried out, the type of test and the results of these tests.

3.1 Earth Resistance Test

The Earth Resistance Test shall involve measuring the resistance to earth of each rod-type electrode, or group of rod-type electrodes, or trench earth which would normally be connected to one down-conductor or earth terminal. This test must be made with the electrodes completely disconnected from any part of the structure or lightning protection system.

3.2 Electrical Continuity Tests

(a) **External Down-Conductors**

Electrical continuity between the lower ends of external down-conductors which must all be disconnected from the earthing system during the test shall not exceed 1 (one) ohm.

(b) Metallic Services

Electrical continuity between any metallic structures of services (e.g. rainwater pipes) which form an integral part of the lightning protection system shall not exceed 1 (one) ohm. These tests should be carried out with all other components of the lightning protection system disconnected from the component being tested.

4. DESCRIPTION OF MATERIAL

4.1 Air Terminals and Down-conductors

All conductors must be in accordance with the requirements of BSS 1474 or American Standards Specification 6063. All aluminium conductors shall have a cross-section area of not less than 30 mm^2 (domestic dwelling only) or 50 mm^2 for all other applications. The dimensions of flat section conductors to be 20 mm x 3 mm. Where conductors are mounted in stand-off guides, the cross-section area of the conductor must be not less than 70 mm^2 to give adequate mechanical strength.

4.2 Conductor Guides

The conductor must be mounted in aluminium alloy guides conforming with the material specification given in 4.1 above. The guides must allow for free longitudinal movement of the conductor to cater for expansion and contraction of the system caused by temperature variation. The minimum thickness of any part of the guide shall not be less than 3 mm. The guides must be securely attached to the structure using two stainless steel screws and plugs, the use of plated screws is not permitted.

The conductor system shall be supported in guides so that an air gap exists at all times between the aluminium and the surface of the structure, the guides being seated upon plastic or other similar insulating material. Should conductors be installed directly upon the surface of concrete or cement plaster, an insulating strip is to be installed over its whole length to prevent contact between the two surfaces. Guides shall be installed to support the conductor at intervals not exceeding 1,2 metres horizontally or 1,5 metres vertically.

N.B.: No part of an aluminium conductor system must be allowed to come into direct contact with concrete or cement plaster as this may cause the aluminium to corrode.

4.3 Expansion Loops

Where conductors are installed horizontally without deviation from a straight line over long distances, expansion loops must be provided at distances not exceeding 30 metres. These expansion loops must have a cross-sectional area which is at least equal to that of the conductor.

4.4 Protection of Down-conductors

Where external down-conductors are installed in areas which are readily accessible to the public, the lower ends of the conductors shall be enclosed in a semi-rigid insulating material. In the case of a circular section conductor this shall comprise a 2 metre length of 20 mm diameter P.V.C. conduit. This conduit shall be securely attached to the wall by means of galvanized steel saddles fixed with stainless steel screws and plugs, spaced at intervals not exceeding 1 m. Where a flat section conductor is used this shall be covered by a similar length of 25 mm P.V.C. conduit. The lower end of the conduit shall be positioned as close as practicable to ground level, i.e. immediately above an aluminium to copper joint. The ends of the conduit shall not be sealed.

4.5 Earthing Electrodes

Earthing electrodes must consist of either copper-clad steel rods not less than 12 mm in diameter and having a minimum copper thickness of 0,20 mm driven into the ground, or a 50 mm^2 (35 mm^2 for domestic dwellings) bare copper conductor buried in a trench, or a combination thereof. Where copper clad steel electrodes are used they must have a suitable bond between the steel core and copper exterior to prevent moisture ingress between the two metals. Where it is necessary to extend earth rods, an electrolytically compatible corrosion resistant, coupling device, which prevents ingress or moisture into the joint shall be used. The copper conductor below the down-conductor joint shall be covered by a semi-rigid P.V.C. conduit for a distance of approximately 200 mm above ground and 400 mm below ground.

4.6 **Joints Above Ground**

Circular section aluminium conductors shall be jointed by aluminium ferrules or lugs which are securely crimped into place. Aluminium lugs must be bolted together using 10 mm diameter aluminium bolts and washers. The material specification for these components must conform with that laid down in paragraph 4.1. Alternatively heavily tinned copper lugs and ferrules may be used. The lugs should be joined together by means of 10 mm diameter copper, brass or bronze bolts and washers. Care should be taken to inhibit corrosion where dissimilar metals are used by thoroughly cleaning the surfaces of the metal before assembly and subsequently sealing the joint with an inert tenacious compound or tape.

Flat section aluminium conductors shall be joined by double riveting, using aluminium rivets which comply with the material specification laid down in 4.1. Alternatively 2 x 6 mm diameter stainless steel bolts, nuts and washers may be used. Fold over type bends will not be permitted.

Down-conductors are to be terminated approximately 200 mm above finished ground level. Circular section aluminium is to be jointed to a 50 mm^2 (35 mm^2 in the case of domestic dwellings) stranded copper conductor by securely crimping in place two heavily tinned lugs and bolting these together using 10 mm diameter copper, brass or bronze nuts, bolts and washers.

N.B. : Under no circumstances shall aluminium conductors be buried in the ground.

4.7 **Joints Below Ground**

A joint in the stranded copper conductor which forms part of the earthing system must be made by using a crimped copper ferrule clamping (not lugs) using two copper line taps of suitable dimensions, or exothermic welding. The copper earth conductor must be joined to an earth rod by either clamping, using a standard earth rod clamp or copper line tap or by exothermic welding. Joints which are made between dissimilar metals (i.e. copper conductor to galvanized steel water main), must be thoroughly cleaned before assembly. They shall be rendered watertight using waterproof adhesive tape on a suitable compound for a minimum distance of 200 mm in all directions from the joint.

4.8 **Bonds**

Where it is necessary to bond the aluminium conductor to any other metallic surface, this must be done by bolting or riveting. When attaching aluminium to a dissimilar metal the joints are to be thoroughly cleaned and sealed to prevent corrosion.

5. GENERAL INSTALLATION PROCEDURE

5.1 **Air Terminals for Non-metallic Pitched Roofs**

Aluminium conductors are to be installed along all ridges of roofs and projections such as dormer windows, etc., terminating at the ends with conductors running downwards over the surface of the roof and the eaves. Non-metallic chimneys must be protected by means of a finial of sufficient length to cover the chimney within a 45° angle struck downwards from its point. Alternatively it should have a conductor installed in the form of a closed loop upon the upper surface. The conductors are to follow the outer contour of the stack and must be bonded at a convenient point to the nearest component of the air terminal system.

N.B. : This bond may run in a horizontal or downward direction, but under no circumstances must any part of it run above horizontal.

Conductors may be dead-ended (i.e. have one end free and unbonded), providing that the length of such a conductor does not exceed 10 metres and that the unbonded end is either at the same level or higher than the bonded end. This technique may be used where ridge conductors are installed over dormer windows, etc.

In all cases where metallic gutters have been installed along the eaves of a pitched roof, these must be bonded to the air terminal system. Where metallic gutters do not exist, however, a conductor must be installed over the surface of the roof at eaves level to which the remainder of the air terminal system is to be bonded, with the following exceptions :

(a) Where the maximum distance from the ground level to the eaves of the building is less than 4 metres and the pitch of the roof is more than 1 in 2 (27° from the horizontal).

(b) Where the maximum distances from ground level to the eaves is less then 7 metres and the pitch of the roof is more than 1 in 1,5 (34° from the horizontal).

(c) Where the distance from the ground level to the eaves is more than 7 metres and the pitch of the roof is more than 1 in 1 (i.e. the included angle at the apex of the roof is less than 90°).

Under these circumstances eaves conductors need not be installed.

Any non-metallic objects which protrude above the general roof lines, such as Cape Dutch gable ends, must be protected as described above with a suitable air terminal system. Any metallic objects which protrude above the general roof line, such as hot water expansion pipes must be bonded as directly as possible to the nearest eaves conductor, gutter or other part of the lightning system.

N.B. : These bonding conductors must run in a horizontal or preferably a downward direction, from the vent pipe, etc., to the lightning protection system.

5.2 Air Terminals for Metallic Pitched Roofs

Buildings with roofs covered with electrically continuous metal sheets do not require separate air terminals but must be earthed via down conductors generally as described in 5.6 and 5.7. Any non-metallic objects projecting above the general roof line must be separately protected as described in 5.1 and bonded to the metal roof covering.

5.3 Air Terminals for Non-metallic flat or Mono-pitched Roofs

For flat or mono pitched roofs of non-metallic construction the air terminal system must consist of aluminium alloy conductors installed around the outer perimeter of each section of the roof structure. These conductors must be installed on top of parapet walls if these exist. Lift motor rooms, tank rooms, penthouses, etc., which protrude above the general roof line must have air terminal conductors installed around the outer perimeter of each roof slab or parapet wall. Any metallic objects which protrude above the roof line, such as expansion pipes, signs, flag poles, handrails, etc., must be bonded directly to the nearest component of the lightning protection system as described in 5.1.

N.B. : It is not permissible for the ends of conductors to be bonded directly to the perimeter air terminal system if the latter is installed upon a parapet wall having a height exceeding 500 mm above roof slab level. In these circumstances the conductors are to be bonded directly to the down conductors.

5.4 Air Terminals for Metallic flat or Mono Pitched Roofs

Metallic flat or mono pitched roofs do not require separate air terminal conductors, providing that there is electrical continuity between the metallic roofing sheets, (see 5.2). A metallic roof surrounded by a non-metallic parapet wall shall have conductors installed at the top of the parapet wall and these must be bonded to the metallic roof at intervals not exceeding 20 metres. If the parapet wall is clad with metal over its upper surface or a handrail is installed which affords good electrical continuity, separate air terminal conductors need not be installed. Under these circumstances the metal handrail or cladding must be bonded to the metal roof covering at intervals not exceeding 20 metres.

All non-metallic covering such as slates, tiles, asbestos cement sheeting, etc., supported by a steel structure being electrically continuous throughout may be treated as being of a complete metal construction. In these circumstances no separate air terminal system need be installed providing the steel roof structure is bonded to earth at intervals given in 5.5.

5.5 Down Conductors for Non-metallic Structures

Down conductors must be installed at regular intervals around structures and to run as directly as possible between the air terminal and earthing system. They must, where practicable, be positioned at the external corners of the structure. The maximum separating distance between down conductors around the perimeter of the structure must not exceed 30 metres. In the case of very tall buildings having a slender base (i.e. chimney stacks, water towers, etc.), a minimum of two down conductors must be installed.

The lower ends of down conductors are to be terminated and bonded to the earthing system approximately 200 mm above finished ground level. Under no circumstances must aluminium conductors be buried underground. Test joints must be provided between the down conductors and earthing system. Down conductors must run vertically between the air terminal and earthing systems. Where this is impracticable, their course may be deviated to run at any angle up to and including horizontal.

Where it is necessary to run conductors horizontally over the upper surface of a structural protrusion, such as an exposed concrete slab, the conductor may run down vertically over the edge of the slab and return to the main structure, so that the distance between the upper and lower conductors exceeds one third of the length of the horizontal run. Looped down conductors are not permitted. Down conductors must not run over the underside of large overhangs which are less than 6 metres above ground level, or other areas where people are likely to be present during a thunderstorm.

External or internal metallic rainwater pipes may be used as down conductors providing these are of substantial section and are jointed by screwing one length into another or welding. Thin gauge galvanized steel pipes whose sections are held together by friction, rivets or screws must not form part of a lightning protection system.

5.6 Down conductors for reinforced concrete framed structures

The steel reinforcement of this type of structure may be used in place of down conductors. Where the reinforcing system is used, the air terminal system must be bonded to it at a maximum of 30 metre intervals using steel clamps. This bond may be achieved by clamping, with a steel clamp, a steel conductor to a selected reinforcing bar, the opposite end of this conductor must terminate at a corrosion resistant metallic terminal such as Grade 316 stainless steel.

The reinforcing system of prefabricated concrete buildings must not be used unless special provision is made for bonding the various prefabricated sections together.

The terminals should be mounted flush with the face of the concrete. An aluminium alloy bond must then be taken from the air terminal system and be connected to the stainless steel terminal by means of a heavily tinned crimp lug for circular section aluminium, or a suitable bi-metallic joint in the case of flat section aluminium. A similar system must be used to bond the reinforcing system at ground level to the earthing system at points directly below the air terminal bonds. Here copper conductors must be used as the external bonding material.

Under no circumstances must copper, or other non-ferrous material be allowed to come into contact with steel reinforcing bars, as this may cause severe corrosion and subsequent structural damage. The lightning protection system must not be bonded to any part of the structure which is electrically isolated from the remainder of the building, i.e. cantilevered sections. In these circumstances, or where it is otherwise impracticable to use the reinforcing system, external down conductors must be installed as described in 5.5.

5.7 Down conductors for steel framed structures

Where the framework of a building is constructed of structural steel columns, these may be used in place of down conductors providing the separating distance between them does not exceed 30 metres. The upper ends of the columns must be bonded to the air terminal systems and the lower ends to the earthing system.

5.8 Earthing by means of vertically installed rod type electrodes

Rod-type electrodes must be driven into the ground at a position directly below each down connector. The maximum earthing resistance of each electrode or number of electrodes bonded to any one down conductor shall not exceed N X 30 ohms, where N equals the total number of down conductors which are bonded to a common air terminal system, or 200 ohms whichever is the lower value.

The minimum horizontal separating distance between rod-type electrodes bonded together must not be less than their installed depth. The upper ends of installed rod-type electrodes are to be terminated approximately 500 mm below finished surface level. A 50 mm^2 copper bonding conductor must be installed to run between each earthing electrode system and the lower ends of the adjacent down conductors. A joint is to be made between each of these bonding conductors and the down conductors at a position approximately 200 mm above finished ground level. These bonding conductors must be installed in P.V.C. conduit securely affixed to the wall (see 3.4). The length of this P.V.C. conduit must be approximately 600 mm and must be installed so that approximately 200 mm protrudes above ground level, the remainder being buried into the soil.

5.9 Earthing by means of metallic water mains

Where two or three down conductors are installed the water mains may serve as an earth terminal for one of these. Where three of more down conductors are installed the water mains may serve as an earth terminal for two of these. Regardless of whether the water mains are used as an earth terminal or not, the incoming metal water pipe must be bonded to the lightning protection earthing system underground.

5.10 Earthing by means of trench type electrodes

Where the soil conditions prevent the satisfactory installation of rod-type electrodes, a trench earth system must be installed. This method is to comprise a 50 mm^2 stranded copper conductor installed horizontally into a trench at a depth of 500 mm below finished ground level. The conductor is to follow the general outline of the structure to be protected and be installed 1 metre away from the outside walls. Where the building stands on rocky ground, the trench earth may be attached to the lower part of the wall in areas where rock protrudes through the soil. The conductor must, however, be buried wherever possible as described above.

Each down conductor must be bonded to the trench earth system as directly as possible by means of a copper conductor.

Trench earth systems must have a maximum earth resistance of 30 ohms. An isolated length of trench earth mat must be bonded to the down conductor system in such a way as to reduce the length of dead-ends to the minimum.

Should trench earths be installed beneath pathways where people are likely to be present during a thunderstorm, a plastic, bitumastic or ceramic pipe must be installed having a length similar to the width of the pathway and the trench earth conductor run inside it.

N.B. : The maximum useful length of a dead-ended trench earth is 80 metres.

KWAZULU-NATAL PROVINCE
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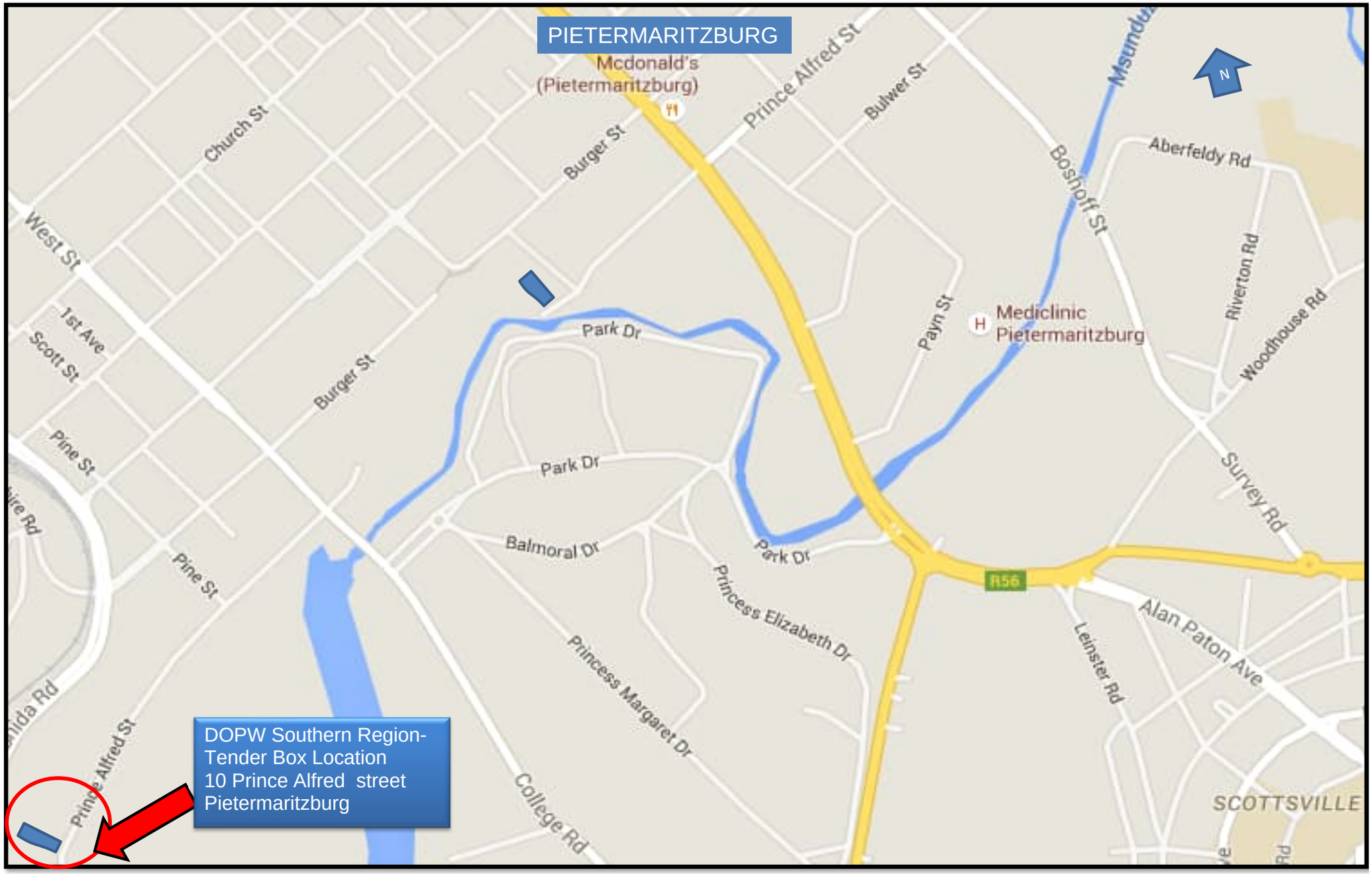
DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 4
MAP OF BID SUBMISSION LOCATION


PIETERMARITZBURG
Mcdonald's
(Pietermaritzburg)
Prince Alfred St
Bulwer St
Church St
Burger St
West St
1st Ave
Scott St
Pine St
Park Dr
Payn St
Mediclinic
Pietermaritzburg
Boshoff St
Aberfeldy Rd
Riverton Rd
Woodhouse Rd
Survey Rd
Balmoral Dr
Princess Elizabeth Dr
Princess Margaret Dr
College Rd
R56
Alan Paton Ave
Leinster Rd
SCOTTSVILLE
N
DOPW Southern Region-
Tender Box Location
10 Prince Alfred street
Pietermaritzburg

KWAZULU-NATAL PROVINCE
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DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 5
GEOTECHNICAL REPORT

GEOTECHNICAL INVESTIGATION FOR THE PROPOSED SANITATION UPGRADES AT MHLABA SCHOOL

DECEMBER 2017

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PROVINCE OF KWAZULU-NATAL

TITLE	***:***	***GEOTECHNICAL INVESTIGATION FOR THE PROPOSED SANITATION UPGRADES AT MHLABA SCHOOL***
Project Team	***:***	*AECOM SA (Pty) Ltd*
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CONTENTS **Page No**

1 Introduction 2
2 Site Description 2
3 General Geology 2
4 Investigation 2
5 Results of the Investigation 3
5.1 Test Pits and DCP Tests 3
5.2 Percolation Test Results 3
6 Geotechnical Evaluation 4
6.1 Expansive Soils 4
6.2 Collapsible Soils 4
6.3 Consolidation Settlement 4
6.4 Drainage 4
6.5 Excavation Conditions 5
6.6 Stability of Excavations 5
7 Recommendations 5
7.1 On-Site Waste Water Disposal 5
7.2 Foundations 5
8 Conclusions 6
9 References 6

ANNEXURES

Annexure A: Figures
Annexure B: Test Pit Profiles
Annexure C: Test Pit Photo's
Annexure D: DCP Results

LIST OF TABLES **Page No**

Table 1: Summary of Test Pit Soil Profiles 3
Table 2: Summary of Percolation Results 4

1 Introduction

The Department of Public Works (DoPW) has commenced with the implementation of a Schools Water and Sanitation Programme for 367 schools in the Kwa-Zulu Natal province in an effort to provide healthy and hygienic ablution facilities for learners and teachers.

In support of this programme, the DoPW has engaged AECOM (SA) (Pty) Ltd (AECOM) for the planning, assessments, design, costing and implementation stages for this programme. Ablution facilities at all schools were conditionally assessed for adequacy. Where ablution facilities did not meet the minimum norms and standards, new ablution blocks have been recommended.

Geotechnical investigations are underway at various schools to determine the type, consistency, conditions and strength of the subsoils in order to select the most cost effective foundations and to ensure the structural integrity of the proposed ablution structures. This report provides the results of the site investigation conducted at Mhlaba School.

2 Site Description

Mhlaba School is situated in the township of Cancele within the Sisonke District. The site is sloping moderately towards the south. No surface water or drainage was identified within the vicinity of the proposed development area. The co-ordinates for the site are 30°18'0.29"S 29°48'56.95"E.

3 General Geology

Based on the 1:250 000 Geological Series Map 3028 Kokstad, the school is underlain by dark grey shale of the Volksrust Formation, of the Ecca Group, Karoo Supergroup.

4 Investigation

The site investigation conducted included the excavation of two test pits by hand to a maximum depth of 1.5m. The test pits were excavated within proximity to the area selected for the ablution facility.

The test pit positions and coordinates are shown in Figure 1 attached to Annexure A. Table 1 provides a summary of the test pit profiles attached in Annexure B, with the test pit photos included in Annexure C. The test pits were profiled by an Engineering Geologist according to the South African Standards for soil profiling.

In order to assess of the consistency of the subsoils seven Dynamic Cone Penetrometer tests (DCP) were carried out. The locations of the DCP tests are shown in Figure 1 in Annexure A with the results attached to Annexure D.

Percolation tests were carried out in each of the test pits excavated in order to evaluate the suitability of the subsoils for the disposal of effluent from the proposed ablutions by subsoil percolation. The tests were undertaken within the test pits at depths of 1.5m within a 300mm x 300mm hole (350mm deep) excavated at the base of each of the test pits.

5 Results of the Investigation

5.1 Test Pits and DCP Tests

The observations made from the test pit soil profiles are summarized in Table 1 and briefly described as follows

In general the site is underlain by a colluvium consisting of grey brown soft silt. The thicknesses of the colluvium within the test pits were 0.7m and 0.4m in TP1 and TP2 respectively. Residual shale consisting of orange brown very soft to firm clay was found below the colluvium which extends to depths in excess of 1.5m. No rock was encountered within the depth limits of the investigation. No groundwater seepage was encountered in either of the pits excavated.

Table 1: Summary of Test Pit Soil Profiles

TP ID.	Soil Profile		Groundwater
	Grey brown soft silt, Colluvium	Orange brown very soft to firm clay, Residual shale	
TP1	0.0-0.7	0.7-1.5	-
TP2	0.0-0.4	0.4-1.5	-

The results of the DCP tests were used to confirm the consistency of the underlying soils. The results confirm a soft consistency within the colluvium, with the consistency ranging between very soft to stiff within the residual shale. Only DCP1 refused at 1.5m possibly on a cobble or boulder. The DCPs conducted within the test pits did not encounter refusal, which is an indication that the rock is deeper than 2.5m.

5.2 Percolation Test Results

The percolation test results were evaluated against the criteria based on the 2005 document titled “eThekwini Municipality Guideline for the Design and Approval of On-site Disposal of Domestic Sewage”. The result which is tabulated in Table 2 fall within the range of acceptable

percolation rates which is between 50mm/hour and 500mm/hour for on-site waste water disposal.

Table 2: Summary of Percolation Results

Test No.	TP1	TP2
Depth of test (m)	1.5	1.5
Drop in water level (mm/30min)	105	170
Drop in water level (mm/60min)	210	340

6 Geotechnical Evaluation

6.1 Expansive Soils

According to Brink (1983) the Karoo shale are considered to have a medium to high potential expansiveness.

6.2 Collapsible Soils

Based on observations from the test pits, the in-situ soils do not exhibit a collapsible soil fabric.

6.3 Consolidation Settlement

The soils are expected to undergo consolidation settlement.

6.4 Drainage

An important factor in the promotion of ground stability is the control and removal of both surface and groundwater from the site.

No groundwater was encountered in any of the test pits excavated. However, it is possible for perched water table conditions to occur during or following periods of heavy or extended rainfall. Provision for surface drainage, such as berms should be provided to ensure water does not enter open excavations during construction. Additional battering or shoring may be required depending on the depth of the excavation and the amount of inflow.

Should groundwater seepage be encountered appropriate dewatering measures should be implemented such as sump pumps, depending on the volume of inflow.

It is fundamental that all drainage installations have adequate capacity to deal with potential storm water and that they be designed to minimize erosion, ponding and infiltration.

6.5 Excavation Conditions

Excavation conditions within the upper 1.5m of the soil profile are classified as “soft excavation” according to SANS 1200D: Earthworks and normal excavation is expected using light earthmoving equipment.

6.6 Stability of Excavations

As indicated above, the groundwater table was not encountered in any of the test pits however seasonal fluctuations are expected.

It is therefore recommended that slopes excavated above the ground water table should have a batter of 1V:1.5H. Excavations below the water table should have soil slopes with a battered of 1V:3H.

7 Recommendations

7.1 On-Site Waste Water Disposal

The results of the percolation tests carried out fall within the National Building Regulations minimum requirement of 50mm/hr. percolation and maximum requirement of a 500mm/hr. percolation. The results are considered favorable and it is recommended that a detailed design of soakaway requirements be carried out at a later stage when effluent volumes are better defined.

As an indication of the size of evapotranspiration area required, consider a building with 50 people creating 70litres of sewage per day, the size of evapotranspiration area required to accommodate this waste is approximately 1026.0m^2 with a soakaway measuring 18.0m long, by 1.0m deep with a width of 0.6m.

7.2 Foundations

In order to reduce settlement, improve the allowable bearing capacity and negate the effects of heave and shrinkage, it is recommended that the proposed ablutions should be founded on an engineered soil raft using a slab on the ground foundation. This will involve the removal of all material below the foundation to a depth and width of 1m. The in-situ soil material (residual shale) at the base of the excavation should then be compacted to 93% Mod AASHTO. Thereafter the removed material should be replaced with G7 or better quality material compacted in layers not exceeding 150mm to 95% Mod AASHTO density at the optimum moisture content up to the desired founding levels. In this way a soil raft would be constructed for the foundations having a minimum allowable bearing capacity of 100kPa. As a general rule, settlement of the fill is taken as 0.5% of the fill height for the well compacted fill.

8 Conclusions

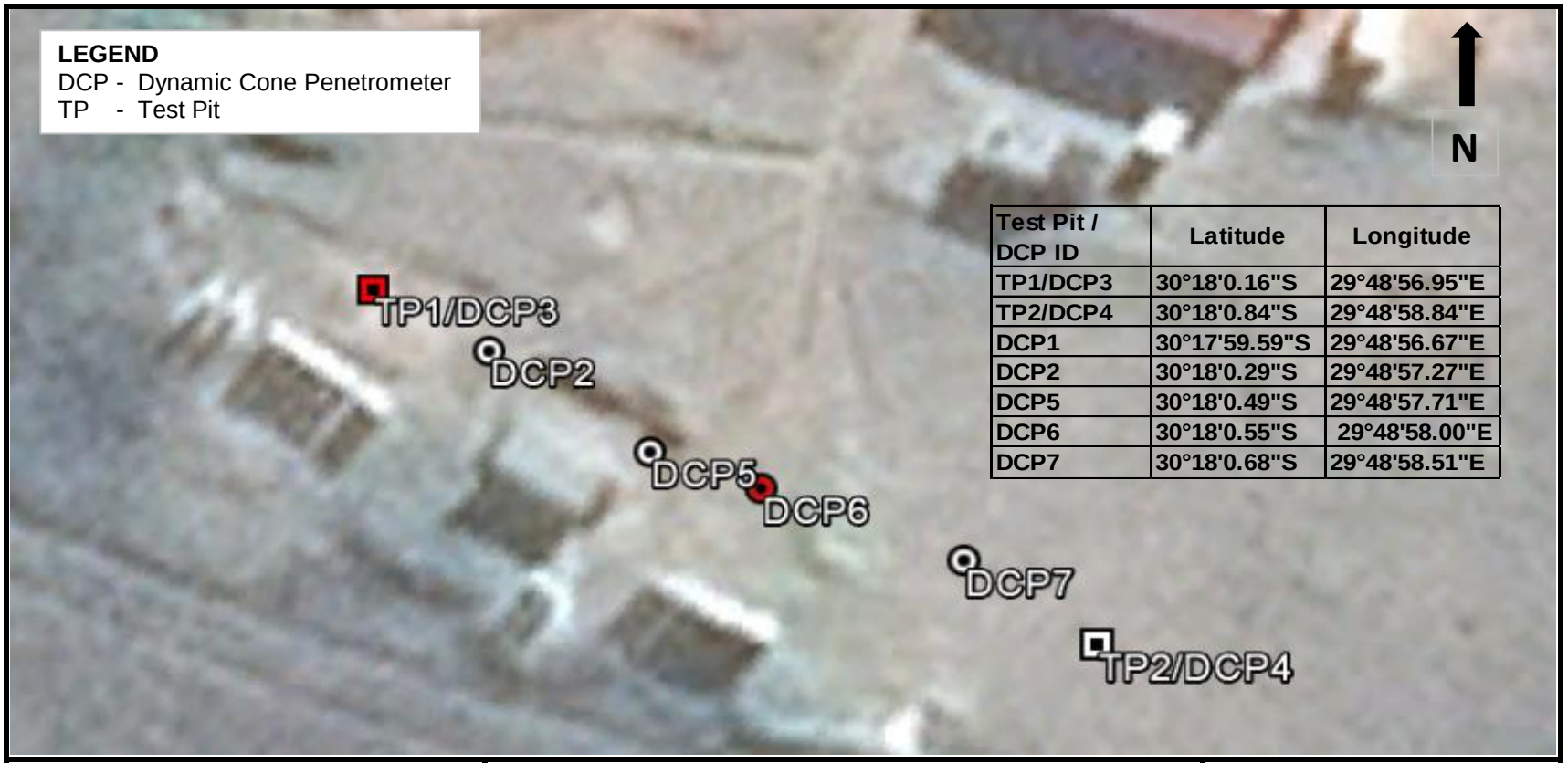
The site is deemed suitable for the proposed development provided cognizance is taken of the findings included herein. It is imperative that the recommendations within this report should be confirmed on site during construction by an engineering geologist or geotechnical engineer to confirm that there is no significant variance to the soils and conditions encountered.

9 References

- Jennings, J.E, Brink, A.B.A and Williams, A.A.B. (1973). Revised Guide to Soil Profiling for Civil Engineering purposes in Southern Africa. Transactions of the South African Institution of Civil Engineers, Vol 15
- Brink, A.B.A (1983) Engineering Geology of Southern Africa, Volume3
- SANS 1200D: Earthworks
- SANS 10400-P: 2010
- Water and Sanitation Unit of the EThekwini Municipality. (2005). Guideline for the Design and Approval of on Site (Sub Surface) Disposal of Domestic Sewage, Guideline No. 6

ANNEXURE A

SITE PLAN



Test Pit / DCP ID	Latitude	Longitude
TP1/DCP3	30°18'0.16"S	29°48'56.95"E
TP2/DCP4	30°18'0.84"S	29°48'58.84"E
DCP1	30°17'59.59"S	29°48'56.67"E
DCP2	30°18'0.29"S	29°48'57.27"E
DCP5	30°18'0.49"S	29°48'57.71"E
DCP6	30°18'0.55"S	29°48'58.00"E
DCP7	30°18'0.68"S	29°48'58.51"E

Figure 1	**MHLABA JS SCHOOL** **Geotechnical Investigation** **Test Pit and DCP Positions**	AECOM

ANNEXURE B

TEST PIT PROFILES

AECOM SA
263A West Avenue, Centurion,
South Africa, 0157
Telephone: +27 (0)12 421 3500
Fax: -

Client: Department of Public Works
Project Number: 60491906
Project: KZN School; Water and Sanitation Programme
Site: Mhlaba SS

Hole Number: TP1
Sheet 1 of 1

Sample Name and Type	Depth (m)	Graphic Log	Material Description
	0.2 0.4 0.6 0.7		Slightly moist dark grey brown soft intact silt with roots. **COLLUVIUM.**
	0.8 1.0 1.2 1.4 1.5		Slightly moist orange brown very soft to firm intact clay with minor roots. **RESIDUAL SHALE.**
			Hole stopped at 1.5m, no refusal.

NOTES:
1: Hole stopped at 1.5m, no refusal.
2: No Seepage was encountered.
3: Sidewalls were stable.
4: No sample taken.
5: Percolation test was done at 1.15-1.5m. Water level dropped by 105mm after 30min.

Date excavated: 2017/03/17
Date profiled: 2017/03/17
Contractor: AECOM
Excavated by: AECOM
Machine: Hand

Profiled by: Alex Reichle
Checked by: Jaco Ehlers

Elevation: NA
X Coordinate: 30°18'00.84"S
Y Coordinate: 29°48'58.84"E
Coordinate System: WGS 84 (SA Grid)

AECOM SA
263A West Avenue, Centurion,
South Africa, 0157
Telephone: +27 (0)12 421 3500
Fax: -

Client: Department of Public Works
Project Number: 60491906
Project: KZN School; Water and Sanitation Programme
Site: Mhlaba SS

Hole Number: TP2
Sheet 1 of 1

Sample Name and Type	Depth (m)	Graphic Log	Material Description
	0.2		Slightly moist dark grey brown soft intact silt with roots. **COLLUVIUM.**
	0.4		0.4
	0.6		Slightly moist orange brown very soft to firm intact clay with minor roots. **RESIDUAL SHALE.**
	0.8		
	1.0		
	1.2		
	1.4		
			1.5
			Hole stopped at 1.5m, no refusal.

NOTES:
1: Hole stopped at 1.5m, no refusal.
2: No Seepage was encountered.
3: Sidewalls were stable.
4: No sample taken.
5: Percolation test was done at 1.15-1.5m. Water level dropped by 170mm after 30min.

Date excavated: 2017/03/17
Date profiled: 2017/03/17
Contractor: AECOM
Excavated by: AECOM
Machine: Hand

Profiled by: Alex Reichle
Checked by: Jaco Ehlers

Elevation: NA
X Coordinate: 30°18'00.16"S
Y Coordinate: 29°48'56.95"E
Coordinate System: WGS 84 (SA Grid)

ANNEXURE C

SITE PHOTOS

Photograph showing excavation of TP1

Photograph showing soil profile of TP1

Photograph showing excavation of TP2

Photograph showing soil profile of TP2

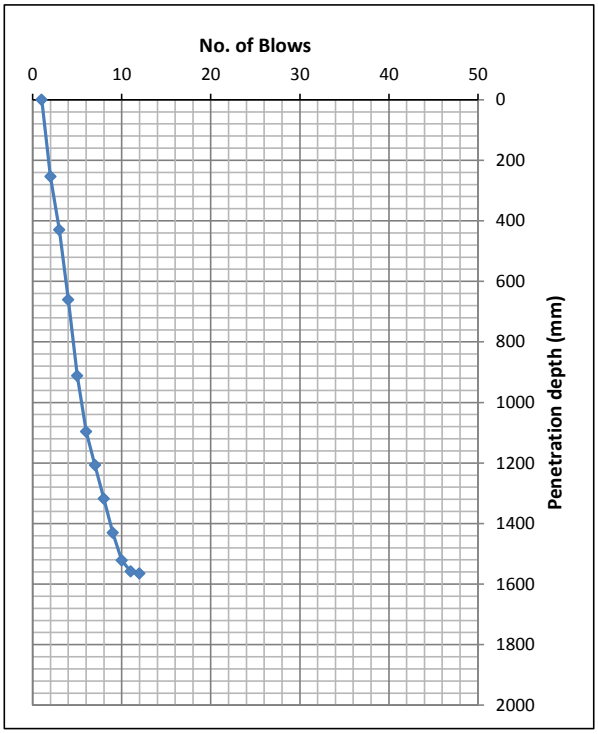
ANNEXURE D

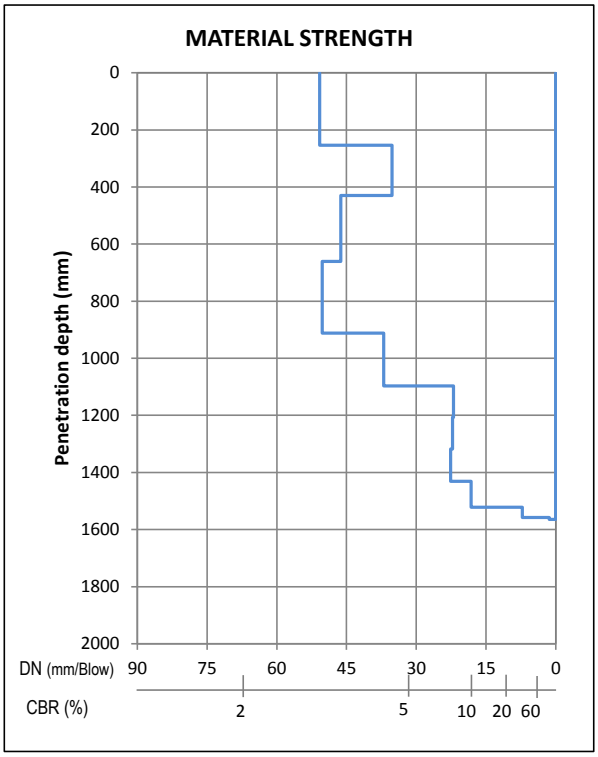
DCP LOGS

GENERAL INFORMATION

Project	KZN Schools Water and Sanitation Programme		
Number	60491906	**Location**	Mhlaba
Client	Dept. of Public Works	**X**	30°17'59.59"S
Test No	DCP 1	**Y**	29°48'56.67"E
Date	2017/03/17	**Undertaken by**	Alex

Readings		Penetration Rate		CBR[1]
No. Blows	Depth (mm)	mm/5blows	DN (mm/blow)	
0	0	-	-	-
5	254	254	50.8	2.8
10	430	176	35.2	4.5
15	661	231	46.2	3.2
20	912	251	50.2	2.8
25	1097	185	37	4.2
30	1207	110	22	8.1
35	1318	111	22.2	8.0
40	1431	113	22.6	7.8
45	1522	91	18.2	10.3
50	1558	36	7.2	33.4
55	1565	7	1.4	232.0
				Refusal



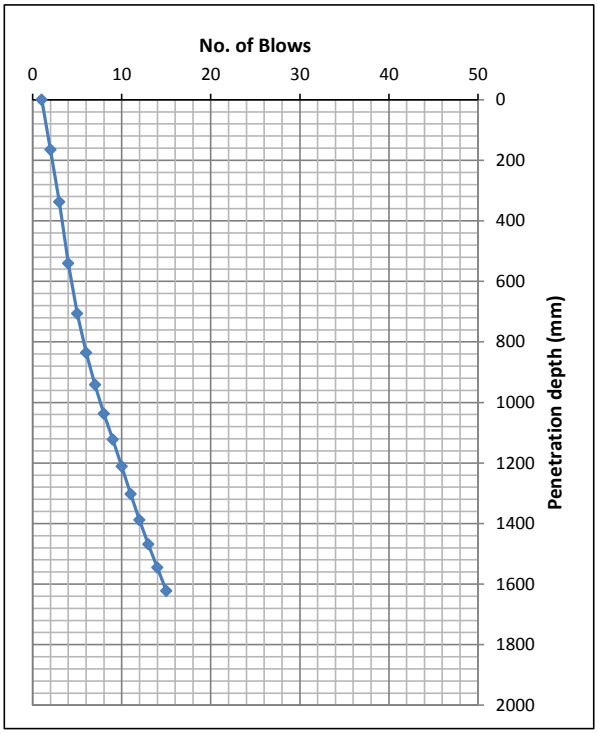


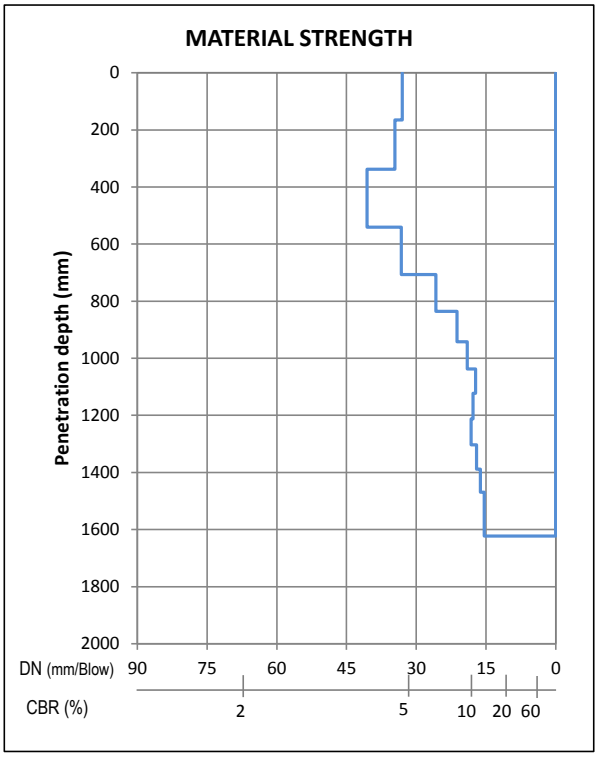
1) Interpretation of DCP Test by Paige-Green and Du Plessis, 2009

GENERAL INFORMATION

Project	KZN Schools Water and Sanitation Programme		
Number	60491906	**Location**	Mhlaba
Client	Dept. of Public Works	**X**	30°18'00.29"S
Test No	DCP 2	**Y**	29°48'57.27"E
Date	2017/03/17	**Undertaken by**	Alex

Readings		Penetration Rate		CBR[1]
No. Blows	Depth (mm)	mm/5blows	DN (mm/blow)	
0	0	-	-	-
5	165	165	33	4.8
10	338	173	34.6	4.6
15	541	203	40.6	3.7
20	707	166	33.2	4.8
25	836	129	25.8	6.6
30	942	106	21.2	8.5
35	1037	95	19	9.7
40	1123	86	17.2	11.1
45	1212	89	17.8	10.6
50	1303	91	18.2	10.3
55	1388	85	17	11.2
60	1469	81	16.2	11.9
65	1546	77	15.4	12.7
70	1623	77	15.4	12.7
				max reach



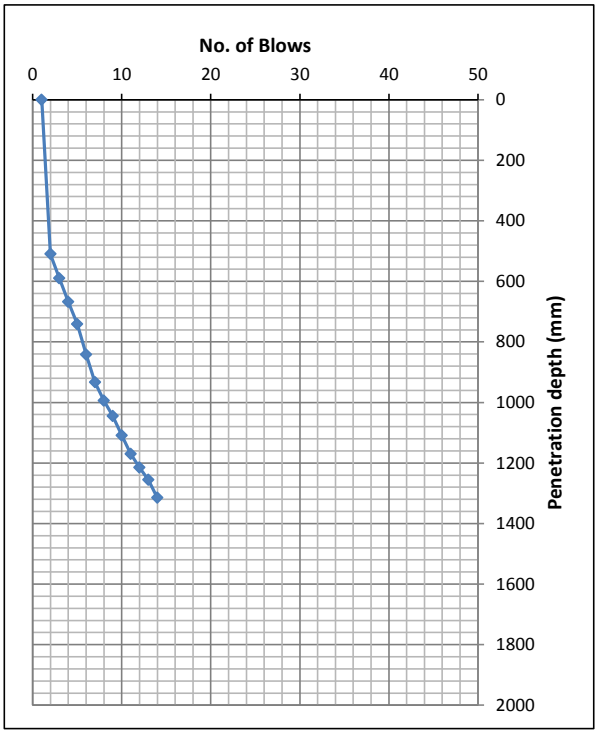


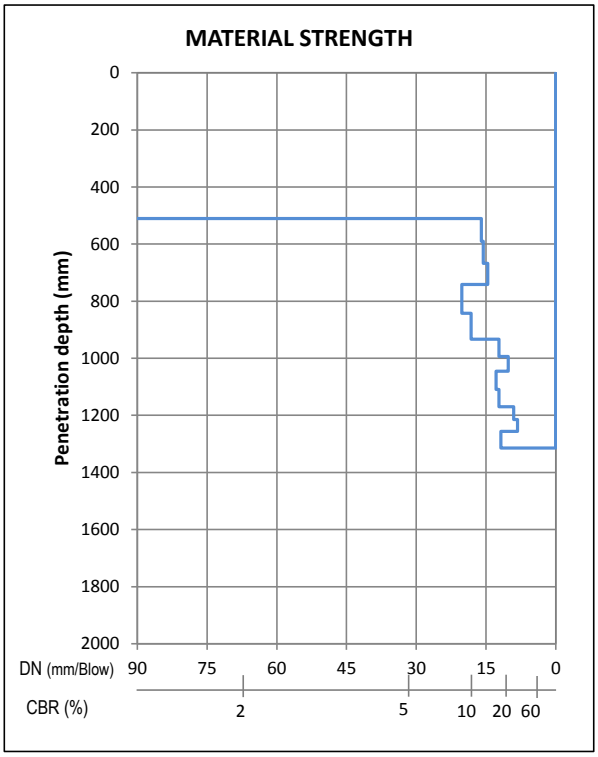
1) Interpretation of DCP Test by Paige-Green and Du Plessis, 2009

GENERAL INFORMATION

Project	KZN Schools Water and Sanitation Programme		
Number	60491906	**Location**	Mhlaba
Client	Dept. of Public Works	**X**	30°18'00.18"S
Test No	DCP 3 (Inside TP1)	**Y**	29°48'56.96"E
Date	2017/03/17	**Undertaken by**	Alex

Readings		Penetration Rate		CBR[1]
No. Blows	Depth (mm)	mm/5blows	DN (mm/blow)	
0	0	-	-	-
5	510	510	102	1.2
10	590	80	16	12.1
15	668	78	15.6	12.5
20	741	73	14.6	13.6
25	842	101	20.2	9.0
30	933	91	18.2	10.3
35	994	61	12.2	17.1
40	1045	51	10.2	21.5
45	1109	64	12.8	16.1
50	1170	61	12.2	17.1
55	1215	45	9	25.2
60	1256	41	8.2	28.3
65	1315	59	11.8	17.8
				max reach





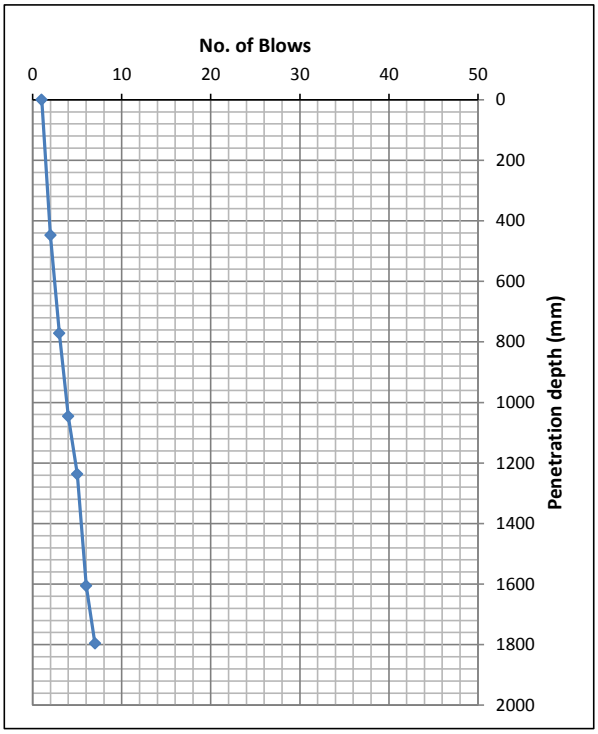
1) Interpretation of DCP Test by Paige-Green and Du Plessis, 2009

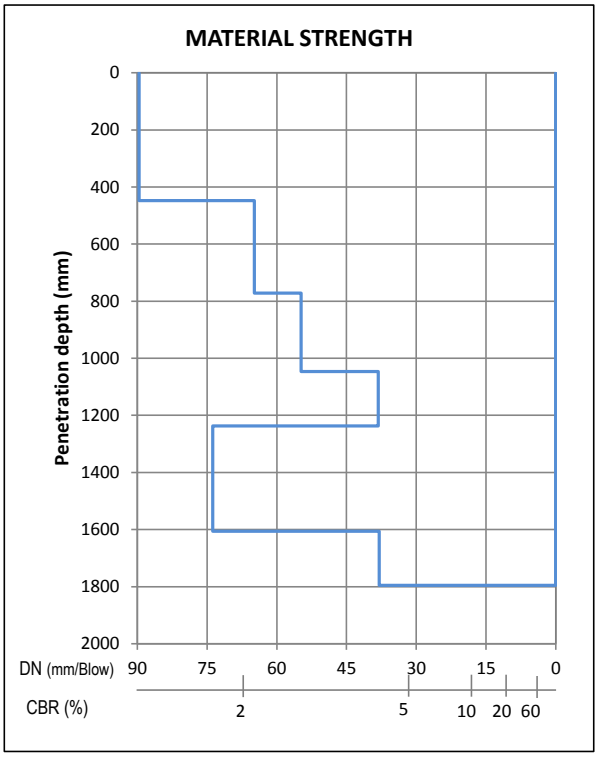
2) CBR % on graph not accurate

GENERAL INFORMATION

Project	KZN Schools Water and Sanitation Programme		
Number	60491906	**Location**	Mhlaba
Client	Dept. of Public Works	**X**	30°18'00.86"S
Test No	DCP 4 (Inside TP2)	**Y**	29°48'58.85"E
Date	2017/03/17	**Undertaken by**	Alex

Readings		Penetration Rate		CBR[1]
No. Blows	Depth (mm)	mm/5blows	DN (mm/blow)	
0	0	-	-	-
5	448	448	89.6	1.4
10	772	324	64.8	2.1
15	1046	274	54.8	2.5
20	1237	191	38.2	4.0
25	1606	369	73.8	1.7
30	1796	190	38	4.0
				Max reach



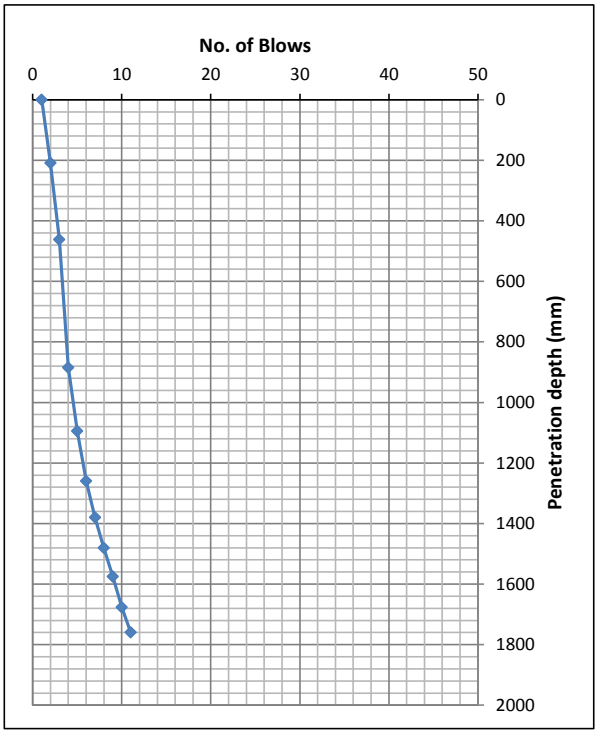


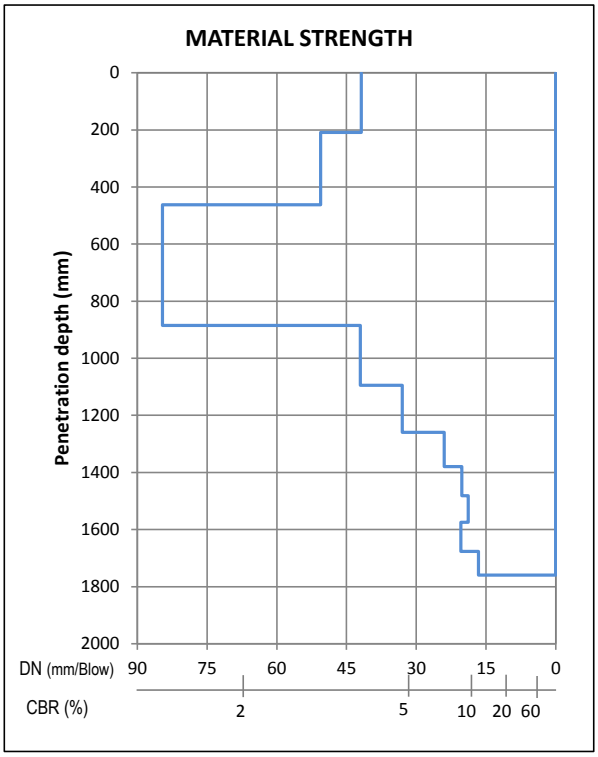
1) Interpretation of DCP Test by Paige-Green and Du Plessis, 2009

GENERAL INFORMATION

Project	KZN Schools Water and Sanitation Programme		
Number	60491906	**Location**	Mhlaba
Client	Dept. of Public Works	**X**	30°18'00.49"S
Test No	DCP 5	**Y**	29°48'57.71"E
Date	2017/03/17	**Undertaken by**	Alex

Readings		Penetration Rate		CBR[1]
No. Blows	Depth (mm)	mm/5blows	DN (mm/blow)	
0	0	-	-	-
5	209	209	41.8	3.6
10	462	253	50.6	2.8
15	885	423	84.6	1.5
20	1095	210	42	3.6
25	1260	165	33	4.8
30	1380	120	24	7.2
35	1481	101	20.2	9.0
40	1575	94	18.8	9.9
45	1677	102	20.4	8.9
50	1760	83	16.6	11.6
				max reach



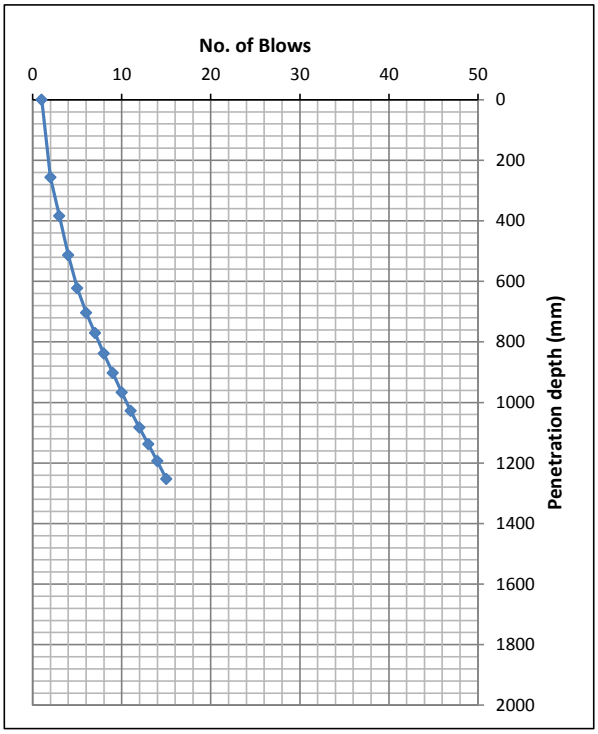


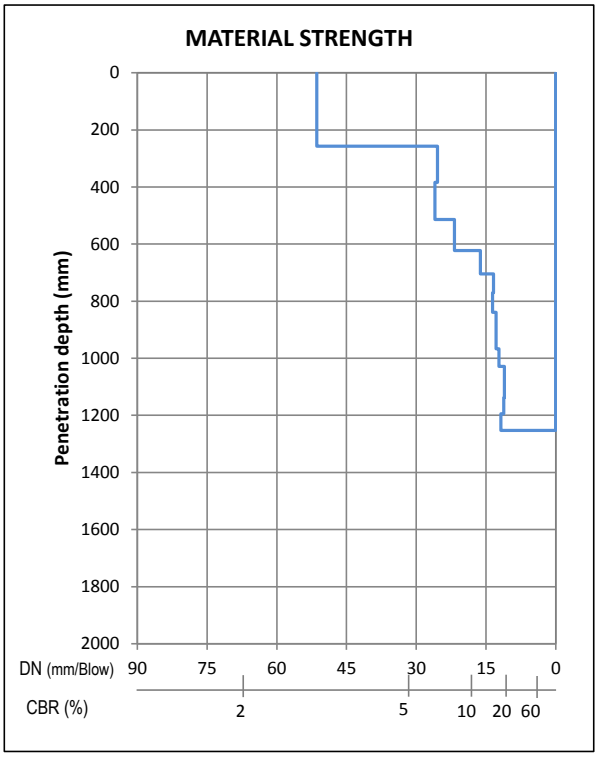
1) Interpretation of DCP Test by Paige-Green and Du Plessis, 2009

GENERAL INFORMATION

Project	KZN Schools Water and Sanitation Programme		
Number	60491906	**Location**	Mhlaba
Client	Dept. of Public Works	**X**	30°18'00.55"S
Test No	DCP 6	**Y**	29°48'58.00"E
Date	2017/03/17	**Undertaken by**	Alex

Readings		Penetration Rate		CBR[1]
No. Blows	Depth (mm)	mm/5blows	DN (mm/blow)	
0	0	-	-	-
5	257	257	51.4	2.8
10	384	127	25.4	6.7
15	514	130	26	6.5
20	623	109	21.8	8.2
25	704	81	16.2	11.9
30	771	67	13.4	15.2
35	839	68	13.6	14.9
40	903	64	12.8	16.1
45	967	64	12.8	16.1
50	1028	61	12.2	17.1
55	1083	55	11	19.5
60	1138	55	11	19.5
65	1194	56	11.2	19.1
70	1253	59	11.8	17.8
				max reach



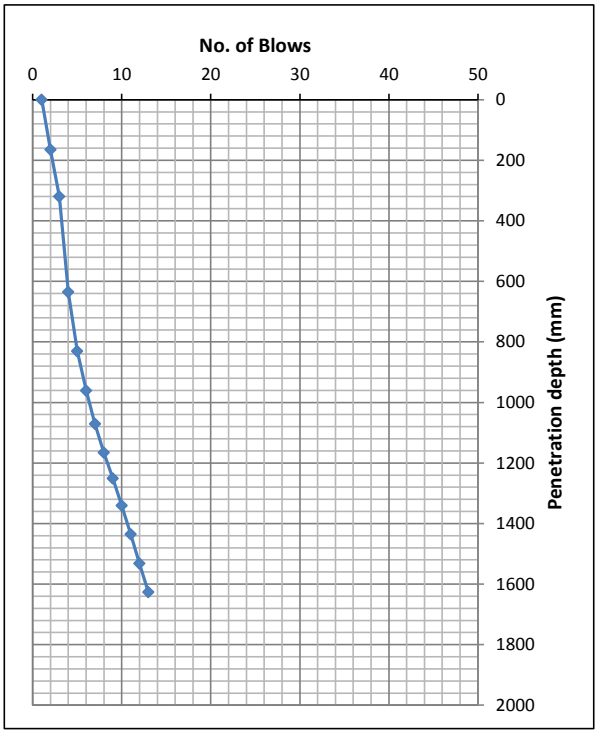


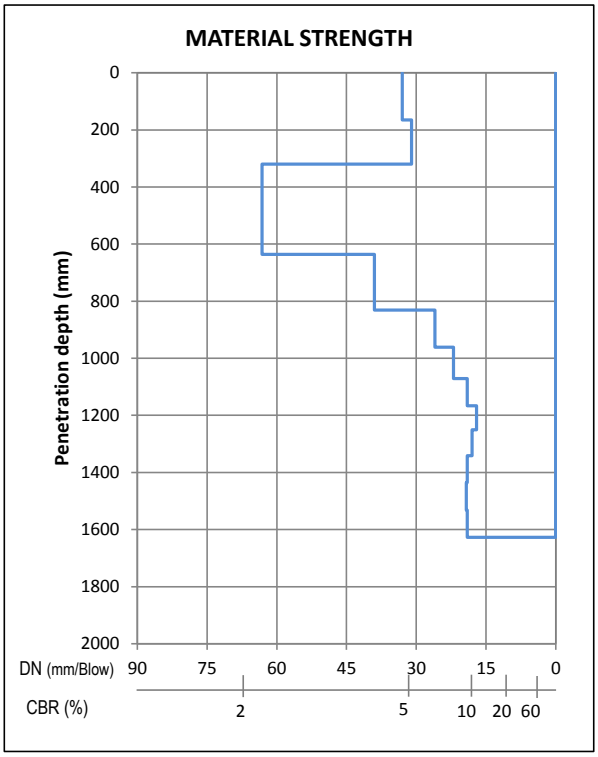
1) Interpretation of DCP Test by Paige-Green and Du Plessis, 2009

GENERAL INFORMATION

Project	KZN Schools Water and Sanitation Programme		
Number	60491906	**Location**	Mhlaba
Client	Dept. of Public Works	**X**	30°18'00.68"S
Test No	DCP 7	**Y**	29°48'58.51"E
Date	2017/03/17	**Undertaken by**	Alex

Readings		Penetration Rate		CBR[1]
No. Blows	Depth (mm)	mm/5blows	DN (mm/blow)	
0	0	-	-	-
5	165	165	33	4.8
10	320	155	31	5.2
15	636	316	63.2	2.1
20	831	195	39	3.9
25	961	130	26	6.5
30	1071	110	22	8.1
35	1166	95	19	9.7
40	1251	85	17	11.2
45	1341	90	18	10.4
50	1436	95	19	9.7
55	1532	96	19.2	9.6
60	1627	95	19	9.7
				max reach





1) Interpretation of DCP Test by Paige-Green and Du Plessis, 2009

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 6
JOINT VENTURE AGREEMENT

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

Joint Venture Agreement
(March 2004)
(First Edition of CIDB document 1017)

1. **PREAMBLE**

This agreement is made and entered into by and between

_____

_____

_____

of the first part and

_____

_____

_____

of the second part and

_____

_____

_____

of the third part.

(allow for additional parties as necessary).

Whereas the foregoing parties have resolved to form a Joint Venture under the title of

_____

_____

_____

for the exclusive purposes of securing and/or executing the Contract to be awarded by

(name of Employer)

to the KZN Department of Public Works in respect of the following project:

for *(brief description of Contract)*

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

Now it is hereby agreed as follows :

2. DEFINITIONS AND INTERPRETATION

2.1 Definitions

The following words and expressions shall have the meanings indicated, except where the context otherwise requires. Defined terms and words are, in general, signified in the text of the Agreement by the use of capital initial letters, but the absence of such letters does not necessarily signify that a term, or word, is not defined.

'Agreement' means the agreement between the Members of the Joint Venture and includes this model form of agreement together with the Preamble, Specific Provisions, if any, Schedules 'A', 'B' and 'C' and any relevant Documents prepared prior to the signing of the Agreement and appended thereto.
'Contract' means the contract with the Employer for the supply of the Deliverables, for the purposes of securing and executing which, the Joint Venture has been formed.
'Deliverables' means the works and/or services, equipment, materials, goods, etc. to be furnished by the Joint Venture to the Employer in terms of the Contract.
'Document' means any written, drawn, typed, printed, or photographic material, which relates to the Agreement.
'Employer' means the person, or body, which is to award the Contract and will employ the Joint Venture if it is awarded the Contract.
'Joint Venture' means the joint venture formed by the Members in accordance with the Agreement.
'Management Committee' means the body established in terms of the Agreement to manage all aspects of the work of the Joint Venture in securing and executing the Contract and in meeting the provisions for the Agreement.

'Member' means a person, or body which, being a party to the Agreement, is a member of the Joint Venture.

'Member's Interest' means the proportion expressed as a percentage, which the total monetary value of all resources provided and contributions made by a Member towards the execution by the Joint Venture of the Contract bears to the total of such values by all Members and, unless otherwise indicated in the Agreement, represents the extent to which the Member participates in the fortunes of the Joint Venture.

'Representative' means the person representing a Member on the Management Committee.

'Schedules' means Schedules 'A', 'B' and 'C' which set out general, financial and other information relating to the Members and the obligations, duties, rights, risks and benefits arising from their participation in the Joint Venture.

'Specific Provisions' means the variations, if any, required to this standard form of agreement for the specific purposes of the Agreement.

2.2 Interpretation

Unless inconsistent with the context, an expression in the Agreement which denotes:

- any gender shall include the other genders
- a natural person shall include a juristic person and vice versa
- the singular shall include the plural and vice versa

2.3 Headings

The headings to clauses of the Agreement shall not be considered part thereof, nor shall the words they contain be taken into account in the interpretation of any clause.

2.4 Law

The Agreement shall be construed in accordance with and governed by the laws of the Republic of South Africa and the English language versions shall prevail.

2.5 Language

English shall be exclusively used by the Members in the preparation of Documents unless otherwise indicated.

2.6 Conflict between Agreement and Contract

Should any provision of the Agreement be in conflict with the terms of the Contract, the Agreement shall be amended to the approval of the Management Committee so as to eliminate the conflict.

3. JOINT VENTURE GENERAL

3.1 Establishment and Purpose

The Joint Venture established by the Members in terms of the Agreement is an unincorporated association with the exclusive purposes of securing and executing the Contract for the benefit of the Members.

3.2 Termination

The operation of the Joint Venture and the validity of the Agreement shall terminate if and when it becomes evident that the Joint Venture will not be awarded the Contract, or, if the Joint Venture secures the Contract, when all obligations and rights of the Joint Venture and the Members in connection with the Contract and the Agreement have ceased and/or been satisfactorily discharged.

Unless otherwise decided by the Management Committee, the Agreement shall not terminate if a Member changes its name, or is taken over by, or merged with, another body.

This agreement will terminate when any one of the Members resigns, are liquidated or opts out of this agreement and the Joint Venture will be in breach of contract with the Employer and their contract could be cancelled.

3.3 Exclusivity

Unless otherwise agreed by the Management Committee, or provided for in the Contract no Member shall engage in any activity related to the Contract other than as a Member of the Joint Venture and Members shall ensure that their subsidiaries and other bodies over which they have control comply with this requirement.

3.4 Participation of Members

Except as may otherwise be stipulated in the Agreement, each Member shall be responsible for all costs incurred by it prior to the date of inception of the Agreement.

Subsequent to the date of inception of the Agreement, each Member shall, participate in the operations, risks, responsibilities and fortunes of the Joint Venture including, inter alia, the provision of funding, sureties, guarantees, insurances, human and other resources and participation in profits and losses to the extents indicated in the Schedules. Participation in any aspect not covered in the Schedules shall, if an agreement cannot be reached between the Members, be to the same extents as indicated by the Members Interests.

3.5 Management

The affairs of the Joint Venture shall be directed and controlled by the Management Committee, as set out in Section 4 hereof.

3.6 Confidentiality

All matters relating to the Agreement and the Contract shall be treated by the Members as confidential and no such matter shall be disclosed to any third party without the prior written approval of the Management Committee.

No Member shall be party to the dissemination of publicity relating to the Contract, or the Agreement, without the prior written approval of the Management Committee and the Employer.

3.7 Assignment

No Member shall cede, assign, or in any other way make over any of its rights, or obligations, under the Agreement without the prior written consent of the Management Committee.

3.8 Subcontracting

No Member shall subcontract any obligation, work or duty for which it is, itself, responsible in terms of the Agreement without the prior written consent of the Management Committee.

3.9 Variations to Agreement

No variation, modification, or waiver of any part of the Agreement shall be of any force, or effect, unless unanimously agreed by the Members and reduced to writing.

3.10 Liability

Each Member warrants that it will indemnify the other Members against all legal liabilities arising out of, or in connection with the performance of its obligations under the Agreement.

It is acknowledged by the Members that they may be held jointly and severally liable in respect of claims against the Joint Venture by the Employer or third parties.

4. MANAGEMENT OF JOINT VENTURE

4.1 General

The affairs of the Joint Venture shall be directed, controlled and managed by the Management Committee, which, within the terms of the Agreement and the Contract, shall have full authority to bind the Members in all matters relating to the affairs of the Joint Venture.

Communication between the Joint Venture and the Employer, or third parties, relating to the Contract shall be conducted exclusively by the Management Committee, or by such person as it may delegate to perform this function.

The Management Committee shall have the power to appoint a project manager and/or such other persons as it may see fit to appoint for the purpose of executing the Contract and may delegate such of its powers, responsibilities and duties as it may consider necessary, or desirable, to persons or bodies appointed or seconded for this purpose.

Such administrative functions as are necessary to ensure the effective operation of the Management Committee shall be performed by its chairman.

4.2 Management Committee

4.2.1 *Composition*

The Management Committee shall, unless otherwise agreed by all the Members, consist of one Representative of each Member and each Member shall be obliged, at all times, to maintain a Representative on the Management Committee.

Each member shall, not later than three working days after the signing of the Agreement, appoint its Representative and notify the other Members of the name and contact details of the Representative. Such Representative shall have the power to bind the Member that he represents in all matters relating to the execution of the Contract and the performance of the Agreement.

A Member shall be entitled, after giving the other Members not less than three working days written notice of his intention to do so, appoint, remove and/or replace, an alternate who shall, at any meeting of the Management Committee from which the Representative whom he represents is absent, be vested with all rights and powers and subjected to all the obligations of the absent Representative.

The chairman of the Management Committee shall be the Representative of the Member which has the largest Member's Interest. If two, or more, Members have the same, largest Member's Interest, the chairmanship shall rotate between the Representatives of such Members at three monthly intervals, the order of rotation to be determined by ballot.

Notwithstanding the foregoing, the chairmanship of the Management Committee may be determined, or changed, at any time by unanimous decision of the Management Committee.

No remuneration shall be paid by the Joint Venture to Representatives or their alternates for serving on the Management

4.2.2 *Meetings*

Meetings of the Management Committee shall take place at such times and places as the Management Committee may determine, provided that the chairman shall convene a meeting of the Management Committee to be held not later than ten working days after he has been requested, in writing, by a Member to do so. Not less than five working days written notice of any meeting of the Management Committee shall be given to all Representatives and their alternates.

The Management Committee may permit, or invite, persons other than Representatives or alternates to attend any of its meetings, but such persons shall not have voting rights.

4.2.3 *Decisions*

Each Representative shall have one vote on the Management Committee and where, in terms of this clause, a casting vote is required, this shall be exercised by the chairman.

All decisions of the Management Committee shall, desirably, be unanimous. Accordingly, if unanimity cannot, initially, be achieved in regard to a decision, the meeting at which that decision is sought shall be adjourned for a period of 48 hours to enable Representatives to consult with their principals. If, on resumption of the adjourned meeting, unanimity can still not be achieved, the decision, provided it is not one requiring unanimity of the Members, shall be taken by majority vote and, in the event of a tie, the chairman shall exercise a casting vote.

A Member not satisfied with a majority decision of the Management Committee may declare a dispute, to be dealt with in terms of Clause 8 hereof, but the majority decision shall, nevertheless, be implemented with immediate effect.

Decisions of the Management Committee, whether taken at a meeting, or otherwise, shall be recorded in written minutes, which shall be distributed by the chairman to reach the Representatives not later than five working days after those decisions were taken. Such minutes shall be deemed to have been affirmed by the Representatives unless written notice of dissent is received by the chairman not later than three working days after receipt of the minutes by the Representative.

4.2.4 Powers and duties

The functions, responsibilities and powers of the Management Committee shall include, inter alia, those listed below:

4.2.4.1 Formulating overall policy in regard to the achievement of the objectives of the Joint Venture.

4.2.4.2 Managing the day to day affairs of the Joint Venture.

4.2.4.3 Monitoring, directing and co-ordinating the activities of the Members to ensure that the objectives of the Joint Venture are achieved and that the obligations and responsibilities of the individual Members are met.

4.2.4.4 Monitoring and controlling the financial affairs of the Joint Venture and ensuring that proper books of account and financial records relating to affairs of the Joint Venture are maintained in an approved form and submitted to the Management Committee for approval at regular intervals, which shall not be longer than one month.

4.2.4.5 Determining the necessity for and the details of any changes in the duties and responsibilities of Members provided that any resulting changes in Members' Interests shall be unanimously approved by the Members.

4.2.4.6 Determining the terms and conditions of employment of personnel and the emoluments applicable to staff seconded to the Joint Venture by the Members.

4.2.4.7 Controlling and approving the appointment of all subcontractors.

4.2.4.8 Procuring, after the completion of the Contract and the release of all bonds, guarantees and sureties given in respect of the performances of the Joint Venture and the Members, the preparation and auditing of a final set of accounts, on the basis of which the final profits, or losses, attributable to the individual Members shall be determined and any necessary adjustments effected.

5 RESOURCES OF JOINT VENTURE

The resources to be utilised by the Joint Venture in securing and executing the Contract shall, insofar as these are to be provided directly by the Members, be as set out in the Schedules and may, from time to time, be amended by decision of the Management Committee, provided that the Member's Interests are not, except with the unanimous approval of the Members, affected thereby.

Similarly, specific areas of responsibility of the Members for the performance of work and the provision of facilities shall be as set out in the Schedules and may, from time to time, be amended by decision of the Management Committee, provided that the Members' Interest are not, except with the unanimous approval of the Members, affected thereby.

5.1 Schedule 'A' (General)

Schedule 'A' shall contain general information relating to the Joint Venture including, inter alia,
the following :

1. The Employer's name and address.
2. A brief description of the Contract and the Deliverables.
3. The name, physical address, communications addresses and domicilium citandi et executandi of each Member and of the Joint Venture.

4. The Members' Interests.
5. A statement indicating whether, or not, Specific Provisions apply to the Agreement.
6. A schedule of insurance policies which must be taken out by the Joint Venture and by the individual Members.
7. A Schedule of sureties, indemnities and guarantees that must be furnished by the Joint Venture and by the individual Members.

8. Details of the persons, who, in the event of failure by the Members to reach agreement on the appointments of mediator and arbitrator, will nominate appointees to these positions in terms of Clauses 8.2 and 8.3.

5.2 Schedule 'B' (Financial)

Schedule 'B' shall contain information regarding the financial affairs of the Joint Venture including, inter alia, the following :

1. The working capital required by the Joint Venture and the extent to which and manner whereby this will be provided and/or guaranteed by the individual Members from time to time.
2. The banking accounts that are to be opened in the name of the Joint Venture and the manner in which these are to be operated.

3. The rates of interest that will be applicable to amounts by which Members are in debit, or credit, to the Joint Venture.

4. The names of the auditors and others, if any, who will provide auditing and accounting services to the Joint Venture.

5. The intervals at which interim financial accounts and forecasts will be prepared for approval by the Management Committee.

6. Insofar as not covered in Schedule 'C', the basis on which contributions of various types by the Members towards the work of the Joint Venture in securing, executing, managing and satisfactorily completing the Contract, will be valued.

7. The basis on which profits and/or surplus cash will, if available from time to time, be distributed to Members.
8. The basis upon which losses, if any, are to be apportioned to Members.

5.3 Schedule 'C' (Contributions by Members)

Schedule 'C' shall set out the contributions of various types, other than cash, that will be made by the individual Members towards the work and obligations of the Joint Venture and shall, as far as possible, indicate the monetary values to be placed on such contributions, which may include, inter alia, the following :

1. Staff seconded to the Joint Venture.
2. Work carried out and services provided to, or on behalf of, the Joint Venture.
3. Plant, equipment, facilities etc. made available for use by the Joint Venture.
4. Materials and goods supplied to, or on behalf of, the Joint Venture.
5. Licences, sureties, guarantees and indemnities furnished to, or on behalf of, the Joint Venture.
6. Joint Venture Disclosure form required for the Contract.

6. BREACH OF AGREEMENT

If a Member breaches any material provision of the Agreement, or delays or fails to fulfil its obligations in whole, or in part, and does not remedy the situation within fourteen calendar days of receipt of notice from the Management Committee, or another Member, to do so, the other Members shall have the right, without prejudice to any other rights arising from the default, to summarily terminate the Agreement and re-assign the defaulting Member's rights and obligations in the Joint Venture as they see fit and withhold any moneys due to the defaulting member by the Joint Venture.

Each Member shall indemnify the other Members against all losses, costs and claims which may arise against them in the event of the Agreement being terminated as a result of breach of the Agreement by the said Member.

7. INSOLVENCY OF MEMBER

Should a Member be placed in liquidation, or under judicial management, whether provisionally or finally, or propose any compromise with its creditors, the other Members shall be entitled to proceed in terms of Clause 6, as if the Member had breached the Agreement.

8. DISPUTES

8.1 Settlement

The Members shall negotiate in good faith and make every effort to settle any dispute, or claim, that may arise out of, or relate to, the Agreement.

If agreement cannot be reached, an aggrieved Member shall, if he intends to proceed further in terms of Clause 8.2 hereof, advise all other Members in writing that negotiations have failed and that he intends to refer the matter to mediation in terms of Clause 8.2.

8.2 Mediation

Not earlier than ten working days after having advised the other Members, in terms of Clause 8.1, that negotiations in regard to a dispute have failed, an aggrieved Member may require that the dispute be referred, without legal representation, to mediation by a single mediator.

The mediator shall be selected by agreement between the Members, or, failing such agreement, by the person named for this purpose in Schedule 'A'. The costs of the mediation shall be borne equally by all Members.

The mediator shall convene a hearing of the Members and may hold separate discussions with any Member and shall assist the Members in reaching a mutually acceptable settlement of their differences through means of reconciliation, interpretation, clarification, suggestion and advice. The Members shall record such agreement in writing and thereafter they shall be bound by such agreement.

The mediator is authorised to end the mediation process whenever in his opinion further efforts at mediation would not contribute to a resolution of the dispute between the Members.

8.3 Arbitration

Where a dispute or claim is not resolved by mediation, it shall be referred to arbitration by a single arbitrator to be selected by agreement between the Members or, failing agreement, to be nominated by the person named for this purpose in Schedule 'A'.

The Member requiring referral to arbitration shall notify the other Members, in writing, thereof, not later than thirty calendar days after the mediator has expressed his opinion, failing which the mediator's opinion shall be deemed to have been accepted by all Members and shall be put into effect.

Arbitration shall be conducted in accordance with the provisions of the Arbitration Act No. 42 of 1965, as amended, and in accordance with such procedure as may be agreed by the Members or, failing such agreement, in accordance with the rules for the Conduct of Arbitrations published by the Association of Arbitrators and current at the date that the arbitrator is appointed.

The decisions of the arbitrator shall be final and binding on the Members, shall be carried into immediate effect and, if necessary, be made an order of any court of competent jurisdiction.

9. DOMICILIUM

The Members choose domicilium citandi et executandi for all purposes of and in connection with the Agreement as stated in Schedule 'A'. A Member shall be entitled to change his domicilium from time to time, but such change shall be effective only on receipt of written notice of the change by all other Members.

Member No. 1

Thus done and signed at _____ this _____ day of _____20___

For and on behalf of_____*[Company]*

by *[name]* _____ who warrants his authority to do so.

_____

As witnesses 1. _____ As witnesses 2. _____

Member No. 2

Thus done and signed at _____ this _____ day of _____20___

For and on behalf of_____*[Company]*

by *[name]* _____ who warrants his authority to do so.

_____

As witnesses 1. _____ As witnesses 2. _____

Member No. 3

Thus done and signed at _____ this _____ day of _____20___

For and on behalf of_____*[Company]*

by *[name]* _____ who warrants his authority to do so.

_____

As witnesses 1. _____ As witnesses 2. _____

[Allow for additional parties as necessary].

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 7
HEALTH AND SAFETY SPECIFICATION AND BILL OF QUANTITIES

REFERENCE NR	
Revision	00
Date	Feb 2023
Client	Department of Education

public works

Department:
Public Works
PROVINCE OF KWAZULU-NATAL

Occupational Health and Safety Specification

(OHSE SPEC)

Project Name : MHLABA JUNIOR SCHOOL
Sanitation Programme

WIMS no. 064404

Client OHS Representative : P Xaba

Region : Southern Region

District : Harry Gwala District

TABLE OF CONTENTS

Content ***Page***

1. Introduction ……..... … 1

2. Definitions …… 2-3

3. Scope of application …….. 4

4. Purpose of OHSE specification …….. 4

5. Contractual Issues …… 5

6. Administrative Requirements ……5

6.1 *Notification of Construction Work ……5*

7. Appointment of Safety Officers ……..……5

7.1 Appointment of COVID-19 compliance officer ……5

7.3. Project Team …… 6

8. Annexures …….. 6

8.1. Annexure A – Structure of the detailed OHSE Plan …….. 7

8.2. Legal appointments to be appointed ……..……..8

8.3. Annexure B – Client Specific Legal Requirements ……..…… 9-13

8.4. Annexure C – OHS Declaration for Tenders ……... 14

8.5. COVID-19 site management compliance …… 15

9. Baseline Risk Assessment ……..... *17-56*

10. OHS BOQ …… 57-58

1. Introduction

The *Kwa-Zulu Natal Department of Public Works* is deemed as the "**Client"** in terms of the definitions of Construction Regulations of 2014 as published in *Government Gazette No. 37305*. The Construction Regulations of 2014 under *CR(5)(1)* stipulates that that the client must prepare a suitable, sufficiently documented and coherent site specific Occupational Health and Safety Specification for the intended construction work based on the baseline risk assessment.

The purpose of this Occupational Health and Safety Specification document *(which hereinafter will be referred to as OHSE Spec)* is to provide designers and the successful tenderer with essential OHS information to ensure effective safety management during the design and construction phase of the project.

This OHSE Spec forms an integral part of the contract between the Client and the Principal Contractor, so as to ensure compliance with the Occupational Health and Safety Act, Act 85 of 1993 and its applicable regulations and must serve as the basis for the Principal Contractor to develop his/her Project Safety, Health and Environmental Management Plan. As with any other plan for it to be implemented and managed effectively it requires the allocation of sufficient funds to achieve the objectives set out in the plan. In line with this requirement Construction Regulation 5(1)(g) requires the Client to ensure that the Principal Contractor has made adequate provisions for the cost of Health and Safety Measures in their tenders.

It must be noted that this OHSE Spec as much as it is detailed it is not exhaustive and the onus is on the Principal Contractors to ensure that they comply with Section 8 of the OHS Act, Act 85 of 1993 which states that "*Every Employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees*". This means that Principal Contractors as they are employers in their own right must at all times ensure continuous assessments are done for continued provision and maintenance of a healthy and safe working environment.

Attention is drawn to the requirements of the Disaster Management Act, 2002 and regulations issued in regards to the containment/management of COVID-19. The Directive issued by Minister of Employment and Labour in respect of COVID-19 Occupational Health Measures in Workplaces, 2020.

2. Definitions

For the purpose of the OHSE Spec, the abbreviations or definitions given hereunder shall apply and the reference to on gender will also apply to the other gender.

"CR" refers to the Construction Regulations 2014

"Agent (*Pr.CHSA***)"** means a competent person who acts as a representative for a Client in terms of regulation (5)5.

"Client" means Department of Public Works

"Competent person" means a person who-

(a) Has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications, specific for that work or task: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualifications Framework Act, 2000 (Act No.67 of 2000), those qualifications and that training must be regarded as the required qualifications and training; and

(b) Is familiar with the OHS Act, Act 85 of 1993 and with the applicable regulations made under the Act;

"Construction Manager (*Site Agent***)"** means a competent person responsible for the management of the physical construction processes and the coordination, administration and management of resources on a construction site;

"Construction Site" means a work place where construction work is being performed;

"Construction Supervisor" means a competent person responsible for supervising construction activities on a construction site;

"Construction Vehicle" means a vehicle used as a means of conveyance for transporting persons or material, or persons and material, on and off the construction site for the purposes of performing construction work;

"Construction work" means any work in connection with –

(a) The construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or
(b) the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work;

"Construction Work Permit" means a document issued in terms of regulation 3 of the Construction Regulations 2014;

"Contractor" means an employer who performs construction work;

"COVID-19" Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus.

“COVID-19 compliance officer” designated person that oversee the implementation of the COVID-19 site management plan.

"Demolition Work" means a method to dismantle, wreck, break, pull down or knock down of a structure or part thereof by way of manual labour, machinery, or the use of explosives;

"Fall Protection Plan" means a documented plan, which includes and provides for-
(a) All risks relating to working from a fall risk position, considering the nature of work undertaken;
(b) The procedures and methods to be applied in order to eliminate the risk of falling; and
(c) A rescue plan and procedures;

"Health and Safety File" means a file, or other record containing the information in writing required by these Regulations;

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

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

"Medical Certificate of Fitness" means a certificate contemplated in regulation 7(8) of Construction Regulations 2014;

"Principal Contractor" means an employer appointed by the client to perform construction work;

“Safety Officer” – a person deemed competent by SACPCMP under the relevant category of registration.

"Professional Engineer or Professional Certificated Engineer" means a person holding registration as either a Professional Engineer or Professional Certificated Engineer in terms of the Engineering Profession Act, 2000 (Act No. 46 of 2000);

3. Scope of Application

This OHSE Specification document stipulates the minimum Occupational Health, Safety, and Environmental requirements that the tenderer need to address in his/her OHSE Plan. This Specification also addresses legal compliance, hazard identification, risk assessment, risk control, and the promotion of a Health and Safety culture amongst those working on the project.

This Specification also makes provision for the protection of persons other than employees. This OHSE Spec is exclusively applicable to the project as listed on the cover page of this specification.

4. Purpose of OHSE specification

This OHSE Specification further seeks to achieve the following;

a) To provide Principal Contractors with the Structure of the Detailed OHSE Plans they will have to prepare and submit for this project. ***See Annexure A***

b) Provide the overarching framework within which the Principal Contractor is required to demonstrate compliance with certain requirements for occupational health and safety established by the Occupational Health and Safety Act, Act 85 of 1993, all applicable regulations and Client Specific Requirements. ***See Annexure B***

c) To bring to the attention of the Bidding Principal Contractors that they need to make an undertaking that the costs for executing the project includes the costs of complying with the OHS Act, Act 85 of 1993, all applicable regulations including Client Specific requirements. Such undertaking is made by appending signatures on the OHS Declaration for Tenders. ***See Annexure C***

d) Ensure that the Principal Agent as the Professional Service Provider appointed by the Department to manage the project on its behalf in terms of the Conditions of Contract applicable to this project ensures that the contents of this document and the attached Baseline Risk Assessment are taken into consideration during design by all professions appointed and that the OHSE Specification is incorporated into the tender documents. ***See Annexure D***

5. Contractual Issues

a) Acceptance by the Principal Contractor of the contract with KZN DOPW shall constitute acknowledgement that the Principal Contractor has familiarised him/herself with the contents of the OHSE Spec and that he/she will comply with all its obligations in respect thereof.

b) Due to fact that this document is based on legislative requirements, the Client requires that all Contractors comply with the requirements of this document and all other relevant legislative requirements not covered by this document.

c) The Client or its duly appointed OHS practitioner reserves the right to stop any Principal Contractor or Sub-Contractors from working whenever Safety, Health or Environmental requirements are being violated as required by regulation 5(1)(q). Any resultant costs of such work stoppages will be for the relevant Contractor's account.

d) The requirements as specified by the Client in this document must not be deemed to be exhaustive and the Client reserves the right to make changes as and when the Client deems fit to address issue of OHSE Compliance.

e) The Client will not entertain any claim of any nature whatsoever which arises as a result of costs incurred or delays being experienced due to the Contractor not complying with the requirements of this document and/or any other applicable legislative requirements imposed on the Contractor.

6. Administrative Requirements

6.1. Notification of Construction Work

The successful tenderer must at least within 07 working days before commencing with construction work notify the Provincial Director in writing using **Annexure "2**" attached on the Construction Regs, 2014. A copy of the notification once stamped by the official from the *Department of Labour* Official must be submitted to the **client prior** to commencing with construction work.

7. Appointment of a Fulltime Safety Officer – SACPCMP Registered

The Principal Contractors will have to appoint a competent fulltime Construction H&S Officer who must be present on site at all times to conduct inductions, safety inspections on site and to the sub-contractors. The CHS officer must also ensure the administration of safety related documents is conducted and submit the SHE report to the client on a monthly bases.

7.1. **Appointment of a COVID-19 Compliance Officer**

The Principal Contractors will have to appoint a COVID-19 compliance officer to oversee the implementation of the COVID-19 site management plan and conduct daily inspection of the work areas.
The COVID-19 Compliance Officer must be always available on site

7.2 Communication, Documentation and Site Audit

All H&S communication during the project between the parties will be in writing, including the issue and responses to non-conformances and H&S audit results. Communication between the DPW OHS practitioner and the principal contractor will be via the Project Manager. A comprehensive site SHE audit

will be conducted monthly and DTSI`s to be completed by construction work supervisor (CR8.7) prior to work daily. The site will be inspected by the appointed CHSO (CR8.5) and the documentation audited relative to verify past or completed activities, verify compliance of current activities and the H&S plan. The CHSO must accompany the, client on all audits and inspections. It is preferable that a H&S representative is present during all audits. The CHSO is to apply a similar approach to managing their Contractors. The frequency of the audits may be increased if the principal contractor, or contractors are not performing adequately. SHE audit results will be acted upon as per section 5(c) of this document. The client, designer may act, or require further outcomes if non-compliances are noted or unsafe acts are noted on site. Weekly internal audits are to be completed and 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 are to be agreed upon between the CHSO and DPW.

Annexure A

8.1. Structure of the Detailed OHSE Plan

A detailed OHSE Plan is to be submitted by the successful tenderer as per the Construction Regulations 7(1) (a) and section 4(a) of this document. The following are the minimum standard legal documentation that must form part of the OHSE Plan based on the risks attached in executing the project as listed on the cover page DOL - Stamped Notification to commence with construction work made to the Provincial Director of Labour using Annexure 2 of the Construction Regs, 2014.

1. A valid Letter of Good Standing with Compensation Commissioner or Registered Compensation insurer.

2. The Contractor's Health, Safety &Environmental Policy, signed by the chief executive officer, which outlines the Contractor's OHSE compliance objectives and how they will be achieved. The policy to include measures for the protection of employees against exposure to COVID-19.

3. Demolition Plan signed off by the structural engineer (to be submitted before demolition work)
4. COVID-19 Site Safety Management Plan

5. Pre-Construction risk assessment *(site specific, dated and signed)*
6. Fall protection Plan *(to be signed and dated by the developer)*
7. Relevant checklists and registers. *(a sample of to be used onsite)*
8. SHE Audit Format to be used for Self-audits and Sub-contractors
9. Site specific OHSE Organogram (onsite)
10. Preliminary Induction Program *(Including toolbox talks program)*
11. Environmental Management Plan *(detailed waste management plan)*
    11.1.1. Compliance to National Environmental Management Act (NEMA)
12. Proof of competency for the following legal appointees;
    12.1. Construction Manager –(Detailed CV reflecting qualification, relevant experience and references from previous clients)

12.2. Construction Work Supervisor – (Detailed CV reflecting qualification, relevant experience and references from previous clients).

12.3. Construction H&S Officer – (Proof of registration with SACPCMP + CV)

12.4. COVID-19 Compliance officer

12.5. Risk Assessor – (SAMTRAC or equivalent)

12.6. Fall Protection Planner -SAMTRAC or equivalent (Training recognised under SAQA unit standard u/s 229994.

12.7. Mobile plant operators – (proof of competency and relevant experience)

12.8. Excavation work supervisor (onsite)

8.2. Legal appointments to be appointed	
Prior Site Handover	**After Site Handover on commencement with Construction work**
• 16.2 CEO of the company • Construction Manager • Construction Work Supervisor accompanied with CV reflecting proof of OHS knowledge and references and relevant competency certificate(s) • Construction H&S Officer (SACPCMP registered) • Risk Assessor (relevant competency certificate(s) • Fall Protection Planner (relevant competency certificate(s)) • COVID-19 compliance officer • Demolition Supervisor • Incident / Accident investigator	• Assistant Construction Work Supervisor • Excavation work supervisor • Mobile plant operators • First Aider *(only if there are more than 10 employees)* • Emergency co-ordinator • Fire Marshalls • Fire team members • Portable Electrical tool inspector • Hand tools inspector • Ladder Inspector • SHE Representative *(as per OHS Act requirements*) • Housekeeping inspector • Stacking and storage inspector • Lifting equipment inspector • Temporary electrical installation inspector • Traffic Controller *(Flagman)* • Flammable liquids Storage Inspector • Hazardous substance storage inspector • Emergency Co-ordinator • Mobile plant operators • Scaffolding Supervisor/ Erector • Competent electrician

Annexure B

8.3. Client Specific Requirements

Items	Client Specific Requirements
Site Office location	• The location of the site office should be in an area that will not require visitors to pass through or enter area where construction work is active and will not require the re-location of the office as the project progresses.
COVID-19 Site Management Plan	• Construction projects operating during the Coronavirus (COVID-19) pandemic ensure they are protecting their workforce and minimizing the risk of spread of infection. • Access control to site - All personnel and visitor entering the site must be temperature screened with a laser temperature scanner and records must be kept of the site register • Medical screening of employees and visitors to site. • The sanitization of work areas, transport for workers, facilities on site. • On site record keeping - All employees, service providers, sub-contractors, visitors and consultants must sign the register with the above details on entering the site.
Demolition Work	• The Principal Contractor must ensure that before any demolition work is carried out a competent person is appointed in writing and that a demolition plan is certified by the structural engineer
Public Safety	• All areas where there construction activities are conducted must be barricaded and strict access control to those areas. • Signage of hazards associated with construction activities conducted must installed and clearly visible. • When working in this facility the contractors and sub-contractors risk assessment/ and subsequent safe work method statement must take into consideration the negative effect the contractors activities may have on the health and safety of the occupants of the facility or members of the public and make provisions for the implementation of all reasonably practicable measures to ensure the health and safety of the occupants of the building or facility.
Medical Certificates	• In compliance with the requirements of the Construction Regulations 2014 section 7(8) the Contractor must ensure that, all of his/ her employee's onsite have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3.
Appointment of a fulltime registered safety officer	• The Principal Contractors will have to appoint a competent full time Construction H&S Officer for this project who will be onsite at all times.
Extreme weather conditions	• If the weather condition poses a threat to the health & safety of employees be it extreme heat, cold, lighting or any adverse weather condition appropriate safety measures have to be taken.
Change to scope of work	• Should there be changes to the original scope of work, the Principal Agent must inform appointed Construction Health and Safety Agent to effect changes to the OHSE Specification.
Safety Plan Submission	• The successful Tenderer must submit a copy of the detailed OHSE Plan for approval and keep the original for onsite use during construction. The principal Contractor will not be allowed to start site establishment before his/her SHE Plan has been approved in writing.
Method Statement	• The Principal Contractor must ensure that detailed Project specific Method statement is incorporated with the SHE Plan
Bylaws	• The Principal Contractor must incorporate any aspects of the EThekwini Municipality bylaws which affect the, Safety and Environmental wellbeing of the employees and the public into his/her OHSE Plan and ensure compliance to such bylaws.
Risk assessment for construction work	• To comply with CR(9) and to also address environmental issues • To also include exposure to hazardous gases

	See the attached baseline risk assessment to be considered by both the designer and the principal contractor.
Occupational Hygiene and infection control	• Occupational exposure to biological agents is a present risk to this project and the contractors must ensure that proper health and hygiene measures are put in place to prevent exposure to these hazards. • Contractors must prevent inhalation, ingestion and absorption of any harmful chemical or biological agents. • Compulsory of respiratory PPE at all times • Sanitisation of workplace, ablution facilities, eating facilities are clean and hygienic • Provide sanitising and/or hand wash facilities as required.
Fall protection	• To comply with CR (10), • Edge protection and protection of floor openings need to be of such a manner as to properly protect employees from falling off elevated positions or falling into floor openings
Construction vehicles and mobile plant	• To comply with CR (23) and the following;
Electrical installations and machinery on construction sites	• To comply with **CR (24)**
Use and temporary storage of flammable liquids on construction sites	• To comply with **CR (25)**
Housekeeping and general safeguarding on construction sites	• To comply with CR (27) and the following; • Contractor to designate areas for placing refuse and rubble prior to being removed from site • Contractor must implement a daily task site clean-up for all activities these should cover work areas, stairways, walkways etc. to free of any construction debris obstruction. • Refuse to be separated for recycling purposes • Hazardous materials may not be included in general rubble and need to be disposed of as per applicable legislative requirements
Stacking and storage on construction sites	• To comply with CR (28)
Fire precautions on construction sites	• To comply with CR (29) and the following; • No smoking may be permitted on site except in designated smoking areas
Construction employees' facilities	• To comply with CR (30) and the following; • Gender signs to be placed at appropriate locations • All welfare facilities to be kept in a hygienic condition at all times • Employees to be trained in good hygiene practices
Public Safety & Signage	• The Principal Contractor engaged in construction work must ensure that each person working on or visiting a site, and the general public in the vicinity of the construction site, shall be made aware of the dangers likely to arise from onsite activities and the precautions to be observed to avoid or minimise those dangers. • Appropriate signage shall be posted at conspicuous points within and around the perimeter of the site. The steps to comply with this requirement must be outlined in the OHSE Plan. • The public or visitors may only be permitted on site if they go through an appropriate health and safety induction detailing hazards and risks they may be exposed to and what measures are in place to control these hazards and risks • The entire project site must be secured against unauthorized access and provided with appropriate warning signage. Where roadways or walkways must be encroached or

	closed due to work, adequate barriers shall be installed to safely redirect the flow of vehicles and pedestrians and protect them from construction activities. • Whenever it is necessary to maintain public use of work areas (such as sidewalks, ramps, entrances to buildings, corridors, or stairways), the public shall be protected with appropriate guardrails, barricades, temporary fences, overhead protection, or temporary partitions and hoarding. The public must also be adequately protected from any work created hazards, such as excavations. Appropriate warnings, signs, warning lights and instructional safety signs shall be conspicuously posted and placed where necessary. • The public must also be protected from falling debris and objects from the project site. Overhead protection shall be provided that will fully protect the public and be capable of withstanding the maximum forces that could be applied from potential falling objects. Special attention shall also be given to developing adequate means to protect against wind-blown debris and construction-related materials.
On Site Health and Safety Training & Induction	• The Principal Contractor shall ensure that all site personnel and visitors undergo a risk-specific health & safety induction training session before starting work or being permitted to enter the site. A record of attendance shall be kept in the health & safety file. • The Principal Contractor shall ensure that, on site periodic toolbox talks take place at least once per week. These talks should deal with risks relevant to the construction work at hand. A record of attendance shall be kept in the health & safety file. The above should also cover all sub-contractors that are onsite. • All Contractors have to comply with this minimum requirement. Environmental issues to be included in toolbox talks where required.
General Record Keeping	• The Principal Contractor and all Sub Contractors must keep and maintain Health and Safety records to demonstrate compliance with this Specification, The OHS Act 85/1993; and with the Construction Regulations of 2014. The Principal Contractor shall ensure that all records of incidents/accidents, training, inspections; audits, etc. are kept in a health & safety file held in the site office, which must be present on site at all times. • The Principal Contractor must ensure that every Sub Contractor opens its own health & safety file, maintains the file and makes it available on request.
Health & Safety Audits, Monitoring and reporting	• The Client or its duly appointed Agent shall conduct monthly health & safety audits. The Principal Contractor is obligated to conduct similar audits on all Sub Contractors appointed by them at least once a month. Detailed audit reports must be presented and discussed at all levels of project management meetings and a copy of such audit will be provided to the Client or its duly appointed Agent within 7 working days of such audit. Copies of the Client's audit reports shall be kept in the Principal Contractors Health & Safety File.
Emergency Procedures	• The Principal Contractor shall submit a detailed Emergency Plan for approval by the Client prior to commencement on site. The plan shall detail the response procedure including the following key elements: 1. List of key competent personnel; 2. Details of emergency services; 3. Actions or steps to be taken in the event of the specific types of emergencies; 4. Information on hazardous material/situations.
First Aid Boxes and First Aid Equipment	• The appointed First Aider(s) to be in possession of a valid first aid training certificate Level 2. Valid certificates are to be kept in the Site Safety File. All Sub Contractors with more than 5 employees shall supply their own first aid box, except if otherwise agreed upon between Principal and Sub- Contractor in writing.
Accident / Incident Reporting and Investigation	• Injuries are to be categorised into Near miss, first aid, LTI, fatal etc. Fatal accidents to be reported in addition to applicable legislative requirements to the Client or its duly appointed Agent with immediate effect. The Principal Contractor must stipulate in its construction phase OHSE Plan how it will handle each of these categories. When reporting injuries to the Client, these categories shall be used. The Principal Contractor shall investigate all injuries, with a report being forwarded to the Client immediately. All Sub- Contractors have to report on the abovementioned categories of injuries to the Principal Contractor at least monthly. All categories of incidents/accidents must be in the Statistics Section of the Monthly Audit Reports, submitted to the Client or it's duly appointed Agent.

Hazards and Potential Situations	• The Principal Contractor shall immediately notify other Sub Contractors as well as the Client of any hazardous or potentially hazardous situations that may arise during performance of construction activities. • Should a hazardous situation require work stoppages, the work must be stopped and corrective steps taken such as the issue of Written Safe Work Procedures and the issue of Personal Protective Equipment.
Personal Protective Equipment (PPE) and Clothing	• The Principal Contractor must ensure that all workers are issued with the required PPE as required by the risks associated with the activities they perform .The minimum PPE to be worn on site will be **Safety Shoes/Boots, Hard Hats, Overalls and reflective vests**. No Visitors may enter the site without Safety Shoes/Boots and Hard hats. The Principal Contractor and all Sub Contractors shall make provision and keep adequate quantities of SABS approved PPE on site at all times. All employees issued with PPE to be trained in correct use, records of training and issue to be kept in the Site SHE File. Procedure to be in place to deal with: • 1. Lost or stolen PPE; • 2. Worn out or damaged PPE replacement. • 3. Employees not utilising PPE as required • The above procedure applies to Principal Contractors and their appointed Sub-Contractors, as they are all employers in their own right.
Permits	1) The Principal Contractor shall prepare and issue the required written permits relating to but not limited to the following: • Hot Work • Roof Work; and • Electrical work (both temporary and permanent) • Confined Space Entry 2) The Principal Contractor must ensure that where permits are required that they are properly implemented and adhered to.
Speed Restrictions and Protections	Unless otherwise stipulated, the maximum speed limit on sites must be limited to 10 km/h. 1) Vehicle movement routes on site must be clearly indicated where applicable. 2) Signage to ensure the safe movement of vehicles on site, as well as to ensure the health and safety of all employees and visitors on site, must be displayed in strategic locations.
Hazardous Chemical Substances (HCS)	1) To comply with Hazardous Chemical Substances Regulations as published in Government Notice No. R. 1179 dated 25 August 1995. 2) In addition to the abovementioned, Material Safety Data Sheets must be kept on site for all materials, which may contain hazardous chemical substances 3) All containers used for decanting of hazardours substance must be marked to indicate
Fire Extinguishers and Fire Fighting Equipment	1) The Principal Contractor and Sub-Contractors must allow for and provide adequate provision of regularly serviced temporary fire fighting equipment located at strategic points on site, specific for the classes of fire likely to occur. 2) The appropriate notices and signs must be allowed for and be erected as required 3) Contractors may not utilize fire protection equipment belonging to the Client without prior consent
Ladders and Ladder Work	1)The Principal Contractor must allow for and ensure that all ladders are inspected at least monthly, are in a good safe working order, are the correct height for the task, extend at least 1m above the landing, are fastened and secured and are placed at a safe angle. 2) Records of inspections must be kept in a register on site.
General Machinery	To comply with Driven Machinery Regulations as published in Government Notice No. R. 1010 dated 18 July 2003
Portable Electrical Tools and Hand Tools	1)The Principal Contractor shall ensure that all electrical tools, electrical distribution boards, extension leads, and plugs are kept in a safe working order. 2) The Principal Contractor shall ensure that all portable electrical Equipment, is clearly numbered, inspected by a Competent appointed person and records of such inspections to be kept on record in an appropriate register on the site SHE file 3)The Principal Contractor shall allow for and ensure the following in relation to hand Tools: That a "Competent Person" undertakes routine inspections and records are kept on site. That only authorized trained persons use the tools. That safe working procedures apply. That PPE is provided and used.

High Voltage Electrical Equipment Installations and Equipment	1) All Employees must be made aware of the presence and location of High Voltage Equipment such as underground cables and overhead lines, and ensure that the necessary precautionary steps are taken where work has to be executed in the vicinity of such equipment. 2) Precautionary measures such as Isolation and Lock-Out of electrical systems or the use of electrically isolated tools must be used.
Adequate Lighting	All Contractors must allow for and ensure that adequate lighting is provided to allow for work to be carried out safely.
Transportation of Workers	1) In addition to CR 23 the following will apply The Principal Contractor and Sub-Contractors shall not: • Transport persons together with goods or tools unless there is an appropriate area or section of the vehicle in which to store such goods. • Transport persons on the back of trucks except if a proper canopy (properly covering the sides and top) has been provided with suitable seating areas. • Permit workers to stand or sit on the edge of the transporting vehicle. • Transport workers in LDVs unless they are closed/covered and have the correct number of seats for the passengers • No driver may transport more than six people on the back of a 1 Ton LDV and more than four passengers on the back of a ½ Ton LDV. 2) The driver of any LDV may not permit more than two passengers to occupy the cab of any LDV 3) Drivers of such vehicles must have a valid driver's license for the code of vehicle being driven by them. 4) No servicing of vehicles will be permitted on a Construction Site. No Vehicles or machinery leaking oil will be permitted on site due to the risk posed to the environment. 5) Any oil or diesel spilled on site must be cleaned up as per accepted environmental practice
Occupational Hygiene	1) Occupational exposure is a major problem and all Contractors must ensure that proper health and hygiene measures are put in place to prevent exposure to these hazards. 2) All Contractors must prevent inhalation, ingestion and absorption of any harmful chemical or biological agents 3) Water to be utilized for drinking purposes may only be drawn from taps designated for drinking water purposes. Fire hydrants and fire hose reels may not be utilized for drinking water purposes.
Environmental Management	• The Principal Contractor and Sub-Contractors must comply with the requirements of NEMA Act. • The Principal Contractor must develop a waste management plan, implement and maintained it onsite • Cement mixing to be done at a predetermined location on site which must include a solid, slab, and bunded edges to prevent runoff • Contaminated run off water from the site must be treated such as to ensure that it does not pose a risk to the environment • Any material which may have a harmful effect when disposed of by normal means must be disposed of in an appropriate manner to eliminate its harmful effect on the environment after disposal. • The Principal Contractor must allow for and ensure that adequate procedures are implemented and maintained to ensure that waste generated is placed in suitable receptacles and removed from the site promptly. • Plans to deal with spillages must be in place and maintained. • No waste materials (liquid or solid) may be disposed of in drains. • No burning of waste material may take place on site as such material being burned may result in pollution of the air or give off toxic vapours which could be harmful to the health of employees or any other person present on site. • The Principal Contractor shall develop a waste management Plan that is in line with Desludging; Transportation and disposal of microbiological waste and proof of Disposal (Disposal certificate/ Desludging Certificate).
Alcohol and other Drugs	• No alcohol and other drugs will be allowed on site without the express permission of the Principal Contractor • No person may be under the influence of alcohol or any other drugs while on the construction site.

	• Any person on the construction site who is on prescription drugs must inform his/her Employer accordingly and the Employer shall in turn report this to the Principal Contractor immediately. • Any person on the construction site who is suffering from any illness/condition that may have a negative effect on his/her safety performance must report this to his/her Employer, who in turn must report this to the Principal Contractor forthwith. • Any person on the construction site who is suspected of being under the influence of alcohol or other drugs must be removed from site immediately and be instructed to report back the next day for a preliminary inquiry. A full disciplinary procedure must be followed by the Contractor concerned and a copy of the disciplinary action must be forwarded to the Principal Contractor for his records.

8.4. Annexure C

T2.16 CONTRACTOR'S SAFETY, HEALTH AND ENVIRONMENTAL DECLARATION

Project title:	**Department of Education Sanitation Programme for Schools, Harry Gwala District – Mhlaba Junior School**		
Bid no:	**Project Code- 064404**	**ZNTM01217W**	

INTRODUCTION

In terms of *Construction Regulation 7(1) (a)* of the *Construction Regulations of February 2014* a Contractor may only be appointed to perform construction work if the Client is satisfied that the Contractor has the necessary competencies and resources to carry out the work safely in accordance with the *Occupational Health and Safety Act, Act 85 of 1993* and the Construction Regulations of February 2014. In line with this requirement the Contractor is required to read through this document carefully, sign it and submit it with his/her Tender.

DECLARATION

1. I the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act, Act 85 of 1993, the Construction Regulations of February 2014 and the Construction Safety, Health and Environmental Specification attached in the tender document.

2. I hereby declare that my company and its employees has the necessary competency and resources to safely carry out the construction work under this contract in compliance with the Occupational Health and Safety Act, Act 85 of 1993, the Construction Regulations of February 2014 and the Construction Safety, Health and Environmental Specification.

3. I hereby confirm that adequate provisions have been made in my tender to cover the cost of all Safety, Health and Environmental duties and responsibilities imposed on me by the Occupational Health and Safety Act, Act 85 of 1993, the Construction Regulations of February 2014 and the Construction Safety, Health and Environmental Specification.

4. I confirm that I may not commence with any part of construction work under the contract until my Construction Safety, Health and Environmental Plan has been approved in writing by the Client.

5. I hereby confirm that copies of the following documentation will be kept on site for viewing and inspection purposes for the duration of the construction work:

   a) Client's Construction Safety, Health and Environmental Specification
   b) Approved Construction Safety, Health and Environmental Plan
   c) Occupational Health and Safety Act, Act 85 of 1993, and
   d) Construction Regulations of February 2014.

6. I agree that my failure to complete and execute this declaration to the satisfaction of the Client will mean that I am unable to comply with the requirements of the Occupational Health and Safety Act, Act 85 of 1993 and Construction Regulations 2014, and accept that my tender will be rejected.

Duly Signed at……. on this the……. day of……201……...

_____	_____
Full Name of Signatory	Name of Enterprise
_____	_____
Capacity of Signatory	Signature of authorised representative of Bidder

8.5. Covid-19 Site Management Safety Requirements

The KZN Department of Public Works has developed the COVID-19 site management guidelines to assist contractors in relation to managing and prevention of the Coronavirus Disease (COVID–19) on construction sites. The contractor as employer has an obligation to assist government in limiting the spread of COVID-19 on site. In view of the COVID-19 pandemic the contractor is mandated to continuously review and update the Risk Assessment and provide training to employees. Contractors are advised to develop an emergency response plan in case someone displays signs of COVID-19 at the workplace (dry cough, fever, headache, shortness of breath). Allocate a room or area where someone who is feeling unwell or has symptoms can be safely isolated. Immediately stop all activities on site and contact the nearest health facility or the COVID-19 centre. If you are advice by the Department of Health to transport the worker to a health facility, you must have a plan for how they can be safely transported from there to a health facility. All activities on site must be ceased and all the details. A site emergency plan to dealing with COVID-19 must be conspicuously displayed onsite.

Onsite Record keeping and management requirements

Every employer (contractor) has an obligation to assist government in enabling contact tracing in the workplace. These obligation include the following measure:

- Contractors are advice to observe confidentiality of employee's details and medical results at all times.
- A register containing the details of employees, visitors and service providers that enter the site in a particular day to be kept in a secured environment only accessible to authorised personnel.
- The following details should be contained in the register, date, time (of entry and departure), name, surname, identity number, residential address, mobile number and next of kin details.
- All employees, service providers, sub-contractors, visitors and consultants must sign the register with the above details on entering the site.
- Adequately trained health and safety personnel, to perform daily workplace COVID-19 symptom screening.
- Provide compulsory medical screening equipment
- Provide prescribed personal protective equipment (PPE) to all employees onsite.
- All personnel and visitor entering the site must be temperature screened with a laser temperature scanner and records must be kept of the site register. If the temperature is 38.0 C or more advice the individual to stay at home, self-isolate, and observe the

symptoms. They should also telephone the nearest health facility or the COVI-19 centre; provide them details of their recent travel and symptoms.

9. Annexure D
Baseline Risk Assessment

Please note that this is a Baseline Risk Assessment and not a detailed Risk Assessment.
Activities as listed below may not be in the sequence preferred by the Contractor or may be conducted at the same time

Project:	Sanitation Programme- Mhlaba Junior School ZNTM01217W : PROJECT CODE- 064404

REF N0		**RISK ASSESSOR**	P Xaba	REVISION	01	**DATE**	**Feb 2023**

Likelihood		**Consequence**		**RISK VALUE= LIKELYHOOD X CONSEQUENCE**	**RISK RANKING**	
					Score	**RANKING**
Rare	**1**	**Negligible**	**1**		**0-5**	**1**
Unlikely	**2**	**Minor**	**2**		**6-10**	**2**
Possible	**3**	**Moderate**	**3**		**11-16**	**3**
Likely	**4**	**Major**	**4**		**17-20**	**4**
Almost certain	**5**	**Severe**	**5**		**21-25**	**5**

MAIN ACTIVITY	**Site establishment**

REF NO	**SUB ACTIVITY**	**HAZARDS SHE**	**HEALTH RISK**	**ENVIRO MENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	**Risk Prioritisation Number**

MAIN ACTIVITY	**SITE ESTABLISHMENT**

REF NO	**SUB ACTIVITY**	**HAZARDS SHE**	**HEALTH RISK**	**ENVIRO MENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	**Risk Prioritisation Number**

	Vehicles entering & exiting a construction site,	poor traffic control, incompetent drivers, no clear safety signages, noise, school kids moving around not monitored etc	Death or physical injuries from vehicles colliding with other vehicles, employees/leaners nocked / run-over by construction vehicles; etc	Land pollution from petrol and oil leaks & spillages from construction vehicles	Exposed to intermittent noise levels & dust inhalation generated by construction vehicles entering & exiting site; etc	5x5=25:5	Competent person to operate driven machineries; Traffic management plan, Induction; PPE, Clear signages, Proper barricade site etc	**3x2=6**	**2**
	Fencing/ Hoarding the site office	Manual Handling, Struck by, Sharp edges, .Physical Exertion, weather changes, Tripping Hazards Hidden services , etc.	Muscular strain .Bruising, fractures Cuts, abrasion Dehydration .Fractures, . Electrocution, death etc.	None	Tripping, cuts etc.	**3x3=9**	HIRA, Competent Management, Competent Supervision, safe systems of work, competent operators, Cable Detection Equipment usage, Medical Fitness Certificates, signage and barricading, training. PPE etc.	**1x2=2**	**1**
	Temporary Ablutions facilities for workers (Exclusive use of leaners and staff at the school	Inadequate/ Insufficient of Ablution facilities; Poor Maintenance of Ablution facilities; Unreliable Service Provider; Unacceptable location of Ablution Facility; Ablution blew by wind due to improper fitting etc	Occupational Diseases due to unhygienic ablutions etc	Land pollutions due to waste spillages	Public may be affected by unpleasant smell from dirty ablutions	**5x5=25:5**	Proper maintenance of ablution; Reliable Service Provider; proof of service each visit; Ablutions to be gender based etc	**3x2=6**	**2**

	Loading/Off-loading materials and equipment (Mechanical)	Uncontrolled movement of loads Limbs caught between surfaces Heated surfaces, Sharp edges. Moving vehicles.	Fractures, death, Damage, Abrasions. Fractures, Cuts. Burns Dermatitis . Cuts Vehicle/property Equipment damage, Fractures, Death etc.	Contamination of resources – oil leaks, fuel spillage	Death, Fractures , Damage etc.	**4x4=16**	HIRA,,Competent Management, Competent Supervision, safe systems of work, competent operators, Flagmen, Medical Fitness Certificates ,Vehicle maintenance records, signage and barricading, training. PPE etc.	**3x3=9**	**2**
	Loading/Off Loading materials and equipment (Manual)	Uncontrolled movement. Sharp edges, Caught between surfaces, Falling materials, Incorrect lifting methods, Spillage etc.	Muscular strain .Cuts, abrasions Bruising, fractures .Crushing ,cuts .Lower back injuries Dermatitis etc.	Contamination of resources due to spillage of HCS, oil leaks,etc if present.	none	**4x5=20**	HIRA,,Competent Management, Competent Supervision, safe systems of work, competent operators, Medical Fitness Certificates ,Vehicle maintenance records, signage and barricading, training in collect lifting methods, PPE etc.	**3x3=9**	**2**
	Positioning of equipment and site office on site (mechanical)	Uncontrolled movement of loads, Limbs caught between surfaces, Heated surfaces, Sharp edges. Moving vehicles.	Fractures, death, damages. Abrasions. Fractures, Cuts. Burns, Dermatitis Cuts, vehicle/property Equipment damage, etc.	Contamination of resources – oil leaks, fuel spillages	Death, Fractures , Damage etc.	**4x5=20**	HIRA,,Competent Management, Competent Supervision, safe systems of work, competent operators Flagmen, Medical Fitness Certificates ,Vehicle maintenance records, signage and barricading, training. PPE etc.	**3x3=9**	**2**

	Electrical Connection to the Site Office	Electricity; Sharp edges, Physical exertion, Poor working posture etc.	Electrocution, death, Cuts Musculoskeletal , etc.	None	None	**4x5=20**	HIRA ,Competent Supervision and Management, Insulated tools ,Lock out, testing and tagging , permit issue, PPE etc.	**2x3=6**	**2**
	Water connection to site office area	Untrained worker, poor connection, Inclement weather, bump against areas, faulty tools etc	Cuts, Heat stroke, Muscular strain, Back strain etc.	None	None	**2x2=4**	HIRA, Competent Management, Competent Supervision, safe systems of work, training. PPE etc.	**1x1=1**	**1**

COVID-19 BASELINE RISK ASSESSMENT **The COVID-19 hazard identification and risk assessment aims to determine the level of risk exposure on site and for contractors to implement the control measures.**			
ACTIVITY / IDENTIFIED POTENTIAL AREA OF EXPOSURE COVID-19	**HAZARDS SHE**	**HEALTH RISK**	**RECOMMENDED RISK CONTROL MEASURE**
Exposure of employees entering the workplace with CV19	1.Transmitting the virus on to other employees, causing illness and possible death 2.Exposure at site access point (security control)	1.Respiratory infection that can lead to fatality's 2. Fever, cough, fatigue	1. Symptomatic individuals will not be allowed entry. 2.Hygiene requirements (handwashing etc.) and symptoms of 3. CV19 included with Induction. 4.CV19 Information posters placed in accessible locations in the workplace 5.All employees and visitors, to receive induction training 6.Adequately train identified personnel to perform regular COVID-19 screenings 7. Provide compulsory medical screening equipment and keep documented record of screenings and should an employee be tested positive, then such an
Workplace / on site	1.Transmitting the virus on to other employees, causing illness and possible death 2. Enhancing the possibility of spreading the Covid 19 pandemic	1.fever, dry cough 2.Tiredness, aches and pains sore throat, diarrhoea conjunctivitis, headache loss of taste or smell, a rash on skin, or discolouration of fingers or toes	1. Worker removed to a designated area at least 2 metres away from other people. 2. The individual will be sent home and advised to follow Governmental guidance. 3. Workplace decontaminated following accepted standards. 4.Relevant PPE to be issued All employees to receive awareness training on COVID-19 and personal hygiene (Toolbox talks) 5.Adequately train identified personnel to perform regular COVID-19 screenings 6.compulsory medical screening equipment and keep documented record of screenings

Contaminated workplace	Workers catching CV19 due to contaminated surfaces, causing illness and possible death	1.fever, dry cough 2.Tiredness, aches and pains sore throat, diarrhoea conjunctivitis, headache loss of taste or smell, a rash on skin, or discolouration of fingers or toes	1.cleaning equipment and facilities frequently. 2.Hand sanitisers to be been placed in readily accessible locations. Extra hygiene requirements enforced. 3.PPE to be issued Clean and disinfect objects that are regularly touched
Overcrowded work areas	Workers catching CV19 due to working closely with infected colleagues, causing illness and possible death	1.fever, dry cough 2.Tiredness, aches and pains sore throat, diarrhoea conjunctivitis, headache loss of taste or smell, a rash on skin, or discolouration of fingers or toes	1. Social Distancing policy implemented. All work areas and activities been revaluated for the possibility of implementing social distancing (no handshaking, deferring large meetings etc.) 2.Relevant PPE to be issued Clean and disinfect objects that are regularly touched 3.CV19 Information posters placed in accessible locations in the workplace 4.Employees and visitors, to receive induction training 5.Employees to receive awareness training on COVID-19 and personal hygiene (Toolbox talks) 6.Adequately train identified personnel to perform regular COVID-19 screenings
Use of handtools or equipment onsite	Workers catching CV19 due to working closely with infected colleagues, causing illness and possible death	1.fever, dry cough 2.Tiredness, aches and pains sore throat, diarrhoea conjunctivitis, headache loss of taste or smell, a rash on skin, or discolouration of fingers or toes	1. Daily disinfecting of all work surfaces, construction work vehicles, portable working tools and equipment prior to resuming construction work. 2. Hand sanitisers to be been placed in readily accessible locations. 3. A formal training program implemented to cover risks, symptoms and control measures. 4.All employees to receive awareness training on COVID-19 and personal hygiene (Toolbox talks)
Transportation of workers to workplace	Workers catching CV19 due to sitting closely with infected colleagues, causing illness and possible death	1.fever, dry cough 2.Tiredness, aches and pains sore throat, diarrhoea conjunctivitis, headache loss of taste or smell, a rash on skin, or discolouration of fingers or toes	1. Adhere to general travel ban by SA Government no over crowding in the transport 70% load capacity 2. Social Distancing policy implemented. All work areas and activities been revaluated for the possibility of implementing social distancing (no handshaking, deferring large meetings etc.) 3.Relevant PPE to be issued Clean and disinfect objects that are regularly touched 4.CV19 Information posters placed in accessible locations in the workplace 5.All employees and visitors, to receive induction training
Change rooms and dining facility	A worker catches CV19 because a Colleague continues working despite being unwell, causing further spread of disease and possible death	1.fever, dry cough 2.Tiredness, aches and pains sore throat, diarrhoea conjunctivitis, headache loss of taste or smell, a rash on skin, or discolouration of fingers or toes	1.decontamination of all facility regularly and provide hygiene requirements (handwashing etc.) and 2.CV19 Information posters placed in accessible locations in the workplace 3.Relevant PPE to be issued Clean and disinfect objects that are regularly touched 4. Provision of hand sanitisers, paper towel, soap and water for employee's onsite. 5. Hand sanitizers should be strategically placed at entrances and common areas. 6. Dining facilities and change rooms onsite be arranged to allow for half a meter physical distancing.
First Aid Training	Workers exposed to CV19 due to providing First Aid in the workplace or during CPR	1.fever, dry cough 2.Tiredness, aches and pains sore throat, diarrhoea conjunctivitis, headache	1.Proper training of First Aid staff 2.Use of correct equipment while giving First Aid 3.Maintaining proper mannequin hygiene 4.Relevant PPE to be issued Clean and disinfect objects that are regularly touched

		loss of taste or smell, a rash on skin, or discolouration of fingers or toes	

Desludging Work									
	SUB ACTIVITY	**HAZARDS SHE**	**HEALTH RISK**	**ENVIROMENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	**Risk Prioritisation Number**
	Vacuum Truck entering & Exiting site	Unpleasant smell; Poor traffic management; incompetent driver; Vehicles collision; Noise; Faulty truck Dust etc	Injuries; Dust Inhalation etc	Oil spillages from truck may cause land pollution	None if work area access properly controlled	**4x4=16**	Supervision, Clear Signage's; Training, competent driver, service trucks etc	**3x3=9**	**2**
	Desludging pits (wet)	Unpleasant Smell; No use of PPE; Workers not immunized ; Workers exposed to sewer; Trips; No Medical testing prior to be exposed to sewer; Extreme Heat; Noise; Trips; spillages of sewerage; Faulty Untrained worker etc	Lung infection due to inhaling sewer; skin irritation due to contact sewer	None	None if work area access properly controlled	**3x3=9**	Training, use of PPE, safe systems of work competent service provider ; Proof of desludging certificate etc	**3x3=9**	**2**
	Dry Sludge	Manual labour, no use of PPE, untrained worker; no medical fitness performed, workers not immunised since exposed to work in the sewer; extreme weather; use of faulty tools etc	Lung infection due to inhaling sewer; Heat Stroke etc	None	None if work area access properly controlled	**4x4=16**	Training, use of PPE, Safe Systems of work competent service provider etc	**3x3=9**	**2**
	Transporting of Sludge away from the site	Vehicles collision; Incompetent operator; Illegal disposal of sewer, Poor traffic Management; Fumes; Noise; Extreme Heat etc	Lung infection due to inhaling fumes; Heat stroke etc	None	None if work area access properly controlled	**4x4=16**	Training; Proper Waste Management; Traffic Management Plan; Approved Dumping Site of sewer; Proof of certificate for dumping site/ Desludging	**3x3=9**	**2**

							Certificate ; signage and safe systems of work and supervision etc		

Main Activity	Sub- Activity	Safety	Health	Environmental	Public Safety	Control Measures	Responsible Person
Filling Old Pits / Septic Tanks after Demolition of Buildings	Filling pits by using manpower	Poor Shoring; Covered by a trench; Dust; Bump against each other; Untrained Worker; Extreme Heat; Confined Space	Permanent back injuries, permanent wrist pain, etc	None	None if work area access properly controlled	Training, PPE; Proper Supervision; Safe Systems of work in place; Keep hydrated	**Contractor**
	Filling Pits by using TLB	Noise, flying particles, dust; Incompetent TLB operator; Un-serviced TLB; Poor Traffic Management; TLB Collides; TLB collides to people etc	Loss of hearing, loss of sight, lung infection from dust inhalation, permanent back injuries etc	Land Pollution due to oil spillages	None if work area access properly controlled	Training, PPE, Safe system of work, only competent TLB Operator to operate TLB Machinery; Proof of competency;	**Contractor**

Demolition of an Existing Ablution									
	SUB ACTIVITY	**HAZARDS SHE**	**HEALTH RISK**	**ENVIRO MENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	**Risk Prioritisation Number**
	Removal of roof sheets and trusses	Falls, using unsafe ladders and unsafe scaffolding, Struck by falling objects Caught between surface, .unsafe lifting position ,sharp edges; extreme weather changes (heat)	Cuts, abrasions , bruising ,backstrain injuries , death, heat exhaustion	None	None if work area access properly controlled	**4x4=16**	Supervision, Competent Scaffolding Erector; PPE, training safe systems of work , signage and barricading, etc	**3x3=9**	**2**
	Removal of existing windows if needed	No use of PPE, Broken Glasses, Extreme heat;	Cuts, abrasions , bruising ,backstrain injuries; Heat Stroke etc	None	None if work area access properly controlled	**3x3=9**	Training, use of PPE, safe systems of work etc	**2x1=2**	**1**
	Demolition of existing ablution(s)	No Demolition Plan; Walls falling to the wrong direction; rough Objects; No use of PPE; Trips; No induction; Extreme Heat; Noise; Dust; Poor Housekeeping etc	Injuries ;Inhalation of dust may damage lungs, Heat Stroke; Hearing impaired due to extreme noise etc	None	None if work area access properly controlled	**4x4=16**	Demolition Plan to be communicated; use of PPE; Training; Safe Systems of work; Housekeeping Supervisor to be appointed etc	**3x3=9**	**2**
	Clearing of the area	Struck by tools, tripping, Dust; Noise; snakes, uneven ground surfaces, sharp objects, toxic vegetation, exposed illegal connections	Back strain, cuts, abrasion, heat exhaustion, snakes bites, electrocutions	None	Falling into exposed excavations, Tripping hazard	**4x4=16**	Training; Proper Waste Management reflector vest, use of dust mask, barricading, signage and safe systems of work and supervision etc	**3x3=9**	**2**

	Levelling and compaction the site mechanically	Machine tilting over, faulty machineries, fire, underground and above ground electrical connections, person struck by machines, noise, dust etc	Death, sever injuries, electrocutions and burns, loss of hearing, lung infections	Contamination of environmental resources due to leaking of fuel, diesel and oil	Dust, noise, death, severe cuts and abrasions	**4x5=20**	Flagman, traffic control, reverse hooters reflective vest, proper barricading, signage and safe systems of work and supervision. Etc	**3x3=9**	**2**

Excavations, Trenches, Foundations,									
	SUB ACTIVITY	**HAZARDS SHE**	**HEALTH RISK**	**ENVIRO MENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	**Risk Prioritisation Number**
	Excavations using Machines or done manually	Improper barricading or warning signs to indicate location of an excavation, Fall into open/ unbarricaded excavation ; Dust; Using faulty Tools, Extreme Heat; Incompetent TLB operator;	Cuts, abrasions , bruising ,backstrain injuries , death, heat exhaustion	None	None if work area access properly controlled	**4x4=16**	Supervision, PPE, training safe systems of work , signage and barricading, etc	**3x3=9**	**2**
	Trenching	Struck by tools, tripping, snakes, Dust; Faulty Tools; uneven ground surfaces, sharp objects, toxic vegetation, exposed illegal connections, Inadequate shoring; Sides collapsing ; Fall into; open/unbarricaded trench; etc	Back strain, cuts, abrasion, heat exhaustion, snakes bites, electrocutions	None	Falling into exposed excavations, Tripping hazard	**4x4=16**	Training; PPE, Shoring; barricading, signage and safe systems of work and supervision etc	**3x3=9**	**2**
	Use of Handtools (picks; spades)	Faulty Tools; Untrained Worker; Employees hit each other with Handtools; extreme weather eg sun/wind/rain; Dust etc	Injuries, Heat stroke, Fever; Lung Infection etc	None	None if work area access properly controlled	**3x2=6**	Training; PPE; Handtools Register; Drink lots of fluid; Refrain from working in the Rain; Proper Supervision of work etc	**2x2=4**	**1**

	Levelling and compaction the site mechanically	Machine tilting over, faulty machineries/ Defective Plant; fire, unforseen underground and above ground electrical connections, person struck by machines, noise, dust etc	Death, sever injuries, electrocutions and burns, loss of hearing, lung infections	Contamination of environmental resources due to leaking of fuel, diesel and oil	Dust, noise, death, severe cuts and abrasions	**4x5=20**	Flagman, traffic control, Competent Operator; reverse hooters reflective vest, proper barricading, signage and safe systems of work and supervision. Etc	**3x3=9**	**2**

MAIN ACTIVITY	**PART OF CONSTRUCTION ACTVITIES**								
REF NO	**SUB ACTIVITY**	**HAZARDS SHE**	**HEALTH RISK**	**ENVIRO MENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	**Risk Prioritisation Number**
	Fencing/ hoarding the new site	Manual handling, Struck by items, Sharp edges, Physical exertion, Tripping hazards, Hidden underground services , etc.	Muscular strain Brusing, fractures, Cuts, abrasion Dehydration, Fractures, Electrocution, death etc.	None	Tripping, cuts etc.	**3x3=9**	HIRA, Competent Management, Competent Supervision, safe systems of work, competent operators, Cable Detection Equipment usage, Medical Fitness Certificates, signage	**1x2=2**	**1**

							and barricading, training. PPE etc.		
	Moving machineries	Incompetent operators, machineries not serviced, poor stacking loads, noise, fumes, no flag man, poor access control etc	Serious injuries, death, loss of hearing etc.	Contamination of resources – oil leaks, fuel spillage	Death, Fractures , Damage etc.	**4x4=16**	HIRA,,Competent Management, Competent Supervision, safe systems of work, competent operators, Flagmen, Medical Fitness Certificates ,Vehicle maintenance records, signage and barricading, training. PPE etc.	**3x3=9:2**	**2**
	Loading/Off Loading working materials and equipment (Manual)	Uncontrolled Movement, Sharp edges, Caught between surfaces, Falling materials, Incorrect lifting methods, Spillage etc.	Muscular strain , Cuts, abrasions, Brusing, fractures, Crushing ,cuts, Lower back injuries Dermatitis etc.	Contamination of resources due to spillage of HCS, oil leaks,etc if present	none	**4x5=20**	HIRA,,Competent Management, Competent Supervision, safe systems of work, competent operators, Medical Fitness Certificates ,Vehicle maintenance records, signage and barricading, training in collect lifting methods, PPE etc.	**3x3=9:2**	**2**

	Foundation	Workers hit each other by tools, dust, no proper social distancing, wrong use of tools, extreme weather changes, noise, faulty tools etc	Injuries, lung infection, workers will infect each other with corana because they working too close to each other, musculoskeletal, heat exhaustion, loss of hearing etc	None	None	**4x5=20**	Safe Systems of work, proper supervision, training, ppe, tools register , appoint tools inspector in writing, barricade etc	**3x3=9**	**2**

	Deep trenches for beams and columns	Workers hit each other by piks/shovel, dust, uneven surfaces, hit unforeseen services, no undercover detection performed , extreme weather changes, wrong use of tool etc	Serious injuries, electrical shock from undercover cables, heat exhaustion, dehydration, musculoskeletal etc	None	None	**3x3=9**	Safe Systems of work, training, PPE, Tools checklist register, drink lots of fluid, dictation of undercover services etc	**1x2=2**	**2**

	CONSTRUCTION OF STRUCTURAL FRAME,BEAMS, COLUMNS AND ROOF STRUCTURE								
MAIN ACTIVITY	**CONSTRUCTION OF STRUCTURAL FRAME**								
REF NO	**SUB ACTIVITY**	**HAZARDS SHE**	**HEALTH RISK**	**ENVIRO MENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	**Risk Prioritisation Number**
	Foundations	digging, struck by, dust, weather changes, flying particles, fall into excavation, hit undercover services etc	Musculoskeletal, heat exhaustion, abrasions, injuries, cuts dehydrated, burns etc	None	None	**4x5=20**	Safe systems of work, training, ppe, proper supervision etc	3x3=9	2
	laying of derbigum, plastic, wire mash to strengthen concrete and prevent concrete leakages	Incorrect bending, sharp objects, cuts, hands caught between areas, falls from height, weather conditions etc	Musculoskeletal, cuts, abrasions, injuries, fatalities, , lung infection, heat exhaustion etc	None	None	4x4=16:3	Training, PPE, Safe Systems of work, only specialist to lay derbigum if needed, proof of guarantee to be produced after completing, proper supervision etc	3x3=9	2
	Reinforce work	Cuts, sharp objects, bump against areas, excessive weather, faulty hand tools eg pliers, dust, poor posture etc	Heat stroke, dehydration, death, injuries, abrasions, body strain cuts , muscular strain, fractures etc.	none	Struck by falling objects, slipping, tripping etc.	**4x5=20**	HIRA ,Competent Supervision and Management, Insulated tools ,Lock out, testing and tagging , permit issue, PPE etc.	**2x3=6**	**2**
	Handling of heavy steel poles/bars, objects	Physical exertion, struck by, sharp edges, bump against areas, inclement weather changes etc	serious injuries, Heat stroke, musculoskeletal etc	None	None	**4x4=16**	HIRA, Supervision, PPE, Safe Systems of work etc	**3x3=9**	**2**

	Steel work	Awkward positions, sharp objects, hit by steel, untrained worker, weather conditions etc	Musculoskeletal, cuts, abrasions, injuries, heat exhaustions etc	None	None		HIRA, Supervision, PPE, Safe Systems of work etc	**3x3=9**	**2**
	Use of ladders	Unsafe ladder, falls, trip, worker not inducted, inclement weather, slippery shoes, etc	Physical & multiple body injuries from falls, heat exhaustion	None	None	**4x4=16**	Ladders checklist register in place and implemented, training, toolbox talks, safe systems of work, appropriate ppe, good housekeeping etc	**3x3=9**	**2**
	Scaffolding Erection and Dismantling	Struck by scaffold components; tripping, scaffolding erector not trained, sharp object, weather changes etc	Falls-death, fractures. Falling objects. Collapsing of scaffold	None	None	4x5=20:4	Only trained scaffolding erector to erect/dismantle scaffolding, proper supervision, safe systems of work, scaffolding checklist register, PPE, etc	3x3=9	**2**
	Installation of scaffolding props	Poor Posture, straining of arms, incorrect lifting, excessive weather, struck by tools, falling objects etc	Back injuries, heat stroke, fractures, fatigues, etc	None	None	4x4=16:3	Training, PPE, Safe Systems of work, supervision of the job, drink lots of fluid etc	3x3=9	**2**
	Use of hand tools	struck by hand tools, faulty handtools, incorrect handtool, no tools checklist register, worker not trained, bump against areas, hands caught in between areas, inclement wearther etc	Injuries, wrist pains, cuts, abrasions, dehydration, heat exhaustion etc	None	None	4x4=16:3	Safe systems of work, handtools checklist register, keep hydrated, proper supervision, training etc	2x3=6	2

	Shuttering / construction of columns	Lifting of heavy boards, incorrect bending, falls from height, falling of objects, weather conditions, cuts ,unsafe scaffolding, awkward position	Back strain, Musculoskeletal; bruising, cuts, abrasions, fractures, death, dehydration etc	none	Struck by falling items	**3x3=9**	Training, safe system of work, proper supervision, PPE, fall protection plan by competent person. Only competent person to erect/ dismantle scaffolding	**1x1=1**	**1**
	Pouring of concrete into rebairs/ reinforcement manually/ machinery - Concrete pump	Lifting of heavy concrete containers, pushing concrete wheelbarrows, untrained workers, incorrect bending ,faulty lifting equipment, cuts, noise, bump against areas, weather conditions	Back strains, heat stroke, injuries, permanent wrist pains etc	None	None	**3x3=9**	. Training, service lifting equipment eg concrete pump, PPE eg , drink lots of water, fall protection plan by competent person, proper supervision etc	**2x3=6**	**2**
	Pouring of concrete Manpower	Rough surfaces, dust, weather conditions, workers not trained etc	Cuts, abrasions , wrist pains, back injuries due to pushing heavy wheelbarrows full of concrete etc	None	none	**3x3=9**	HIRA, Supervision, PPE, Safe Systems of work, training etc.	**2 x2=4**	**1**
	Fitment of frames/poles (structural frmae)	Physical exertion, sharp edges , struck by etc.	Muscular strain ,cuts etc.	None	Struck by objects, slipping, tripping etc.	**2 x2=4**	HIRA, Supervision, PPE, Safe Systems of work, training etc.	**1 x1=1**	**1**

Main Activity	**CONSTRUCTION OF ABLUTION FACILITIES AND WALKWAYS**								
REF NO	**SUB ACTIVITY**	**HAZARDS SHE RISK**	**HEALTH RISK**	**ENVIRO MENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	**RISK PRIORITISATION NUMBER**
	Construction of Building Platforms	Untrained worker; Rough objects; Handling of heavy objects; Extreme Heat; Dust; Noise etc	Musculoskeletal, heat exhaustion, dehydration, lung infection due to inhalation of dust etc	Land pollution (from poor housekeeping	None	4x4=16:3	Training, safe systems of work, PPE, barricading, shoring, proper supervision, clear safety synages etc	2x3=6	2
	Trenches / Excavations	Heat related illness; Cuts and lacerations; dust, Collapse of excavation, poor barricading, hitting Underground services, inclement weather etc	Musculoskeletal, heat exhaustion, dehydration, lung infection due to inhalation of dust etc	Land pollution (from poor housekeeping)	Unauthorised persons fall into trenches,	4x5=20:4	Training, safe systems of work, PPE, barricading, shoring, proper supervision, clear safety synages etc	2x1=2:1	1

	Reinforcement	Untrained Worker; Handling sharp objects; extreme heat; No use of PPE etc	Musculoskeletal, heat exhaustion, dehydration, lung infection due to inhalation of dust etc	None	None	4x4=16:3	Safe systems of work, training, PPE, Good Housekeeping Practises, Supervision; etc	3x3=9:2	2
	Shattering	Untrained worker; Awkward Posture; Sharp Objects; Noise; Dust; Extreme Heat etc	Musculoskeletal, heat exhaustion, dehydration, lung infection due to inhalation of dust etc	None	None	4x4=16:3	Safe systems of work, training, PPE, Good Housekeeping Practises, Supervision; etc	3x3=9:2	2
	Manual handling of construction material	Incorrect lifting, workers not help each other, bump against areas, inclement weather etc	Back injuries, permanent wrist pain, heat stroke etc	None	None	4x4=16:3	Safe systems of work, training, PPE, Good Housekeeping Practises, Supervision; etc.	2x3=6	2
	Cement and Concrete Mixing	Struck by hand tools, tripping & slips from paint spillages.	Noise exposure, cuts, abrasions, death, Ingestion, inhalation of cement. Contact with skin may cause Dermatitis.	Spilling of cement mixture	Exposure to dust while trucks delivering materials, unauthorised persons etc	4x4=16:3	Safe systems of work, training, PPE, Good Housekeeping Practises, trucks cover materials, Supervision; etc.	2x3=6	2

	Use of ladders	Unsafe ladder, falls, trip, worker not inducted, inclement weather, slippery shoes, etc	Physical & multiple body injuries from falls, heat exhaustion	None	None	4x4=16:3	Ladders checklist register in place and implemented, training, toolbox talks, safe systems of work, appropriate ppe, good housekeeping etc	2x3=6	2
	Scaffolding Erection and Dismantling	Struck by scaffold components; tripping, scaffolding erector not trained,	Falls-death, fractures. Falling objects. Collapsing of scaffold	None	None	4x5=20:4	Only trained scaffolding erector to erect/dismantle scaffolding, proper supervision, safe systems of work, scaffolding checklist register, PPE, etc	3x3=9	2
	Use of hand tools	struck by hand tools, incorrect handtool, worker not trained, bump against areas, hands caught in between areas, inclement wearther etc	Heat exhaustion, serious injuries, musculoskeletal, etc	None	None	4x4=16:3	Safe systems of work, handtools checklist register, keep hydrated, proper supervision, training etc	2x3=6	2

	Brick laying	Incorrect bending, inclement weather, strain, lack of communication, rough surfaces, trips, fall from height, unsafe scaffolding/trestle/ladder etc	Musculoskeletal, twisting and straining muscles, dehydration, serious injuries ,etc	None	None	4x4=16:3	Safe systems of work, training, PPE, Good Housekeeping Practises, Supervision; SABS approved bricks, etc.	2x3=6	2
	Working with hazardous chemical substances	Physical injuries from being struck by hand tools, falls from paint spillages or trips from chemical containers, etc.	Respiratory condition from inhalation of chemicals	Land pollution (from littering / poor housekeeping), etc.	Exposure to chemical dusts & vapours, tripping hazards, etc.	4x4=16:3	Safe systems of work, training, PPE, Good Housekeeping Practises, Supervision; etc.	2x3=6	2
	Plastering	Dermatitis from being exposed to cement; physical injuries from falling off the work platform;	Respiratory condition due to Dust inhalation; Sprains & strains caused during the material handling	Littering due to poor housekeeping	None	4x4=16:3	Safe systems of work, training, PPE, Good Housekeeping Practises, Supervision; etc.	2x3=6	2

	Roof Coverings (placement of metal sheeting & accessories)	Working at height, unfit worker, unsafe scaffolding/ladder, compromised posture, struck by tools, inclement weather, falls, trip	Physical injuries from falling from roof height and from materials falling from heights; Injuries from falling off during wet weather work & windy conditions. Cuts / laceration / electrical shocks from using etc	None	None	4x5=20:4	Safe scaffolding, training, ppe, safe systems of work, proper supervision, medical fitness for workers, fall protection plan, fall protection developer etc	3x3=9	2

Main Activity	**External envelope: Brick Work/ External & Internal works**								
REF NO	**Sub Activity**	**HAZARDS SHE**	**HEALTH RISKS**	**Environmental Risk**	**Public Safety Risk**	**PURE RISK**	**Control Measures**	**RESIDUAL RISK**	**Risk Prioritisation Number**
	Delivery of /cement concrete	Handling heavy objects, incorrect lifting, dust, heat exhaustion ,moving vehicles	Back strain; back pain; heat exhaustion; Handling heavy objects, incorrect lifting, dust, moving vehicles	Littering from poor housekeeping; etc.	None	**3x3=9**	SWP, training, PPE, Good Housekeeping Practises, Supervision; etc.	**1x2=2**	**1**

	Cement mixing	Bumping against area, sharp edge, hazardous substance, dust, cuts	Permanent back injuries, repetitive strain injuries, death, heat stroke	Littering from poor housekeeping	None	3x2=6	SWP, training, PPE, Good Housekeeping Practises, Supervision; etc.	**1x2=2**	**1**
	Brick laying	Rough surfaces, hazardous substances, flying particles, falling objects	Cuts &abrasions, inhalation of dust, contact dermatitis	Cement spillages	None	3x3=9	HIRA, Supervision, PPE, Safe Systems of work etc.	**1x1=1**	**1**
	Installation of Ceiling & Soffits	Awkward posture, dust, sharp edges, fall from height, unsafe ladders, no ladder checklist register, weather changes etc	Musculoskeletal, lung infection, serious injuries, dehydration etc	None	None	4x5=20:4	HIRA, Supervision, PPE, Safe Systems of work, ladder checklist register, ladder inspector etc.	3x3=9	2
	Internal wall finishes	Plastering & painting walls , dust, paint smell, use of unsafe ladder, awkward posture, fall from height , confined space, lifting heavy paint containers, weather changes etc	Musculoskeletal, lung infection, skin irritation, serious injuries, dehydration , heat stroke etc	None	None	4x5=20:4	HIRA, Supervision, PPE, Safe Systems of work , ladder checklist register, ladder inspector etc.	3x3=9	2
	Floor finishes- Screeding, ceramic floor tiles, tile skirting	Continuous bending, rough surfaces, fumes from primer/paint for tiling, awkward posture, sharp edges, inclement weather changes etc	Musculoskeletal, lung infection, skin irritation, wrist pains, serious injuries, dehydration , heat stroke etc	None	None	**3x3=9**	HIRA, Supervision, PPE, drink lots of fluid, Safe Systems of work etc.	**2x2=4**	**1**

	Waterproofing	not suitable contractor for waterproofing job, fall from height, poor access, extreme weather changes, chemicals etc	injuries, fatalities, dehydration, musculoskeletal, skin irritation, lung infection etc	none	none	4x5=20:4	Waterproofing specialist, Safe scaffolding, training, ppe, safe systems of work, proper supervision, medical fitness for workers, fall protection plan, fall protection developer etc	3x3=9	2
Main Activity	**External Works: Installation Of Aluminium Windows, Doors And Rain Water Goods**								
REF NO	**Sub Activity**	**HAZARDS SHE**	**HEALTH RISKS**	**Environmental Risk**	**Public Safety Risk**	**PURE RISK**	**Control Measures**	**RESIDUAL RISK**	**Risk Prioritisation Number**
	Delivery of aluminium windows and doors	Poor housekeeping, no barrication, poor handling of glasses and sharp objects, dropping of goods, flying particles , dust etc	Injuries, abrasions, cuts, lung infection etc	None	None	4x3=12	Flagmen, barricade area where material is delivered, use of ppe eg hand gloves, googles etc, safe systems of work, proper supervision etc	2x2=4	**1**
	Delivery of aluminium gutters	Struck by gutters and down pipes, trips, weather changes etc	Injuries, abrasions, cuts, heat stroke etc	None	None	4x3=12	Flagmen, barricade area where material is delivered, use of ppe eg hand gloves, googles etc, safe systems of work, proper supervision etc	2x2=4	**1**

	Installation of window frames and door frames	Awkward posture, fall from height, ladder fall, sharp objects, dust, weather changes, noise , no use of ppe etc	Musculoskeletal, injuries, fatal, abrasion, cuts, lung infection, heat stroke, loss of hearing,	None	None	4x3=12	HIRA, ppe, proper supervision, safe systems of work, etc	2x2=4	**1**
	Glazing	Broken glasses, flying articles, awkward posture, weather changes, noise etc	Injuries, loss of sight, musculoskeletal, heat stroke, loss of hearing etc	None	None	4x4=16	HIRA, ppe, proper supervision, safe systems of work, etc	2x2=4	**1**
	Installation of aluminium gutters and downpipes	Awkward posture, fall from height, ladder fall, sharp objects, dust, weather changes, noise , no use of ppe, struck by etc	Musculoskeletal, injuries, fatal, abrasion, cuts, lung infection, heat stroke, loss of hearing,	None	None	4x4=16	HIRA, ppe, proper supervision, safe systems of work, etc	2x3=6	**2**
	Ductwork	Awkward position, bump against, struck by, confined space, extreme weather changes, flying particles got into eyes, fall from height, poor access, unfit workers etc	Musculoskeletal, injuries, loss of breath, heat exhaustion, loss of sight etc	None	None	3x4=12	Training, PPE, drink lots of fluid, Proper supervision, safe system of work etc	2x3=6	**2**
	Terminal fittings	Consistent bending, struck by, faulty tools, untrained worker, no use of ppe, dust, noise, flying of small particles, extreme weather changes etc	Musculoskeletal, injuries, loss of breath, lung infection, loss of hearing, o loss f sight ,heat exhaustion, etc	None	None	3x4=12	Training, PPE, drink lots of fluid, Proper supervision, safe system of work etc	2x3=6	**2**

Main Activity	Sub- Activity	Safety	Health	Environmental	Public Safety	Control Measures	Responsible Person
Sanitary Fittings such as wash hand basins, urinals; etc	Untrained worker; Incompetent Supplier; No use of PPE;	Hit by falling objects; bump against, incorrect lifting, wrist twisting; Noise; Dust; Poor Housekeeping etc	Permanent back injuries, permanent wrist pain, etc	None	None	Training, only competent Supplier, Proper supervision of work; PPE; Drink lots of fluid	**Contractor**
	Drilling	Noise, flying particles, dust, incorrect bending; Faulty tools	Loss of hearing, loss of sight, lung infection from dust inhalation, permanent back injuries etc	None	None	Training, PPE, Safe system of work, Tools Register etc	**Contractor**
	Portable hand tools	Sharp objects; Untrained worker bump against, cuts, wrist twisting ; faulty tools; etc	Permanent back injuries, electric shock permanent wrist pain, etc	None	None	Training, PPE; Safe Systems of work; Tools Register etc	**Contractor**
	Fitting of taps & sinks	Dust; Untrained worker; Noise; lifting of heavy materials; falling objects; No Risk Assessment etc	Permanent back injuries, electric shock permanent wrist pain, etc	None	None	Training, PPE; Safe Systems of work; Tools Register etc	**Contractor**
	Waste management	Sharp objects; No use of PPE; Trips; Dust etc	Lung infection, musculoskeletal, injuries, abrasions cuts etc	None	None	Proper Waste management; Training, ppe, safe systems of work, appoint Housekeeping Supervisor HIRA etc	**Contractor**

Main Activity	ELECTRICAL WORK								
REF NO	**SUB-ACTIVITY**	**HAZARD SHE**	**HEALTH RISK**	**ENVIRONMENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	RISK PRIORITISATION NUMBER
	Trenching (when required)	Striking a live cable when trenching, disruption of electrical supply to other areas etc	Serious injuries eg burns due to Electrocution, death	None	None	4x5=20:4	Conduct risk assessment, use of cable tracers to trace existing cables before work commence, PPE, proper supervision , etc	3x4=12	3
	Working with existing electrical reticulation	Electrocution	Burns, injuries, death	None	None	4x5=20:4	Training, PPE, safe systems of work, Proof of valid Electric certificate, log out tag out, etc	3x4=12	3
	Chasing of conduits into walls	Electrocution, falling, struck by flying objects, noise, dust, lack of communication etc	Serious injuries eg burns due to Electrocution, death, loss of hearing due to noise, lung infection due to dust inhalation, loss of sight due to flying particles got into eyes etc	None	None	4x5=20:4	Risk assessment, use safe ladders where required, fall protection plan in place and communicated a competent fall protection developer, safety signs in place, training, PPE	3x3=9	2
	Connection/ disconnection	Incorrect wiring, faulty tools, bumping against, hands caught between areas etc	Electrocution, burns etc	None	None	4x4=16:3	Risk assessment, use safe ladders where required, fall protection plan in place and communicated a competent fall	2x2=4	1

							protection developer, safety signs in place, training, PPE, Log out Tag out, systems etc		
	fitting of plug boxes, junction boxes, Distribution boards etc	Noise, dust, electricity, bumping against, struck by flying items, entanglement, incorrect lifting, incorrect bending, inclement weather etc	Electrocution, musculoskeletal, abrasions, cuts heat exhaustion etc	None	None	4x5=20:4	Safe systems of work, ppe, training, proper supervision, toolbox talks etc	3x3=9	2
	Wiring	Muscular exertion, untrained worker, lack of communication, sharp surfaces, bumping against etc	Muscular strains, abrasions, wrist pain, heat exhaustion etc	None	None	4x4=16:3	Safe systems of work, ppe, training, proper supervision, toolbox talks etc	3x3=9	2
	Connection of services	Electrocution, struck by tools, hands caught between areas etc	Electrocution, Muscular strains, abrasions, wrist pain, heat exhaustion etc	None	None	4x4=16:3	Risk assessment, use safe ladders where required, fall protection plan in place and communicated a competent fall protection developer, safety signs in place, training, PPE, Log out Tag out, systems etc	3x3=9	2

	Installation of Electrical infrastructure	Working on live wires	Electrical shock and death etc	None	None	4x5=20	HIRA, training, use of ppe, lock out and tag out, safe systems of work, appoint competent electrician with a wireman's licence etc	2x2=4	1

Main Activity	**STORM WATER DRAINAGE/ CHANNEL**								
REF NO	**SUB-ACTIVITY**	**HAZARD SHE**	**HEALTH RISK**	**ENVIRONMENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	**RISK PRIORITISATION NUMBER**
	Ground levelling	Grazing abrasions, bumping against surfaces, slipping hazards, dust, inclement weather, lack of communication, flying particles in eyes, etc	Loss of sight due to flying particles in eyes, cuts, abrasions, heat exhaustion, back injuries etc	None	None	3x3=9:2	Training, Toolbox talks, safe systems of work, proper supervision, PPE etc	2x2=4	1
	Steel reinforcing	Handling of sharp/rough objects, untrained persons cutting reinforcing bars with grinder, faulty tools,	Electrocution, heat exhaustion, muscular pains etc	None	None	4x4=16:3	Training, checklist tools register, PPE, supervision of the job, drink lots of fluid, safe systems of work, etc	3x2=6	2

		inclement weather, sparks from grinder, electrocution etc							
	Storm water drainage (manholes if required)	Tripping over protruding pegs, dust, contact with hazardous substances etc	Cuts, abrasions, heat exhaustions, skin irritations etc	None	None	4x4=16:3	Training, PPE, proper supervision, barricading, safe systems of work etc	3x2=6	2
	Mixing and pouring concrete for aprons, V-drains, Ramps	Incorrect bending, bumping against areas, contact with hazardous substances, tripping, lack of communication , inclement weather etc	Cuts, abrasions, heat exhaustions, injuries, skin irritations etc	None	None	4x4=16:3	Training, PPE, proper supervision, barricading, safe systems of work etc	3x2=6	2
	Granolithic Finish	Inhalation of dust, struck by tools, bumping against, incorrect bending, inclement weather, lack of communication etc	Musculoskeletal, heat exhaustion, dehydrated etc	None	None	3x3=9:2	Tool Box Talks, Training, PPE, Supervision, safe systems of work , etc	2x2=4	1

MAIN ACTIVITY	INSTALLATION OF NEW PLUMBING FITTINGS								
REF NO	SUB-ACTIVITY	HAZARD SHE	HEALTH RISK	ENVIRONMENTAL RISK	PUBLIC RISK	PURE RISK	RECOMMENDED RISK CONTROL MEASURE	RESIDUAL RISK	RISK PRIORITISATION NUMBER
	Digging Excavation/trenches	Dust, faulty tools, tripping, inclement weather	Dust, faulty tools, tripping, inclement weather	Lung infection due to dust inhalation, heat stroke	None	None	Training, PPE, barricading , safe systems of work and supervision	3x3=9	**2**
	Chasing	Electricity, moving part, entanglement, struck by flying items, sparks, noise , dust etc	Electrocution, cuts abrasions, dust inhalation, noise induced hearing loss	None	None	4x3=12:3	Training, fall protection plan, PPE, Proper Supervision, Safe systems of work	3x3=9	**2**
	Chiselling	Struck by tools, hands caught between areas, Flying particles, sparks, faulty chisel	cuts, abrasions, dust inhalation, burns, etc	None	None	4x3=12:3	Training, PPE, barricading , safe systems of work and supervision, handtools checklist register etc	2x4=8:2	1
	Soldering of pipes	Hazardous substance, heated surface, flammable substance, noise, sharp edges etc	Inhalation of hazardous vapour, burns, body strain, noise induced hearing etc	None	None	4x3=12:3	Training, PPE, drink lots of fluid, Safe systems of work, proper supervision of work, etc	3x2=6	2

MAIN ACTIVITY	INSTALLATION OF PIPELINES RETICULATION & DRAINAGE								
REF NO	SUB-ACTIVITY	HAZARD SHE	HEALTH RISK	ENVIRONMENTAL RISK	PUBLIC RISK	PURE RISK	RECOMMENDED RISK CONTROL MEASURE	RESIDUAL RISK	RISK PRIORITISATION NUMBER
	Digging of trenches by machinery/ manhandling	Incompetent operator, hit underground services, trench collapsed, dust, struck by tools, tripping, heat exhaustion	Dust inhalation, death, heat stroke, etc	Land pollution, fuel/ diesel spillages	None	4x5=20:4	Competent machinery, operator, shoring, barricade ,Training, PPE, safe System of work etc	3x2=6	2
	Ground levelling	Abrasion, dust, bumping against, struck by, inclement weather	Dust inhalation, heat stroke, etc	None	None	3x2=6:2	Safe systems of work, proper supervision, training, ppe , etc	2x2=4	1
	Moving of Pipes	Strike by swinging pipes, carrying heavy pipes, cuts, injuries, heat exhaustion, dehydration etc	Heat stroke, dehydrated, Back injuries; wrist pain etc	None	None	3x4=12:3	Correct lifting, drink lots of liquids, training, safe system of work, correct PPE	2x3=6	2
	Installation of Pipelines Reticulation	bump against, dust inhalation, tripping, heat exhaustion, hit by swinging pipes, incorrect lifting etc	Heat stroke, suffocation, lung infection due to dust inhalation, back injuries	None	None	3x4=12:3	Correct lifting, using safe lifting equipment, drink liquids, training, safe system of work, correct PPE,	3x2=6	2
	Mixing and pouring concrete for	Tripping, dust inhalation, noise,	Skin irritation, lung infection, cuts,	None	None	3x4=12:3	Safe systems of work, training, ppe, toolbox talks,	2x2=4	1

	aprons, V-drains, ramps	untrained worker, contact with hazardous chemicals etc	abrasions, muscular strains etc				proper supervision of the job etc		
	Internal plumbing – Sanitary fittings	bump against, dust inhalation, tripping, heat exhaustion, sharp objects, incorrect lifting etc	Heat stroke, suffocation, lung infection due to dust inhalation, back injuries	None	None	3x4=12:3	Safe systems of work, training, ppe, toolbox talks, proper supervision of the job etc	2x2=4	1

Main Activity	**External works that include Water Tank; Landscaping and Reinstatement of Paving that is damaged by construction activities**								
REF NO	**SUB-ACTIVITY**	**HAZARD SHE**	**HEALTH RISK**	**ENVIRONMENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	**RISK PRIORITISATION NUMBER**
	Soil drainage	Soil poison, hit unforeseen undercover services, dangerous insects on soil, weather conditions etc	Skin dermatitis, electrocution, injuries, heat exhaustion, dehydration etc	Soil contamination etc	None	4x4=16:3	HIRA, proper PPE, proper supervision, training, drink lots of water etc	3x2=6	2

Landscaping	Use of Grass machinery	Lack of communication, untrained worker, faulty machine, noise from machine, inclement weather, hands caught between etc	Heat exhaustion, loss of hearing due to noise, dehydration, injuries, cuts etc	Oil leakages from faulty grass machinery etc	None	4x4=16:3	Training, service machinery, proper PPE, induction, toolbox talks, safe systems of work, etc	3x3=9	2
	Planting of grass, trees, flowers etc	Soil poisoning, not using PPE, not considering Safety Data Sheets, handling hazardous chemicals, incorrect bending, lack of communication, inclement weather , bumping against each other, hazardous insects, hazardous chemicals etc	Skin irritation, abrasions, heat exhaustion, Loss of sight due to flying particles, and hazardous insects into eyes	Hazardous chemicals etc	None	4x4=16:3	Soil poisoning by trained worker, PPE, use of Safety Data Sheets, ToolBox Talks, safe systems of work, proper supervision etc	3x3=9	2
Fitting of Water Tank Including Stand	**Stand preparation**	Ground levelling, dust, rough surfaces, concrete mix, weather conditions etc	Lung infection, abrasions, cuts, hydration etc	None	None	4x4=16:3	Safe systems of work, Training, PPE, proper supervision, drink lots of fluid etc	3x3=9	2

	Lifting and installation of a tank	Incorrect lifting, falling objects, bump against areas, weather conditions etc	Musculoskeletal, injuries, cuts, abrasions heat exhaustion etc	None	None	4x4=16:3	Safe systems of work, Training, PPE, proper supervision, drink lots of fluid etc	3x3=9	2
Reinstatement of Paved Areas	**Using strong chemicals/ Tar**	Inclement weather, untrained worker, incorrect bending, Inhaling Strong Chemicals; Not using PPE; Tar contact skin;	Musculoskeletal, injuries, cuts, abrasions heat exhaustion; Skin irritation etc	None	None	4x4=16:3	Safe systems of work, Follow engineers details and spec, Training, PPE, proper supervision, drink lots of fluid etc	3x3=9	2
	Lifting heavy containers	Awkward posture, sharp edges, rough surfaces, bump against, struck by, falling, confined space , inclement weather, poor access etc	Musculoskeletal, injuries, cuts, abrasions heat exhaustion, suffocation etc	None	None	4x4=16:3	Safe systems of work, Training, PPE, proper supervision, drink lots of fluid, limited time in confined space, medicals etc	3x3=9	2

MAIN ACTIVITY	**INSTALLATION OF GRADE R GATE AND FENCING**								
REF NO	**SUB-ACTIVITY**	**HAZARD SHE**	**HEALTH RISK**	**ENVIRONMENTAL RISK**	**PUBLIC RISK**	**PURE RISK**	**RECOMMENDED RISK CONTROL MEASURE**	**RESIDUAL RISK**	**RISK PRIORITISATION NUMBER**
	Digging of trenches by machinery/ manhandling	Incompetent operator, hit underground services, trench collapsed,	Dust inhalation, death, heat stroke, etc	Land pollution, fuel/ diesel spillages	None	4x5=20:4	Competent machinery, operator, shoring, barricade ,Training, PPE,	3x2=6	2

		dust, struck by tools, tripping, heat exhaustion					safe System of work etc		
	Ground levelling	Abrasion, dust, bumping against, struck by, inclement weather	Dust inhalation, heat stroke, etc	None	None	3x2=6:2	Safe systems of work, proper supervision, training, ppe , etc	2x2=4	1
	Gate installation	Dust; Noise; Untrained worker; Incompetent Supplier ;Inclement weather ie heat; faulty too;s etc	Dust inhalation, heat stroke, etc	None	None	3x4=12:3	Correct lifting, drink lots of liquids, training, safe system of work, correct PPE; Approved or recognised Supplier	2x3=6	2
	Fencing	Dust; Noise; Poor Barricading; Untrained worker; Work not supervised; Sharp objects etc	Dust inhalation, heat stroke, etc	None	None	3x4=12:3	Training; using safe lifting equipment, drink liquids, training, safe system of work, correct PPE,	3x2=6	2
	Mixing and pouring concrete for aprons, V-drains, ramps along fencing and gate if required	Tripping, dust inhalation, noise, untrained worker, contact with hazardous chemicals etc	Skin irritation, lung infection, cuts, abrasions, muscular strains etc	None	None	3x4=12:3	Safe systems of work, training, ppe, toolbox talks, proper supervision of the job etc	2x2=4	1

Activity	Risk to safety	Risk to Health	Risk to Environment	Risk to Public Safety	Control Measures
Drilling	Entanglement, struck by flying objects, electricity, hazardous substance dust , noise	Electrocution, dust inhalation, noise induced hearing loss, muscle strain, foreign objects in eyes	Contamination of natural resources (spillages)	dust , noise	Safe systems of work ,Training, PPE, barricading, Supervision etc.
Sanding	Grazing, wrist strain, bumping	Dust inhalation, dust in eyes, minor abrasions	none	dust nuisance	Safe systems of work ,PPE, Housekeeping, barricading, Supervision etc.
Painting	Bumping against, wrist strain	Inhalation of vapours, paint in eyes , minor abrasions	Contamination of natural resources (spillages)	None	Safe systems of work ,PPE, ventilation of area, good housekeeping
Grinding	Electrocution, entanglement,, tripping hazards, struck by flying materials etc	Noise induced hearing loss, cuts, loss of limbs, electrocution	none	Noise, dust etc	Safe systems of work ,Wet cutting, barricading, temporary guarding, signage Supervision ,etc.
Breaking of concrete	Struck by flying particles, impact hazards, vibration, electrocution etc	Noise induced hearing loss ,dust inhalation , particles in eye, electrocution , etc	None	Noise, dust etc	Safe Systems of work , barricading, temporary guarding, signage Supervision etc
Excavation work	Hidden services ,bumping against , uncomfortable working position etc	Back strain , dust inhalation, cuts and abrasions	None	None	Safe systems of work , supervision , PPE , Barricading etc.
Cement Mixing	Struck by ,sharp edges, poor working position , hazardous substances	Inhalation of cement dust, back strain , dermatitis	Contamination of natural resources (spillages)	Noise, dust	Safe Systems of work ,PPE, Housekeeping, barricading, bunding, Supervision etc.
General brickwork	Abrasive surfaces, hazardous substances , straining of muscles	Cut and abrasions, crushing injuries etc	None	dust	Safe systems of work, barricading, signages PPE, Supervision etc.
Activity	**Risk to safety**	**Risk to Health**	**Risk to Environment**	**Risk to Public Safety**	**Control Measures**
Compaction of soil	Struck by tools, flammable substances , flying materials, soil poison etc	Back strain, heat exhaustion, bruising, dust inhalation, burns	Contamination of resources with fuel	Noise	Safe systems of work, barricading, signage , PPE, Supervision etc.

Loading and unloading by hand	Bumping against edges , Hands caught between , Sharp edges, muscle strain	Back strain, exhaustion, bruising, hand injuries,	None	None	Safe systems of work, PPE, Training in correct lifting procedures , Supervision etc.
Ladder use	Incorrect positioning, overreach , Overhead hazards , dropping of tools from ladder , Falls	Broken bones , death,	None	None	Safe systems of work , PPE usage, Supervision etc.
Extension cords	Electricity , tripping hazards	Electrocution , fractures etc	none	None	Safe systems of work, PPE, Supervision etc.
Hand tools	Tripping, struck by, bumping against, abrasions, sharp edges, caught between surfaces, flying metal particles etc	Cuts ,Bruising ,Foreign material in eyes	none	None	Safe systems of work, PPE, Supervision etc.
Installation of signage's	Bumping against edges , Hands caught between , Sharp edges, muscle strain	Back strain, exhaustion, bruising, hand injuries	None	None	Safe systems of work, PPE, Training in correct lifting procedures , Supervision etc.

HEALTH AND SAFETY IMPLEMENTATION COSTING

Contractor to give a breakdown of his Health and Safety costs on this sheet.

ITEM	DESCRIPTION	UNIT	QUAN-TITY	MONTHS (Indicative)	RATE	AMOUNT
			(a)		(b)	(a) x (b)
1	**MEDICALS**					
1.1	Pre-employment medical	Nr.	**0**			-
1.2	Re-medicals - yearly	Nr.	**0**			-
	TOTAL					**-**
2	**PERSONAL PROTECTIVE EQUIPMENT**					
2.1	Overalls	Nr.	**0**			-
2.2	Hard hats	Nr.	**0**			-
2.3	Safety boots/shoes	Nr.	**0**			-
2.4	Gloves	Nr.	**0**			-
2.5	Gumboots steel toecap	Nr.	**0**			-
2.6	Safety glasses	Nr.	**0**			-
2.7	Reflector Bibs	Nr.	**0**			-
2.8	Barricading Material	m	**0**			-
2.11	Dust masks	box 20	**0**			-
	TOTAL					**-**
3	**FIRE FIGHTING**					
3.1	Fire extinguishers - 4.5Kg	Nr.	**0**			-
3.2	Surveys - Annual Service	Nr.	**0**			-
	TOTAL					**-**
4	**HEALTH AND SAFETY PERSONNEL**					
4.1	Safety Manager	Nr.	**0**	0		-
4.2	Safety Officer	Nr.	**0**	0		-
4.3	Construction Phase Safety, Health, Environmental and Waste Management Plan	Nr.	**0**	0		-
	TOTAL					**-**
5	**FACILITIES**					
5.1	Provision of ablution facilities	Nr.	**0**		-	
5.2	Service and maintenance of ablution facilities	Nr.	**0**		-	
5.3	Provision of eating areas	Nr.	**0**		-	
5.4	Cleaning of Lay down and other storage areas	Nr.	**0**		-	
5.5	Wash hand basin	Nr.	**0**		-	
5.6	Hot and Cold running water	Nr.	**0**		-	
5.7	Degreasing & Toilet soap	Nr.	**0**		-	
	TOTAL					**-**
6	**FALL PREVENTION / PROTECTION**					
6.1	Safety harnesses with double lanyards	Nr.	**0**			-
6.2	Safety harnesses with Scaffold hooks	Nr.	**0**			-

6.3	Lifelines and vertical fall arrest systems	Nr.	**0**			-
6.4	Scaffolding – material, erection and inspection (Estimate for project)	Nr.	**0**			-
6.5	Temporary hand railing material and kick flats	Nr.	**0**			-
6.6	Chin Straps	Nr.	**0**			-
	TOTAL					**-**
7	**FIRST AID**					
7.1	Replenishment of boxes and other supplies	Nr.	**0**			-
	TOTAL					**-**
8	**TRAINING**					
8.1	SHE Representative	Nr.	**0**			-
8.2	First Aid Level 1	Nr.	**0**			-
8.3	Fire Fighting	Nr.	**0**			-
	TOTAL					**-**
9	**SIGNAGE**					
9.1	All signage as required by law: regulatory, warning and information	Nr.	**0**			-
9.2	Posters for awareness	Nr.	**0**		-	-
	TOTAL					**-**
10	**ELECTRICAL**					
10.1	Replacement of Locks required for lockouts	Nr.	**0**		-	-
10.2	Replacement of Tags	Nr.	**0**			-
10.3	Replacement for Permit books	Nr.	**0**			-
10.4	Replacement of Callipers	Nr.	**0**		-	-
	TOTAL					**-**
11	**OTHERS (Project Specific)**					
11.1		Nr.	**0**		-	-
	TOTAL					**-**
GRAND TOTAL TO BE CARRIED TO THE PRELIMINARIES AND GENERAL IN BILL OF QUANTITIES						**0,00**

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 8
BUILDERS LIEN AGREEMENT

WAIVER OF CONTRACTOR'S LIEN

DEFINITIONS

Contractor:	_____
Employer:	Head: Public Works (KZN Department of Public Works: Province of KwaZulu-Natal)
Agreement:	GCC FOR CONSTRUCTION WORKS - SECOND EDITION 2010
Works (description):	**DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT**
Site:	Region: Umgungundlovu Municipality: Local Municipality: Umzimkhulu Ward No.: Cluster Nr: HG15

AGREEMENT

The Contractor waives, in favour of the Employer, any lien or right of retention that is or may be held in respect of the Works to be executed on the Site

Thus done and signed at _____ on _____
[Date]

Name of signatory	Capacity of signatory
As witness	For and on behalf of the contractor who by signature hereof warrants authorisation hereto

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 9
SCOPE OF WORKS - EPWP

SCOPE OF WORKS IN RESPECT OF WORK RELATING TO THE EXTENDEND PUBLIC WORKS PROGRAMME (EPWP)

Project title:	**DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT**		
Project Code:	**064404**	EPWP NO:	**0**

Introductory notes:

1. The works, or parts of the works will be constructed using labour-intensive methods only in terms of this specification. The use of plant to provide such works, other than plant specifically provided for in the scope of work, is a variation to the contract. The items marked with the letters **LI** are not necessarily an exhaustive list of all the activities which must be done by hand, and this clause does not over-ride any of the requirements in the generic labour intensive specification in the Scope of Works.
2. Payment for items which are designated to be constructed labour-intensively (either in this schedule or in the Scope of Works) will not be made unless they are constructed using labour-intensive methods. Any unauthorised use of plant to carry out work which was to be done labour-intensively will not be condoned and any works so constructed will not be certified for payment.

DESCRIPTION OF THE WORKS

Employer's objectives

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

Labour-intensive works

Labour-intensive works comprise the activities described in the Labour-Intensive Specification. Labour-intensive works shall be constructed/maintained using local workers who are temporarily employed in terms of the scope of work.

LABOUR-INTENSIVE COMPETENCIES OF SUPERVISORY AND MANAGEMENT STAFF

Contractors shall only engage supervisory and management staff in labour-intensive works that have completed the skills programme including Foremen/ Supervisors at NQF level 4 "National Certificate: Supervision of Civil Engineering Construction Processes" and Site Agent/ Manager at NQF level 5 "Manage Labour-Intensive Construction Processes" or equivalent QCTO qualifications (See Appendix C). at NQF outlined in Table 1. (See GUIDELINES FOR THE IMPLEMENTATION OF LABOUR-INTENSIVE INFRASTRUCTURE PROJECTS UNDER THE EXPANDED PUBLIC WORKS PROGRAMME (EPWP) -THIRD EDITION 2015)

Emerging contractors shall have personally completed, or be registered on a skills programme for the NQF level 2 unit standard. All other site supervisory staff in the employ of emerging contractors must have completed, or be registered on a skills programme for the NQF level 2 unit standards or NQF level 4 unit standards. Table 1: Skills programme for supervisory and management staff.

Table 1: Skills programme for supervisory and management staff

Personnel	NQF level	Unit standard titles	Skills programme description
Team leader / supervisor	2	Apply Labour-Intensive Construction Systems and Techniques to Work Activities	This unit standard must be completed, and
		Use Labour-Intensive Construction Methods to Construct and Maintain Roads and Storm water Drainage	any one of these 3 unit standards
		Use Labour-Intensive Construction Methods to Construct and Maintain Water and Sanitation Services	
		Use Labour-Intensive Construction Methods to Construct, Repair and Maintain structures	
Personnel	**NQF level**	**Unit standard titles**	**Skills programme description**
Foreman/supervisor	4	Implement Labour-Intensive Construction Systems and Techniques	This unit standard must be completed, and
		Use Labour-Intensive Construction Methods to Construct and Maintain Roads and Storm water Drainage	any one of these 3 unit standards
		Use Labour-Intensive Construction Methods to Construct and Maintain Water an Sanitation Services	
		Use Labour-Intensive Construction Methods to Construct, Repair and Maintain structures	
Site Agent /Manager (i.e. the contractor's most senior representative that is resident on the site)	5	Manage Labour-Intensive Construction Processes	Skills Programme against this single unit standard
Details of these skills programmes may be obtained from the CETA ETQA manager (e-mail :gerard@ceta.co.za , tel: 011-265 5900)			

EMPLOYMENT OF UNSKILLED AND SEMI-SKILLED WORKERS IN LABOUR-INTENSIVE WORKS

1.1 Requirements for the sourcing and engagement of labour.

1.1.1 Unskilled and semi-skilled labour required for the execution of all labour-intensive works shall be engaged strictly in accordance with prevailing legislation and SANS 1914-5, Participation of Targeted Labour.

1.1.2 The rate of pay set for the SPWP per task or per day will be an acceptable rate determined by the Department of Labour.

1.1.3 Tasks established by the contractor must be such that:

a) the average worker completes 5 tasks per week in 40 hours or less; and

b) the weakest worker completes 5 tasks per week in 55 hours or less.

1.1.4 The contractor must revise the time taken to complete a task whenever it is established that the time taken to complete a weekly task is not within the requirements of 1.1.3.

1.1.5 The Contractor shall, through all available community structures, inform the local community of the labour-intensive works and the employment opportunities presented thereby. Preference must be given to people with previous practical experience in construction and / or who come from households:

a) where the head of the household has less than a primary school education;

b) that have less than one full time person earning an income;

c) where subsistence-agriculture is the source of income.

d) that who are not in receipt of any social security pension income

1.1.6 The Contractor shall endeavour to ensure that the expenditure on the employment of unskilled and semi-skilled workers is in the following proportions:

a) 55% women;

b) 55% youth who are between the ages of 18 and 35; and

c) 2% on persons with disabilities.

1.2 Specific provisions pertaining to SANS 1914-5

1.2.1 Definitions

Targeted labour: Unemployed persons who are employed as local labour on the project.

1.2.2 Contract participation goals

1.2.2.1 There is no specified contract participation goal for the contract. The contract participation goal shall be measured in the performance of the contract to enable the employment provided to targeted labour to be quantified.

1.2.2.2 The wages and allowances used to calculate the contract participation goal shall, with respect to both time-rated and task rated workers, comprise all wages paid and any training allowance paid in respect of agreed training programmes.

1.2.3 Terms and conditions for the engagement of targeted labour

Further to the provisions of clause 3.3.2 of SANS 1914-5, written contracts shall be entered into with targeted labour.

1.2.4 Terms and conditions for the engagement of targeted labour

Further to the provisions of clause 3.3.2 of SANS 1914-5, written contracts shall be entered into with targeted labour.

1.2.5 Variations to SANS 1914-5

1.2.5.1 The definition for net amount shall be amended as follows:
Financial value of the contract upon completion, exclusive of any value added tax or sales tax which the law requires the employer to pay the contractor.

1.2.5.2 The schedule referred to in 5.2 shall in addition reflect the status of targeted labour as women, youth and persons with disabilities and the number of days of formal training provided to targeted labour.

1.3 Training of targeted labour

1.3.1 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.

1.3.2 The cost of the formal training of targeted labour, will be funded by the local office of the Department of Labour. This training will take place as close to the project site as practically possible. The contractor must access this training by informing the relevant regional 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 and the Department of Public Works (Fax: 012 3258625/ EPWP Unit, Private Bag X65, Pretoria 0001) must be furnished with a copy of this request.

1.3.3 The contractor shall do nothing to dissuade targeted labour from participating in training programmes and shall take all reasonable steps to ensure that each beneficiary is provided with two days of formal training for every 22 days worked.

1.3.4 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 the above.

1.3.5 Proof of compliance with the above requirements must be provided by the Contractor to the Employer prior to submission of the final payment certificate.

GENERIC LABOUR-INTENSIVE SPECIFICATION

1 Scope

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

a) trenches having a depth of less than 1.5 metres
b) storm water drainage
c) low-volume roads and sidewalks

2 Precedence

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

3 Hand excavateable material

Hand excavateable material is material:

a) Granular materials:

i) whose consistency when profiled may in terms of table 1 be classified as very loose, loose, medium dense, or dense; or

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

b) Cohesive materials:

i) whose consistency when profiled may in terms of table 1 be classified as very soft, soft, firm, stiff and stiff / very stiff; or

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

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

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

Table 2: Consistency of materials when profiled

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

4 Trench excavation

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

5 Compaction of backfilling to trenches (areas not subject to traffic)

Backfilling to trenches shall be placed in layers of thickness (before compaction) not exceeding 100mm. Each layer shall be compacted using hand stampers

a) to 90% Proctor density;

b) such that in excess of 5 blows of a dynamic cone penetrometer (DCP) is required to penetrate 100 mm of the backfill, provided that backfill does not comprise more than 10% gravel of size less than 10mm and contains no isolated boulders, or

c) such that the density of the compacted trench backfill is not less than that of the surrounding undisturbed soil when tested comparatively with a DCP.

6 Excavation

All hand excavateable material including topsoil classified as hand excavateable shall be excavated by hand. Harder material may be loosened by mechanical means prior to excavation by hand.

The excavation of any material which presents the possibility of danger or injury to workers shall not be excavated by hand.

7 Clearing and grubbing

Grass and small bushes shall be cleared by hand.

8 Shaping

All shaping shall be undertaken by hand.

9 Loading

All loading shall be done by hand, regardless of the method of haulage.

10 Haul

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

11 Offloading

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

12 Spreading

All material shall be spread by hand.

13 Compaction

Small areas may be compacted by hand provided that the specified compaction is achieved.

14 Grassing

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

15 Stone pitching and rubble concrete masonry

All stone required for stone pitching and rubble concrete masonry, whether grouted or dry, must be collected, loaded, off loaded and placed by hand.

Sand and stone shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150m.

Grout shall be mixed and placed by hand.

16 Manufactured Elements

Elements manufactured or designed by the Contractor, such as manhole rings and cover slabs, precast concrete planks and pipes, masonry units and edge beams shall not individually, have a mass of more than 320kg. In addition, the items shall be large enough so that four workers can conveniently and simultaneously acquire a proper handhold on them.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 10
ADDITIONAL SPECIFICATIONS - EPWP NYS

ADDITIONAL SPECIFICATION - EPWP

SL **EMPLOYMENT AND TRAINING OF EPWP BENEFICIARY ON THE EXPANDED PUBLIC WORKS PROGRAMME (EPWP) Infrastructure Projects:**

CONTENTS

SL 01 SCOPE
SL 02 TERMINOLOGY AND DEFINITIONS
SL 03 APPLICABLE LABOUR LAWS
SL 04 EXTRACTS FROM MINISTERIAL DETERMINATION REGARDING EPWP
SL 05 EMPLOYER'S RESPONSIBILITIES
SL 06 PLACEMENT OF RECRUITED EPWP BENEFICIARY
SL 07 TRAINING OF YOUTH WORKERS
SL 08 BENEFICIARY (EPWP BENEFICIARY) SELECTION CRITERIA
SL 09 CONTRACTUAL OBLIGATIONS IN RELATION TO EPWP BENEFICIARY
SL 10 PROVINCIAL RATES OF PAY
SL 11 MEASUREMENTS AND PAYMENT
EXAMPLE EPWP EMPLOYMENT AGREEMENT

SL 01 SCOPE

This project is part of the Expanded Public Works Programme aims to train young people and provide them with practical work experience as part of this programme. Youth aged between 18 and 35 will be recruited and trained in skills relevant to the work to be done on this project. These youth will have to be employed by the contractor as part of this project so that they can gain their work experience on these projects. The training of the youth will be coordinated and implemented by a separate service provider. This service provider will provide the contractor with a list of all the youth and the training each of these youth have received. The Contractor will be required to employ all of these youth for a minimum period of 6 months. Furthermore the Contractor will be required to supervise these youth to ensure that the work they perform is of the required standard. If necessary the contractor's staff will be required to assist and mentor the youth to ensure that they are able to perform the type of work they need to do to the satisfactory standards required. The contractor will not be required to employ all youth in the programme at the same time, but may rotate the youth on the project, as long as all youth are employed for the minimum duration stated earlier.

This specification contains the standard terms and conditions for workers employed in elementary occupations and trained on a Expanded Public Works Programme (EPWP) for the Infrastructure Programme.

SL 02 TERMINOLOGY AND DEFINITIONS

SL 02.01 TERMINOLOGY

(a) EPWP The Code of Good Practice for Expanded Public Works Programmes, which has been gazetted by the Department of Labour, and which provides for special conditions of employment for these EPWP projects. In terms of the Code of Good Practice, the workers on these projects are entitled to formal training, which will be provided by training providers appointed (and funded) by the Department of Labour. For projects of up to six months in duration, this training will cover life-skills and information about other education, training and employment opportunities.

(b) EPWP Expanded Public Works Programme, a National Programme of the government of South Africa, approved by Cabinet.

(c) UYF Umsobumvu Youth Fund.

(d) DOL Department of Labour.

SL 02.02 DEFINITIONS

(a) "employer" means the contractor or any party employing the worker / beneficiary under the EPWP Programme.

(b) "client" means the Department of Public Works.

(c) " worker / trainee" means any person working or training in an elementary occupation on a EPWP.

SL 03 APPLICABLE LABOUR LAWS

In line with the Expanded Public Works Programme (EPWP) policies, the Ministerial Determination, Special Public Works Programmes, issued in terms of the Basic Conditions of Employment Act of 1997 by the Minister of labour in government Notice No. R63 of 25 January 2002, of which extracts have been reproduced below in clauses SL 04 shall apply to works described in the scope of work and which are undertaken by unskilled or semi-skilled workers. The Code of Good Practise for Employment and Conditions of Work for Expanded Public Works Programmes, issued in terms of the Basic Conditions of Employment Act of 1997 by the Minister of Labour in Government Notice No. R64 of 25 January 2002 shall apply to works described in the scope of work and which unskilled or semi-skilled workers undertake.

SI 04 EXTRACTS FROM MINISTERIAL DETERMINATION REGARDING EPWP

SL 04.01 <u>DEFINITIONS</u>

(a) "department" means any department of the State, implementing agent or contractor;

(b) "employer" means any department that hires workers to work in elementary occupations on a EPWP;

(c) "worker" means any person working in an elementary occupation on a EPWP;

(d) "elementary occupation" means any occupation involving unskilled or semi-skilled work;

(e) "management" means any person employed by a department or implementing agency to administer or execute a EPWP;

(f) "task" means a fixed quantity of work;

(g) "task-based work" means work in which a worker is paid a fixed rate for performing a task;

(h) "task-rated worker" means a worker paid on the basis of the number of tasks completed;

(i) "time-rated worker" means a worker paid on the basis of the length of time worked

(j) "Service Provider" means the consultant appointed by Department to coordinate and arrange the employment and training of labour on EPWP infrastructure projects.

SL 04.02 <u>TERMS OF WORK</u>

(a) Workers on a EPWP are employed on a temporary basis.

(b) A worker may NOT be employed for longer than 24 months in any five-year cycle on a EPWP.

(c) Employment on a EPWP does not qualify as employment and a worker so employed does not have to register as a contributor for the purposes of the Unemployment Insurance Act 30 of 1966.

SL 04.03 NORMAL HOURS OF WORK

(a) An employer may not set tasks or hours of work that require a worker to work–

(i) more than forty hours in any week
(ii) on more than five days in any week; and
(iii) for more than eight hours on any day.

(b) An employer and a worker may agree that the worker will work four days per week. The worker may then work up to ten hours per day.

(c) A task-rated worker may not work more than a total of 55 hours in any week to complete the tasks (based on a 40-hour week) allocated to him.

Every work is entitled to a daily rest period of at least eight consecutive hours. The daily rest period is measured from the time the worker ends work on one day until the time the worker starts work on the next day.

SL 04.04 MEAL BREAKS

(a) A worker may not work for more than five hours without taking a meal break of at least thirty minutes duration.

(b) An employer and worker may agree on longer meal breaks.

(c) A worker may not work during a meal break. However, an employer may require a worker to perform duties during a meal break if those duties cannot be left unattended and cannot be performed by another worker. An employer must take reasonable steps to ensure that a worker is relieved of his or her duties during the meal break.

SL 04.05 SPECIAL CONDITIONS FOR SECURITY GUARDS

(a) A security guard may work up to 55 hours per week and up to eleven hours per day.

(b) A security guard who works more than ten hours per day must have a meal break of at least one hour duration or two breaks of at least 30 minutes duration each.

SL 04.06 DAILY REST PERIOD

Every worker is entitled to a daily rest period of at least eight consecutive hours. The daily rest period is measured from the time the worker ends work on one day until the time the worker starts work on the next day.

SL 04.07 WEEKLY REST PERIOD

Every worker must have two days off every week. A worker may only work on their day off to perform work which must be done without delay and cannot be performed by workers during their ordinary hours of work ("emergency work").

SL 04.08 WORK ON SUNDAYS AND PUBLIC HOLIDAYS

(a) A worker may only work on a Sunday or public holiday to perform emergency or security work.

(b) Work on Sundays is paid at the ordinary rate of pay.

(c) A task-rated worker who works on a public holiday must be paid –

(i) the worker's daily task rate, if the worker works for less than four hours;

(ii) double the worker's daily task rate, if the worker works for more than four hours.

(d) A time-rated worker who works on a public holiday must be paid –

(i) the worker's daily rate of pay, if the worker works for less than four hours on the public holiday;

(ii) double the worker's daily rate of pay, if the worker works for more than four hours on the public holiday.

SL 04.09 SICK LEAVE

(a) Only workers who work four or more days per week have the right to claim sick-pay in terms of this clause.

(b) A worker who is unable to work on account of illness or injury is entitled to claim one day's paid sick leave for every full month that the worker has worked in terms of a contract.

(c) A worker may accumulate a maximum of twelve days' sick leave in a year.

(d) Accumulated sick-leave may not be transferred from one contract to another contract.

(e) An employer must pay a task-rated worker the worker's daily task rate for a day's sick leave.

(f) An employer must pay a time-rated worker the worker's daily rate of pay for a day's sick leave.

(g) An employer must pay a worker sick pay on the worker's usual payday.

(h) Before paying sick-pay, an employer may require a worker to produce a certificate stating that the worker was unable to work on account of sickness or injury if the worker is –

(i) absent from work for more than two consecutive days; or

(ii) absent from work on more than two occasions in any eight-week period.

(i) A medical certificate must be issued and signed by a medical practitioner, a qualified nurse or a clinic staff member authorised to issue medical certificates indicating the duration and reason for incapacity.

(j) A worker is not entitled to paid sick-leave for a work-related injury or occupational disease for which the worker can claim compensation under the Compensation for Occupational Injuries and Diseases Act.

SL 04.10 MATERNITY LEAVE

(a) A worker may take up to four consecutive months' unpaid maternity leave.

(b) A worker is not entitled to any payment or employment-related benefits during maternity leave.

(c) A worker must give her employer reasonable notice of when she will start maternity leave and when she will return to work.

(d) A worker is not required to take the full period of maternity leave. However, a worker may not work for four weeks before the expected date of birth of her child or for six weeks after the birth of her child, unless a medical practitioner, midwife or qualified nurse certifies that she is fit to do so.

(e) A worker may begin maternity leave –

(i) four weeks before the expected date of birth; or

(ii) on an earlier date –

(1) if a medical practitioner, midwife or certified nurse certifies that it is necessary for the health of the worker or that of her unborn child; or

(2) if agreed to between employer and worker; or

(iii) on a later date, if a medical practitioner, midwife or certified nurse has certified that the worker is able to continue to work without endangering her health.

(f) A worker who has a miscarriage during the third trimester of pregnancy or bears a stillborn child may take maternity leave for up to six weeks after the miscarriage or stillbirth.

(g) A worker who returns to work after maternity leave, has the right to start a new cycle of twenty-four months employment, unless the EPWP on which she was employed has ended.

SL 04.11 FAMILY RESPONSIBILITY LEAVE

(a) Workers, who work for at least four days per week, are entitled to three days paid family responsibility leave each year in the following circumstances -

(i) when the employee's child is born;

(ii) when the employee's child is sick;

(iii) in the event of the death of –

(1) the employee's spouse or life partner

(2) the employee's parent, adoptive parent, grandparent, child, adopted child, grandchild or sibling

SL 04.12 STATEMENT OF CONDITIONS

(a) An employer must give a worker a statement containing the following details at the start of employment –

(i) the employer's name and address and the name of the EPWP;

(ii) the tasks or job that the worker is to perform;

(iii) the period for which the worker is hired or, if this is not certain, the expected duration of the contract;

(iv) the worker's rate of pay and how this is to be calculated;

(v) the training that the worker may be entitled to receive during the EPWP.

(b) An employer must ensure that these terms are explained in a suitable language to any employee who is unable to read the statement.

(c) An employer must supply each worker with a copy of the relevant conditions of employment contained in this specification.

(d) An employer must enter into a formal contract of employment with each employee. A copy of a pro-forma is attached at the end of this specification.

SL 04.13 KEEPING RECORDS

(a) Every employer must keep a written record of at least the following –

(i) the worker's name and position;

(ii) in the case of a task-rated worker, the number of tasks completed by the worker;

(iii) in the case of a time-rated worker, the time worked by the worker;

(iv) payments made to each worker.

(b) The employer must keep this record for a period of at least three years after the completion of the EPWP.

SL 04.14 PAYMENT

(a) A task-rated worker will only be paid for tasks that have been completed.

(b) An employer must pay a task-rated worker within five weeks of the work being completed and the work having been approved by the manager or the contractor having submitted an invoice to the employer. Payment must be made in cash, by cheque or by direct deposit into a bank account designated by the worker.

(c) A time-rated worker will be paid at the end of each month and payment must be made in cash, by cheque or by direct deposit into a bank account designated by the worker.

(d) Payment in cash or by cheque must take place –

  (i) at the workplace or at a place agreed to by at least 75% of the workers; and

  (ii) during the worker's working hours or within fifteen minutes of the start or finish of work;

(e) All payments must be enclosed in a sealed envelope which becomes the property of the worker.

(f) An employer must give a worker the following information in writing –

  (i) the period for which payment is made;

  (ii) the number of tasks completed or hours worked;

  (iii) the worker's earnings;

  (iv) any money deducted from the payment;

  (v) the actual amount paid to the worker.

(g) If the worker is paid in cash or by cheque, this information must be recorded on the envelope and the worker must acknowledge receipt of payment by signing for it.

(h) If a worker's employment is terminated, the employer must pay all monies owing to that worker within one month of the termination of employment.

SL 04.15 DEDUCTIONS

(a) An employer may not deduct money from a worker's payment unless the deduction is required in terms of a law.

(b) An employer must deduct and pay to the SA Revenue Services any income tax that the worker is required to pay.

(c) An employer who deducts money from a worker's pay for payment to another person must pay the money to that person within the time period and other requirements specified in the agreement law, court order or arbitration award concerned.

(d) An employer may not require or allow a worker to –

  (i) repay any payment except an overpayment previously made by the employer by mistake;

  (ii) state that the worker received a greater amount of money than the employer actually paid to the worker; or

  (iii) pay the employer or any other person for having been employed.

SL 04.16 HEALTH AND SAFETY

(a) Employers must take all reasonable steps to ensure that the working environment is healthy and safe and that all legal requirements regarding health and safety are strictly adhered to.

(b) A worker must:

(i) work in a way that does not endanger his/her health and safety or that of any other person;

(ii) obey any health and safety instruction;

(iii) obey all health and safety rules;

(iv) use any personal protective equipment or clothing issued by the employer;

(v) report any accident, near-miss incident or dangerous behaviour by another person to their employer or manager.

SL 04.17 COMPENSATION FOR INJURIES AND DISEASES

(a) It is the responsibility of employers to arrange for all persons employed on a EPWP to be covered in terms of the Compensation for Occupational Injuries and Diseases Act, 130 of 1993.

(b) A worker must report any work-related injury or occupational disease to their employer or manager.

(c) The employer must report the accident or disease to the Compensation Commissioner.

(d) An employer must pay a worker who is unable to work because of an injury caused by an accident at work 75% of their earnings for up to three months. The employer will be refunded this amount by the Compensation Commissioner. This does NOT apply to injuries caused by accidents outside the workplace such as road accidents or accidents at home.

SL 04.18 TERMINATION

(a) The employer may terminate the employment of a worker provided he has a valid reason and after following existing termination procedures.

(b) A worker will not receive severance pay on termination.

(c) A worker is not required to give notice to terminate employment. However, a worker who wishes to resign should advise the employer in advance to allow the employer to find a replacement.

(d) A worker who is absent for more than three consecutive days without informing the employer of an intention to return to work will have terminated the contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period.

(e) A worker who does not attend required training events, without good reason, will have terminated the contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period.

SL 04.19 CERTIFICATE OF SERVICE

(a) On termination of employment, a worker is entitled to a certificate stating –

(i) the worker's full name;
(ii) the name and address of the employer;
(iii) the SPWP on which the worker worked;
(iv) the work performed by the worker;
(v) any training received by the worker as part of the EPWP;
(vi) the period for which the worker worked on the EPWP;
(vii) any other information agreed on by the employer and worker.

SL 05 EMPLOYER'S RESPONSIBILITIES

The employer shall adhere to the conditions of employment as stipulated in the *Code of Good Practice for Employment and Conditions of Work for Expanded Public Works Programmes*. Over and above the conditions stipulated above, he shall be responsible to:

(a) formulate and design a contract between himself/ herself and each of the recruited EPWP beneficiary, ensuring that the contract does not contravene any of the Acts stipulated in South African Law, e.g. Basic Conditions of Employment Act, etc. (A copy of a pro-forma contract is attached at the end of this specification);

(b) screen and select suitable candidates for employment from the priority list of EPWP beneficiary provided by the Umsobumvu Youth Fund (UYF);

(c) ensure that the recruited EPWP beneficiary are made available to receive basic life skills training which will be conducted and paid for by the Umsobumvu Youth Fund;

(d) ensure that all EPWP beneficiary receive instruction on safety on site prior to them commencing with work on site;

(e) ensure that all EPWP beneficiary are covered under workmen's compensation for as long as they are contracted to the contractor. Payment to the Compensation Commissioner shall be the responsibility of the contractor;

(f) assist in the identification and assessment of potential EPWP beneficiary to undergo advanced technical training in respective trades;

(g) test and implement strict quality control and to ensure that the health and safety regulations are adhered to;

(h) provide all EPWP beneficiary with the necessary protective clothing as required by law for the specific trades that they are involved in.

(i) provide overall supervision and day-to-day management of EPWP beneficiary and/or sub-contractors; and

(j) ensure that all EPWP beneficiary are paid their wages on time through a pre-agreed payment method as stipulated in the contract with the EPWP beneficiary.

SL 06 PLACEMENT OF RECRUITED EPWP BENEFICIARY

Employers will be contractually obliged to:

(a) employ EPWP beneficiary from targeted social groups from the priority list provided by the Service Provider/ Umsobumvu Youth Fund.

(b) facilitate on-the-job training and skills development programmes for the EPWP beneficiary;

(c) achieve the following minimum employment targets:

(i) 55% people between the ages of 18 and 35

(ii) 55% women;

(iii) 2% people with disabilities.

(d) brief EPWP beneficiary on the conditions of employment as specified in sub clause SL 04.09 above;

(e) enter into a contract with each EPWP beneficiary, which contract will form part of the Employment Agreement;

(f) allow EPWP beneficiary the opportunity to attend life skills training through DOL. This shall be arranged at the beginning of the contract;

(g) ensure that payments to EPWP beneficiary are made as set out in sub clauses SL 04.14 and SL 04.15 above.

(h) set up of personal profile files as prescribed by EPWP beneficiary and as set out in sub clause SL 04.13 above.

(i) in addition to (h)
- a copy of the I.D;
- qualifications;
- career progress;
- EPWP Employment Agreement, and
- list of small trade tools;

must be included in the EPWP beneficiary's personal profile file.

SL 07 TRAINING OF EPWP BENEFICIARY

Three types of training are applicable, namely

- Life skills;
- On the job training and
- Technical Skills training.

Training will be implemented by training instructors accredited by DOL and/or CETA :

- EPWP beneficiary shall be employed on the projects for an average of 6 months.
- EPWP beneficiary shall be deployed on projects in the vicinity of their homes. The same arrangements as for other workers regarding accommodation, subsistence and travel shall be applicable to EPWP beneficiary.

(a) Life skills training

All EPWP beneficiary are entitled to undergo life skills training. Training of this module will be flexible enough to meet the needs of the employer. Training should take place immediately after site hand-over and during the period of site establishment and pre-planning before actual construction starts, alternatively this will be spread over the duration of the contract period. The contractor will be required to work closely with the person to schedule the training sessions so that the timing of the training is aligned with the contractors work schedule and his demand for workers.

(b) On-the job training

The Employer shall provide EPWP beneficiary with on-the-job training to enable them to fulfil their employment requirements. The employer shall also be expected to closely monitor the job performance of EPWP beneficiary and shall identify potential EPWP beneficiary for skills development programmes.

(c) Technical skills training

The Employer shall assist in identifying EPWP beneficiary for further training. These EPWP beneficiary will undergo further technical training to prepare them for opportunities as semi-skilled labourers.

Such training will comprise of an off-site theoretical component and practical training on-site. The contractor will be responsible for on-site practical work under his supervision. EPWP beneficiary who graduate from the first phase of the training programme will be identified and given opportunities to register for skills development programmes. These can ultimately result in a accredited qualification. The programme will consist of theoretical instruction away from the construction site as well as on-site practical work under the supervision of the employer. Candidates will be entitled to employment to complete all training modules.

SL 08 BENEFICIARY (EPWP BENEFICIARY) SELECTION CRITERIA

SL 08.01 <u>PREAMBLE</u>

The *Code of Good Practise for Employment and Conditions of Work for Expanded Public Works Programmes* encourages:

- optimal use of locally-based labour in a Expanded Public Works Programme (EPWP);
- a focus on targeted groups which consist of namely youth, consisting of women, female-headed households, disabled and households coping with HIV/AIDS; and
- the empowerment of individuals and communities engaged in a SPWP through the provision of training.

SL 08.02 BENEFICIARY (EPWP BENEFICIARY) SELECTION CRITERIA

(a) The EPWP beneficiary of the programmes should preferably be non-working individuals from the most vulnerable sections of disadvantaged communities who do not receive any social security pension income. The local community must, through all structures available, be informed of and consulted about the establishment of any EPWP

(b) In order to spread the benefit as broadly as possible in the community, a maximum of one person per household should be employed, taking local circumstances into account.

(c) Skilled artisans from other areas may be employed if they have skills that are required for a project and there are not enough persons in the local communities who have those skills or who could undergo appropriate skills training. However, this should not result in more than 20% of persons working on a programme not being from local communities.

(d) Programmes should set participation targets for employment with respect to youth, single male- and female-headed households, women, people with disabilities, households coping with HIV/AIDS, people who have never worked, and those in long-term unemployment.

(e) The proposed targets as set out in sub clause SL 06 (c)

- 55% youth from 18 to 35 years of age;
- 55% women;
- 2% disabled.

SL 09 CONTRACTUAL OBLIGATIONS IN RELATION TO YOUTH LABOUR

The EPWP beneficiary to be employed in the programme (EPWP) shall be directly contracted to the employer. Over and above the construction and project management responsibilities, the employer will be expected to perform the tasks and responsibilities as set out in clause SL 05 above.

SL 10 PROVINCIAL RATES OF PAY

It is stipulated that youth workers on the EPWP receive a minimum of R 1 000 per month whilst working and R 600 per month whilst on training in ALL provinces. Should EPWP beneficiary be attending training whilst employed by the contractor, the contractor will still be responsible for payment to the EPWP beneficiary whilst at training.

SL 11 MEASUREMENTS AND PAYMENT

The number of EPWP beneficiary specified for this contract that will receive life skills training is 50 and technical training is 50

SL 11.01 PAYMENT FOR TRAINING OF EPWP BENEFICIARY (TARGET:- 50 EPWP BENEFICIARY)

SL 11.01.01 Skills development and Technical training for EPWP beneficiary for an average of 10 days ……(Prov.Sum)……..Unit: R/EPWP beneficiary

The above item is only applicable if DoL does not fund the Technical Training PRIOR to site handover.

SL 11.01.02 Penalty due to not meeting the target as in SL 11.01.01……..Unit: EPWP beneficiary

LESS R 2000 per EPWP beneficiary

SL 11.02 PAYMENT FOR TRAVELLING AND ACCOMMODATION DURING OFF-SITE TRAINING

SL 11.02.01 Life skills training for 26 days:

01 Travelling (based on 50 km/EPWP beneficiary) ……Unit: km

02 Accommodation……..(Prov.Sum)…..Unit: R/EPWP beneficiary

03 Profit and attendance…… Unit: %

SL 11.02.02 Skilled development and Technical training:

01 Travelling (based on 50 km/EPWP beneficiary)……...Unit: km

02 Accommodation……..(Prov.Sum)….Unit: R/EPWP beneficiary

03 Profit and attendance …….. Unit: %

The units of measurement for sub items SL 11.02.01 (01) and SL 11.02.02 (01) above shall be the distance travelled in km by the EPWP beneficiary trained off site. The tendered rate shall include full compensation to safely transport the youth workers to and from the training venue/s.

The unit of measurement for sub items SL 11.02.01 (02) and SL 11.02.02 (02) above shall be the amounts in Rand expended for accommodation and daily meal allowances for the EPWP beneficiary trained off site that must be arranged by the contractor. Amounts quoted shall be corrected according to re-measurement based on actual invoices.

The tendered percentages under sub items SL 11.02.01 (03) and SL 11.02.02 (03) will be paid to the contractor on the value of each payment pertaining to the accommodation and advance meal allowances to cover his expenses in this regard.

SL 11.03 ALTERNATIVE WORKERS FOR THE PERIOD OF OFF-SITE TRAINING

SL 11.03.01 Life skills training for 26 days …… Unit: worker-days

SL 11.03.02 Skilled development and Technical training for EPWP beneficiary for (…….) days…….. Unit: worker-days

The unit of measurement shall be the number of EPWP beneficiary replaced while in training multiplied by the number of days absent from the site.

The rates tendered shall include full compensation for additional replacement labour during periods of off-site training.

SL 11.04 EMPLOYMENT OF EPWP BENEFICIARY

SL 11.04.01 Employment of EPWP beneficiary……...(Prov.Sum)¼.Unit: R/ worker-month

SL 11.04.02 Employment of EPWP beneficiary……...(Prov.Sum)¼.Unit: R/ worker-month

The unit of measurement shall be the number of EPWP beneficiary at the statutory labour rates of R ……. multiplied by the period employed in months and the rate tendered shall include full compensation for all costs associated with the employment of EPWP beneficiary and for complying with the conditions of contract. The cost for the training shall be excluded from this item. This item is based on 6 months appointment for EPWP beneficiary.

SL 11.05 PROVISION OF EPWP DESIGNED OVERALLS TO EPWP BENEFICIARY

SL 11.05.01 Supply EPWP designed overalls to EPWP beneficiary ……..
(Prov.Sum)…….Unit: R

EPWP beneficiary overalls should be orange (top and bottom) as per EPWP specification with the exception of Correctional Services contracts where the EPWP beneficiary top would be blue and the bottom orange.

SL 11.05.02 Profit and attendance…….. Unit: %

An amount has been provided in the Schedule of Quantities under sub item SL 10.05.01 for the supply of EPWP designed overalls, as per the specification provided by the EPWP unit, arranged by the Service Provider. The Engineer will have sole authority to spend the amounts or part thereof. The tendered percentage under sub items SL 10.05.02 will be paid to the contractor on the value of each payment pertaining to the supply of overalls to cover his expenses in this regard.

SL 11.06 PROVISION OF SMALL TOOLS FOR EPWP BENEFICIARY

SL 11.06.01 Provide all EPWP beneficiary with prescribed tools for their respective trades. Specification for the mentioned tools to be provided by the EPWP Service Provider. These tools will become the property of the EPWP beneficiary after the completion of the programme.....(Prov.Sum)….Unit: **R 500-00** /youth worker

SL 11.06.02 Profit and attendance…….. Unit: %

SL 11.07 APPOINTMENT OF EPWP BENEFICIARY TEAM LEADER/S

SL 11.07.01 Appointment of (_____) EPWP beneficiary team leader/s for the duration of the contract……(Prov.Sum)……..... Unit: R / EPWP beneficiary team leader

The EPWP beneficiary Team Leader will act as CLO/PLO to facilitate the project work between the EPWP beneficiary and the contractor. Umsobumvu Youth Fund can assist with the sourcing of EPWP beneficiary Team Leader for employment by the contractor.

SL 11.08 LIAISON WITH SERVICE PROVIDER ……Unit: hours

The tendered rate shall include full compensation for the cost of liaising with the Service Provider and Social Facilitators on all issues regarding the works.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 11
EPWP BILLS OF QUANTITIES

PAGE NO	ITEM NO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
1		BILL NO 2				
1		EMPLOYMENT AND TRAINING OF LABOUR ON THE EPWP BENEFICIARY INFRASTRUCTURE PROJECTS				
1		PREAMBLES				
1		Tenderers are advised to study the Additional Specification SL: Employment and training of Labour on the Expanded Public Works Programme (EPWP) Infrastructure Projects as bound elsewhere in the Bills of Quantities and then price this Bill accordingly				
1		TRAINING OF EPWP BENEFICIARY				
1		(TARGET: 50 EPWP BENEFICIARY)				
1		Skills development and Technical training:				
1	1	Skills development and technical training for EPWP beneficiary for an average of 10 days (ref. SL11.01.01)	Item	1		
1	2	Penalty due to not meeting the target as in SL 11.01.02	Y/Work	R 2 000.00		
1		TRAVELLING AND ACCOMMODATION DURING OFF SITE TRAINING:				
1		Life skills training for 26 days (ref. SL 11.02.01)				
1	3	Travelling (based on 50km/EPWP beneficiary)	km	2500		
1	4	Profit and attendance on Items 1, 2 & 3	%			
1		EMPLOYMENT OF EPWP BENEFICIARY				
1	5	Employment of EPWP beneficiary (30 youth) [New Office Block]	Item	1		
1		The unit of measurement shall be the number of EPWP beneficiary at the statutory labour rates of R 100/day multiplied by the period employed in months and the rate tendered shall include full compensation for all costs associated with the employment of EPWP beneficiary and for complying with the conditions of contract. The cost for training shall be excluded from this item. This item is based on 6 months appointment for EPWP beneficiary				
1	6	Employment of EPWP beneficiary(40 youth) [Parking garage]	Item	1		
		TOTAL CARRIED TO SUMMARY				

			UNIT	QUANTITY	RATE	AMOUNT
2		The unit of measurement shall be the number of EPWP beneficiary at the statutory labour rates of R 110/day multiplied by the period employed in months and the rate tendered shall include full compensation for all costs associated with the employment of EPWP beneficiary and for complying with the conditions of contract. The cost for training shall be excluded from this item. This item is based on 12 months appointment for EPWP beneficiary				
2	7	Employment of EPWP beneficiary (30 youth) [Conference Centre & Canteen]	Item	1		
2		The unit of measurement shall be the number of EPWP beneficiary at the statutory labour rates of R 120/day multiplied by the period employed in months and the rate tendered shall include full compensation for all costs associated with the employment of EPWP beneficiary and for complying with the conditions of contract. The cost for training shall be excluded from this item. This item is based on 12 months appointment for EPWP beneficiary				
2		PROVISION OF EPWP DESIGNED OVERALLS TO YOUTH WORKERS				
2	8	Supply EPWP designed overalls to EPWP beneficiary (ref. SL 11.05.01) for 100 workers	Item	1		
2	9	Profit and attendance on Items 5 - 8 (ref. SL 11.05.02)	%	7.5		
2		PROVISION OF SMALL TOOLS FOR EPWP BENEFICIARY				
2	10	Supply of small tools to EPWP beneficiary. Specification to be supplied by the EPWP-NYS Serviced Provider for the respective trades (ref. SL 11.06.01) for 100 workers	Item	1		
2	11	Profit and attendance (ref. SL 11.06.02)	%	7.5		
2		APPOINTMENT OF YOUTH TEAM LEADERS				
2	12	Appointment of EPWP beneficiary Team Leaders for the duration of the contract (ref. SL 11.07)	Item	1		
2	13	Liaison with Service Provider (ref. SL 11.08)	Hrs	30		
2	14	Profit and attendance on Items 12 & 13	%	7.5		
		FINAL TOTAL CARRIED TO PRELIMINARY AND GENERAL IN BILL OF QUANTITIES				

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 12
EPWP EMPLOYMENT AGREEMENT

(Insert Your Company Logo)

(This shall serve as the cover page on employment contracts for local labour)

EMPLOYMENT AGREEMENT

BETWEEN

[CONTRACTOR NAME].....

AND

[WORKER NAME].....

1. PARTIES

The Parties to this Agreement are -

1.1. Contractor: _____

herein represented by: _____

duly authorised thereto

And

1.2. Mr / Me: _____
[worker's name]

2. DEFINITIONS AND INTERPRETATION

2.1. In this Agreement and any Annexure thereto, unless inconsistent with or otherwise indicated by the context-

"Agreement"	means the contents of this Agreement.
"Company"	means the company that employs the worker
"Department"	means the Department of Public Works
"Worker"	is a person that performs a specific or necessary task or who completes tasks in a certain way
"EPWP"	The Expanded Public Works Programme is a government programme aimed at the alleviation of poverty and unemployment. The programme ensures the full engagement on Labour Intensive Methods of Construction (LIC) to contractors for skills development. The EPWP focuses at reducing unemployment by increasing economic growth by means of improving skills levels through education and training and improving the enabling environment for the industry to flourish.

3. PURPOSE

The purpose of this agreement is to:-

Ensure that the agreement is binding to both the Worker and the Employer.

4. TERMS AND CONDITIONS

- The worker will have no entitlement to the benefits of a full time employee, namely;

_____

_____

- The worker should not have the expectation that this contract will be renewed or extended.
- The worker will be subject to all laws, rules, policies, codes and procedures applicable to the;

_____

- The worker must meet the standards and requirements of the contractor
- The worker must render his/her services during normal working hours of minimum of forty to fifty five hours in any week; which comprise of an eight-hour working day in a five-day week.

5. REMUNERATION

The worker will receive compensation to the amount of R_____00 which must be paid by the 25th or on the last day of each month.

6. ROLES AND RESPONSIBILITIES

6.1 Employer / Worker

- Work for _____ in terms of the period as specified in the employment agreement contract.
- Be available for and participate in all learning and work experience required by the company.
- Comply with workplace policies and procedures.
- Complete any attendance or any written assessment tools supplied by the contractor to record relevant workplace experience.
- Demonstrate willingness to grow and learn through work experience.

  Provide the following documentation to the employer,

  - Certified identity document not longer than 3 months
  - ID size photos
  - Sign employment contract

6.2 Employer

- Employ the worker for a period specified in the agreement.
- Provide the worker with appropriate work based experience in the work environment.
- Facilitate payments of wages / stipends.
- Keep accurate records of workers.
- Where a worker/ learner is disabled, the employer will have to provide in the additional needs e.g. special materials, learning aids and in some cases physical or professional support (such aids remain the property of the employer).
- Keep up to date records of learning and discuss progress with the intern on a regular basis.
- Apply fair disciplinary, grievance and dispute resolution procedures to the worker.
- Prepare an orientation/ induction course to introduce worker/ learner to the workplace and specific workplace requirements.
- Ensure the daily attendance register is signed by the worker.

7. DURATION.

This agreement commences on: _____

and

expires on: _____

8. BREACH.

If either party commits any breach of the terms of this contract (and fails to rectify it within 30 days of receipt of a written notice calling it to do so, then) the other party shall be entitled to terminate the contract or to claim specific performance without prejudice to any of its other legal rights, including its rights to claim damages.

9. CONDITIONS OF EMPLOYMENT

9.1. Meal Breaks

9.1.1 A worker may not work for more than five hours without taking a meal break of at least thirty minutes duration.

9.1.2 An employer and worker may agree on longer meal breaks.

9.1.3 A worker may not work during a meal break. However, an employer may require a worker to perform duties during a meal break if those duties cannot be left unattended and cannot be performed by another worker. An employer must take reasonable steps to ensure that a worker is relieved of his or her duties during the meal break.

9.1.4 A worker is not entitled to payment for the period of a meal break. However, a worker who is paid on the basis of time worked must be paid if the worker is required to work or to be available for work during the meal break.

9.2. Special Conditions for Security Guards (Only applicable to security Guards)

9.2.1 A security guard may work up to 55 hours per week and up to eleven hours per day.

9.2.2 A security guard who works more than ten hours per day must have a meal break of at least one hour or two breaks of at least 30 minutes each.

9.3. Weekly Rest Period

Every worker must have two days off every week. A worker may only work on their day off to perform work which must be done without delay and cannot be performed by workers during their ordinary hours of work ("emergency work").

9.4. Work on Sundays and Public Holidays

9.4.1 A worker may only work on a Sunday or public holiday to perform emergency or security work.

9.4.2 Work on Sundays is paid at the ordinary rate of pay.

9.4.3 A task-rated worker who works on a public holiday must be paid;

(a) the worker's daily task rate, if the worker works for less than four hours;

(b) double the worker's daily task rate, if the worker works for more than four hours.

9.4.4 A time-rated worker who works on a public holiday must be paid

(a) the worker's daily rate of pay, if the worker works for less than four hours on the public holiday;

(b) double the worker's daily rate of pay, if the worker works for more than four hours on the public holiday.

9.5 Sick leave

9.5.1 Only workers who work more than 24 hours per month have the right to claim sick-pay in terms of this clause.

9.5.2 A worker who is unable to work on account of illness or injury is entitled to claim one day's paid sick leave for every full month that the worker has worked in terms of a contract.

9.5.3 A worker may accumulate a maximum of twelve days' sick leave in a year.

9.5.4 Accumulated sick-leave may not be transferred from one contract to another contract.

9.5.5 An employer must pay a task-rated worker the worker's daily task rate for a day's sick leave.

9.5.6 An employer must pay a time-rated worker the worker's daily rate of pay for a day's sick leave.

9.5.7 An employer must pay a worker sick pay on the worker's usual payday.

9.5.8 Before paying sick-pay, an employer may require a worker to produce a certificate stating that the worker was unable to work on account of sickness or injury if the worker is

(a) absent from work for more than two consecutive days; or

(b) absent from work on more than two occasions in any eight-week period.

9.5.9 A medical certificate must be issued and signed by a medical practitioner, a qualified nurse or a clinic staff member authorised to issue medical certificates indicating the duration and reason for incapacity.

9.5.10 A worker is not entitled to paid sick-leave for a work-related injury or occupational disease for which the worker can claim compensation under the Compensation for Occupational Injuries and Diseases Act.

9.6. Maternity Leave

9.6.1 A worker may take up to four consecutive months' unpaid maternity leave.

9.6.2 A worker is not entitled to any payment or employment-related benefits during maternity leave.

9.6.3 A worker must give her employer reasonable notice of when she will start maternity leave and when she will return to work.

9.6.4 A worker is not required to take the full period of maternity leave. However, a worker may not work for four weeks before the expected date of birth of her child or for six weeks after the birth of her child, unless a medical practitioner, midwife or qualified nurse certifies that she is fit to do so.

9.6.5 A worker may begin maternity leave as follows;

(a) four weeks before the expected date of birth; or

(b) on an earlier date

(i) if a medical practitioner, midwife or certified nurse certifies that it is necessary for the health of the worker or that of her unborn child; or

(ii) if agreed to between employer and worker; or

(c) on a later date, if a medical practitioner, midwife or certified nurse has certified that the worker is able to continue to work without endangering her health.

10.6 A worker who has a miscarriage during the third trimester of pregnancy or bears a stillborn child may take maternity leave for up to six weeks after the miscarriage or stillbirth.

9.7. Family responsibility leave

9.7.1 Workers, who work for at least four days per week, are entitled to three days paid family responsibility leave each year in the following circumstances;

(a) when the employee's child is born;

(b) when the employee's child is sick;

(c) in the event of a death of

(i) the employee's spouse or life partner;

(ii) the employee's parent, adoptive parent, grandparent, child, adopted child, grandchild or sibling.

9.8. Keeping Records

9.8.1 Every employer must keep a written record on site for the duration of the project and three (3) year after completion records should consists of at least the following;

(a) the worker's name and position;

(b) copy of an acceptable worker identification

(c) in the case of a task-rated worker the number of tasks completed by the worker;

(d) in the case of a time-rated worker, the time worked by the worker;

(e) payments made to each worker in a form of Proof of Payment, Payroll registers and the acknowledgement of payment receipt signed by the worker.

9.8.2 The employer must keep this record for a period of at least three years after the completion of the EPWP.

9.9. Payment

9.9.1 An employer must pay all wages at least monthly in cash or by cheque or into a bank account.

9.9.2 A worker may not be paid less than the Ministerial Determination wage rate.

9.9.3 A task-rated worker will only be paid for tasks that have been completed.

9.9.4 An employer must pay a task-rated worker within five weeks of the work being completed and the work having been approved by the manager or the contractor having submitted an invoice to the employer.

9.9.5 A time-rated worker will be paid at the end of each month.

9.9.6 Payment must be made in cash, by cheque or by direct deposit into a bank account designated by the worker.

9.9.7 Payment in cash or by cheque must take place

(a) at the workplace or at a place agreed to by the worker;

(b) during the worker's working hours or within fifteen minutes of the start or finish of work;

(c) in a sealed envelope which becomes the property of the worker.

9.9.8 An employer must give a worker the following information in writing

(a) the period for which payment is made;

(b) the numbers of tasks completed or hours worked;

(c) the worker's earnings;

(d) any money deducted from the payment;

(e) the actual amount paid to the worker.

9.9.9 If the worker is paid in cash or by cheque, this information must be recorded on the envelope and the worker must acknowledge receipt of payment by signing for it.

9.9.10 If a worker's employment is terminated, the employer must pay all monies owing to that worker within one month of the termination of employment.

9.10. Inclement weather

If no work has begun on site, and if an employee has reported for work, the employee will be paid for four hours. Should work be stopped after the first four hours, the employee will be paid for the hours worked. Where the employer has given employees notice on the previous working day that no work will be available due to inclement weather, then no payment will be made.

9.11. Deductions

9.11.1 An employer may not deduct money from a worker's payment unless the deduction is required in terms of a law.

9.11.2 An employer must deduct and pay to the SA Revenue Services any income tax that the worker is required to pay.

9.11.3 An employer who deducts money from a worker's pay for payment to another person must pay the money to that person within the time period and other requirements specified in the agreement of Law; court order or arbitration

9.11.4 It is the responsibility of the employers to arrange for all persons employed on a Project to be covered in terms of the Unemployment Insurance Fund Contributions Act, 2002 (Act No. 4 of 2002)

9.11.5 An employer may not require or allow a worker to

(a) repay any payment except an overpayment previously made by the employer by mistake;

(b) state that the worker received a greater amount of money than the employer actually paid to the worker; or

(c) pay the employer or any other person for having been employed.

9.12. Health and Safety

9.12.1 Employers must take all reasonable steps to ensure that the working environment is healthy and safe.

9.12.2 A worker must;

(a) work in a way that does not endanger his/her health and safety or that of any other person;

(b) obey any health and safety instruction;

(c) use any personal protective equipment or clothing issued by the employer;

(d) report any accident, near-miss incident or dangerous behaviour by another person to their employer or manager.

9.13. Compensation for Injuries and Diseases

9.13.1 It is the responsibility of the employers to arrange for all persons employed on a Project to be covered in terms of the Compensation for Occupational Injuries and Diseases Act, 130 of 1993 as amended by COIDA Act 61, 1997.

9.13.2 A worker must report any work-related injury or occupational disease to their employer or manager.

9.13.3 The employer must report the accident or disease to the Compensation Commissioner.

9.13.4 An employer must pay a worker who is unable to work because of an injury caused by an accident at work 75% of their earnings for up to three months. The employer will be refunded this amount by the Compensation Commissioner. This does NOT apply to injuries caused by accidents outside the workplace such as road accidents or accidents at home.

9.14. Termination

9.14.1 The employer may terminate the employment of a worker for good cause after following a fair procedure.

9.14.2 A worker will not receive severance pay on termination.

9.14.3 A worker is not required to give notice to terminate employment. However, a worker who wishes to resign should advise the employer in advance to allow the employer to find a replacement.

9.14.4 A worker **who is absent for more than three consecutive days** without informing the employer of an intention to return to work will have terminated the contract. However, the worker may be re-engaged if a position becomes available.

9.14.5 A worker who does not attend required training events, without good reason, will have terminated the contract. However, the worker may be re-engaged if a position becomes available.

Notice procedure is as follows;

- One week if employed for four weeks or less
- Two weeks if employed for more than four weeks but not more than a year
- Four weeks of employed for one (1) year or more

9.15. Certificate of Service

9.15.1 On termination of employment, a worker is entitled to a certificate stating;

(a) the worker's full name;
(b) the name and address of the employer;
(c) the Project on which the worker worked; the work performed by the worker;
(d) any training received by the worker;
(e) the period for which the worker worked on the Project; and
(f) any other information agreed on by the employer and worker.

9.16. DOMICILE

The address to which notices and all legal documents may be delivered or served are as follows:

Employee Details

Name & Surname: _____

ID No: _____

Residential Address: _____

_____

Contact No: _____

Date of Employment: _____

To be supervised by: **Main Contractor:** ☐
or Sub Contractor: ☐

Category of employment: **Skilled:** ☐
Semi-skilled: ☐
Unskilled: ☐

For Skilled & Semi-skilled state the trade: _____

Period of employment: Fixed for until when your services are still required on site

I confirm that I have been inducted and fully understand the condition of my appointment.

Employee Signature: _____ **Witness by SGB/CLO:** _____

Signature by Witness: _____

Employer Details

Name & Surname: _____
Designation: _____
Contact No: _____ **Signature:** _____

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 13
ATTENDANCE REGISTER FOR ONSITE WORKS

KWAZULU-NATAL DEPARTMENT OF PUBLIC WORKS

EXPANDED PUBLIC WORKS PROGRAMME

The Attendance Register for on-site Workers

Reporting month: _____ Cell No: _____

Surname: _____ First Name: _____

Project Name: **DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT**

Project Code: **064404** Tender No **ZNTM01217W**

IDENTITY NUMBER: _____

Day	Date	Time In	Signature	Time Out	Signature	Report On Any Formal Training Provided In The Reporting Month
WEEK 1						
MONDAY						
TUESDAY						
WEDNESDAY						
THURSDAY						
FRIDAY						
WEEK 2						
MONDAY						
TUESDAY						
WEDNESDAY						
THURSDAY						
FRIDAY						
WEEK 3						
MONDAY						
TUESDAY						
WEDNESDAY						
THURSDAY						
FRIDAY						
WEEK 4						
MONDAY						
TUESDAY						
WEDNESDAY						
THURSDAY						
FRIDAY						
WEEK 5						
MONDAY						
TUESDAY						
WEDNESDAY						
THURSDAY						
FRIDAY						
Total Days worked						

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL
EYESIZWE CONTRACT

ANNEXURE 14
EPWP DATA COLLECTION TOOL FOR PHASE 3 SYSTEM

BUSINESS PLAN

Reference No	
Profile ID	
Project Name	
Project Details	
Project Name	
Project Reference Number	
Project description	
Project Start Date	
Project End Date	
Estimated Budget	
Project Location	
Province	
District/Metro Municipality	
Local Municipality/Metro Region	
Latitude (in decimal format)	
Longitude (in decimal format)	
Public Body Details	
Public body sphere	
Reporting public body that is the project owner (and will report on the project)	
Implementing public body type	
Public body that will implement the project	
IDP reference number allocated to the project	
EPWP Details	
EPWP Sector	
EPWP Program	
EPWP Sub programme	
Budget Amount	
April 2014/March 2015	
April 2015/March 2016	
Total Budget Amount	
Wages	
UIF	
COIDA	
Training	
Administration	
Equipment and materials	
Other	
Describe other	
Outputs and Training	
Output	
Despription	
Target Quantity	
Number of persons to be trained	
Contact person	
Title	
Initials	
First Name	
Surname	
Email	
Tel (Office)	
Fax Number	
Cell Number	
Physical Address 1	
Physical Address 2	
Physical Address 3	
Physical Address 4	
Postal Address 1	
Postal Address 2	
Postal Address 3	
Postal Address 4	

KZN PUBLIC WORKS

Monthly Data collection for LOCAL Labour

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

EXPANDED PUBLIC WORKS PROGRAMME

Name of Contractor: _____ Project Code: **064404** Project location name (area):_____

Name of Project: DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT

Reporting month:_____ Project location (Ward No.):_____

Beneficiary Details																		Experience/Literacy				Location Details				Household Details		
No	First Name	Initial	Surname	ID number	D.O.B	Gender F/M	Disability Y/N	Start Date on the current month	End Date on the current month	Total days worked	Job description	Registered on UIF (Y/N)	Registered with COIDA (Y/N)	Are you receiving any Gov grant? (Y/N)	1st Language	Other Language 1	Other Language 2	Education Level (See Codes below)	Highest Level of Education	Address	Ward No.	Cell No.	Nationality	No. of people in Household	No. of Dependants in Household	No. of Children attending school
1																										
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										

- Education Levels – use the codes (1,2,3) on the excel spreadsheet
  - **(1)** Unknown **(3)** Grade 1-3 (Sub A – Std 1) **(5)** Grade 5-6 (Std 3-4) ABET 2 **(7)** Grade 9 (Std 7) ABET 4 **(9)** Grade 12 (Std 10)
  - **(2)** No Schoo **(4)** Grade 4 (Std 2) ABET 1 **(6)** Grade 7-8 (Std 5-6) ABET 3 **(8)** Grade 10-11 (Std 8-9) **(10)** Post Matric

Contractor sign:_____ DPW Official/Consultant sign:_____ EPWP Official sign:_____

Designation:_____ Designation:_____ Designation:_____

Date:_____ Date:_____ Date:_____

Contact no:_____ Contact no:_____ Contact no:_____

KZN PUBLIC WORKS

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

EXPANDED PUBLIC WORKS PROGRAMME

Worker payment capture form for LOCAL Labour

Name of Contractor: _____ Project Code: **064404**

Name of Project: **DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT**

Reporting month: _____

Payment Upload

No.	First Name	Initials	Surname	Identity No.	D.O.B	Job Description	Daily Wage Rate	Total Paid Days	Total Amount Paid	Total days Worked Days
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Contractor sign:_____
Designation:_____
Date:_____
Contact no:_____

DPW Official/Consultant sign:_____
Designation:_____
Date:_____
Contact no:_____

EPWP Official sign:_____
Designation:_____
Date:_____
Contact no:_____

KZN PUBLIC WORKS

Worker Training capture form for LOCAL Labour

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

EXPANDED PUBLIC WORKS PROGRAMME

Name of Contractor:

Name of Project: **DEPARTMENT OF EDUCATION, WATER & SANITATION PROGRAMME FOR SCHOOLS - HARRY GWALA DISTRICT - MHLABA JUNIOR SCHOOL EYESIZWE CONTRACT**

Project Code: **064404**

Reporting month:

Training														
No	**Name**	**Surname**	**ID No.**	**Job description**	**Course Name**	**Was training Accredited or Non - accredited by a relevant SETA**	**Start date on current month**	**End date on current month**	**Training Days Paid**	**Training Days Not Paid**	**Total Number of Training Days**	**Cost per trainee**	**Is training complete or on - going**	**Name of Training Provider**
1														
2														
3														
4														
5														
6														
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Contractor sign: _____

Designation: _____

Date: _____

Contact no: _____

DPW Official/Consultant sign: _____

Designation: _____

Date: _____

Contact no: _____

EPWP Official sign: _____

Designation: _____

Date: _____

Contact no: _____

Location	
Locality Name	
Municipality	
Subplace	
Ward	
Government Facility	
Latitude	
Longitude	
Physical Address/Location	