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
SECTION 2

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

PROJECT NAME	WIMS NO.	CONTRACT PERIOD	TYPE OF CONTRACT
BHEKAMAKHOSI PS	053448	9 CALENDAR MONTHS	OPEN TENDER

ENGINEER/PRINCIPAL AGENT
LDM Quantity Surveyors DBN (Pty) Ltd
P.O. Box 19233
Dormerton
Durban
4015
031 - 207 1340 - Tel Number
031 - 209 9441 - Fax Number
nsirbadhoo@ldm.co.za

QUANTITY SURVEYORS
LDM Quantity Surveyors DBN (Pty) Ltd
P.O. Box 19233
Dormerton
Durban
4015
031 - 207 1340 - Tel Number
031 - 209 9441 - Fax Number
lkhwela@ldm.co.za

EMPLOYER:
Head: Public Works
KZN Department of Public Works
Private Bag X 9041
PIETERMARITZBURG
3200
Tel Number: 033 - 897 1300
Fax Number: 033 - 897 1399

REGION:
Regional Manager
KZN Department of Public Works
Private Bag X 42
Ulundi
3838
Tel Number: 035-874 3235
Fax Number: 035-874 2519

Tender Number:	ZNTU04274W	Project Code:	053448
CIDB Grading:	4GB OR HIGHER	Document Date:	As Per Tender Advert
ECDP Number:	N/A	Contract Period:	9 Calendar Months

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

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

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THE CONTRACT

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THE CONTRACT

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C1 - AGREEMENT AND CONTRACT DATA

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DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

FORM OF OFFER AND ACCEPTANCE

FORM OF OFFER AND ACCEPTANCE

Tender No - ZNTU04274W

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DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

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
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DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

C1.2 - CONTRACT DATA

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

CONTRACT DATA FOR:

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

Tender no: ZNTU04274W

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 - 897 1399*** Fax: ***033 - 897 1300***

[1.2.1.2] Physical address:
191 Prince Alfred Street
PIETERMARITZBURG
3200

[1.1.1.16] **Employers Agent 1**
LDM Quantity Surveyors DBN (Pty) Ltd

Agent's service:
PRINCIPAL AGENT

Postal address:
P.O. Box 19233
Dormerton
4015

Tel: ***031 - 207 1340*** Fax: ***031 - 209 9441***

Employers Agent 2
LDM Quantity Surveyors DBN (Pty) Ltd

Agent's service:
QUANTITY SURVEYORS

Postal address:
P.O. Box 19233
Dormerton
4015

Tel: ***031 - 207 1340*** Fax: ***031 - 209 9441***

Employers Agent 3
Map Africa Consulting Engineers

Agent's service:
STRUCTURAL / CIVIL ENGINEERS

Postal address:
Suite ESS106A, Strathmore Park, 305 Musgrave Rd,
Musgrave, Durban
4001

Tel: ***031 309 5831*** Fax: ***031 309 2929***

Employers Agent 4
Ibuya Consulting Engineers

Agent's service:
ELECTRICAL ENGINEERS

Postal address:
P.O. Box 1692
Wandsbeck
3631

Tel: ***031 266 7332*** Fax: ***031 266 7340***

Tender no:	**ZNTU04274W**
	Employers Agent 5 ***Nathan Francis Architects*** ***Agent's*** service: ***ARCHITECTS*** Postal address: ***Suite 12, 40 Newport Avenue*** ***Glenashley, Durban*** ***4001*** Tel: insert ***0790379821*** Fax: ***N//A***
	Employers Agent 6 ***[Agents Name]*** ***Agent's*** service: ***[Identify Agent's Service, eg. Engineer]*** Postal address: ***[P.O. Box number]*** ***[Name of town]*** ***[Code]*** Tel: insert ***[Tel Number including Area Code]*** Fax: ***[Fax Number including Area Code]***
	Employers Agent 7 ***[Agents Name]*** ***Agent's*** service: ***[Identify Agent's Service, eg. Engineer]*** Postal address: ***[P.O. Box number]*** ***[Name of town]*** ***[Code]*** Tel: insert ***[Tel Number including Area Code]*** Fax: ***[Fax Number including Area Code]***
	Employers Agent 8 ***[Agents Name]*** ***Agent's*** service: ***[Identify Agent's Service, eg. Engineer]*** Postal address: ***[P.O. Box number]*** ***[Name of town]*** ***[Code]*** Tel: insert ***[Tel Number including Area Code]*** Fax: ***[Fax Number including Area Code]***
	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 14 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 at closing date of tenders.
	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: ***12 Dec 25*** ends on: ***02 Jan 26*** Second Year end break - commences: ***14 Dec 26*** ends on: ***01 Jan 27*** 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 14 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***	***No X***
	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, Civil and Building 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: **9 calendar months after date of formal site handover.**		
	For the **works** as a whole: The whole of the works shall be completed within:	***9*** *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	***9 calendar months after date of formal site handover***	
[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: ***NIL*** *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 excessive 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*

[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

(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

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 14 calendar days after notice from the Employer, prior to the Commencement Date.
It is a condition of this contact that, the contractor 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 Contract Sum includes a monthly allowance of 3 working days inclement weather during which rainfall exceeds 10mm per day for months as indicated in the Scope of Works. These days shall be reflected on the critical path of the Contractor's programme as specified in MANAGING PROJECT DURATION above.

(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.
9. The total of all monthly delays due to inclement weather shall be calculated in accordance with the example given below:

Description		Months					Total
		Sept	Oct	Nov	Dec	Jan	
		Hours	Hours	Hours	Hours	Hours	Hours
Programmed	Rain days	0	30	30	15	15	90
Actual	Rain days	16	22	35	15	18	106
Difference		-16	8	-5	0	-3	-16
8 hrs/day*						Estimated Extension of time - in working days	2

See point 5.2 in the Scope of Works for the specific days the tenderer must allow for in this contract.

Tender no: **ZNTU04274W** **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 alternative 'A' shall apply

2 DOCUMENTS

Contract documents marked and annexed hereto:

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

Guarantee Options:

Not applicable

2.2 DESIGN BRIEF

Not applicable	YES	YES or NO
2.3 DRAWINGS	YES	YES or NO
See list of Drawings/Annexures attached to this document.	YES	YES or NO
2.4 DESIGN PROCEDURES	YES	YES or NO

Not applicable

Contract drawings:	**Yes**	X	**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	
(ii) bank or insurance Performance Guarantee of 10 % of the Contract Price	
(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)	
(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)	

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

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

Capacity of signatory — as Witness.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

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 ZNTU04274W	Project Code 053448

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: **DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER**

"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: _____

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
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DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

PART C2 - PRICING DATA

C2.1 PRICING INSTRUCTIONS GCC FOR CONSTRUCTION WORKS (Second Edition 2010)			
Project title:	DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER		
Tender no:	ZNTU04274W	Project Code:	053448

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 (7th 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 "ASAQS Model Preambles for Trades 2017" 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 practice 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 verification 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 verified 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 verified 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 Tenderer'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 Compliance Status (TCS) requirements are also applicable to foreign Tenderers / individuals who wish to submit Tenders.
2. SARS will then furnish the Tenderer 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** Should the Bills of Quantities/Lump Sum Document be a fixed price contract, the following clause must be inserted in the Pricing Instructions: Tenderers are to take note that the contract price adjustments are not applicable to this contract. Tenderers should therefore make provision in the Contract Sum, schedule of rates, etc. for possible price increases during the contract period, as no claims in this regard shall be entertained.	

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

Item No		Quantity	Rate	Amount

SECTION NO. 1

BILL NO. 1

PRELIMINARY AND GENERAL (CPAP WORK GROUP NO. 190 UNLESS OTHERWISE STATED)

The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)

NOTES

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").

Carried Forward R

Brought Forward R

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 ommissions or additions, issued by the Employer, or delays caused by the Employer, for which variation and extension of time has been granted.

PRELIMINARY AND GENERAL

SECTION A: GENERAL CONDITIONS OF CONTRACT

1 **A1** General(clause 1)
F:_____ V:_____ T:_____ Item

2 **A2** Basis of contract (clause 2)
F:_____ V:_____ T:_____ Item

3 **A3** Engineer (clause 3)
F:_____ V:_____ T:_____ Item

4 **A4** Contrators general obligations (clause 4)
F:_____ V:_____ T:_____ Item

5 **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

6 **A6** Payment and related matters (clause 6)
F:_____ V:_____ T:_____ Item

7 **A7** Quality and related matters (clause 7)
F:_____ V:_____ T:_____ Item

Carried Forward R

	Brought Forward			R
8	**A8** Risks and related matters (clause 8) F:_____ V:_____ T:_____	Item		
9	**A9** Terminations of contract (clause 9) F:_____ V:_____ T:_____	Item		
10	**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:			
11	**B1** Scope (clause 1) F:_____ V:_____ T:_____	Item		
12	**B2** Normative references (clause 2) F:_____ V:_____ T:_____	Item		
13	**B3** Definitions (clause 3) F:_____ V:_____ T:_____	Item		
14	**B4** Requirements for construction and management (clause 4) F:_____ V:_____ T:_____	Item		
15	**B4.1** General (Clause 4.1) F:_____ V:_____ T:_____	Item		
16	**B4.2** Responsibilities for design and construction (clause 4.2) F:_____ V:_____ T:_____	Item		
17	**B4.3** Planning, programme and method statements (clause 4.3) F:_____ V:_____ T:_____	Item		
18	**B4.4** Quality assurance (clause 4.4) F:_____ V:_____ T:_____	Item		
	Carried Forward			R

	Brought Forward			R
19	**B4.5** Setting out (clause 4.5) F:_____ V:_____ T:_____	Item		
20	**B4.6** Management and disposal of water (clause 4.6) F:_____ V:_____ T:_____	Item		
21	**B4.7** Blasting (Clause 4.7) F:_____ V:_____ T:_____	Item		
22	**B4.8** Works adjacent to services and structures (clause 4.8) F:_____ V:_____ T:_____	Item		
23	**B4.9** Management of the Works and site (clause 4.9) F:_____ V:_____ T:_____	Item		
24	**B4.10** Earthworks (clause 4.10) F:_____ V:_____ T:_____	Item		
25	**B4.11** Testing (clause 4.11) F:_____ V:_____ T:_____	Item		
26	**B4.12** Materials, samples and fabrication drawings (clause 4.12) F:_____ V:_____ T:_____	Item		
27	**B4.13** Equipment (clause 4.13) F:_____ V:_____ T:_____	Item		
28	**B4.14** Site establishment (clause 4.14) F:_____ V:_____ T:_____	Item		
29	**B4.15** Survey control (clause 4.15) F:_____ V:_____ T:_____ As built survey information prepared by an engineering surveyor to be submitted upon request to the engineer.	Item		
30	**B4.16** Temporary works (clause 4.16) F:_____ V:_____ T:_____	Item		
	Carried Forward			R

	Brought Forward			R
31	**B4.17** Existing services (clause 4.17) F:_____ V:_____ T:_____ The contractor to note that the water and electricity supplies at the specific school may be restricted or possibly non-existent. Accordingly, the tenderer to ensure that temporary supplies(water tanks/ electrical generators) are available on site to meet the project demands and to achieve continuity of the works on site.The use of potable water for construction activities is prohibited.		Item	
32	**B4.18** Health and safety (clause 4.18) F:_____ V:_____ T:_____ The Contractor shall provide all PPE requirements for all employees and visitors to the site, during the execution of the works.		Item	
33	**B4.19** Environmental requirements (clause 4.19) F:_____ V:_____ T:_____		Item	
34	**B4.20** Alterations, additions, extensions and modifications to existing works (clause 4.20) F:_____ V:_____ T:_____		Item	
35	**B4.21** Inspection of adjoining structures, services, buildings and property (clause 4.21) F:_____ V:_____ T:_____		Item	
36	**B4.22** Attendance on nominated and selected subcontractors (clause 22) 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)*			
	Carried Forward			R

	Brought Forward			R
37	**C.1** Certification by recognised bodies (clause 4.4) F:_____ V:_____ T:_____ The contractor shall provide all original certification of compliance in respect of all specialist installations and compliance testing as deemed necessary or as stipulated by the engineer.Payment will be withheld in the abscence of the provision of original compliance certificates.		Item	
38	**C.2** Agrément certificates (clause 4.5) F:_____ V:_____ T:_____		Item	
39	**C.3** Other services and facilities (clause 4.8) F:_____ V:_____ T:_____		Item	
40	**C.4** Recording of weather (clause 5.2) F:_____ V:_____ T:_____ A rain gauge shall be provided on site for the duration of the contract. A diary shall be maintained with all rainfall records and signed off by the school principal and thereafter submitted to the engineer at every site meeting.		Item	
41	**C.5** Management meetings (clause 5.3) F:_____ V:_____ T:_____		Item	
42	**C.6** Daily records (clause 5.6) F:_____ V:_____ T:_____		Item	
43	**C.7** Bond and guarantees (clause 5.7) F:_____ V:_____ T:_____		Item	
44	**C.8** Permits (clause 5.9) F:_____ V:_____ T:_____		Item	
45	**C.9** Proof of compliance with the law (clause 5.10) F:_____ V:_____ T:_____		Item	
	Carried Forward			R

	Brought Forward			R
	SECTION D: SPECIFICATION DATA ASSOCIATED WITH SANS 1921-1:2004 (Table A.1)			
46	**D.1** Requirements for drawings, information and calculations for which the contractor is responsible (clause 4.1.7) F:_____ V:_____ T:_____	Item		
47	**D.2** The responsibility strategy assigned to the contractor for the works (clause 4.2.1) F:_____ V:_____ T:_____	Item		
48	**D.3** The planning, programme and method statements (clause 4.3) F:_____ V:_____ T:_____ The Contractor must provide weekly programme updates to the engineer including the identification of all the activities that are delayed and the proposed plan for corrective action.	Item		
49	**D.4** Samples of materials, workmanship and finishes (clause 4.12.1) F:_____ V:_____ T:_____	Item		
50	**D.5** Fabrication drawings that the contractor is to provide and deliver to the employer (clause 4.12.2) F:_____ V:_____ T:_____	Item		
51	**D.6** Office for the foreman (clause 4.14.3) F:_____ V:_____ T:_____	Item		
52	**D.7** Telephone (clause 4.14.3) F:_____ V:_____ T:_____	Item		
53	**D.8** Office for inspector of works (clause 4.14.3) F:_____ V:_____ T:_____	Item		
54	**D.9** Telephone in office for inspector of works (clause 4.14.3) F:_____ V:_____ T:_____	Item		
	Carried Forward			R

	Brought Forward			R
55	**D.10** Sheds (clause 4.14.3) F:_____ V:_____ T:_____	Item		
56	**D.11** Provision and erection of signboards (clause 4.14.6) F:_____ V:_____ T:_____	Item		
57	**D.12** Termination, diversion or maintenance of existing services (clause 4.17.1) F:_____ V:_____ T:_____	Item		
58	**D.13** Services which are known to exist (clause 4.17.3) F:_____ V:_____ T:_____	Item		
59	**D.14** Detection apparatus (clause 4.17.4) F:_____ V:_____ T:_____	Item		
60	**D.15** Additional health and safety requirements (clause 4.18) F:_____ V:_____ T:_____	Item		
	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.			
61	**E1 PROPRIETARY BRANDED PRODUCTS** The tenderer 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		
	Carried Forward			R

		Brought Forward			R
62	**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	
63	**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	
64	**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	
		Carried Forward			R

		Brought Forward			R
65	**E5**	**LABOUR RECORD** At the end of each week for the full duration of the contract, 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. The contractor shall provide the completed DPW local labour forms , records and schedules together with all supporting documentation (certified ID copies , employee details, wage rates, proof of payment , period of employment, employment contracts, etc). The client reserves the right to conduct random inspections on site to verify the local labour employed on the project. F:_____ V:_____ T:_____	Item		
66	**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		
67	**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		
68	**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		
		Carried Forward			R

		Brought Forward		R
69	**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, other may be employed subject to satisfactory proof being provided that every reasonable endeavour has been made to employ local Labour. The Contractor shall identify 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 and preference should be given to parents of those children that are enrolled in the school whom are not currently employed. The Contractor shall, in general, maximize the involvement of the local labour and it is required that 100% of unskilled labour should be from the local community. All standard local labour employment forms (EPWP local labour forms) together with the supporting documentation (certified ID copies, employee details, wage rates, proof of payment, period of employment, employment contracts, etc) must be submitted with the monthly payment certificates and issued to the engineer.		
		F:_____ V:_____ T:_____	Item	
		Carried Forward		R

	Brought Forward			R
70	**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	
71	**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 unless otherwise instructed. 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	
	Carried Forward			R

		Brought Forward		R
72	E12	**EXPANDED PUBLIC WORKS PROGRAMME (EPWP)** Tenderers are advised that this contract will be subject to certain provisions of 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. 55% of unskilled labour to be women. 2. 40% of unskilled labour to be youth aged between 18 and 35 years. 3. 2% of unskilled labour to be people living with disability. 4. 100% Unskilled labour utilised must reside within the boundries of the Municipality Ward where this contract is executed, with preference to the local community closest or at the 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. This is not an EPWP project. **TENDERERS TO NOTE:** Those parts of the contract to be constructed using Labour intensive methods have been marked in the bills of quantities/lump sum document with the letters LI (indicating "Labour Intensive") against every item so designated. The works, or parts of the works so designated are to be constructed using Labour intensive methods only. F:_____ V:_____ T:_____	Item	
		Carried Forward		R

	Brought Forward			R
73	**E12.1 LABOUR RATE AND PAYMENT INTERVALS** The contractor should ensure that labour rate paid to unskilled local labour is commensurate to the daily task. When determining the rate, consideration should be given to 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. 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	
74	**E12.2 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. F:_____ V:_____ T:_____		Item	
	Carried Forward			R

	Brought Forward		R
E12.3 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, to be conducted in the presence of local structures and the Contractor's representative, in order to assist the Contractor in the procurement of any local labour, etc. required for this project. The Contractor is to liaise with the CLO and afford him any assistance needed in ensuring sound working relations with the local community.			
	Carried Forward		R

Brought Forward	R
Key responsibilities of the CLO are envisaged to include and not necessarily 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 conflicts 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 workforce in the establishment of grievance procedures and necessary recommendations to the Contractor regarding the grievances and solution thereto.	
9. Attending to site meetings and project implementation meetings as required by the Contractor and preparing 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.	
Carried Forward	R

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75	Tenderers are to price twice the rate of unskilled local labour rate for the Community Liason 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		
76	**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) Provide and maintain a condom dispenser in terms of Clause 5.1a F:_____ V:_____ T:_____	Item		
77	**E13.1** Provide and maintain HIV/AIDS awareness posters terms of Clause 5.1b F:_____ V:_____ T:_____	Item		
78	**E13.2** 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		
79	**E13.3** Arrange for workers to attend the HIV Awareness Programme in terms of Clause 5.2.1b F:_____ V:_____ T:_____	Item		
	Carried Forward			R

	Brought Forward			R
80	**E13.4 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:_____	Item		
	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.			
81	**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		
82	**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		
83	**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. F:_____ V:_____ T:_____	Item		
	Carried Forward			R

		Brought Forward		R
84	E17	**CONTRACT DOCUMENTS** The drawings issued 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	
85	E18	**GENERAL PREAMBLES** The Document Preambles will be the "ASAQS Model Preambles for Trades - 2017" 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	
86	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	
		Carried Forward		R

		Brought Forward			R
87	**E20**	**EXISTING PREMISES** The contractors attention is drawn to the fact that the existing building and surrounding buildings will remain in occupation during the performance of this contract and it is essential that the interruption to the daily activities of be kept to a minimum during the construction activities, to this end, the Contractor must allow for working in co-operation with the Engineer in organising the work in such a way as to cause the minimum disruption to the normal activities of this institution F:_____ V:_____ T:_____	Item		
88	**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		
89	**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			R

		Brought Forward		R
90	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	
91	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	
92	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	
		Carried Forward		R

		Brought Forward			R
93	**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		
94	**E27**	**NATURE AND EXTENT OF WORK** The broad scope of the work comprises repairs, renovation, alterations, external works, construction of new ablutions, etc. necessitated by **Water & Sanitation Programme Only**. F:_____ V:_____ T:_____	Item		
95	**E28**	**PROTECTION OF EXISTING** Every care shall be taken to protect all parts of the building and ground against disfigurement of any kind. The contractor shall be responsible for any damage caused to vehicles, persons or property by his operations, and he will be required to supply and maintain such temporary measures as are required, to prevent such damage. F:_____ V:_____ T:_____	Item		
		Carried Forward			R

		Brought Forward			R
96	**E29**	**ACCESS** The contractor is to allow for all costs associated with sites having restricted access due to location, road conditions, etc. The contractor to note the sites have extremely restricted access and in some instances , restricted access may affect the delivery of materials etc. The contractor to accordingly ensure the most suitable and effective access routes are investigated and implemented to achieve continuity of the works. F:_____ V:_____ T:_____	Item		
97	**E30**	**SAFETY TO THE SITE** All scaffolding, protection, machinery and tools on the site shall be erected, used and/or maintained in accordance of the requirements of the Occupational Health and Safety Act (85/1993) as amended and any regulations thereto. All relevant local authority bylaws shall also be complied with. The contractor to provide suitable hoarding to demarkate the area of the construction works from the other adjacent operational areas. All open excavations and incomplete construction work to be cordined off with danger tape. F:_____ V:_____ T:_____	Item		
98	**E31**	**ASBESTOS CEMENT** All preparatory work, alterations, demolitions, etc. to existing asbestos cement roof sheeting, gutters, rainwater pipes, etc. are to be carried out strictly in accordance with statutory requirements (Occupational Health and Safety Act, 1993 - Asbestos Abatement Regulations, 2020) and all necessary precautions must be taken when working with and disposing of asbestos cement products and the disposing of waste resulting from cleaning operations, etc. Allowance is to be made for costs associated with compliance with these Regulations. F:_____ V:_____ T:_____	Item		
		Carried Forward			R

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99 **E32 EXISTING PREMISES OCCUPIED**

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 building and occupants. He shall provide proper protection and provide, erect and remove when directed, any temporary tarpaulins, temporary fences that may be necessary during the progress of the works, all to the satisfaction of the principal agent. The contractor may have to sequence noisy activities during school hours. In addition, no disruptions will be entertained during examinations.

F:_____ V:_____ T:_____ Item

Carried to Final Summary Page R

Section No. 1
Bill No. 1
Preliminaries
LDM QUANTITY SURVEYORS

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

PART C2.3 BILL OF QUANTITIES

Item No		Quantity	Rate	Amount

SECTION NO. 2

BILL NO. 1

ALTERATIONS AND DEMOLITIONS (PIT TOILETS)(CPAP WORK GROUP NO. 102 UNLESS OTHERWISE STATED)

The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)

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

Explosives

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

Taking Out and Removal of Asbestos

Taking out and removing asbestos roof, gutters, underlay, fibreglass, downpipes, ect. must be in strict accordance with health and occupational safety regulations and a specialist firm must be contracted to dispose of the material

General

Descriptions of taking out shall be deemed to include carting away from site to a dump ground to be found by the contractor

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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		
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		
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)		
Carried Forward		R

	Brought Forward			R
	The Contractor to acknowledge that sequencing of the work will be necessary to accommodate the operational aspects of the school. The Contractor to accordingly factor the above requirement in the construction programme and pricing			
	DEMOLITIONS ETC			
	Demolishing and removing			
1	Single storey building with pitched roof 7.50 x 3.00m on plan and 3m high at eaves comprising of concrete surface bed, block external and internal walls,corrugated roof covering on wooden purlins including breaking up and removing foundations, backfilling on completion and levelling site	m2	23	
2	Pit latrine base 4.50 x 3.70m on plan and 2.9m high at cover level comprising of brick external and internal walls, reinforced concrete base including breaking up and removing foundation and compaction	m2	17	
3	Pit latrine base 6.50 x 4.50m on plan and 2.9m high at cover level comprising of brick external and internal walls, reinforced concrete base including breaking up and removing foundation and compaction	m2	29	
4	Pit latrine base 7.00 x 2.50m on plan and 2.9m high at cover level comprising of brick external and internal walls, reinforced concrete base including breaking up and removing foundation and compaction	m2	18	
5	Pit latrine base 7.20 x 2.70m on plan and 2.9m high at cover level comprising of brick external and internal walls, reinforced concrete base including breaking up and removing foundation and compaction	m2	19	
	Taking out and removing doors, windows, etc from brickwork to remain			
6	Timber single door and timber frame 813 x 2032mm high overall from block wall	No	8	
	Carried Forward			R

				R
	Brought Forward			
	Taking down and removing roofs, floors, panelling ceilings, partitions, etc completely (new work elsewhere measured) including carting away			
7	Fibre cement barge boards and fixings	m	15	
	Take out & remove plumbing			
8	Existing plastic W/C pedestal and seat	No	8	
	Hacking up/off and removing granolithic, screeds, plaster, etc from concrete or brickwork and preparing surfaces for new screeds, plaster, etc			
9	30mm Screed from floors	m2	45	
	Taking out and removing glass and mirrors			
10	Glass from steel windows including cleaning out rebates and preparing for new glass (glass elsewhere measured)	m2	10	
	DE-WATERING			
	De-watering of seepage water and water from other subterranean sources in excavations			
11	Provide necessary hoses for the above, including couplings etc.	m	60	
	DESLUDGING OF EXISTING PITS AND SEPTIC TANKS			
	Desludging of existing pits and septic tanks			
12	Provide the amount of R35,000.00 (Thirty Five Thousand Rand) for the Desludging of Existing Pits and Septic Tanks Including Provision of Proof of Safe Desludging and Disposal Certificate from a Registered Sewerage Disposal Firm.		Item	35,000.00
	Carried Forward			R

	Brought Forward			R
	TEMPORARY ABLUTION			
13	Rental of temporary chemical mobile toilets including transportation and establishment on site and de-establishment on completion for a period of 9 calendar months	No	10	
	Tenderer to note that a total hire period of 9 calendar months must be priced in the above-mentioned item			
	Carried to Final Summary of Section No. 2			R

Section No. 2
Bill No. 1
Alterations and Demolitions To Pit Toilets (Provisional)
LDM QUANTITY SURVEYORS

Item No			Quantity	Rate	Amount
	SECTION NO. 2				
	BILL NO. 2				
	NEW WORK TO EXISTING BUILDINGS (PIT TOILETS)				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)				
	CARPENTRY AND JOINERY(CPAP WORK GROUP NO. 126 UNLESS OTHERWISE STATED)				
	EAVES, VERGES, ETC				
	Pressed Nutec or other approved fibre cement boards				
1	10mm x 80 x 200mm Barge boards including H-profile jointing strips.	m	15		
	DOORS, ETC				
	Wrought Meranti or other approved doors				
2	40mm Framed, ledged and braced battened door size 813 x 2032mm high of 40 x 110mm wide top rail and stiles, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces	No	8		
	IRONMONGERY(CPAP WORK GROUP NO. 132 UNLESS OTHERWISE STATED)				
	HINGES, BOLTS, ETC.				
	"Dorma" or other approved				
3	"DRR-SS-012" 102 x 75 x 3mm Stainless steel rising butt hinge	No	8		
	Carried Forward			R	

				R
	Brought Forward			
	LOCKS			
	"Union" or other approved			
4	" 2247-7855 Commercial Series" four lever mortice lock	No	8	
	HANDLES			
	"Union" or other approved			
5	"CB862-05CH" Brass Gower lever handles	No	8	
	LETTERS, NAMEPLATES, ETC.			
	Signage			
6	200 x 250mm Pressed aluminium with male, female or paraplegic symbol fixed to brickwork with 6 no. "Hilti" nail anchors.	No	2	
	METALWORK(CPAP WORK GROUP NO. 136 UNLESS OTHERWISE STATED)			
	WELDED GALVANISED STEEL SCREENS, GATES, ETC.			
	Screens and gates			
7	Single gate size 877 x 2250mm high of 40 x 60 x 3mm rectangular tubing with 12mm diameter steel rods at 110mm centre and 40 x 6mm horizontal support flat bars fixed with hinges to steel frame of 45 x 45 x 3mm rectangular tubing fixed to walls with bolts and lugs including padlock plate	No	2	
	HOT DIPPED GALVANISED MILD STEEL DOOR FRAMES			
	1,2mm Rebated frames suitable for half brick walls			
8	Frame for door 813 x 2032mm high	No	6	
	Carried Forward			R

				R
	Brought Forward			
	1,2mm Rebated frames suitable for existing one-brick walls			
9	Frame for door 813 x 2032mm high	No	2	
	PLASTERING(CPAP WORK GROUP NO. 142 UNLESS OTHERWISE STATED)			
	SCREEDS			
	Screeds steel trowelled, on concrete			
10	Average 50mm thick on floors to falls	m2	45	
	PLUMBING AND DRAINAGE PROVISIONAL(CPAP WORK GROUPS NO.146 AND 148UNLESS OTHERWISE STATED)			
	SANITARY FITTINGS			
	"Atlas Plastics (Pty) Ltd" or other approved			
11	Atlas "VIP 200" (code 222AP) pedestal with footpiece complete with seat and lid screwed in precast slab including inlet funnel (code 224AP) riveted to shaft.	No	8	
	SANITARY PLUMBING			
	Black uPVC UV stabilised pipes			
12	110mm Vent pipes	m	24	
	Extra over Black uPVC UV stabalised pipes for fittings			
13	Vent cowl formed of 110mm vent valve with top cut off and black shade cloth fixed over end of vent pipe	No	8	
	Carried Forward			R

	Brought Forward			R
	GLAZING(CPAP WORK GROUP NO. 150 UNLESS OTHERWISE STATED)			
	GLAZING TO WOOD/STEEL WITH PUTTY			
	6mm Thick obscure satety glass			
14	Panes exceeding 0,1m2 and not exceeding 0.5m2	m2	10	
	PAINTWORK(CPAP WORK GROUP NO. 152 UNLESS OTHERWISE STATED)			
	PAINTWORK ETC TO PREVIOUSLY PAINTED WORK			
	"PLASCON" OR OTHER EQUAL AND APPROVED			
	ON INTERNAL FLOATED PLASTER SURFACES			
	Prepare and brush surface to remove all loose contaminants and apply one coat alkali resistant primer, one undercoat and two coats 'PLASCON Wall & All' or other approved emulsion paint for interior use.			
15	On walls	m2	208	
	ON WOOD SURFACES			
	Prepare and brush surface to remove all loose contaminants and apply two coats "A.B.E Provonite" carbolineum or equal approved anti-corrosive coal tar paint			
16	Roof timbers at eaves and verges	m2	10	
	Carried Forward			R

	Brought Forward			R
	PAINTWORK ETC TO NEW WORK			
	"PLASCON" OR OTHER EQUAL AND APPROVED			
	ON FIBRE-CEMENT BOARD SURFACES			
	Prepare and brush surface to remove all loose contaminants and apply one coat alkali resistant primer and two coats superior quality acrylic emulsion paint for exterior use			
17	Fascias and barge boards, including priming metal jointing strips	m2	5	
	ON WOOD SURFACES			
	Prepare surfaces and remove all loose material, apply one coat water based primer, one coat alkyd based universal undercoat and two coats superior quality universal enamel paint, on timber doors			
18	Doors (LI)	m2	32	
	Carried to Final Summary of Section No. 2			R

Section No. 2
Bill No. 2
New Work to Pit Toilets (Provisional)
LDM QUANTITY SURVEYORS

SECTION SUMMARY - REPAIRS AND RENOVATIONS TO PIT ABLUTIONS (P

Bill No		Page No	Amount
1	Alterations and Demolitions To Pit Toilets (Provisional)	29	
2	New Work to Pit Toilets (Provisional)	34	

Carried to Final Summary Page R

Section No. 2
LDM QUANTITY SURVEYORS

Item No			Quantity	Rate	Amount
	SECTION NO. 3				
	BILL NO. 1				
	TYPE A - GRADE R - 2NO. WC SEATS + 1NO. TEACHERS WC - ABLUTION BLOCK (1NO.)				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)				
	EARTHWORKS (PROVISIONAL)(CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)				
	SITE CLEARANCE, ETC.				
	Site clearance				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m2	108		
2	Stripping average 150mm thick layer of top soil and stockpiling on site.	m2	108		
	EXCAVATION, FILLING, ETC. OTHER THAN BULK				
	Excavation in earth not exceeding 2m deep				
3	Reduced levels under floors. (LI)	m3	5		
4	Trenches, foundation beams, etc. (LI)	m3	2		
	Extra over back excavation in earth for working space for excavation in intermediate material				
5	Not exceeding 1,5m deep, etc. 300mm away from excavated face.	m2	25		
	Carried Forward			R	

				R
	Brought Forward			
6	Exceeding 1,5m and not exceeding 3m deep, etc. 300mm away from excavated face.	m2	16	
	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	7	
	Risk of collapse of excavations			
8	Sides of trench and hole excavations not exceeding 1,5m deep. (LI)	m2	25	
9	Sides of trench and hole excavations exceeding 1,5m deep. (LI)	m2	16	
	Keeping excavations free of water			
10	Keeping excavations free of all water other than subterranean water.		Item	
	FILLING ETC			
	Earth filling supplied by the contractor under floors, etc.			
11	150mm G5 Material in accordance with SABS 1200 DM compacted to 98% Mod. AASHTO density. (LI)	m3	4	
	Compaction of surfaces			
12	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 98% Mod. AASHTO density. (LI)	m2	29	
	Prescribed density tests on filling			
13	"Modified AASHTO Density" test.	No	2	
14	"Field Density" test including "Optimum Moisture Content" (four readings per test). (22/34)	No	2	
	Carried Forward			R

	Brought Forward			R
	SOIL POISONING			
	Soil Insecticide in accordance with SANS 5859			
15	Under floors, etc. including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming.	m2	29	
	Carried Forward			R

Brought Forward		R
CONCRETE, FORMWORK AND REINFORCEMENT (PROVISIONAL)(CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)		
SUPPLEMENTARY PREAMBLES		
Cost of tests		
The costs of making, storing and testing of concrete test cubes as required under Clause 7 "Tests" of SABS 1200 G 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. (Test cubes are measured separately)		
Formwork		
Descriptions of formwork shall be deemed to include use and waste only (except where described as "left in" or "permanent"), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use.		
The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself.		
Carried Forward		R

				R
	Brought Forward			
	Formwork to soffits of solid slabs etc. shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.			
	Formwork to sides of bases, pile caps, ground beams, etc. will only be measured where it is prescribed by the Engineer for design reasons. 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".			
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES			
	15MPa Concrete			
16	Surface blinding under surface beds, slabs, etc. (LI)	m3	1	
	REINFORCED CONCRETE			
	25MPa/19mm Concrete			
17	Foundation beams. (LI)	m3	2	
18	Surface beds, etc., including thickening. (LI)	m3	3	
19	Slabs including beams and inverted beams. (LI)	m3	4	
20	Concrete nib, etc. (LI)	m3	1	
	30MPa/19mm Concrete			
21	Pit base. (LI)	m3	4	
	CONCRETE SUNDRIES			
	Sleeves			
22	110mm Diameter pipe and socket cast in concrete formed of 130mm long black pipe uPVC welded to 100mm long uPVC pipe with single socket. (LI)	No	3	
	Carried Forward			R

	Brought Forward			R
	Finishing top surfaces of concrete smooth with a wood float			
23	Surface beds, slabs, etc. (LI)	m2	18	
	Test blocks			
24	Making and testing 150 x 150 x 150mm concrete strength test cubes.	No	8	
	FORMWORK (PROVISIONAL)(CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	ROUGH FORMWORK (DEGREE OF ACCURACY III)			
	Rough formwork to sides			
25	Foundation beams (Provisional), etc. (LI)	m2	14	
	ROUGH FORMWORK (DEGREE OF ACCURACY II)			
	Rough formwork to sides			
26	Edges, risers, ends and reveals not exceeding 300mm high or wide. (LI)	m	21	
	Rough formwork to soffits			
27	Slabs, propped up exceeding 1.5m and not exceeding 3.5m high. (LI)	m2	14	
	Rough formwork to sides and soffits			
28	Beams propped up exceeding 1.5m and not exceeding 3.5m high. (LI)	m2	5	
	Boxing out rough formwork to form			
29	110 x 255mm High horizontal projections to sides along bottom edges. (LI)	m	3	
	Carried Forward			R

				R
	Brought Forward			
	MOVEMENT JOINTS, ETC.			
	Slip joints between horizontal concrete and brick surfaces with two layers of 3 ply malthoid			
30	Not exceeding 300mm wide. (LI)	m	16	
	Expansion joints with bitumen impregnated fibreboard between vertical concrete surfaces			
31	13mm Joints not exceeding 300mm high. (LI)	m	18	
	REINFORCEMENT (PROVISIONAL) (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	High tensile steel reinforcement to structural concrete work			
32	Bars of varying diameters.	t	1.104	
	PRECAST CONCRETE (CPAP WORK GROUP 112 UNLESS OTHERWISE STATED)			
	Precast concrete cover slab 80mm thick formed of 25Mpa/19mm concrete with class 1 smooth finish on exposed surfaces splayed 25mm at edges with ref. 193 mesh reinforcement and 2no. 15mm diameter polycop pipe sleeves cast in to receive 2no. threaded 10mm diameter galvanised L-shaped lifting handles with 50 x 50 x 5mm holed plates, nuts and lock nuts, including holes to fit 110mm diameter vent pipe, etc. laid on brick walls			
33	Cover slab size 860 x 930mm.	No	4	
34	Cover slab size 870 x 930mm.	No	1	
	Carried Forward			R

	Brought Forward				R
	MASONRY(CPAP WORK GROUP NO. 116 UNLESS OTHERWISE STATED)				
	SUPPLEMENTARY PREAMBLES				
	BRICKWORK				
	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 etc				
	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.				
	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 "Brixeal" bitumen emulsion waterproofing coating.				
	Face bricks				
	Bricks shall be ordered timeously to obtain uniformity in size and colour				
	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 IN FOUNDATIONS (PROVISIONAL)				
	Brickwork of NFX (14 MPa nominal compressive strength) clay imperial bricks in cement mortar				
35	Half brick wall. (LI)	m2	15		
	Carried Forward				R

				R
	Brought Forward			
36	One brick wall. (LI)	m2	53	
	OPENINGS THROUGH WALLS ETC			
	Breaking out for and forming plain openings through brick walls, including prestressed concrete lintels to suit opening, etc			
37	Opening 340 x 330mm high through half brick wall. (LI)	No	2	
38	Opening 340 x 330mm high through one brick wall. (LI)	No	2	
	Brickwork reinforcement			
39	75mm Wide reinforcement built in horizontally. (LI)	m	40	
40	150mm Wide reinforcement built in horizontally. (LI)	m	155	
	BRICKWORK IN SUPERSTRUCTURE			
	Brickwork of NFP Bricks in Class II mortar			
41	Half brick wall. (LI)	m2	4	
42	Half brick wall in beamfilling. (LI)	m2	1	
43	One brick wall. (LI)	m2	59	
	BRICKWORK SUNDRIES			
	Bagging of 1:3 cement and sand mixture			
44	On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and / or brick reinforcing fabric. (LI)	m2	59	
	Brickwork reinforcement			
45	75mm Wide reinforcement built in horizontally. (LI)	m	13	
46	150mm Wide reinforcement built in horizontally. (LI)	m	158	
	Carried Forward			R

				R
	Brought Forward			
	Prestressed fabricated lintels			
47	90 x 115mm Lintels in lengths not exceeding 3m. (LI)	m	22	
	Turning pieces			
48	230mm Wide turning piece to lintels, etc. (LI)	m	11	
	Galvanised wire ties etc			
49	30 x 1.6mm Roof tie 1.6m long with one end built into brickwork and other end fixed to timber. (LI)	No	16	
	Air bricks etc			
50	229 x 152mm Terra-cotta vermin proof air brick. (LI)	No	10	
	FACE BRICKWORK			
	"Corobrik Travertine FBA" or other approved face bricks in stretcher bond with ruled joints and perpends internally and externally			
51	Extra over brickwork for face brickwork. (LI)	m2	51	
52	Extra over brickwork for brick-on-edge header course lintel. (LI)	m	5	
	Brick-on-edge header course copings, sills, etc. of "Corobrik Travertine FBA" or other approved face bricks pointed with recessed joints on all exposed faces			
53	220mm Wide sill set sloping and slightly projecting. (LI)	m	4	
	"NUTEC" OR OTHER APPROVED FIBRE-CEMENT WINDOW SILLS			
	Natural grey sills in single lengths bedded in class I mortar including metal fixing lugs etc			
54	150 x 15mm Thick sills set flat and slightly projecting. (LI)	m	4	
	Carried Forward			R

	Brought Forward				R
	WATERPROOFING(CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)				
	DAMP-PROOFING OF WALLS AND FLOORS				
	One layer of 375 micron Consol Plastics Brikgrip DPC or other approved embossed damp proof course				
55	In walls under sills, over lintels, etc. (LI)	m2	10		
	One layer 375 'Hyperstatic Orange' DPM with 3mm masonite protection				
56	Vertically between walls. (LI)	m2	53		
	One layer of 250 micron "Consol Plastic Gunplas USB Green" or other approved waterproof sheeting Type C, sealed at laps with "Gunplas Pressure Sensitive Tape"				
57	Under surface beds, slabs, etc. (LI)	m2	18		
	Two coats "ABE Brixeal" or other approved bitumen emulsion waterproof coating				
58	On brick walls. (LI)	m2	59		
	WATERPROOFING TO ROOFS, BASEMENTS, ETC.				
	Five coats "Acrylastic" or other approved fibre reinforced heavy duty maintenance free acrylic waterproofing				
59	Collar around pipe not exceeding 100mm internal diameter. (LI)	No	3		
	JOINT SEALANTS, ETC.				
	Carried Forward				R

	Brought Forward			R
	Two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc.			
60	13 x 13mm In expansion joints in vertical concrete / brick surfaces including raking out expansion joint filler as necessary. (LI)	m	34	
	Carried Forward			R

	Brought Forward				R
	ROOF COVERINGS, ETC.(CPAP WORK GROUP NO. 125 UNLESS OTHERWISE STATED)				
	SUPPLEMENTARY PREAMBLES				
	Profiled metal sheeting and accessories				
	Roof sheeting systems are to be manufactured in strict accordance with the supplier's specifications.				
	Fixing of all roof sheeting is to be in accordance with the manufacturer's approved instruction book.				
	The manufacturer shall comply with ISO9002 Quality Management System.				
	PROFILED METAL SHEETING AND ACCESSORIES				
	0.58mm Colorbond IBR profile sheeting, colour one side fixed to timber purlins (elsewhere measured) and fixed strictly in accordance with the manufacturer's instructions				
61	Roof covering with pitch not exceeding 25 degrees.	m2	26		
62	Standard galvanised ridge capping (550mm girth) screwed through sheeting to purlins	m	5		
63	Sondor IBR pattern polyclosures to underside of ridge capping	m	10		
	Carried Forward				R

	Brought Forward				R
	ROOF AND WALL INSULATION				
	"Sisalation FR430" Heavy Industrial Grade Aluminum Foil based insulation				
64	Insulation laid taut over purlins and fixed concurrent with roof covering including galvanised steel straining wires.	m2	26		
	CARPENTRY AND JOINERY(CPAP WORK GROUP NO. 126 UNLESS OTHERWISE STATED)				
	PREFABRICATED TIMBER ROOF TRUSSES, ETC				
	NOTE:				
	Timber roof trusses are to comply with SABS Code of Practice 0243. (The design, manufacture and erection of timber trusses, including nail-plated and bolted trusses with lapped members).				
	The following is applicable in respect of roof trusses:				
	Trusses are at maximum 1200mm centres. Roof covering is IBR profiled metal sheeting colour one side on 50 x 76mm purlins. Ceilings are nailed gypsum plasterboard on brandering.				
	The dimensions in the descriptions of the trusses are nominal and actual measurements are to be obtained from site before design or fabrication commences.				
	Design and supply plate nailed timber roof trusses				
65	Design, supply and install roof truss system complete in accordance with the Standard Building Regulations, including cross battens at hips, valleys, etc. fixed to trusses with and including ring shank nails, hurricane clips at exposed sections and at ridges, temporary and permanent bracing, etc. to suit roof area approximate size **26m2 (on flat floor area inclusive of overhangs)**	No	1		
	Carried Forward				R

				R
	Brought Forward			
66	Allowance for the issue of TR1 and TR2 certificates after completion of entire roof installation, signed by a competent person		Item	
	Wrought softwood			
67	38 x 114mm Wall plates.	m	10	
68	76 x 50mm Purlins.	m	40	
69	76 x 76mm Splayed gutter purlins.	m	10	
	EAVES, VERGES, ETC.			
	Pressed Nutec or other approved fibre cement boards			
70	12 x 225mm Fascia boards including aluminium H-profile fascia joiners fixed with galvanised screws and washers	m	10	
71	10 x 80 x 200mm Barge boards including H-profile jointing strips.	m	10	
	DOORS, ETC.			
	Wrought Meranti or similar approved doors			
72	40mm Framed ledged, braced and battened purpose made door size 762 x 1200mm high, hung 100mm from the finished floor level (Refer to Door Schedule D1 on drawing - GR-2S-1T-TB)	No	2	
73	40mm Framed ledged, braced and battened door size 813 x 2032mm high of 40 x 110mm wide top rail and stiles, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces, hung to steel frame (elsewhere measured) (Refer to Door Schedule D2 on drawing - GR-2S-1T-TB)	No	2	
	Carried Forward			R

	Brought Forward			R
	POSTS			
	Wrought meranti			
74	44 x 70mm Rebated and hollow rounded at back post bolted	m	4	
	IRONMONGERY(CPAP WORK GROUP NO. 132 UNLESS OTHERWISE STATED)			
	HINGES, BOLTS, ETC.			
	"Union" or other approved			
75	"37651" Helping hand indicator bolts	No	2	
	"Dorma" or other approved			
76	"DRR-SS-012" 102 x 75 x 3mm Stainless steel rising butt hinge	No	8	
	LOCKS			
	"Union" or other approved			
77	" 2247-7855 Commercial Series" Four lever mortice lock	No	2	
	HANDLES			
	"Union" or other approved			
78	"CB862-05CH" Brass Gower lever handles	No	2	
	SUNDRIES			
	"Union" or other approved			
79	"CZ8731CH" Door stop fixed with counter-sunk bolt into anchor bolt	No	2	
	Carried Forward			R

	Brought Forward			R
	LETTERS, NAMEPLATES, ETC.			
	Signage			
80	200 x 250mm Pressed aluminium with male, female or paraplegic symbol fixed to brickwork with 6 no. "Hilti" nail anchors.	No	3	
	BATHROOM FITTINGS			
	Toilet roll holders			
81	40 x 3mm Thick steel plate with 2 x 8mm holes and rawl bolts and 2 x 30mm holes to support roller bent to suit 27 diameter x 2mm thick steel pipe with hole for padlock and a 40 x 3mm thick steel plate welded on other end.(See architect drawing No.TRH)	No	3	
	METALWORK(CPAP WORK GROUP NO. 136 UNLESS OTHERWISE STATED)			
	WELDED GALVANISED STEEL SCREENS, GATES, ETC.			
	Screens and gates			
82	Single gate size 877 x 2250mm high of 40 x 60 x 3mm rectangular tubing with 12mm diameter steel rods at 110mm centre and 40 x 6mm horizontal support flat bars fixed with hinges to steel frame of 45 x 45 x 3mm rectangular tubing fixed to walls with bolts and lugs including padlock plate (Refer to Door Detail on drawing - GR-2S-1T-TB)	No	1	
	HOT DIPPED GALVANISED MILD STEEL DOOR FRAMES			
	1,2mm Rebated frames suitable for one brick walls			
83	Frame for door 813 x 2032mm high.	No	2	
	Carried Forward			R

				R
	Brought Forward			
	GALVANISED STEEL WINDOWS, DOORS, ETC			
	SS industrial type windows			
84	Window type W1, 1100 x 550mm high. (Refer to window schedule on drawing - GR-2S-1T-TB)	No	2	
85	Window type W2, 360 x 518mm high. (Refer to window schedule on drawing GR-2S-1T-TB)	No	2	
	PLASTERING(CPAP WORK GROUP NO. 142 UNLESS OTHERWISE STATED)			
	SCREEDS			
	Screeds steel trowelled, on concrete			
86	Average 50mm thick on floors to falls. (LI)	m2	18	
	INTERNAL PLASTER			
	Cement plaster steel trowelled, on brickwork			
87	On walls. (LI)	m2	78	
88	On narrow widths. (LI)	m2	3	
89	On pit walls. (LI)	m2	51	
	PLUMBING AND DRAINAGE (PROVISIONAL)(CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)			
	PLUMBING			
	NOTE: Prices for sanitary fittings fixed to walls or abutting walls, etc. shall include for sealing against walls with silicone sealing compound. This shall apply to wash hand basins, sinks and drainers, urinals, WC cisterns, wash troughs, shower trays and the like.			
	Carried Forward			R

				R
	Brought Forward			
	RAINWATER DISPOSAL			
	uPVC gutters and rainwater pipes			
90	110mm Half-round gutters including fixings	m	6	
91	75mm Diameter uPVC downpipes	m	6	
92	Extra over eaves gutter for stopped ends.	No	4	
93	Extra over eaves gutter outlet for 75mm diameter rainwater downpipes	No	2	
94	Extra over rainwater downpipes for shoes	No	1	
95	Extra over rainwater downpipes for bends	No	2	
	SANITARY FITTINGS			
	"Atlas Plastics (Pty) Ltd" or other approved			
96	Atlas "VIP 200" (code 222AP) pedestal with footpiece complete with seat and lid screwed in precast slab including inlet funnel (code 224AP) riveted to shaft.	No	1	
97	Atlas "Bambi Long Drop" (code 613AP) with footpiece complete with seat and lid screwed in precast slab including inlet funnel (code 224AP) riveted to shaft.	No	2	
98	Atlas Plastics "30 Litre Wash Trough" (code 366AP) colour Granite (code101133), overall size 528 x 412mm wide with 40mm waste outlet, plugged and screwed to the wall with galvanised screws and fixing brackets.	No	1	
	Carried Forward			R

				R
	Brought Forward			
	SANITARY PLUMBING			
	Black uPVC UV stabilised pipes			
99	110mm Vent pipes.	m	12	
	Extra over Black uPVC UV stabilised pipes for fittings			
100	Vent cowl formed of 110mm vent valve with top cut off and black shade cloth fixed over end of vent pipe.	No	3	
	GLAZING(CPAP WORK GROUP NO. 150 UNLESS OTHERWISE STATED)			
	GLAZING TO WOOD/STEEL WITH PUTTY			
	6mm Thick obscure safety glass			
101	Panes exceeding 0,1m2 and not exceeding 0.5m2.	m2	2	
	MIRRORS, ETC.			
	6mm Silvered float glass copper backed mirrors with polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in brickwork or concrete			
102	Mirror 300 x 400mm high.	No	2	
	Carried Forward			R

				R
	Brought Forward			
	PAINTWORK(CPAP WORK GROUP NO. 152 UNLESS OTHERWISE STATED)			
	PAINTWORK, ETC. TO NEW WORK			
	"PLASCON" OR OTHER EQUAL AND APPROVED			
	ON INTERNAL FLOATED PLASTER SURFACES			
	Prepare and brush surface to remove all loose contaminants and apply one coat alkali resistant primer, one undercoat and two coats 'PLASCON Wall & All' or other approved emulsion paint for interior use.			
103	Walls. (LI)	m2	81	
	ON FIBRE-CEMENT BOARD SURFACES			
	Prepare and brush surface to remove all loose contaminants and apply one coat alkali resistant primer and two coats superior quality acrylic emulsion paint for exterior use			
104	Fascias and barge boards, including priming metal jointing strips. (LI)	m2	9	
	ON WOOD SURFACES			
	Prepare surfaces and remove all loose material, apply one coat water based primer, one coat alkyd based universal undercoat and two coats superior quality universal enamel paint, on timber doors			
105	On doors. (LI)	m2	13	
	Prepare surfaces and remove all loose material, apply two coats 'ABE Provonite' carbolineum or equal approved anti-corrosive coal tar paint			
106	Roof timbers at eaves and verges. (LI)	m2	6	
	Carried Forward			R

	Brought Forward			R
	CONCRETE V-DRAIN CHANNELS (ALL TRADES) (PROVISIONAL)			
	CONCRETE V- DRAINS			
	EARTHWORKS(CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	EXCAVATION OTHER THAN BULK			
	Excavation in earth not exceeding 2m deep			
107	Reduced levels under floors. (LI)	m3	9	
	CARTING AWAY			
	Extra over all excavations for loading, carting and dumping surplus excavated material			
108	Off site to be located by the contractor.	m3	9	
	EARTH FILLING, ETC			
	Earth filling supplied by the contractor under floors, etc.			
109	150mm G5 Material in accordance with SABS 1200 DM compacted to 98% Mod. AASHTO density. (LI)	m3	5	
	COMPACTION			
	Compaction of surfaces			
110	Compaction of ground surfaces under floors etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 95% Mod. AASHTO density. (LI)	m2	32	
	Carried Forward			R

	Brought Forward			R
	TESTS			
	Prescribed density tests on filling			
111	Modified AASHTO Density test	No	3	
	SOIL POISONING			
	Soil insecticide in accordance with SANS 5859			
112	Under floors, etc. including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming	m2	32	
	CONCRETE, FORMWORK AND REINFORCEMENT (CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	REINFORCED CONCRETE CAST ON/IN FORMWORK			
	20Mpa/19mm Concrete			
113	Surface beds, slabs, etc., to falls and currents. (LI)	m3	4	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete with a wood float finish			
114	Concrete channel to falls. (LI)	m2	32	
	Test blocks			
115	Making and testing 150 x 150 x 150mm concrete strength test cubes.	No	1	
	Carried Forward			R

	Brought Forward			R
	ROUGH FORMWORK (DEGREE OF ACCURACY II) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
116	Apron slabs, paving and ramps not exceeding 300mm high. (LI)	m	32	
	Expansion joints with 10mm softboard between vertical concrete and brick surfaces			
117	10mm Joints not exceeding 300mm high. (LI)	m	32	
	REINFORCEMENT (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	Fabric reinforcement			
118	Type 193 fabric reinforcement in concrete surface beds, slabs, etc.	m2	32	
	WATERPROOFING (CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)			
	JOINT SEALANTS, ETC			
	"ABE Flexothane" or other approved two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc			
119	In 10mm joints not exceeding 300mm high. (LI)	m	32	
	Carried Forward			R

	Brought Forward			R
	WATER TANK SUPPORTS (ALL TRADES) (PROVISIONAL)			
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	EXCAVATION OTHER THAN BULK			
	Excavation in earth not exceeding 2m deep			
120	Bases. (LI)	m3	6	
	Extra over trench and hole excavation in earth for excavation in			
121	Hard rock.	m3	1	
	CARTING AWAY			
	Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk)			
122	Off site to be located by the contractor.	m3	4	
	EARTH FILLING, ETC			
	Note: All filling whether obtained from the excavations, from stockpiles or by the contractor from an outside source must be selected and approved by the Structural / Civil Engineers			
	Filling with material from the excavations compacted to a density of at least 93% Mod. AASHTO density			
123	Backfilling to trenches, holes, etc. (LI)	m3	2	
	KEEPING EXCAVATIONS FREE OF WATER			
	Keeping excavations free of water			
124	Allow for keeping excavations free of water or mud by hand or machinery		Item	
	Carried Forward			R

	Brought Forward			R
	COMPACTION			
	Compaction of surfaces			
125	Compaction of ground surfaces 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. (LI)	m2	7	
	TESTS			
	Prescribed density tests on filling			
126	Modified AASHTO Density test.	No	1	
	SOIL POISONING			
	Soil insecticide in accordance with SANS 5859			
127	Under floors, etc. including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming.	m2	13	
	CONCRETE, FORMWORK AND REINFORCEMENT (CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES			
	10MPa Concrete			
128	Surface blinding under footings, bases, etc. (LI)	m3	1	
	REINFORCED CONCRETE			
	25MPa/19mm Concrete			
129	Surface beds. (LI)	m3	1	
130	Bases. (LI)	m3	2	
	Carried Forward			R

	Brought Forward			R
	TEST BLOCKS			
	Test blocks			
131	Prepare a set of six concrete cubes each cube size 150 x 150 x 150mm for strength cubes and deliver to an approved laboratory for testing and pay all charges in connection therewith.	Sets	1.00	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete with a wood float			
132	Surface beds, slabs, etc. (LI)	m2	6	
	ROUGH FORMWORK (DEGREE OF ACCURACY III) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
133	Edges, risers, ends and reveals not exceeding 300mm high or wide. (LI)	m	10	
	Boxing in smooth formwork to form			
134	50mm Horizontal chamfer at corner. (LI)	m	10	
	REINFORCEMENT (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	Mild steel reinforcement to structural concrete work			
135	10mm Diameter bars.	t	0.400	
	Carried Forward			R

				R
	Brought Forward			
	MASONRY(CPAP WORK GROUP NO. 116 UNLESS OTHERWISE STATED)			
	BRICKWORK IN FOUNDATIONS			
	Brickwork of NFX (14 MPa nominal compressive strength) clay imperial bricks in cement mortar			
136	One brick wall. (LI)	m2	8	
	BRICKWORK IN SUPERSTRUCTURE			
	Brickwork of NFP Bricks in Class II mortar			
137	One brick wall. (LI)	m2	16	
	BRICKWORK SUNDRIES			
	Bagging of 1:3 cement and sand mixture			
138	On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and / or brick reinforcing fabric. (LI)	m2	4	
	Brickwork reinforcement			
139	150mm Wide reinforcement built in horizontally.	m	46	
	FACE BRICKWORK			
	"Corobrik Travertine FBA" or other approved face bricks in stretcher bond with ruled joints and perpends internally and externally			
140	Extra over brickwork for face brickwork. (LI)	m2	4	
	Carried Forward			R

	Brought Forward			R
	PLUMBING AND DRAINAGE (CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)			
	WATER SUPPLIES AND FIRE SERVICES			
	TAPS, VALVES, ETC			
	"Cobra Watertech" or other approved			
141	15mm Rough brass hose bib tap as 'Cobra Watertech' Ref. No. 108-15 or other equal and approved including hose union, wall plate elbow, etc. with couplings for copper.	No	1	
	TANKS, ETC			
	Polyethylene drinking water tanks			
142	5000 Litre low profile circular tank size 2250mm diameter x 1800mm high, with access lid and inlet hole,embedded in pedestal to a minimum of 400mm above ground level and tied down with 2 No. off 4mm galvanised double strap stay wires tied to galvanised mild steel M12 eye bolt of which is to be drilled and fixed to the 4 corners of concrete supporting base.	No	1	
	Carried to Final Summary of Section No. 3			R

Item No			Quantity	Rate	Amount
	SECTION NO. 3				
	BILL NO. 2				
	TYPE B - WB - TEACHER/LEARNERS - 1NO. WC SEATS MALE +1NO. URINAL + 2NO. WC SEATS FEMALE + 1NO.PARAPLEGIC WC - ABLUTION BLOCK (1NO.)				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)				
	EARTHWORKS (PROVISIONAL)(CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)				
	SITE CLEARANCE, ETC.				
	Site clearance				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m2	110		
2	Stripping average 150mm thick layer of top soil and stockpiling on site.	m2	110		
	EXCAVATION, FILLING, ETC. OTHER THAN BULK				
	Excavation in earth not exceeding 2m deep				
3	Reduced levels under floors. (LI)	m3	13		
4	Trenches. (LI)	m3	2		
	Extra over trench and hole excavations in earth for excavation in				
5	Intermediate material.	m3	5		
	Carried Forward			R	

				R
	Brought Forward			
6	Hard rock.	m3	5	
	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	15	
	Risk of collapse of excavations			
8	Sides of trench and hole excavations not exceeding 1,5m deep. (LI)	m2	23	
	Keeping excavations free of water			
9	Keeping excavations free of all water other than subterranean water.		Item	
	FILLING ETC			
	Earth filling supplied by the contractor under floors, etc.			
10	150mm G5 Material in accordance with SABS 1200 DM compacted to 98% Mod. AASHTO density. (LI)	m3	6	
	Compaction of surfaces			
11	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 98% Mod. AASHTO density. (LI)	m2	37	
	Prescribed density tests on filling			
12	"Modified AASHTO Density" test.	No	2	
13	"Field Density" test including "Optimum Moisture Content" (four readings per test)	No	2	
	Carried Forward			R

	Brought Forward			R
	SOIL POISONING			
	Soil Insecticide in accordance with SANS 5859			
14	Under floors, etc. including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming.	m2	37	
	CONCRETE, FORMWORK AND REINFORCEMENT (PROVISIONAL)(CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	SUPPLEMENTARY PREAMBLES			
	Cost of tests			
	The costs of making, storing and testing of concrete test cubes as required under Clause 7 "Tests" of SABS 1200 G 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. (Test cubes are measured separately)			
	Formwork			
	Descriptions of formwork shall be deemed to include use and waste only (except where described as "left in" or "permanent"), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use.			
	The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself.			
	Carried Forward			R

				R
	Brought Forward			
	Formwork to soffits of solid slabs etc. shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.			
	Formwork to sides of bases, pile caps, ground beams, etc. will only be measured where it is prescribed by the Engineer for design reasons. 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".			
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES			
	15MPa Concrete			
15	Surface blinding under surface beds, slabs, etc. (LI)	m3	1	
	REINFORCED CONCRETE			
	25MPa/19mm Concrete			
16	Foundation beams. (LI)	m3	2	
17	Surface beds on waterproofing, including thickening. (LI)	m3	8	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete smooth with a wood float			
18	Surface beds, slabs, etc. (LI)	m2	37	
	Test blocks			
19	Making and testing 150 x 150 x 150mm concrete strength test cubes.	No	4	
	Carried Forward			R

	Brought Forward			R
	FORMWORK (PROVISIONAL) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	ROUGH FORMWORK (DEGREE OF ACCURACY II)			
	Rough formwork to sides			
20	Edges, risers, ends and reveals not exceeding 300mm high or wide. (LI)	m	25	
	MOVEMENT JOINTS, ETC.			
	Expansion joints with bitumen impregnated fibreboard between vertical concrete surfaces			
21	13mm Joints not exceeding 300mm high. (LI)	m	25	
	REINFORCEMENT (PROVISIONAL) (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	High tensile steel reinforcement to structural concrete work			
22	Bars of varying diameters.	t	1.700	
	MASONRY(CPAP WORK GROUP NO. 116 UNLESS OTHERWISE STATED)			
	SUPPLEMENTARY PREAMBLES			
	BRICKWORK			
	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			
	Carried Forward			R

				R
	Brought Forward			
	Hollow walls etc			
	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.			
	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 "Brixeal" bitumen emulsion waterproofing coating.			
	Face bricks			
	Bricks shall be ordered timeously to obtain uniformity in size and colour			
	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 IN SUPERSTRUCTURE			
	Brickwork of NFP Bricks in Class II mortar			
23	Half brick wall. (LI)	m2	14	
24	Half brick wall in beamfilling. (LI)	m2	2	
25	One brick wall. (LI)	m2	132	
	BRICKWORK SUNDRIES			
	Bagging of 1:3 cement and sand mixture			
26	On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and / or brick reinforcing fabric. (LI)	m2	86	
	Carried Forward			R

				R
	Brought Forward			
	Brickwork reinforcement			
27	75mm Wide reinforcement built in horizontally. (LI)	m	37	
28	150mm Wide reinforcement built in horizontally. (LI)	m	326	
	Prestressed fabricated concrete lintels including necessary temporary supports			
29	110 x 75mm Lintels in lengths not exceeding 3m. (LI)	m	26	
	Turning pieces to lintels, etc			
30	230mm Wide turning pieces. (LI)	m	13	
	Galvanised hoop iron cramps, ties, etc			
31	30 x 1.6mm Roof tie 1,6m long with one end built into brickwork and other end fixed to timber. (LI)	No	16	
	Air bricks etc			
32	229 x 152mm Terra-cotta vermin proof air brick. (LI)	No	8	
	FACE BRICKWORK			
	"Corobrik Travertine FBA" or other approved face bricks in stretcher bond with ruled joints and perpends internally and externally			
33	Extra over brickwork for face brickwork. (LI)	m2	86	
34	Extra over brickwork for brick-on-edge header course lintel. (LI)	m	11	
35	Fair cutting and fitting around pipe not exceeding 100mm diameter. (LI)	No	4	
36	Fair cutting and fitting around pipe exceeding 100mm and not exceeding 200mm diameter. (LI)	No	4	
	Carried Forward			R

	Brought Forward			R
	Brick-on-edge header course copings, sills, etc. of "Corobrik Travertine FBA" or other approved face bricks pointed with recessed joints on all exposed faces			
37	220mm Wide sill set sloping and slightly projecting. (LI)	m	8	
	"NUTEC" OR OTHER APPROVED FIBRE-CEMENT WINDOW SILLS			
	Natural grey sills in single lengths bedded in class I mortar including metal fixing lugs etc			
38	150 x 15mm Thick sills set flat and slightly projecting. (LI)	m	8	
	WATERPROOFING(CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)			
	DAMP-PROOFING OF WALLS AND FLOORS			
	One layer of 375 micron Consol Plastics Brikgrip DPC or other approved embossed damp proof course			
39	In walls under sills, over lintels, etc. (LI)	m2	10	
	One layer of 250 micron "Consol Plastic Gunplas USB Green" or other approved waterproof sheeting Type C, sealed at laps with "Gunplas Pressure Sensitive Tape"			
40	Under surface beds, slabs, etc. (LI)	m2	37	
	Two coats "ABE Brixeal" or other approved bitumen emulsion waterproof coating			
41	On brick walls. (LI)	m2	86	
	Carried Forward			R

	Brought Forward				R
	JOINT SEALANTS, ETC.				
	Two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc.				
42	13 x 13mm In expansion joints in vertical concrete / brick surfaces including raking out expansion joint filler as necessary. (LI)	m	24		
	ROOF COVERINGS, ETC.(CPAP WORK GROUP NO. 125 UNLESS OTHERWISE STATED)				
	SUPPLEMENTARY PREAMBLES				
	Profiled metal sheeting and accessories				
	Roof sheeting systems are to be manufactured in strict accordance with the supplier's specifications.				
	Fixing of all roof sheeting is to be in accordance with the manufacturer's approved instruction book.				
	The manufacturer shall comply comply with ISO9002 Quality Management System.				
	PROFILED METAL SHEETING AND ACCESSORIES				
	0.58mm Colorbond IBR profile sheeting, colour one side fixed to timber purlins (elsewhere measured) and fixed strictly in accordance with the manufacturer's instructions				
43	Roof covering with pitch not exceeding 25 degrees.	m2	45		
44	Standard galvanised ridge capping (550mm girth) screwed through sheeting to purlins	m	7		
45	Cover flashings 100mm girth.	m	14		
46	Sondor IBR pattern polyclosures to underside of ridge capping	m	14		
	Carried Forward				R

	Brought Forward			R
	ROOF AND WALL INSULATION			
	"Sisalation FR430" Heavy Industrial Grade Aluminum Foil based insulation			
47	Insulation laid taut over purlins and fixed concurrent with roof covering including galvanised steel straining wires.	m2	45	
	CARPENTRY AND JOINERY(CPAP WORK GROUP NO. 126 UNLESS OTHERWISE STATED)			
	PREFABRICATED TIMBER ROOF TRUSSES, ETC			
	NOTE:			
	Timber roof trusses are to comply with SABS Code of Practice 0243. (The design, manufacture and erection of timber trusses, including nail-plated and bolted trusses with lapped members).			
	The following is applicable in respect of roof trusses:			
	Trusses are at maximum 1200mm centres. Roof covering is IBR profiled metal sheeting colour one side on 50 x 76mm purlins. Ceilings are nailed gypsum plasterboard on brandering.			
	The dimensions in the descriptions of the trusses are nominal and actual measurements are to be obtained from site before design or fabrication commences.			
	Design and supply plate nailed timber roof trusses			
48	Design, supply and install roof truss system complete in accordance with the Standard Building Regulations, including cross battens at hips, valleys, etc. fixed to trusses with and including ring shank nails, hurricane clips at exposed sections and at ridges, temporary and permanent bracing, etc. to suit roof area approximate size **45m2 (on flat floor area inclusive of overhangs)**	No	1	
	Carried Forward			R

	Brought Forward			R
49	Allowance for the issue of TR1 and TR2 certificates after completion of entire roof installation, signed by a competent person		Item	
	Wrought softwood			
50	38 x 114mm Wall plates.	m	14	
51	76 x 50mm Purlins.	m	66	
52	76 x 76mm Splayed gutter purlins.	m	14	
	EAVES, VERGES, ETC.			
	Pressed Nutec or other approved fibre cement boards			
53	12mm x 225mm Fascia boards including aluminium H-profile fascia joiners fixed with galvanised screws and washers	m	14	
54	10 x 80 x 200mm Barge boards including H-profile jointing strips	m	12	
	DOORS, ETC.			
	Wrought Meranti or similar approved doors			
55	40mm Framed ledged, braced and battened door size 762 x 1932mm high of 40 x 110mm wide top rail and stiles, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces, hung to steel frame (elsewhere measured) (Refer to Door Schedule D1 on drawing - 2B-2G-1P-TB-WB)	No	3	
56	40mm Framed ledged, braced and battened door size 813 x 2032mm high of 40 x 110mm wide top rail and stiles, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces, hung to steel frame (elsewhere measured) (Refer to Door Schedule D2 on drawing - 2B-2G-1P-TB-WB)	No	2	
	Carried Forward			R

	Brought Forward			R
57	40mm Framed ledged, braced and battened door size 813 x 2032mm high of 40 x 110mm wide top rail and stiles, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces, hung to steel frame (elsewhere measured) (Refer to Door Schedule D2P on drawing - 2B-2G-1P-TB-WB)	No	1	
	IRONMONGERY(CPAP WORK GROUP NO. 132 UNLESS OTHERWISE STATED)			
	HINGES, BOLTS, ETC.			
58	Solid Art 294 WC or other approved anodised aluminium mortice indicator bolt.	No	3	
	"Union" or other approved			
59	"37651" Helping hand indicator bolts	No	1	
	"Dorma" or other approved			
60	"DRR-SS-012" 102 x 75 x 3mm Stainless steel rising butt hinge	No	12	
61	"Dorma" DBC - SS - 017 Stainless steel adjustable roller bolt	No	1	
	LOCKS			
	"Union" or other approved			
62	" 2247-7855 Commercial Series" Four lever mortice lock	No	2	
	HANDLES			
	"Union" or other approved			
63	"CB862-05CH" Brass Gower lever handles	No	3	
	"Dorma" or other approved			
64	"Dorma" DPH301B 300 x 25mm Stainless steel pull handle with flange fixing.	No	2	
	Carried Forward			R

				R
	Brought Forward			
	SUNDRIES			
	"Union" or other approved			
65	"CZ8731CH" Door stop fixed with counter-sunk bolt into anchor bolt	No	2	
66	38mm Diameter rubber door stop, plugged and screwed to wall with 50mm long brass screw	No	3	
	"Dorma" or other approved			
67	"Dorma" DDS - SS - 017 Stainless steel floor stop.	No	1	
	LETTERS, NAMEPLATES, ETC.			
	Signage			
68	200 x 250mm Pressed aluminium with male, female or paraplegic symbol fixed to brickwork with 6 no. "Hilti" nail anchors.	No	3	
	BATHROOM FITTINGS			
	Toilet roll holders			
69	40 x 3mm Thick steel plate with 2 x 8mm holes and rawl bolts and 2 x 30mm holes to support roller bent to suit 27 diameter x 2mm thick steel pipe with hole for padlock and a 40 x 3mm thick steel plate welded on other end.(See architect drawing No.TRH)	No	3	
	"Kimberly Clark Professional" or other approved			
70	Kimberly Clark Professional SQ2 tiolet tissue dispenser	No	1	
	"Dorma" or other approved			
71	"Dorma" Cistern back rail DGR - SS - 150, plugged	No	1	
72	"Dorma" Side grab rail DGR - SS - 152, plugged	No	1	
	Carried Forward			R

				R
	Brought Forward			
73	"Dorma" Flush-valve backrail DGR - SS - 151, plugged	No	1	
	METALWORK(CPAP WORK GROUP NO. 136 UNLESS OTHERWISE STATED)			
	WELDED GALVANISED STEEL SCREENS, GATES, ETC.			
	Screens and gates			
74	Single gate size 877 x 2250mm high of 40 x 60 x 3mm rectangular tubing with 12mm diameter steel rods at 110mm centre and 40 x 6mm horizontal support flat bars fixed with hinges to steel frame of 45 x 45 x 3mm rectangular tubing fixed to walls with bolts and lugs including padlock plate (Refer to Door Schedule on drawing 2B-2G-1P-TB-WB)	No	3	
	HOT DIPPED GALVANISED MILD STEEL DOOR FRAMES			
	1,2mm Rebated frames suitable for half brick walls			
75	Frame for door 762 x 2032mm high	No	3	
	1,2mm Rebated frames suitable for one brick walls			
76	Frame for door 813 x 2032mm high	No	2	
	GALVANISED STEEL WINDOWS, DOORS, ETC			
	SS industrial type windows			
77	Window type W1, 360 x 518mm high. (Refer to window schedule on drawing 2B-2G-1P-TB-WB)	No	5	
	Carried Forward			R

				R
	Brought Forward			
	PLASTERING(CPAP WORK GROUP NO. 142 UNLESS OTHERWISE STATED)			
	SCREEDS			
	Screeds steel trowelled, on concrete			
78	Average 50mm thick on floors to falls. (LI)	m2	37	
	INTERNAL PLASTER			
	Cement plaster steel trowelled, on brickwork			
79	On walls. (LI)	m2	94	
80	On narrow widths. (LI)	m2	2	
	PLUMBING AND DRAINAGE (PROVISIONAL)(CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)			
	PLUMBING			
	NOTE: Prices for sanitary fittings fixed to walls or abutting walls, etc. shall include for sealing against walls with silicone sealing compound. This shall apply to wash hand basins, sinks and drainers, urinals, WC cisterns, wash troughs, shower trays and the like.			
	RAINWATER DISPOSAL			
	uPVC gutters and rainwater pipes			
81	110mm Half-round gutters including fixings	m	14	
82	75mm Diameter uPVC downpipes	m	5	
83	Extra over eaves gutter outlet for 75mm diameter rainwater downpipes	No	2	
	Carried Forward			R

				R
	Brought Forward			
84	Extra over eaves gutter for stopped ends	No	4	
85	Extra over rainwater downpipes for shoes	No	2	
86	Extra over rainwater downpipes for bends	No	2	
	SANITARY FITTINGS			
	"Atlas Plastics (Pty) Ltd" or other approved			
87	Atlas Plastics "Aquarius Close Coupled Toilet" (code 570AP) colour Granite with seat, overall size 416 x 690 x 768mm high, with foot of pan grouted to the floor with 1:3 cement mortar.	No	4	
88	Atlas Plastics "SC urinal" (Code 496AP) colour Granite with 40mm waterless waste - 496 (Code: 101228), overall size 350 x 320 x 470mm high plugged and screwed to wall with galvanised screws and brackets.	No	1	
89	Atlas Plastics "Christy" (Code 945AP) wash hand basin with splashback, colour Granite, overall size 580 x 410mm wide with 2 tap holes and 40mm waste outlet, plugged and screwed to wall with galvanised screws and brackets.	No	2	
90	Atlas Plastics "30 Llitre Wash Trough" (Code 366AP) colour Granite (Code: 101133), overall size 528 x 412mm wide with 40mm waste outlet, plugged and screwed to the wall with galvanised screws and fixing brackets.	No	1	
	TAPS, VALVES, ETC			
	"Cobra Watertech" or other approved			
91	15mm Chromium plated 'Star 136-15' stopcock	No	9	
92	15mm Chromium plated 'Star 106-15' basin bibtap	No	2	
93	15mm Chromium plated elbow action pillartap (code 503-21B)	No	2	
	Carried Forward			R

				R
	Brought Forward			
94	15mm Standard brass 'Plain 100-15' bibtap with flow straightener	No	2	
95	Cobra medical pillar tap elbow action - 504 - 21b side flush lever	No	1	
	SANITARY PLUMBING			
	uPVC pipes			
96	50mm Pipes	m	8	
97	110mm Pipes	m	6	
	Extra over uPVC pipes for fittings			
98	50mm Bend	No	5	
99	110mm Bend	No	4	
100	50mm Access bend	No	5	
101	110mm Access bend	No	4	
102	50mm Junction	No	2	
103	110mm Junction	No	2	
104	110mm Reducing junction	No	1	
105	110mm Pan connector	No	4	
	TRAPS ETC			
	"Cobra Watertech" or other approved rubber traps			
106	32 x 40mm Butyl rubber P-trap jointed to waste outlet fitting and to 50mm uPVC pipe including clamps	No	4	
107	100mm Diameter cast iron 'P' urinal trap	No	1	
	Carried Forward			R

				R
	Brought Forward			
	WATER SUPPLIES			
	Class 0 copper pipes			
108	15mm Pipes	m	15	
109	15mm Pipes chased into brick walls	m	3	
110	22mm Pipes	m	12	
111	22mm Pipes chased into brick walls	m	2	
112	28mm Pipes	m	23	
	Extra over class 0 copper pipes for capillary fittings			
113	15mm Fittings	No	30	
114	22mm Fittings	No	23	
115	28mm Fittings	No	38	
	Extra over class 0 copper pipes for brass compression fittings			
116	15mm Fittings	No	18	
117	22mm Fittings	No	14	
118	28mm Fittings	No	23	
	Class 2 copper overflow and service pipes			
119	15mm Bent service pipe average 400mm girth, one end fitted with brass adaptor and jointed to tap, etc., and other end jointed to Class 0 copper pipe	No	5	
120	22mm Bent overflow pipe 500mm girth and joint to fitting	No	4	
	TESTING			
121	Allow for testing the whole of the sanitary plumbing and water supply		Item	
	Carried Forward			R

	Brought Forward			R
	GLAZING(CPAP WORK GROUP NO. 150 UNLESS OTHERWISE STATED)			
	GLAZING TO WOOD/STEEL WITH PUTTY			
	6mm Thick obscure safety glass			
122	Panes exceeding 0,1m2 and not exceeding 0.5m2.	m2	8	
	6mm Silvered float glass copper backed mirrors with polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in brickwork or concrete			
123	Mirror 300mm x 400mm high	No	3	
	PAINTWORK(CPAP WORK GROUP NO. 152 UNLESS OTHERWISE STATED)			
	PAINTWORK, ETC. TO NEW WORK			
	"PLASCON" OR OTHER EQUAL AND APPROVED			
	ON INTERNAL FLOATED PLASTER SURFACES			
	Prepare and brush surface to remove all loose contaminants and apply one coat alkali resistant primer, one undercoat and two coats 'PLASCON Wall & All' or other approved emulsion paint for interior use.			
124	Walls. (LI)	m2	96	
	ON FIBRE-CEMENT BOARD SURFACES			
	Prepare and brush surface to remove all loose contaminants and apply one coat alkali resistant primer and two coats superior quality acrylic emulsion paint for exterior use			
125	Fascias and barge boards, including priming metal jointing strips. (LI)	m2	12	
	Carried Forward			R

	Brought Forward			R
	ON WOOD SURFACES			
	Prepare surfaces and remove all loose material, apply one coat water based primer, one coat alkyd based universal undercoat and two coats superior quality universal enamel paint, on timber doors			
126	On doors. (LI)	m2	22	
	Prepare surfaces and remove all loose material, apply two coats 'ABE Provonite' carbolineum or equal approved anti-corrosive coal tar paint			
127	On roof timbers at eaves and verges (LI)	m2	8	
	CONCRETE V-DRAIN CHANNELS (ALL TRADES) (PROVISIONAL)			
	CONCRETE V-DRAINS, ETC			
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	EXCAVATION OTHER THAN BULK			
	Excavation in earth not exceeding 2m deep			
128	Reduced levels under floors	m3	13	
	CARTING AWAY			
	Extra over all excavations for loading, carting and dumping surplus excavated material			
129	Off site to be located by the contractor	m3	13	
	EARTH FILLING, ETC			
	Earth filling supplied by the contractor under floors, etc.			
130	150mm G5 Material in accordance with SABS 1200 DM compacted to 98% Mod. AASHTO density. (LI)	m3	7	
	Carried Forward			R

				R
	Brought Forward			
	COMPACTION			
	Compaction of surfaces			
131	Compaction of ground surfaces under V drain channel, etc., including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density. (LI)	m2	44	
	TESTS			
	Prescribed density tests on filling			
132	Modified AASHTO Density test	No	3	
	SOIL POISONING			
	Soil insecticide in accordance with SANS 5859			
133	Under floors, etc. including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming	m2	44	
	CONCRETE, FORMWORK AND REINFORCEMENT (CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	REINFORCED CONCRETE CAST ON/IN FORMWORK			
	20Mpa/19mm Concrete			
134	Surface beds, slabs, etc., to falls and currents (LI)	m3	6	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete with a wood float finish			
135	Concrete channel to falls. (LI)	m2	44	
	Carried Forward			R

				R
	Brought Forward			
	Test blocks			
136	Making and testing 150 x 150 x 150mm concrete strength test cubes.	No	1	
	ROUGH FORMWORK (DEGREE OF ACCURACY III) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
137	Apron slabs, paving and ramps not exceeding 300mm high. (LI)	m	44	
	Expansion joints with 10mm softboard between vertical concrete and brick surfaces			
138	10mm Joints not exceeding 300mm high. (LI)	m	44	
	REINFORCEMENT (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	Fabric reinforcement			
139	Type 193 fabric reinforcement in concrete surface beds, slabs, etc	m2	44	
	WATERPROOFING (CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)			
	JOINT SEALANTS, ETC			
	"ABE Flexothane" or other approved two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc			
140	In 10mm joints not exceeding 300mm high. (LI)	m	44	
	Carried Forward			R

	Brought Forward			R
	WATER TANK SUPPORTS (ALL TRADES) (PROVISIONAL)			
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	EXCAVATION OTHER THAN BULK			
	Excavation in earth not exceeding 2m deep			
141	Bases. (LI)	m3	6	
	Extra over trench and hole excavation in earth for excavation in			
142	Hard rock.	m3	1	
	CARTING AWAY			
	Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk)			
143	Off site to be located by the contractor.	m3	4	
	EARTH FILLING, ETC			
	Note: All filling whether obtained from the excavations, from stockpiles or by the contractor from an outside source must be selected and approved by the Structural / Civil Engineers			
	Filling with material from the excavations compacted to a density of at least 93% Mod. AASHTO density			
144	Backfilling to trenches, holes, etc. (LI)	m3	2	
	KEEPING EXCAVATIONS FREE OF WATER			
	Keeping excavations free of water			
145	Allow for keeping excavations free of water or mud by hand or machinery		Item	
	Carried Forward			R

	Brought Forward			R
	COMPACTION			
	Compaction of surfaces			
146	Compaction of ground surfaces 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. (LI)	m2	7	
	TESTS			
	Prescribed density tests on filling			
147	Modified AASHTO Density test.	No	1	
	SOIL POISONING			
	Soil insecticide in accordance with SANS 5859			
148	Under floors, etc. including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming.	m2	13	
	CONCRETE, FORMWORK AND REINFORCEMENT (CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES			
	10MPa Concrete			
149	Surface blinding under footings, bases, etc. (LI)	m3	1	
	REINFORCED CONCRETE			
	25MPa/19mm Concrete			
150	Surface beds. (LI)	m3	1	
151	Bases. (LI)	m3	2	
	Carried Forward			R

				R
	Brought Forward			
	TEST BLOCKS			
	Test blocks			
152	Prepare a set of six concrete cubes each cube size 150 x 150 x 150mm for strength cubes and deliver to an approved laboratory for testing and pay all charges in connection therewith.	Sets	1.00	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete with a wood float			
153	Surface beds, slabs, etc. (LI)	m2	6	
	ROUGH FORMWORK (DEGREE OF ACCURACY III) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
154	Edges, risers, ends and reveals not exceeding 300mm high or wide. (LI)	m	10	
	Boxing in smooth formwork to form			
155	50mm Horizontal chamfer at corner. (LI)	m	10	
	REINFORCEMENT (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	Mild steel reinforcement to structural concrete work			
156	10mm Diameter bars.	t	0.400	
	Carried Forward			R

				R
	Brought Forward			
	MASONRY(CPAP WORK GROUP NO. 116 UNLESS OTHERWISE STATED)			
	BRICKWORK IN FOUNDATIONS			
	Brickwork of NFX (14 MPa nominal compressive strength) clay imperial bricks in cement mortar			
157	One brick wall. (LI)	m2	8	
	BRICKWORK IN SUPERSTRUCTURE			
	Brickwork of NFP Bricks in Class II mortar			
158	One brick wall. (LI)	m2	4	
	BRICKWORK SUNDRIES			
	Bagging of 1:3 cement and sand mixture			
159	On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and / or brick reinforcing fabric. (LI)	m2	4	
	Brickwork reinforcement			
160	150mm Wide reinforcement built in horizontally. (LI)	m	46	
	FACE BRICKWORK			
	"Corobrik Travertine FBA" or other approved face bricks in stretcher bond with ruled joints and perpends internally and externally			
161	Extra over brickwork for face brickwork. (LI)	m2	4	
	Carried Forward			R

	Brought Forward			R
	PLUMBING AND DRAINAGE (CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)			
	WATER SUPPLIES AND FIRE SERVICES			
	TAPS, VALVES, ETC			
	"Cobra Watertech" or other approved			
162	15mm Rough brass hose bib tap as 'Cobra Watertech' Ref. No. 108-15 or other equal and approved including hose union, wall plate elbow, etc. with couplings for copper.	No	1	
	TANKS, ETC			
	Polyethylene drinking water tanks			
163	5000 Litre low profile circular tank size 2250mm diameter x 1800mm high, with access lid and inlet hole,embedded in pedestal to a minimum of 400mm above ground level and tied down with 2 No. off 4mm galvanised double strap stay wires tied to galvanised mild steel M12 eye bolt of which is to be drilled and fixed to the 4 corners of concrete supporting base.	No	1	
	Carried to Final Summary of Section No. 3			R

Item No			Quantity	Rate	Amount
	SECTION NO. 3				
	BILL NO.3				
	TYPE C - LEARNERS BOYS - 2NO. WC SEATS + 2NO. URINALS - ABLUTION BLOCK (1NO.)				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)				
	EARTHWORKS (PROVISIONAL)(CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)				
	SITE CLEARANCE, ETC.				
	Site clearance				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m2	100		
2	Stripping average 150mm thick layer of top soil and stockpiling on site.	m2	100		
	EXCAVATION, FILLING, ETC. OTHER THAN BULK				
	Excavation in earth not exceeding 2m deep				
3	Reduced levels under floors. (LI)	m3	7		
4	Trenches, foundation beams, etc. (LI)	m3	3		
	Extra over back excavation in earth for working space for excavation in intermediate material				
5	Not exceeding 1,5m deep, etc. 300mm away from excavated face.	m2	19		
	Carried Forward			R	

	Brought Forward			R
6	Exceeding 1,5m and not exceeding 3m deep, etc. 300mm away from excavated face.	m2	13	
	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	10	
	Risk of collapse of excavations			
8	Sides of trench and hole excavations not exceeding 1,5m deep. (LI)	m2	19	
9	Sides of trench and hole excavations exceeding 1,5m deep. (LI)	m2	13	
	Keeping excavations free of water			
10	Keeping excavations free of all water other than subterranean water.		Item	
	FILLING ETC			
	Earth filling supplied by the contractor under floors, etc.			
11	150mm G5 Material in accordance with SABS 1200 DM compacted to 98% Mod. AASHTO density. (LI)	m3	7	
	Compaction of surfaces			
12	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 98% Mod. AASHTO density. (LI)	m2	33	
	Prescribed density tests on filling			
13	"Modified AASHTO Density" test.	No	2	
14	"Field Density" test including "Optimum Moisture Content" (four readings per test)	No	2	
	Carried Forward			R

	Brought Forward			R
	SOIL POISONING			
	Soil Insecticide in accordance with SANS 5859			
15	Under floors, etc. including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming. (LI)	m2	40	
	Carried Forward			R

Brought Forward R

CONCRETE, FORMWORK AND REINFORCEMENT (PROVISIONAL)(CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)

SUPPLEMENTARY PREAMBLES

Cost of tests

The costs of making, storing and testing of concrete test cubes as required under Clause 7 "Tests" of SABS 1200 G 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. (Test cubes are measured separately)

Formwork

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

The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself.

Carried Forward R

	Brought Forward			R
	Formwork to soffits of solid slabs etc. shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.			
	Formwork to sides of bases, pile caps, ground beams, etc. will only be measured where it is prescribed by the Engineer for design reasons. 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".			
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES			
	15MPa Concrete			
16	Surface blinding under surface beds, slabs, etc. (LI)	m3	1	
	REINFORCED CONCRETE			
	25MPa/19mm Concrete			
17	Foundation beams. (LI)	m3	1	
18	Surface beds, etc., including thickening. (LI)	m3	3	
19	Slabs including beams and inverted beams. (LI)	m3	2	
20	Concrete nib, etc. (LI)	m3	0.2	
	30MPa/19mm Concrete			
21	Pit base	m3	3	
	CONCRETE SUNDRIES			
	Sleeves			
22	110mm Diameter pipe and socket cast in concrete formed of 130mm long black pipe uPVC welded to 100mm long uPVC pipe with single socket. (LI)	No	2	
	Carried Forward			R

				R
	Brought Forward			
	Finishing top surfaces of concrete smooth with a wood float			
23	Surface beds, slabs, etc. (LI)	m2	22	
	Test blocks			
24	Making and testing 150 x 150 x 150mm concrete strength test cubes.	No	4	
	FORMWORK (PROVISIONAL)(CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	ROUGH FORMWORK (DEGREE OF ACCURACY III)			
	Rough formwork to sides			
25	Foundation beams (Provisional), etc. (LI)	m2	7	
	ROUGH FORMWORK (DEGREE OF ACCURACY II)			
	Rough formwork to sides			
26	Edges, risers, ends and reveals not exceeding 300mm high or wide. (LI)	m	29	
	Rough formwork to soffits			
27	Isolated sections of composite slab propped up exceeding 1,5m and not exceeding 3,5m high. (LI)	m2	15	
	Rough formwork to sides and soffits			
28	Beams propped up exceeding 1.5m and not exceeding 3.5m high. (LI)	m2	7	
	Boxing in rough formwork to form			
29	110 x 200mm High horizontal projections to sides along bottom edges. (LI)	m	9	
	Carried Forward			R

				R
	Brought Forward			
	MOVEMENT JOINTS, ETC.			
	Slip joints between horizontal concrete and brick surfaces with two layers of 3 ply malthoid			
30	Not exceeding 300mm wide. (LI)	m	14	
	Expansion joints with bitumen impregnated fibreboard between vertical concrete surfaces			
31	13mm Joints not exceeding 300mm high. (LI)	m	5	
	REINFORCEMENT (PROVISIONAL) (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	High tensile steel reinforcement to structural concrete work			
32	Bars of varying diameters	t	1.313	
	PRECAST CONCRETE (CPAP WORK GROUP 112 UNLESS OTHERWISE STATED)			
	Precast concrete cover slab 80mm thick formed of 25Mpa/19mm concrete with class 1 smooth finish on exposed surfaces splayed 25mm at edges with ref. 193 mesh reinforcement and 2no. 15mm diameter polycop pipe sleeves cast in to receive 2no. threaded 10mm diameter galvanised L-shaped lifting handles with 50 x 50 x 5mm holed plates, nuts and lock nuts, including holes to fit 110mm diameter vent pipe, etc. laid on brick walls			
33	Cover slab size 665 x 930mm.	No	2	
34	Cover slab size 660 x 930mm.	No	2	
	Carried Forward			R

	Brought Forward				R
	MASONRY(CPAP WORK GROUP NO. 116 UNLESS OTHERWISE STATED)				
	SUPPLEMENTARY PREAMBLES				
	BRICKWORK				
	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 etc				
	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.				
	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 "Brixeal" bitumen emulsion waterproofing coating.				
	Face bricks				
	Bricks shall be ordered timeously to obtain uniformity in size and colour				
	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 IN FOUNDATIONS (PROVISIONAL)				
	Brickwork of NFX (14 MPa nominal compressive strength) clay imperial bricks in cement mortar				
35	One brick wall. (LI)	m2	42		
	Carried Forward				R

				R
	Brought Forward			
	OPENINGS THROUGH WALLS ETC			
	Breaking out for and forming plain openings through brick walls, including prestressed concrete lintels to suit opening, etc			
36	Opening 340 x 330mm high through one brick wall. (LI)	No	2	
	Brickwork reinforcement			
37	150mm Wide reinforcement built in horizontally. (LI)	m	125	
	BRICKWORK IN SUPERSTRUCTURE			
	Brickwork of NFP Bricks in Class II mortar			
38	Piers. (LI)	m3	1	
39	Half brick wall. (LI)	m2	7	
40	Half brick wall in beamfilling. (LI)	m2	2	
41	One brick wall. (LI)	m2	53	
	BRICKWORK SUNDRIES			
	Bagging of 1:3 cement and sand mixture			
42	On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and / or brick reinforcing fabric. (LI)	m2	49	
	Brickwork reinforcement			
43	75mm Wide reinforcement built in horizontally. (LI)	m	38	
44	150mm Wide reinforcement built in horizontally. (LI)	m	156	
	Prestressed fabricated lintels			
45	90 x 115mm Lintels in lengths not exceeding 3m. (LI)	m	5	
	Carried Forward			R

				R
	Brought Forward			
	Turning pieces			
46	230mm Wide turning piece to lintels, etc. (LI)	m	6	
	Galvanised wire ties etc			
47	30 x 1.6mm Roof tie 1.6m long with one end built into brickwork and other end fixed to timber. (LI)	No	16	
	Air bricks etc			
48	229 x 152mm Terra-cotta vermin proof air brick. (LI)	No	12	
	FACE BRICKWORK			
	"Corobrik Travertine FBA" or equal and other approved face bricks in stretcher bond with ruled joints and perpends internally and externally			
49	Extra over brickwork for face brickwork. (LI)	m2	53	
50	Extra over brickwork for brick-on-edge header course lintel. (LI)	m	5	
51	Extra over brickwork for face brick piers. (LI)	m3	1	
	Brick-on-edge header course copings, sills, etc. of "CorobrikTravertine FBA" or other equal and approved face bricks pointed with recessed joints on all exposed faces			
52	220mm Wide sill set sloping and slightly projecting. (LI)	m	2	
	"NUTEC" OR OTHER APPROVED FIBRE-CEMENT WINDOW SILLS			
	Natural grey sills in single lengths bedded in class I mortar including metal fixing lugs etc			
53	150 x 15mm Thick sills set flat and slightly projecting. (LI)	m	2	
	Carried Forward			R

	Brought Forward			R
	WATERPROOFING(CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)			
	DAMP-PROOFING OF WALLS AND FLOORS			
	One layer of 375 micron Consol Plastics Brikgrip DPC or other equal and approved embossed damp proof course			
54	In walls under sills, over lintels, etc. (LI)	m2	1	
	One layer 375 'Hyperstatic Orange' DPM with 3mm masonite protection			
55	Vertically between walls. (LI)	m2	44	
	One layer of 250 micron "Consol Plastic Gunplas USB Green" or other equal and approved waterproof sheeting Type C, sealed at laps with "Gunplas Pressure Sensitive Tape"			
56	Under surface beds, slabs, etc. (LI)	m2	14	
	Two coats "ABE Brixeal" or other equal and approved bitumen emulsion waterproof coating			
57	On brick walls. (LI)	m2	49	
	WATERPROOFING TO ROOFS, BASEMENTS, ETC.			
	Five coats "Acrylastic" or other equal and approved fibre reinforced heavy duty maintenance free acrylic waterproofing			
58	Collar around pipe not exceeding 100mm internal diameter. (LI)	No	2	
	Carried Forward			R

	Brought Forward			R
	JOINT SEALANTS, ETC.			
	Two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc.			
59	13 x 13mm In expansion joints in vertical concrete / brick surfaces including raking out expansion joint filler as necessary. (LI)	m	19	
	ROOF COVERINGS, ETC.(CPAP WORK GROUP NO. 125 UNLESS OTHERWISE STATED)			
	SUPPLEMENTARY PREAMBLES			
	Profiled metal sheeting and accessories			
	Roof sheeting systems are to be manufactured in strict accordance with the supplier's specifications.			
	Fixing of all roof sheeting is to be in accordance with the manufacturer's approved instruction book.			
	The manufacturer shall comply with ISO9002 Quality Management System.			
	PROFILED METAL SHEETING AND ACCESSORIES			
	0.58mm Colorbond IBR profile sheeting, colour one side fixed to timber purlins (elsewhere measured) and fixed strictly in accordance with the manufacturer's instructions			
60	Roof covering with pitch not exceeding 25 degrees.	m2	31	
61	Standard galvanised ridge capping (550mm girth) screwed through sheeting to purlins	m	5	
62	Sondor IBR pattern polyclosures to underside of ridge capping	m	10	
	Carried Forward			R

	Brought Forward			R
	ROOF AND WALL INSULATION			
	"Sisalation FR430" Heavy Industrial Grade Aluminum Foil based insulation			
63	Insulation laid taut over purlins and fixed concurrent with roof covering including galvanised steel straining wires	m2	31	
	CARPENTRY AND JOINERY(CPAP WORK GROUP NO. 126 UNLESS OTHERWISE STATED)			
	PREFABRICATED TIMBER ROOF TRUSSES, ETC			
	NOTE:			
	Timber roof trusses are to comply with SABS Code of Practice 0243. (The design, manufacture and erection of timber trusses, including nail-plated and bolted trusses with lapped members).			
	The following is applicable in respect of roof trusses:			
	Trusses are at maximum 1200mm centres. Roof covering is IBR profiled metal sheeting colour one side on 50 x 76mm purlins. Ceilings are nailed gypsum plasterboard on brandering.			
	The dimensions in the descriptions of the trusses are nominal and actual measurements are to be obtained from site before design or fabrication commences.			
	Design and supply plate nailed timber roof trusses			
64	Design, supply and install roof truss system complete in accordance with the Standard Building Regulations, including cross battens at hips, valleys, etc. fixed to trusses with and including ring shank nails, hurricane clips at exposed sections and at ridges, temporary and permanent bracing, etc. to suit roof area approximate **size 31m2 (on flat floor area inclusive of overhangs)**		Item	
	Carried Forward			R

	Brought Forward			R
65	Allowance for the issue of TR1 and TR2 certificates after completion of roof installation, signed by a competent person		Item	
	Wrought softwood			
66	38 x 114mm Wall plates.	m	10	
67	76 x 50mm Purlins	m	46	
68	76 x 76mm Splayed gutter purlins.	m	10	
	Sawn softwood Grade 7			
69	32 x 220mm Beam built into the brickwork.	m	9	
	EAVES, VERGES, ETC.			
	Pressed Nutec or other approved fibre cement boards			
70	12 x 225mm Fascia boards including galvanised steel H-profile jointing strips	m	10	
71	10 x 80 x 200mm Barge boards including H-profile jointing strips	m	12	
	DOORS, ETC.			
	Wrought Meranti or similar approved doors			
72	40mm Framed ledged, braced and battened door size 762 x 1932mm high of 40 x 110mm wide top rail and stiles, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces, hung to steel frame (elsewhere measured) (Refer to Door Schedule D1 on drawing - 4B-TB)	No	2	
	Carried Forward			R

				R
	Brought Forward			
73	40mm Framed ledged, braced and battened door size 813 x 2032mm high of 40 x 110mm wide top rail and stiles, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces, hung to steel frame (elsewhere measured) (Refer to Door Schedule D2 on drawing - 4B-TB)	No	1	
	IRONMONGERY(CPAP WORK GROUP NO. 132 UNLESS OTHERWISE STATED)			
	HINGES, BOLTS, ETC.			
74	Solid Art 294 WC or other equal and approved anodised aluminium mortice indicator bolt	No	2	
	"Dorma" or other approved			
75	"DRR-SS-012" 102 x 75 x 3mm Stainless steel rising butt hinge	No	6	
	LOCKS			
	"Union" or other approved			
76	" 2247-7855 Commercial Series" Four lever mortice lock	No	1	
	HANDLES			
	"Union" or other approved			
77	"CB862-05CH" Brass Gower lever handles	No	1	
	SUNDRIES			
	"Union" or other approved			
78	"CZ8731CH" Door stop fixed with counter-sunk bolt into anchor bolt	No	1	
79	38mm Diameter rubber door stop, plugged and screwed to floor with 50mm long brass screw	No	2	
	Carried Forward			R

					R
	Brought Forward				
	LETTERS, NAMEPLATES, ETC.				
	Signage				
80	200 x 250mm Pressed aluminium with male or female symbol fixed to brickwork with 6 no. "Hilti" nail anchors.	No	1		
	BATHROOM FITTINGS				
	Toilet roll holders				
81	40 x 3mm Thick steel plate with 2 x 8mm holes and rawl bolts and 2 x 30mm holes to support roller bent to suit 27 diameter x 2mm thick steel pipe with hole for padlock and a 40 x 3mm thick steel plate welded on other end.(See architect drawing No.TRH)	No	2		
	METALWORK(CPAP WORK GROUP NO. 136 UNLESS OTHERWISE STATED)				
	WELDED GALVANISED STEEL SCREENS, GATES, ETC.				
	Screens and gates				
82	Single gate size 877 x 2250mm high of 40 x 60 x 3mm rectangular tubing with 12mm diameter steel rods at 110mm centre and 40 x 6mm horizontal support flat bars fixed with hinges to steel frame of 45 x 45 x 3mm rectangular tubing fixed to walls with bolts and lugs including padlock plate (Refer to Door Schedule on drawing 4B -TB)	No	1		
	HOT DIPPED GALVANISED MILD STEEL DOOR FRAMES				
	1,2mm Rebated frames suitable for half brick walls				
83	Frame for door 762 x 2032mm high.	No	2		
	Carried Forward				R

				R
	Brought Forward			
	1,2mm Rebated frames suitable for one brick walls			
84	Frame for door 813 x 2032mm high	No	1	
	GALVANISED STEEL WINDOWS, DOORS, ETC			
	SS industrial type windows			
85	Window type W1, 1100 x 550mm high. (Refer to window schedule on drawing 4B -TB)	No	2	
	PLASTERING(CPAP WORK GROUP NO. 142 UNLESS OTHERWISE STATED)			
	SCREEDS			
	Screeds steel trowelled, on concrete			
86	Average 50mm thick on floors to falls. (LI)	m2	22	
	INTERNAL PLASTER			
	Cement plaster steel trowelled, on brickwork			
87	On walls. (LI)	m2	62	
88	On narrow widths. (LI)	m2	2	
	PLUMBING AND DRAINAGE (PROVISIONAL)(CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)			
	PLUMBING			
	NOTE: Prices for sanitary fittings fixed to walls or abutting walls, etc. shall include for sealing against walls with silicone sealing compound. This shall apply to wash hand basins, sinks and drainers, urinals, WC cisterns, wash troughs, shower trays and the like.			
	Carried Forward			R

				R
	Brought Forward			
	RAINWATER DISPOSAL			
	uPVC gutters and rainwater pipes			
89	110mm Half-round gutters including fixings	m	10	
90	75mm Diameter uPVC downpipes	m	7	
91	Extra over eaves gutter outlet for 75mm diameter rainwater downpipes	No	2	
92	Extra over eaves gutter for stopped ends	No	4	
93	Extra over rainwater downpipes for bends	No	4	
94	Extra over rainwater downpipes for shoes	No	1	
	SANITARY FITTINGS			
	"Atlas Plastics (Pty) Ltd" or other approved			
95	Atlas "VIP 200" (code 222AP) pedestal with footpiece complete with seat and lid screwed in precast slab including inlet funnel (code 224AP) riveted to shaft.	No	2	
96	Atlas 507 AP bowl urinal C/W 496 AP waterless urinal fitting, waste, etc complete.	No	2	
97	Atlas Plastics "30 Litre Wash Trough" (code 366AP) colour Granite (code 101133), overall size 528 x 412mm wide with 40mm waste outlet, plugged and screwed to the wall with galvanised screws and fixing brackets.	No	1	
	"Cobra Watertech" or other approved			
98	15mm Rough brass hose bib tap as 'Cobra Watertech' Ref. No. 108-15 or other equal and approved including hose union, wall plate elbow, etc. with couplings for copper.	No	1	
	Carried Forward			R

				R
	Brought Forward			
	SANITARY PLUMBING			
	Black uPVC UV stabilised pipes			
99	110mm Vent pipes.	m	16	
	Extra over Black uPVC UV stabilised pipes for fittings			
100	Vent cowl formed of 110mm vent valve with top cut off and black shade cloth fixed over end of vent pipe.	No	4	
	GLAZING(CPAP WORK GROUP NO. 150 UNLESS OTHERWISE STATED)			
	GLAZING TO WOOD/STEEL WITH PUTTY			
	6mm Thick obscure safety glass			
101	Panes exceeding 0,1m2 and not exceeding 0.5m2	m2	1	
	MIRRORS, ETC.			
	6mm Silvered float glass copper backed mirrors with polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in brickwork or concrete			
102	Mirror 300 x 400mm high	No	2	
	Carried Forward			R

				R
	Brought Forward			
	PAINTWORK(CPAP WORK GROUP NO. 152 UNLESS OTHERWISE STATED)			
	PAINTWORK, ETC. TO NEW WORK			
	"PLASCON" OR OTHER EQUAL AND APPROVED			
	ON INTERNAL FLOATED PLASTER SURFACES			
	Prepare and brush surface to remove all loose contaminants and apply one coat alkali resistant primer, one undercoat and two coats 'PLASCON Wall & All' or other approved emulsion paint for interior use.			
103	Walls. (LI)	m2	64	
	ON FIBRE-CEMENT BOARD SURFACES			
	Prepare and brush surface to remove all loose contaminants and apply one coat alkali resistant primer and two coats superior quality acrylic emulsion paint for exterior use			
104	Nutec cement fascia and barge boards. (LI)	m2	6	
	ON WOOD SURFACES			
	Prepare surfaces and remove all loose material, apply one coat water based primer, one coat alkyd based universal undercoat and two coats superior quality universal enamel paint, on timber doors			
105	On doors. (LI)	m2	12	
	Prepare surfaces and remove all loose material, apply two coats 'ABE Provonite' carbolineum			
106	Roof timbers at eaves and verges. (LI)	m2	6	
	Carried Forward			R

	Brought Forward			R
	CONCRETE V DRAIN CHANNEL (ALL TRADES) (PROVISIONAL)			
	CONCRETE APRON, ETC			
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	Excavation in earth not exceeding 2m deep			
107	Over site to reduce levels for concrete V drain channel, etc. (LI)	m3	7	
	CARTING AWAY			
	Extra over all excavations for loading, carting and dumping surplus excavated material			
108	Off site to be located by the contractor.	m3	7	
	EARTH FILLING, ETC			
	Earth filling supplied by the contractor under floors, etc.			
109	150mm G5 Material in accordance with SABS 1200 DM compacted to 98% Mod. AASHTO density. (LI)	m3	3	
	COMPACTION			
	Compaction of surfaces			
110	Compaction of ground surfaces under floors etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 95% Mod. AASHTO density. (LI)	m2	25	
	TESTS			
	Prescribed density tests on filling			
111	Modified AASHTO Density test.	No	3	
	Carried Forward			R

				R
	Brought Forward			
	SOIL POISONING			
	Approved brand of anti-termite soil poison applied by a Registered Pest Control company and guaranteed against termite infestation for ten years			
112	Under concrete V drain channel, etc.	m2	25	
	CONCRETE, FORMWORK AND REINFORCEMENT (CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	REINFORCED CONCRETE CAST ON/IN FORMWORK			
	20Mpa/19mm Concrete			
113	Concrete V drain channel to falls. (LI)	m3	4	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete with a wood float finish			
114	Concrete channel to falls. (LI)	m2	25	
	Test blocks			
115	Making and testing 150 x 150 x 150mm concrete strength test cubes.	No	1	
	ROUGH FORMWORK (DEGREE OF ACCURACY II) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
116	Apron slabs, paving and ramps not exceeding 300mm high. (LI)	m	25	
	Carried Forward			R

				R
	Brought Forward			
	Expansion joints with 10mm softboard between vertical concrete and brick surfaces			
117	10mm Joints not exceeding 300mm high. (LI)	m	25	
	REINFORCEMENT (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	Fabric reinforcement			
118	Type 193 fabric reinforcement in concrete surface beds, slabs, etc. (LI)	m2	25	
	WATERPROOFING (CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)			
	JOINT SEALANTS, ETC			
	"ABE Flexothane" or other equal and approved two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc			
119	In 10mm joints not exceeding 300mm high. (LI)	m	25	
	WATER TANK SUPPORTS (ALL TRADES) (PROVISIONAL)			
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	EXCAVATION OTHER THAN BULK			
	Excavation in earth not exceeding 2m deep			
120	Bases. (LI)	m3	6	
	Extra over trench and hole excavation in earth for excavation in			
121	Hard rock.	m3	1	
	Carried Forward			R

	Brought Forward			R
	CARTING AWAY			
	Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk)			
122	Off site to be located by the contractor.	m3	4	
	EARTH FILLING, ETC			
	Note: All filling whether obtained from the excavations, from stockpiles or by the contractor from an outside source must be selected and approved by the Structural / Civil Engineers			
	Filling with material from the excavations compacted to a density of at least 93% Mod. AASHTO density			
123	Backfilling to trenches, holes, etc. (LI)	m3	2	
	KEEPING EXCAVATIONS FREE OF WATER			
	Keeping excavations free of water			
124	Allow for keeping excavations free of water or mud by hand or machinery.		Item	
	COMPACTION			
	Compaction of surfaces			
125	Compaction of ground surfaces 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. (LI)	m2	7	
	TESTS			
	Prescribed density tests on filling			
126	Modified AASHTO Density test.	No	1	
	Carried Forward			R

				R
	Brought Forward			
	SOIL POISONING			
	Soil insecticide			
127	Under floors, etc. including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming.	m2	13	
	CONCRETE, FORMWORK AND REINFORCEMENT (CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES			
	10MPa Concrete			
128	Surface blinding under footings, bases, etc. (LI)	m3	1	
	REINFORCED CONCRETE			
	25MPa/19mm Concrete			
129	Surface beds. (LI)	m3	1	
130	Bases. (LI)	m3	2	
	TEST BLOCKS			
	Test blocks			
131	Prepare a set of six concrete cubes each cube size 150 x 150 x 150mm for strength cubes and deliver to an approved laboratory for testing and pay all charges in connection therewith.	Sets	1.00	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete with a wood float			
132	Surface beds, slabs, etc.	m2	6	
	Carried Forward			R

				R
	Brought Forward			
	ROUGH FORMWORK (DEGREE OF ACCURACY III) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
133	Edges, risers, ends and reveals not exceeding 300mm high or wide. (LI)	m	10	
	Boxing in smooth formwork to form			
134	50mm Horizontal chamfer at corner. (LI)	m	10	
	REINFORCEMENT (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	Mild steel reinforcement to structural concrete work			
135	10mm Diameter bars.	t	0.088	
	MASONRY(CPAP WORK GROUP NO. 116 UNLESS OTHERWISE STATED)			
	BRICKWORK IN FOUNDATIONS			
	Brickwork of NFX (14 MPa nominal compressive strength) clay imperial bricks in cement mortar			
136	One brick wall. (LI)	m2	8	
	BRICKWORK IN SUPERSTRUCTURE			
	Brickwork of NFP Bricks in Class II mortar			
137	One brick wall. (LI)	m2	4	
	Carried Forward			R

				R
	Brought Forward			
	BRICKWORK SUNDRIES			
	Bagging of 1:3 cement and sand mixture			
138	On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and / or brick reinforcing fabric. (LI)	m2	4	
	Brickwork reinforcement			
139	150mm Wide reinforcement built in horizontally. (LI)	m	46	
	FACE BRICKWORK			
	"Corobrik Travertine FBA" or equal approved face bricks in stretcher bond with ruled joints and perpends internally and externally			
140	Extra over brickwork for face brickwork. (LI)	m2	4	
	PLUMBING AND DRAINAGE (CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)			
	WATER SUPPLIES AND FIRE SERVICES			
	TAPS, VALVES, ETC			
	"Cobra Watertech"			
141	15mm Rough brass hose bib tap as 'Cobra Watertech' Ref. No. 108-15 or other equal and approved including hose union, wall plate elbow, etc. with couplings for copper.	No	1	
	Carried Forward			R

	Brought Forward			R
	TANKS, ETC			
	Polyethylene drinking water tanks			
142	5000 Litre low profile circular tank size 2250mm diameter x 1800mm high, with access lid and inlet hole,embedded in pedestal to a minimum of 400mm above ground level and tied down with 2 No. off 4mm galvanised double strap stay wires tied to galvanised mild steel M12 eye bolt of which is to be drilled and fixed to the 4 corners of concrete supporting base.	No	1	
	SOAK-AWAY (ALL TRADES) (PROVISIONAL)			
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	SITE CLEARANCE, ETC.			
	Site clearance			
143	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m2	11	
144	Stripping average 150mm thick layer of top soil and stockpiling on site.	m2	11	
	EXCAVATION, FILLING, ETC			
	Excavation in earth not exceeding 2m deep			
145	Holes	m3	15	
	Extra over bulk excavations in earth for excavation in			
146	Soft rock	m3	2	
147	Hard rock	m3	2	
	Carried Forward			R

	Brought Forward			R
	Extra over all excavations for carting away			
148	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	7	
	Risk of collapse of excavations			
149	Sides of bulk excavations not exceeding 1,5m deep. (LI)	m2	17	
150	Sides of bulk excavations exceeding 1,5m deep. (LI)	m2	7	
	EARTH FILLING, ETC			
	Earth filling supplied by the contractor (not compacted)			
151	300mm Thick layer of 15mm diameter stone filling on ground for soakaways, etc. (LI)	m3	2	
152	600mm Thick layer of 150mm diameter boulders filling laid on ground for soakaways, etc. (LI)	m3	4	
153	600mm Thick layer of 300mm diameter boulders filling laid in ground for soakaways, etc. (LI)	m3	4	
154	500mm Thick layer of G6 type material filling in soakaways, etc. (LI)	m3	4	
	Keeping excavations free of water			
155	Allow for keeping excavations free of water other than subterranean water		Item	
	PLUMBING AND DRAINAGE (CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)			
	DRAINAGE			
	Class 34 HD uPVC sewer and drain pipes			
156	50mm Perforated pipes laid in herring-bone pattern and including trenches not exceeding 1m deep	m	15	
	Carried Forward			R

				R
	Brought Forward			
157	110mm Pipes laid in and including trenches not exceeding 1m deep	m	35	
	Extra over Class 34 HD uPVC sewer and drain pipes for fittings			
158	110mm Bend	No	3	
159	110mm Access bend	No	1	
160	50mm Reducing junction	No	12	
161	110mm Junction	No	2	
	uPVC Gulleys			
162	110mm Diameter gulley trap jointed to drain, complete with hopper head and grid and the whole set on and encased in unreinforced concrete Class B (1:3:5) carried up 75mm above ground as kerb, dished down to grating and finished on all exposed faces in 1:3 cement render with angles rounded, including necessary excavation and formwork	No	1	
	Testing			
163	Allow for testing the whole of the Soil Drainage to the satisfaction of the Principal Agent and Local Authorities All defective work is to be taken out and replaced at the contractor's expense and the whole re-tested until found satisfactory		Item	
	GRASSING, ETC(CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	Topsoil supplied by the contractor, including spreading and levelling			
164	In plant beds, grassed areas and holes for trees, shrubs, etc. (LI)	m3	13	
	Grassing, ground covers, etc			
165	"Kikuyu" rolls 50mm thick. (LI)	m2	130	
	Carried to Final Summary of Section No. 3			R

Section No. 3
Bill No. 3
Type C - Learners Boys - 2WC + 2Urinals Ablution
LDM QUANTITY SURVEYORS

Item No			Quantity	Rate	Amount
	SECTION NO. 3				
	BILL NO.4				
	TYPE D - LEARNERS GIRLS - 4NO. WC SEATS - ABLUTION BLOCK (1NO.)				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)				
	EARTHWORKS (PROVISIONAL)(CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)				
	SITE CLEARANCE, ETC.				
	Site clearance				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m2	120		
2	Stripping average 150mm thick layer of top soil and stockpiling on site.	m2	120		
	EXCAVATION, FILLING, ETC. OTHER THAN BULK				
	Excavation in earth not exceeding 2m deep				
3	Reduced levels under floors. (LI)	m3	7		
4	Trenches, foundation beams, etc. (LI)	m3	3		
	Extra over back excavation in earth for working space for excavation in intermediate material				
5	Not exceeding 1,5m deep, etc. 300mm away from excavated face.	m2	29		
	Carried Forward			R	

				R
	Brought Forward			
6	Exceeding 1,5m and not exceeding 3m deep, etc. 300mm away from excavated face.	m2	20	
	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	10	
	Risk of collapse of excavations			
8	Sides of trench and hole excavations not exceeding 1,5m deep. (LI)	m2	29	
9	Sides of trench and hole excavations exceeding 1,5m deep. (LI)	m2	20	
	Keeping excavations free of water			
10	Keeping excavations free of all water other than subterranean water.		Item	
	FILLING ETC			
	Earth filling supplied by the contractor under floors, etc.			
11	150mm G5 Material in accordance with SABS 1200 DM compacted to 98% Mod. AASHTO density. (LI)	m3	7	
	Compaction of surfaces			
12	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 98% Mod. AASHTO density. (LI)	m2	33	
	Prescribed density tests on filling			
13	"Modified AASHTO Density" test.	No	5	
14	"Field Density" test including "Optimum Moisture Content" (four readings per test)	No	5	
	Carried Forward			R

	Brought Forward			R
	SOIL POISONING			
	Soil Insecticide in accordance with SANS 5859			
15	Under floors, etc. including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming.	m2	40	
	Carried Forward			R

Brought Forward R

CONCRETE, FORMWORK AND REINFORCEMENT (PROVISIONAL)(CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)

SUPPLEMENTARY PREAMBLES

Cost of tests

The costs of making, storing and testing of concrete test cubes as required under Clause 7 "Tests" of SABS 1200 G 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. (Test cubes are measured separately)

Formwork

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

The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself.

Carried Forward R

				R
	Brought Forward			
	Formwork to soffits of solid slabs etc. shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.			
	Formwork to sides of bases, pile caps, ground beams, etc. will only be measured where it is prescribed by the Engineer for design reasons. 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".			
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES			
	15MPa Concrete			
16	Surface blinding under surface beds, slabs, etc. (LI)	m3	1	
	REINFORCED CONCRETE			
	25MPa/19mm Concrete			
17	Foundation beams. (LI)	m3	1	
18	Surface beds, etc., including thickening. (LI)	m3	3	
19	Slabs including beams and inverted beams. (LI)	m3	4	
20	Concrete nib, etc. (LI)	m3	0.2	
	30MPa/19mm Concrete			
21	Pit base. (LI)	m3	5	
	CONCRETE SUNDRIES			
	15MPa Non-shrink grout			
22	Bedding approximately 25mm thick under 220 x 220mm base plate including chamfered edges all round. (LI)	No	6	
	Carried Forward			R

				R
	Brought Forward			
	Sleeves			
23	110mm Diameter pipe and socket cast in concrete formed of 130mm long black pipe uPVC welded to 100mm long uPVC pipe with single socket. (LI)	No	2	
	Finishing top surfaces of concrete smooth with a wood float			
24	Surface beds, slabs, etc. (LI)	m2	25	
	Test blocks			
25	Making and testing 150 x 150 x 150mm concrete strength test cubes.	No	4	
	FORMWORK (PROVISIONAL)(CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	ROUGH FORMWORK (DEGREE OF ACCURACY III)			
	Rough formwork to sides			
26	Foundation beams (Provisional), etc. (LI)	m2	7	
	ROUGH FORMWORK (DEGREE OF ACCURACY II)			
	Rough formwork to sides			
27	Edges, risers, ends and reveals not exceeding 300mm high or wide. (LI)	m	29	
	Rough formwork to soffits			
28	Isolated sections of composite slab propped up exceeding 1,5m and not exceeding 3,5m high. (LI)	m2	15	
	Rough formwork to sides and soffits			
29	Beams propped up exceeding 1.5m and not exceeding 3.5m high. (LI)	m2	7	
	Carried Forward			R

				R
	Brought Forward			
	Boxing in rough formwork to form			
30	110 x 200mm High horizontal projections to sides along bottom edges. (LI)	m	9	
	MOVEMENT JOINTS, ETC.			
	Slip joints between horizontal concrete and brick surfaces with two layers of 3 ply malthoid			
31	Not exceeding 300mm wide. (LI)	m	14	
	Expansion joints with bitumen impregnated fibreboard between vertical concrete surfaces			
32	13mm Joints not exceeding 300mm high. (LI)	m	5	
	REINFORCEMENT (PROVISIONAL) (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	High tensile steel reinforcement to structural concrete work			
33	Bars of varying diameters	t	1.313	
	PRECAST CONCRETE (CPAP WORK GROUP 112 UNLESS OTHERWISE STATED)			
	Precast concrete cover slab 80mm thick formed of 25Mpa/19mm concrete with class 1 smooth finish on exposed surfaces splayed 25mm at edges with ref. 193 mesh reinforcement and 2no. 15mm diameter polycop pipe sleeves cast in to receive 2no. threaded 10mm diameter galvanised L-shaped lifting handles with 50 x 50 x 5mm holed plates, nuts and lock nuts, including holes to fit 110mm diameter vent pipe, etc. laid on brick walls			
34	Cover slab size 770 x 930mm.	No	2	
35	Cover slab size 765 x 930mm.	No	4	
	Carried Forward			R

	Brought Forward			R
	MASONRY(CPAP WORK GROUP NO. 116 UNLESS OTHERWISE STATED)			
	SUPPLEMENTARY PREAMBLES			
	BRICKWORK			
	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 etc			
	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.			
	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 "Brixeal" bitumen emulsion waterproofing coating.			
	Face bricks			
	Bricks shall be ordered timeously to obtain uniformity in size and colour			
	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 IN FOUNDATIONS (PROVISIONAL)			
	Brickwork of NFX (14 MPa nominal compressive strength) clay imperial bricks in cement mortar			
36	One brick wall. (LI)	m2	42	
	Carried Forward			R

				R
	Brought Forward			
	OPENINGS THROUGH WALLS ETC			
	Breaking out for and forming plain openings through brick walls, including prestressed concrete lintels to suit opening, etc			
37	Opening 340 x 330mm high through one brick wall. (LI)	No	2	
	Brickwork reinforcement			
38	150mm Wide reinforcement built in horizontally. (LI)	m	125	
	BRICKWORK IN SUPERSTRUCTURE			
	Brickwork of NFP Bricks in Class II mortar			
39	Half brick wall. (LI)	m2	21	
40	Half brick wall in beamfilling. (LI)	m2	2	
41	One brick wall. (LI)	m2	53	
	BRICKWORK SUNDRIES			
	Bagging of 1:3 cement and sand mixture			
42	On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and / or brick reinforcing fabric. (LI)	m2	49	
	Brickwork reinforcement			
43	75mm Wide reinforcement built in horizontally. (LI)	m	76	
44	150mm Wide reinforcement built in horizontally. (LI)	m	156	
	Prestressed fabricated lintels			
45	90 x 115mm Lintels in lengths not exceeding 3m. (LI)	m	5	
	Turning pieces			
46	230mm Wide turning piece to lintels, etc. (LI)	m	12	
	Carried Forward			R

				R
	Brought Forward			
	Galvanised wire ties etc			
47	30 x 1.6mm Roof tie 1,6m long with one end built into brickwork and other end fixed to timber. (LI)	No	16	
	Air bricks etc			
48	229 x 152mm Terra-cotta vermin proof air brick. (LI)	No	12	
	FACE BRICKWORK			
	"Corobrik Travertine FBA" or equal and other approved face bricks in stretcher bond with ruled joints and perpends internally and externally			
49	Extra over brickwork for face brickwork. (LI)	m2	53	
50	Extra over brickwork for brick-on-edge header course lintel. (LI)	m	5	
	Brick-on-edge header course copings, sills, etc. of "Corobrik Travertine FBA" or other equal and approved face bricks pointed with recessed joints on all exposed faces			
51	220mm Wide sill set sloping and slightly projecting. (LI)	m	2	
	"NUTEC" OR OTHER APPROVED FIBRE-CEMENT WINDOW SILLS			
	Natural grey sills in single lengths bedded in class I mortar including metal fixing lugs etc			
52	150 x 15mm Thick sills set flat and slightly projecting. (LI)	m	2	
	Carried Forward			R

	Brought Forward			R
	WATERPROOFING(CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)			
	DAMP-PROOFING OF WALLS AND FLOORS			
	One layer of 375 micron Consol Plastics Brikgrip DPC or other equal and approved embossed damp proof course			
53	In walls under sills, over lintels, etc. (LI)	m2	4	
	One layer 375 'Hyperstatic Orange' DPM with 3mm masonite protection			
54	Vertically between walls. (LI)	m2	44	
	One layer of 250 micron "Consol Plastic Gunplas USB Green" or other equal and approved waterproof sheeting Type C, sealed at laps with "Gunplas Pressure Sensitive Tape"			
55	Under surface beds, slabs, etc. (LI)	m2	25	
	Two coats "ABE Brixeal" or other equal and approved bitumen emulsion waterproof coating			
56	On brick walls. (LI)	m2	49	
	WATERPROOFING TO ROOFS, BASEMENTS, ETC.			
	Five coats "Acrylastic" or other equal and approved fibre reinforced heavy duty maintenance free acrylic waterproofing			
57	Collar around pipe not exceeding 100mm internal diameter. (LI)	No	2	
	Carried Forward			R

	Brought Forward				R
	JOINT SEALANTS, ETC.				
	Two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc.				
58	13 x 13mm In expansion joints in vertical concrete / brick surfaces including raking out expansion joint filler as necessary. (LI)	m	19		
	ROOF COVERINGS, ETC.(CPAP WORK GROUP NO. 125 UNLESS OTHERWISE STATED)				
	SUPPLEMENTARY PREAMBLES				
	Profiled metal sheeting and accessories				
	Roof sheeting systems are to be manufactured in strict accordance with the supplier's specifications.				
	Fixing of all roof sheeting is to be in accordance with the manufacturer's approved instruction book.				
	The manufacturer shall comply with ISO9002 Quality Management System.				
	PROFILED METAL SHEETING AND ACCESSORIES				
	0.58mm Colorbond IBR profile sheeting, colour one side fixed to timber purlins (elsewhere measured) and fixed strictly in accordance with the manufacturer's instructions				
59	Roof covering with pitch not exceeding 25 degrees.	m2	36		
60	Standard galvanised ridge capping (550mm girth) screwed through sheeting to purlins	m	6		
61	Sondor IBR pattern polyclosures to underside of ridge capping	m	12		
	Carried Forward				R

	Brought Forward			R
	ROOF AND WALL INSULATION			
	"Sisalation FR430" Heavy Industrial Grade Aluminum Foil based insulation			
62	Insulation laid taut over purlins and fixed concurrent with roof covering including galvanised steel straining wires	m2	36	
	CARPENTRY AND JOINERY(CPAP WORK GROUP NO. 126 UNLESS OTHERWISE STATED)			
	PREFABRICATED TIMBER ROOF TRUSSES, ETC			
	NOTE:			
	Timber roof trusses are to comply with SABS Code of Practice 0243. (The design, manufacture and erection of timber trusses, including nail-plated and bolted trusses with lapped members).			
	The following is applicable in respect of roof trusses:			
	Trusses are at maximum 1200mm centres. Roof covering is IBR profiled metal sheeting colour one side on 50 x 76mm purlins. Ceilings are nailed gypsum plasterboard on brandering.			
	The dimensions in the descriptions of the trusses are nominal and actual measurements are to be obtained from site before design or fabrication commences.			
	Design and supply plate nailed timber roof trusses			
63	Design, supply and install roof truss system complete in accordance with the Standard Building Regulations, including cross battens at hips, valleys, etc. fixed to trusses with and including ring shank nails, hurricane clips at exposed sections and at ridges, temporary and permanent bracing, etc. to suit roof area approximate size **36m2 (on flat floor area inclusive of overhangs)**	Item		
	Carried Forward			R

				R
	Brought Forward			
64	Allowance for the issue of TR1 and TR2 certificates after completion of roof installation, signed by a competent person		Item	
	Wrought softwood			
65	38 x 114mm Wall plates.	m	12	
66	76 x 50mm Purlins	m	46	
67	76 x 76mm Splayed gutter purlins.	m	14	
	EAVES, VERGES, ETC.			
	Pressed Nutec or other approved fibre cement boards			
68	12 x 225mm Fascia boards including galvanised steel H-profile jointing strips	m	12	
69	10 x 80 x 200mm Barge boards including H-profile jointing strips	m	12	
	DOORS, ETC.			
	Wrought Meranti or similar approved doors			
70	40mm Framed ledged, braced and battened door size 762 x 1932mm high of 40 x 110mm wide top rail and stiles, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces, hung to steel frame (elsewhere measured) (Refer to Door Schedule D1 on drawing - 4G-TB)	No	4	
71	40mm Framed ledged, braced and battened door size 813 x 2032mm high of 40 x 110mm wide top rail and stiles, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces, hung to steel frame (elsewhere measured) (Refer to Door Schedule D2 on drawing - 4G-TB)	No	1	
	Carried Forward			R

	Brought Forward				R
	IRONMONGERY(CPAP WORK GROUP NO. 132 UNLESS OTHERWISE STATED)				
	HINGES, BOLTS, ETC.				
72	Solid Art 294 WC or other equal and approved anodised aluminium mortice indicator bolt	No	4		
	"Dorma" or other approved				
73	"DRR-SS-012" 102 x 75 x 3mm Stainless steel rising butt hinge	No	10		
	LOCKS				
	"Union" or other approved				
74	" 2247-7855 Commercial Series" Four lever mortice lock	No	1		
	HANDLES				
	"Union" or other approved				
75	"CB862-05CH" Brass Gower lever handles	No	1		
	SUNDRIES				
	"Union" or other approved				
76	"CZ8731CH" Door stop fixed with counter-sunk bolt into anchor bolt	No	1		
77	38mm Diameter rubber door stop, plugged and screwed to floor with 50mm long brass screw	No	4		
	LETTERS, NAMEPLATES, ETC.				
	Signage				
78	200 x 250mm Pressed aluminium with male or female symbol fixed to brickwork with 6 no. "Hilti" nail anchors.	No	1		
	Carried Forward				R

Section No. 3
Bill No. 4
Type D - Learner Girls - 4WC Seats Ablution
LDM QUANTITY SURVEYORS

	Brought Forward			R
	BATHROOM FITTINGS			
	Toilet roll holders			
79	40 x 3mm Thick steel plate with 2 x 8mm holes and rawl bolts and 2 x 30mm holes to support roller bent to suit 27 diameter x 2mm thick steel pipe with hole for padlock and a 40 x 3mm thick steel plate welded on other end.(See architect drawing No.TRH)	No	4	
	METALWORK(CPAP WORK GROUP NO. 136 UNLESS OTHERWISE STATED)			
	WELDED GALVANISED STEEL SCREENS, GATES, ETC.			
	Screens and gates			
80	Single gate size 877 x 2250mm high of 40 x 60 x 3mm rectangular tubing with 12mm diameter steel rods at 110mm centre and 40 x 6mm horizontal support flat bars fixed with hinges to steel frame of 45 x 45 x 3mm rectangular tubing fixed to walls with bolts and lugs including padlock plate (Refer to Door Schedule on drawing 4G-TB)	No	1	
	HOT DIPPED GALVANISED MILD STEEL DOOR FRAMES			
	1,2mm Rebated frames suitable for half brick walls			
81	Frame for door 762 x 2032mm high.	No	4	
	1,2mm Rebated frames suitable for one brick walls			
82	Frame for door 813 x 2032mm high	No	1	
	Carried Forward			R

				R
	Brought Forward			
	GALVANISED STEEL WINDOWS, DOORS, ETC			
	SS industrial type steel windows			
83	Window type W1, 1100 x 550mm high. (Refer to window schedule on drawing 4G-TB)	No	2	
	PLASTERING(CPAP WORK GROUP NO. 142 UNLESS OTHERWISE STATED)			
	SCREEDS			
	Screeds steel trowelled, on concrete			
84	Average 50mm thick on floors to falls. (LI)	m2	25	
	INTERNAL PLASTER			
	Cement plaster steel trowelled, on brickwork			
85	On walls. (LI)	m2	72	
86	On narrow widths. (LI)	m2	3	
	PLUMBING AND DRAINAGE (PROVISIONAL)(CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)			
	PLUMBING			
	NOTE: Prices for sanitary fittings fixed to walls or abutting walls, etc. shall include for sealing against walls with silicone sealing compound. This shall apply to wash hand basins, sinks and drainers, urinals, WC cisterns, wash troughs, shower trays and the like.			
	Carried Forward			R

				R
	Brought Forward			
	RAINWATER DISPOSAL			
	uPVC gutters and rainwater pipes			
87	110mm Half-round gutters including fixings	m	11	
88	75mm Diameter uPVC downpipes	m	7	
89	Extra over eaves gutter outlet for 75mm diameter rainwater downpipes	No	2	
90	Extra over eaves gutter for stopped ends	No	4	
91	Extra over rainwater downpipes for bends	No	4	
92	Extra over rainwater downpipes for shoes	No	1	
	SANITARY FITTINGS			
	"Atlas Plastics (Pty) Ltd" or other approved			
93	Atlas "VIP 200" (code 222AP) pedestal with footpiece complete with seat and lid screwed in precast slab including inlet funnel (224AP) riveted to shaft.	No	4	
94	Atlas Plastics "30 Litre Wash Trough" (code 366AP) colour Granite (code 101133), overall size 528 x 412mm wide with 40mm waste outlet, plugged and screwed to the wall with galvanised screws and fixing brackets.	No	1	
	"Cobra Watertech" or other approved			
95	15mm Rough brass hose bib tap as 'Cobra Watertech' Ref. No. 108-15 or other equal and approved including hose union, wall plate elbow, etc. with couplings for copper.	No	1	
	Carried Forward			R

				R
	Brought Forward			
	SANITARY PLUMBING			
	Black uPVC UV stabilised pipes			
96	110mm Vent pipes.	m	16	
	Extra over Black uPVC UV stabilised pipes for fittings			
97	Vent cowl formed of 110mm vent valve with top cut off and black shade cloth fixed over end of vent pipe.	No	4	
	GLAZING(CPAP WORK GROUP NO. 150 UNLESS OTHERWISE STATED)			
	GLAZING TO WOOD/STEEL WITH PUTTY			
	6mm Thick obscure safety glass			
98	Panes exceeding 0,1m2 and not exceeding 0.5m2	m2	1	
	MIRRORS, ETC.			
	6mm Silvered float glass copper backed mirrors with polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in brickwork or concrete			
99	Mirror 300 x 400mm high	No	2	
	Carried Forward			R

				R
	Brought Forward			
	PAINTWORK(CPAP WORK GROUP NO. 152 UNLESS OTHERWISE STATED)			
	PAINTWORK, ETC. TO NEW WORK			
	"PLASCON" OR OTHER EQUAL AND APPROVED			
	ON INTERNAL FLOATED PLASTER SURFACES			
	Prepare and brush surface to remove all loose contaminants and apply one coat alkali resistant primer, one undercoat and two coats 'PLASCON Wall & All' or other approved emulsion paint for interior use.			
100	Walls. (LI)	m2	75	
	ON FIBRE-CEMENT BOARD SURFACES			
	Prepare and brush surface to remove all loose contaminants and apply one coat alkali resistant primer and two coats superior quality acrylic emulsion paint for exterior use.			
101	Nutec cement fascia and barge boards. (LI)	m2	5	
	ON WOOD SURFACES			
	Prepare surfaces and remove all loose material, apply one coat water based primer, one coat alkyd based universal undercoat and two coats superior quality universal enamel paint, on timber doors			
102	On doors. (LI)	m2	20	
	Prepare surfaces and remove all loose material, apply two coats 'ABE Provonite' carbolineum			
103	Roof timbers at eaves and verges. (LI)	m2	7	
	Carried Forward			R

				R
	Brought Forward			
	CONCRETE V DRAIN CHANNEL (ALL TRADES) (PROVISIONAL)			
	CONCRETE APRON, ETC			
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	Excavation in earth not exceeding 2m deep			
104	Over site to reduce levels for concrete V drain channel, etc. (LI)	m3	7	
	CARTING AWAY			
	Extra over all excavations for loading, carting and dumping surplus excavated material			
105	Off site to be located by the contractor	m3	10	
	EARTH FILLING, ETC			
	Earth filling supplied by the contractor under floors, etc.			
106	150mm G5 Material in accordance with SABS 1200 DM compacted to 98% Mod. AASHTO density. (LI)	m3	3	
	COMPACTION			
	Compaction of surfaces			
107	Compaction of ground surfaces under V drain channel, etc., including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density. (LI)	m2	25	
	TESTS			
	Prescribed density tests on filling			
108	Modified AASHTO Density test	No	3	
	Carried Forward			R

				R
	Brought Forward			
	SOIL POISONING			
	Approved brand of anti-termite soil poison applied by a Registered Pest Control company and guaranteed against termite infestation for ten years			
109	Under concrete V drain channel, etc	m2	25	
	CONCRETE, FORMWORK AND REINFORCEMENT (CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	REINFORCED CONCRETE CAST ON/IN FORMWORK			
	20Mpa/19mm Concrete			
110	Concrete V drain channel to falls. (LI)	m3	4	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete with a wood float finish			
111	Concrete channel to falls. (LI)	m2	25	
	Test blocks			
112	Making and testing 150 x 150 x 150mm concrete strength test cubes.	No	1	
	ROUGH FORMWORK (DEGREE OF ACCURACY II) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
113	Apron slabs, paving and ramps not exceeding 300mm high. (LI)	m	25	
	Carried Forward			R

	Brought Forward			R
	Expansion joints with 10mm softboard between vertical concrete and brick surfaces			
114	10mm Joints not exceeding 300mm high. (LI)	m	25	
	REINFORCEMENT(CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	Fabric reinforcement			
115	Type 193 fabric reinforcement in concrete surface beds, slabs, etc	m2	25	
	WATERPROOFING (CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)			
	JOINT SEALANTS, ETC			
	"ABE Flexothane" or other equal and approved two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc			
116	In 10mm joints not exceeding 300mm high. (LI)	m	25	
	WATER TANK SUPPORTS (ALL TRADES)(PROVISIONAL)			
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	EXCAVATION OTHER THAN BULK			
	Excavation in earth not exceeding 2m deep			
117	Bases. (LI)	m3	6	
	Extra over trench and hole excavation in earth for excavation in			
118	Hard rock	m3	1	
	Carried Forward			R

	Brought Forward			R
	CARTING AWAY			
	Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk)			
119	Off site to be located by the contractor	m3	4	
	EARTH FILLING, ETC			
	Note: All filling whether obtained from the excavations, from stockpiles or by the contractor from an outside source must be selected and approved by the Structural / Civil Engineers			
	Filling with material from the excavations compacted to a density of at least 93% Mod. AASHTO density			
120	Backfilling to trenches, holes, etc. (LI)	m3	2	
	KEEPING EXCAVATIONS FREE OF WATER			
	Keeping excavations free of water			
121	Allow for keeping excavations free of water or mud by hand or machinery		Item	
	COMPACTION			
	Compaction of surfaces			
122	Compaction of ground surfaces 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. (LI)	m2	7	
	TESTS			
	Prescribed density tests on filling			
123	Modified AASHTO Density test	No	1	
	Carried Forward			R

				R
	Brought Forward			
	SOIL POISONING			
	Soil insecticide			
124	Under floors, etc., including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming	m2	13	
	CONCRETE, FORMWORK AND REINFORCEMENT (CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES			
	10MPa Concrete			
125	Surface blinding under footings, bases, etc. (LI)	m3	1	
	REINFORCED CONCRETE			
	25MPa/19mm Concrete			
126	Surface beds. (LI)	m3	1	
127	Bases. (LI)	m3	2	
	TEST BLOCKS			
	Test blocks			
128	Prepare a set of six concrete cubes each cube size 150 x 150 x 150mm for strength cubes and deliver to an approved laboratory for testing and pay all charges in connection therewith	Sets	1.00	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete with a wood float			
129	Surface beds, slabs, etc. (LI)	m2	6	
	Carried Forward			R

				R
	Brought Forward			
	ROUGH FORMWORK (DEGREE OF ACCURACY III) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
130	Edges, risers, ends and reveals not exceeding 300mm high or wide. (LI)	m	10	
	Boxing in smooth formwork to form			
131	50mm Horizontal chamfer at corner. (LI)	m	10	
	REINFORCEMENT (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	Mild steel reinforcement to structural concrete work			
132	10mm Diameter bars	t	0.088	
	MASONRY(CPAP WORK GROUP NO. 116 UNLESS OTHERWISE STATED)			
	BRICKWORK IN FOUNDATIONS			
	Brickwork of NFX (14 MPa nominal compressive strength) clay imperial bricks in cement mortar			
133	One brick wall. (LI)	m2	8	
	BRICKWORK IN SUPERSTRUCTURE			
	Brickwork of NFP Bricks in Class II mortar			
134	One brick wall. (LI)	m2	4	
	Carried Forward			R

				R
	Brought Forward			
	BRICKWORK SUNDRIES			
	Bagging of 1:3 cement and sand mixture			
135	On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and / or brick reinforcing fabric. (LI)	m2	4	
	Brickwork reinforcement			
136	150mm Wide reinforcement built in horizontally. (LI)	m	46	
	FACE BRICKWORK			
	"Corobrik Travertine FBA" or equal approved face bricks in stretcher bond with ruled joints and perpends internally and externally			
137	Extra over brickwork for face brickwork. (LI)	m2	4	
	PLUMBING AND DRAINAGE (CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)			
	WATER SUPPLIES AND FIRE SERVICES			
	TAPS, VALVES, ETC			
	"Cobra Watertech"			
138	15mm Rough brass hose bib tap as 'Cobra Watertech' Ref. No. 108-15 or other equal and approved including hose union, wall plate elbow, etc. with couplings for copper.	No	1	
	Carried Forward			R

	Brought Forward				R
	TANKS, ETC				
	Polyethylene drinking water tanks				
139	5000 Litre low profile circular tank size 2250mm diameter x 1800mm high, with access lid and inlet hole,embedded in pedestal to a minimum of 400mm above ground level and tied down with 2 No. off 4mm galvanised double strap stay wires tied to galvanised mild steel M12 eye bolt of which is to be drilled and fixed to the 4 corners of concrete supporting base.	No	1		
	Carried to Final Summary of Section No. 3				R

Section No. 3
Bill No. 4
Type D - Learner Girls - 4WC Seats Ablution
LDM QUANTITY SURVEYORS

SECTION SUMMARY - NEW BUILDINGS

Bill No		Page No	Amount
1	Type A - Grade R - 2WC+2Urinals+1Teachers	64	
2	Type B-WB - Teacher/Learner - 2WC-F+ 2WC-M+1Paraplegic WC Ablution	91	
3	Type C - Learners Boys - 2WC + 2Urinals Ablution	121	
4	Type D - Learner Girls - 4WC Seats Ablution	149	

Carried to Final Summary Page R

Section No. 3
LDM QUANTITY SURVEYORS

Item No			Quantity	Rate	Amount
	SECTION NO. 4				
	BILL NO.1				
	V- DRAINS (ALL TRADES) (PROVISIONAL)				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)				
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)				
	SITE CLEARANCE ETC				
	Site clearance				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc	m2	45		
	EXCAVATION OTHER THAN BULK				
	Excavation in earth not exceeding 2m deep				
2	Reduced levels under floors. (LI)	m3	6		
	CARTING AWAY				
	Extra over all excavations for loading, carting and dumping surplus excavated material				
3	Off site to be located by the contractor	m3	6		
	Carried Forward			R	

				R
	Brought Forward			
	COMPACTION			
	Compaction of surfaces			
4	Compaction of ground surfaces under floors etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 95% Mod. AASHTO density. (LI)	m2	45	
	TESTS			
	Prescribed density tests on filling			
5	Modified AASHTO Density test	No	1	
	SOIL POISONING			
	Soil insecticide in accordance to SANS 5859			
6	Under floors, etc. including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming	m2	45	
	CONCRETE, FORMWORK AND REINFORCEMENT (CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	REINFORCED CONCRETE CAST ON/IN FORMWORK			
	20MPa/19mm Concrete			
7	Surface beds, slabs, etc to falls and currents. (LI)	m3	6	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete with a wood float finish			
8	Concrete channel to falls. (LI)	m2	45	
	Carried Forward			R

	Brought Forward				R
	Test blocks				
9	Prepare a set of six concrete cubes each cube size 150 x 150 x 150mm for strength cubes and deliver to an approved laboratory for testing and pay all charges in connection therewith	Sets	1		
	ROUGH FORMWORK (DEGREE OF ACCURACY II) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)				
	Rough formwork to sides				
10	V-drains, paving and ramps not exceeding 300mm high. (LI)	m	45		
	MOVEMENT JOINTS, ETC.				
	Expansion joints with 10mm softboard between vertical concrete and brick surfaces				
11	10mm Joints not exceeding 300mm high. (LI)	m	23		
	REINFORCEMENT (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)				
	Fabric reinforcement				
12	Type 193 fabric reinforcement in concrete surface beds, slabs, etc	m2	45		
	WATERPROOFING (CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)				
	JOINT SEALANTS, ETC				
	"ABE Flexothane" or equal approved two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc				
13	In 10mm joints not exceeding 300mm high. (LI)	m	23		
	Carried to Final Summary of Section No. 4				R

Section No. 4
Bill No. 1
V - Drains (Provisional)
LDM QUANTITY SURVEYORS

Item No			Quantity	Rate	Amount
	SECTION NO. 4				
	BILL NO.2				
	COVERED WALKWAYS (ALL TRADES) (PROVISIONAL)				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)				
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)				
	SITE CLEARANCE ETC				
	Site clearance				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc (LI)	m2	97		
	EXCAVATION OTHER THAN BULK				
	Excavation in earth not exceeding 2m deep				
2	Reduce levels under floors (LI)	m3	10		
3	Trenches (LI)	m3	8		
4	Bases (LI)	m3	7		
	CARTING AWAY				
	Extra over all excavations for carting way				
5	Surplus material from excavations and/or stocked piles on site to a dumping site to be located by the contractor	m3	25		
	Carried Forward			R	

	Brought Forward			R
	KEEPING EXCAVATIONS FREE OF WATER			
	Keeping excavations free of water			
6	Allow for keeping excavations free of water or mud by hand or machinery (LI)		Item	
	COMPACTION			
	Compaction of surfaces			
7	Compaction of ground surfaces 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 (LI)	m2	97	
	TESTS			
	Prescribed density tests on filling			
8	Modified AASHTO Density test (LI)	No	1	
9	"Field Density" test including "Optimum Moisture Content" (four readings per test)	No	1	
	SOIL POISONING			
	Soil insecticide in accordance to SANS 5859			
10	Under concrete walkways, etc (LI)	m2	97	
	CONCRETE, FORMWORK AND REINFORCEMENT (CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	REINFORCED CONCRETE CAST ON/IN FORMWORK			
	20Mpa/19mm Concrete			
11	Foundation beams (LI)	m3	8	
	Carried Forward			R

				R
	Brought Forward			
12	Surface beds cast in panels (LI)	m3	10	
13	Bases (LI)	m3	7	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete with a broomed non-slip finish			
14	Surface beds, slabs, etc (LI)	m2	97	
	Test blocks			
15	Prepare a set of six concrete cubes each cube size 150 x 150 x 150mm for strength cubes and deliver to an approved laboratory for testing and pay all charges in connection therewith	Sets	4	
	ROUGH FORMWORK (DEGREE OF ACCURACY II) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
16	Edges, risers, ends and reveals n.e 300mm high (LI)	m	88	
	MOVEMENT JOINTS, ETC.			
	Expansion joints with 10mm softboard between vertical concrete surfaces			
17	10mm Joints not exceeding 300mm high (LI)	m	48	
	REINFORCEMENT(CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	Fabric reinforcement			
18	Type 193 fabric reinforcement in concrete surface bed, slabs, etc (LI)	m2	97	
	Carried Forward			R

	Brought Forward			R
	WATERPROOFING (CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)			
	Joint Sealants, etc			
	"ABE Flexothane" or equal and approved two-part grey polysulphide sealing compound including backing cord, bond breaking, primer, etc			
19	In 10mm joints not exceeding 300mm high (LI)	m	48	
	ROOF COVERINGS, ETC.(CPAP WORK GROUP NO. 125 UNLESS OTHERWISE STATED)			
	PROFILED METAL SHEETING AND ACCESSORIES			
	0,58mm Colorbond or equal and approved roof sheeting IBR profile colour one side fixed in accordance with the manufacturer's instructions			
20	Roof covering with pitch not exceeding 25 degrees (LI)	m2	114	
	CARPENTRY AND JOINERY			
	CARPENTRY AND JOINERY(CPAP WORK GROUP NO. 126 UNLESS OTHERWISE STATED)			
	ROOFS, ETC			
	Wrought softwood			
21	228 x 170mm Timber beam (LI)	m	88	
22	114 x 38mm Rafter beam (LI)	m	95	
23	76 x 50mm Purlins (LI)	m	132	
	Carried Forward			R

				R
	Brought Forward			
	STRUCTURAL STEELWORK(CPAP WORK GROUP NO. 134 UNLESS OTHERWISE STATED)			
	GALVANISED STEEL POSTS, ETC			
	Hot dip galvanised full penetration welded posts with angle section cleats and flat section fixing plates bolted to concrete			
24	102mm Diameter x 3mm thick circular hollow section posts including all plates, fixings, etc (LI)	t	0.12	
	Galvanised bolts, etc.			
25	M12 Grade 8.8 bolts (LI)	No	108	
	PAINTWORK(CPAP WORK GROUP NO. 152 UNLESS OTHERWISE STATED)			
	PAINTWORK, ETC. TO NEW WORK			
	Prepare surfaces and remove all loose material, apply two coats 'ABE Provonite' or equal and approved carbolineum or equal approved anti-corrosive coal tar paint			
26	On roof timbers at eaves and verges (LI)	m2	114	
	Carried to Final Summary of Section No. 4			R

Section No. 4
Bill No. 2
Covered Walkways (Provisional)
LDM QUANTITY SURVEYORS

Item No			Quantity	Rate	Amount
	SECTION NO. 4				
	BILL NO.3				
	OPEN WALKWAYS (ALL TRADES)(PROVISIONAL)				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)				
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)				
	SITE CLEARANCE ETC				
	Site clearance				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc	m2	77		
	EXCAVATION OTHER THAN BULK				
	Excavation in earth not exceeding 2m deep				
2	Reduce levels under floors. (LI)	m3	8		
3	Trenches. (LI)	m3	6		
	CARTING AWAY				
	Extra over all excavations for carting way				
4	Surplus material from excavations and/or stocked piles on site to a dumping site to be located by the contractor	m3	14		
	Carried Forward			R	

	Brought Forward			R
	KEEPING EXCAVATIONS FREE OF WATER			
	Keeping excavations free of water			
5	Allow for keeping excavations free of water or mud by hand or machinery		Item	
	COMPACTION			
	Compaction of surfaces			
6	Compaction of ground surfaces 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. (LI)	m2	77	
	TESTS			
	Prescribed density tests on filling			
7	Modified AASHTO Density test	No	1	
	SOIL POISONING			
	Soil insecticide in accordance to SANS 5859			
8	Under concrete walkways, etc	m2	77	
	CONCRETE, FORMWORK AND REINFORCEMENT (CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	REINFORCED CONCRETE CAST ON/IN FORMWORK			
	20Mpa/19mm Concrete			
9	Foundation beams. (LI)	m3	6	
10	Surface beds, cast in panels. (LI)	m3	6	
	CONCRETE SUNDRIES			
	Carried Forward			R

				R
	Brought Forward			
	Finishing top surfaces of concrete with a broomed non-slip finish			
11	Surface beds, slabs, etc. (LI)	m2	77	
	Test blocks			
12	Prepare a set of six concrete cubes each cube size 150 x 150 x 150mm for strength cubes and deliver to an approved laboratory for testing and pay all charges in connection therewith	Sets	1.0	
	MOVEMENT JOINTS, ETC.			
	Expansion joints with 10mm softboard between vertical concrete surfaces			
13	10mm Joints not exceeding 300mm high. (LI)	m	39	
	ROUGH FORMWORK (DEGREE OF ACCURACY II) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
14	Aprons slabs, paving, walkways and ramps. (LI)	m	70	
	REINFORCEMENT(CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	Fabric reinforcement			
15	Type 193 fabric reinforcement in concrete surface bed, slabs, etc	m2	77	
	Carried Forward			R

	Brought Forward			R
	WATERPROOFING (CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)			
	Joint Sealants, etc			
	"ABE Flexothane" or other equally approved two-part grey polysulphide sealing compound including backing cord, bond breaking, primer, etc			
16	In 10mm joints not exceeding 300mm high. (LI)	m	39	
	Carried to Final Summary of Section No. 4			R

Section No. 4
Bill No. 3
Open Walkways (Provisional)
LDM QUANTITY SURVEYORS

Item No			Quantity	Rate	Amount
	SECTION NO. 4				
	BILL NO. 4				
	WATER TANK SUPPORTS (ALL TRADES) (PROVISIONAL)				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)				
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)				
	EXCAVATION OTHER THAN BULK				
	Excavation in earth not exceeding 2m deep				
1	Bases. (LI)	m3	12		
	Extra over trench and hole excavation in earth for excavation in				
2	Hard rock	m3	2		
	CARTING AWAY				
	Extra over all excavations for loading, carting and dumping surplus excavated material (no allowance made for increase in bulk)				
3	Off site to be located by the contractor	m3	8		
	Carried Forward			R	

				R
	Brought Forward			
	EARTH FILLING, ETC			
	Note: All filling whether obtained from the excavations, from stockpiles or by the contractor from an outside source must be selected and approved by the Structural / Civil Engineers			
	Filling with material from the excavations compacted to a density of at least 93% Mod. AASHTO density			
4	Backfilling to trenches, holes, etc. (LI)	m3	8	
	KEEPING EXCAVATIONS FREE OF WATER			
	Keeping excavations free of water			
5	Allow for keeping excavations free of water or mud by hand or machinery		Item	
	COMPACTION			
	Compaction of surfaces			
6	Compaction of ground surfaces 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. (LI)	m2	14	
	TESTS			
	Prescribed density tests on filling			
7	Modified AASHTO Density test	No	2	
	SOIL POISONING			
	Soil insecticide in accordance to SANS 5859			
8	Under floors, etc., including forming and poisoning shallow furrows against foundation walls, etc., filling in furrows and ramming	m2	26	
	Carried Forward			R

				R
	Brought Forward			
	CONCRETE, FORMWORK AND REINFORCEMENT(CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES			
	10MPa Concrete			
9	Surface blinding under footings, bases, etc. (LI)	m3	2	
	REINFORCED CONCRETE CAST AGAINST/ON FORMWORK			
	25MPa/19mm Concrete			
10	Surface beds. (LI)	m3	2	
11	Bases. (LI)	m3	4	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete with a wood float			
12	Surface beds, slabs, etc. (LI)	m2	12	
	Test blocks			
13	Prepare a set of six concrete cubes each cube size 150 x 150 x 150mm for strength cubes and deliver to an approved laboratory for testing and pay all charges in connection therewith	Sets	1.00	
	ROUGH FORMWORK (DEGREE OF ACCURACY III) (CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
14	Edges, risers, ends and reveals not exceeding 300mm high or wide. (LI)	m	20	
	Carried Forward			R

				R
	Brought Forward			
	Boxing in smooth formwork to form			
15	50mm Horizontal chamfer at corner. (LI)	m	20	
	REINFORCEMENT (CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	Mild steel reinforcement to structural concrete work			
16	10mm Diameter bars	t	0.176	
	MASONRY(CPAP WORK GROUP NO. 116 UNLESS OTHERWISE STATED)			
	BRICKWORK IN FOUNDATIONS			
	Brickwork of NFX (14 MPa nominal compressive strength) clay imperial bricks in cement mortar			
17	One brick wall. (LI)	m2	16	
	BRICKWORK IN SUPERSTRUCTURE			
	Brickwork of NFP Bricks in Class II mortar			
18	One brick wall. (LI)	m2	8	
	BRICKWORK SUNDRIES			
	Bagging of 1:3 cement and sand mixture			
19	On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and / or brick reinforcing fabric. (LI)	m2	8	
	Brickwork reinforcement			
20	150mm Wide reinforcement built in horizontally. (LI)	m	92	
	Carried Forward			R

	Brought Forward			R
	FACE BRICKWORK			
	"Corobrik Travertine FBA" or equal approved face bricks in stretcher bond with ruled joints and perpends internally and externally			
21	Extra over brickwork for face brickwork. (LI)	m2	8	
	PLUMBING AND DRAINAGE (CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)			
	WATER SUPPLIES AND FIRE SERVICES			
	TAPS, VALVES, ETC			
	"Cobra Watertech" or other approved			
22	15mm Rough brass hose bib tap as 'Cobra Watertech' Ref. No. 108-15 or other equal and approved including hose union, wall plate elbow, etc. with couplings for copper.	No	2	
	TANKS, ETC			
	Polyethylene drinking water tanks			
23	5000 Litre low profile circular tank size 2250mm diameter x 1800mm high, with access lid and inlet hole,embedded in pedestal to a minimum of 400mm above ground level and tied down with 2 No. off 4mm galvanised double strap stay wires tied to galvanised mild steel M12 eye bolt of which is to be drilled and fixed to the 4 corners of concrete supporting base.	No	2	
	Carried to Final Summary of Section No. 4			R

Section No. 4
Bill No. 4
Water Tanks (Provisional)
LDM QUANTITY SURVEYORS

Item No			Quantity	Rate	Amount
	SECTION NO. 4				
	BILL NO. 5				
	RETAINING STRUCTURES (ALL TRADES) (PROVISIONAL)				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)				
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)				
	EXCAVATION OTHER THAN BULK				
	Excavation in earth not exceeding 2m deep				
1	Trenches (LI)	m3	35		
	Extra over all excavations for carting away				
2	Surplus material from excavations and/or stock piles on site, to a dumping site to be located by the contractor	m3	17		
	Risk of collapse of excavations				
3	Sides of trench and hole excavations not exceeding 1,5m deep. (LI)	m2	101		
	Keeping excavations free of water				
4	Keeping excavations free of all water other than subterranean water.		Item		
	FILLING ETC				
	Filling with material from the excavations compacted to a density of at least 93% Mod. AASHTO density				
5	Backfilling to trenches, holes, etc. (LI)	m3	18		
	Carried Forward			R	

	Brought Forward			R
	COMPACTION			
	Compaction of surfaces			
6	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 98% Mod. AASHTO density. (LI)	m2	35	
	TESTS			
	Prescribed density tests on filling			
7	"Modified AASHTO Density" test.	No	2	
8	"Field Density" test including "Optimum Moisture Content" (four readings per test). (22/34)	No	2	
	SOIL POISONING			
	Soil Insecticide in accordance with SANS 5859			
9	To bottoms and sides of trenches, etc	m2	136	
	CONCRETE, FORMWORK AND REINFORCEMENT (PROVISIONAL)(CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)			
	SUPPLEMENTARY PREAMBLES			
	Cost of tests			
	The costs of making, storing and testing of concrete test cubes as required under Clause 7 "Tests" of SABS 1200 G 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. (Test cubes are measured separately)			
	Carried Forward			R

	Brought Forward			R
	Formwork			
	Descriptions of formwork shall be deemed to include use and waste only (except where described as "left in" or "permanent"), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use.			
	The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself.			
	Formwork to soffits of solid slabs etc. shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.			
	Formwork to sides of bases, pile caps, ground beams, etc. will only be measured where it is prescribed by the Engineer for design reasons. 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".			
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES			
	15MPa Concrete			
10	Surface blinding under surface beds, slabs, etc. (LI)	m3	2	
	REINFORCED CONCRETE			
	25MPa/19mm Concrete			
11	Strip footings. (LI)	m3	9	
	CONCRETE SUNDRIES			
	Carried Forward			R

				R
	Brought Forward			
	Test blocks			
12	Making and testing 150 x 150 x 150mm concrete strength test cubes.	No	1	
	FORMWORK (PROVISIONAL)(CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	ROUGH FORMWORK (DEGREE OF ACCURACY II)			
	Rough formwork to sides			
13	Edges, risers, ends and reveals not exceeding 300mm high or wide. (LI)	m	101	
	REINFORCEMENT (PROVISIONAL)			
	High tensile steel reinforcement to structural concrete work			
14	Bars of varying diameters.	t	1.350	
	MASONRY(CPAP WORK GROUP NO. 116 UNLESS OTHERWISE STATED)			
	SUPPLEMENTARY PREAMBLES			
	BRICKWORK			
	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 etc			
	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.			
	Carried Forward			R

	Brought Forward			R
	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 "Brixeal" bitumen emulsion waterproofing coating.			
	Face bricks			
	Bricks shall be ordered timeously to obtain uniformity in size and colour			
	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 IN FOUNDATIONS (PROVISIONAL)			
	Brickwork of NFX (14 MPa nominal compressive strength) clay imperial bricks in cement mortar			
15	One brick wall. (LI)	m2	38	
	BRICKWORK SUNDRIES			
	Brickwork reinforcement			
16	150mm Wide reinforcement built in horizontally. (LI)	m	100	
	BRICKWORK IN SUPERSTRUCTURE			
	Brickwork of NFP Bricks in Class II mortar			
	BRICKWORK SUNDRIES			
	Bagging of 1:3 cement and sand mixture			
17	On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and / or brick reinforcing fabric. (LI)	m2	75	
	Carried Forward			R

	Brought Forward			R
	Brickwork reinforcement			
18	150mm Wide reinforcement built in horizontally. (LI)	m	150	
	FACE BRICKWORK			
	"Corobrik Travertine FBA" or other approved face bricks in stretcher bond with ruled joints and perpends internally and externally			
19	Extra over brickwork for face brickwork. (LI)	m2	75	
20	Extra over brickwork for brick-on-edge header course lintel. (LI)	m	50	
	WATERPROOFING(CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)			
	DAMP-PROOFING OF WALLS AND FLOORS			
	Two coats "ABE Brixeal" or other approved bitumen emulsion waterproof coating			
21	On brick walls. (LI)	m2	75	
	Carried to Final Summary of Section No. 4			R

Section No. 4
Bill No. 5
Retaining Structures (Provisional)
LDM QUANTITY SURVEYORS

Item No			Quantity	Rate	Amount
	SECTION NO. 4				
	BILL NO. 6				
	CONSERVANCY TANK (ALL TRADES) (PROVISIONAL)				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)				
	EARTHWORKS (CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)				
	SITE CLEARANCE, ETC.				
	Site clearance				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m2	64		
2	Stripping average 150mm thick layer of top soil and stockpiling on site.	m2	64		
	BULK EXCAVATION, FILLING, ETC				
	Excavation in earth not exceeding 2m deep				
3	Holes (Tank).	m3	72		
	Excavation in earth exceeding 2m but not exceeding 4m deep				
4	Holes (Tank).	m3	31		
	Back excavation of vertical sides of excavation in earth for working space including backfilling compacted to 98% Mod. AASHTO density				
5	Not exceeding 1,5m deep, etc. 300mm away from excavated face. (LI)	m2	36		
	Carried Forward			R	

				R
	Brought Forward			
6	Exceeding 1,5m and not exceeding 3m deep, etc. 300mm away from excavated face. (LI)	m2	33	
	Extra over bulk excavations in earth for excavation in			
7	Soft rock	m3	21	
8	Hard rock	m3	14	
	Extra over back excavation in earth for working space for excavation in soft rock			
9	Not exceeding 1,5m deep, etc. 300mm away from excavated face.	m2	36	
10	Exceeding 1,5m and not exceeding 3m deep, etc. 300mm away from excavated face.	m2	33	
	Extra over back excavation in earth for working space for excavation in hard rock			
11	Not exceeding 1,5m deep, etc. 300mm away from excavated face.	m2	36	
12	Exceeding 1,5m and not exceeding 3m deep, etc. 300mm away from excavated face.	m2	33	
	Extra over all excavations for carting away			
13	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the Contractor	m3	69	
	Risk of collapse of excavations			
14	Sides of trench and hole excavations not exceeding 1,5m deep. (LI)	m2	36	
15	Sides of trench and hole excavations exceeding 1,5m deep. (LI)	m2	33	
	Keeping excavations free of water			
16	Keeping excavations free of all water other than subterranean water.		Item	
	Carried Forward			R

				R
	Brought Forward			
	EARTH FILLING, ETC			
	Filling with material from the excavations compacted to a density of at least 95% Mod. AASHTO maximum density			
17	Backfilling to trenches, holes, etc. (LI)	m3	34	
	Compaction of surfaces			
18	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 98% Mod. AASHTO density. (LI)	m2	36	
	Prescribed density tests on filling			
19	"Modified AASHTO Density" test	No	1	
20	"Field Density" test including "Optimum Moisture Content" (four readings per test)	No	1	
	SOIL POISONING			
	Soil insecticide in accordance with SANS 5859			
21	Under floors etc including forming and poisoning shallow furrows against foundation walls etc., filling in furrows and ramming	m2	105	
	Carried Forward			R

Brought Forward

CONCRETE, FORMWORK AND REINFORCEMENT(CPAP WORK GROUP NO. 110 UNLESS OTHERWISE STATED)

SUPPLEMENTARY PREAMBLES

Cost of tests

The costs of making, storing and testing of concrete test cubes as required under Clause 7 "Tests" of SABS 1200 G 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. (Test cubes are measured separately)

Formwork

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

The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself.

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Carried Forward

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				R
	Brought Forward			
	Formwork to soffits of solid slabs etc. shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described.			
	Formwork to sides of bases, pile caps, ground beams, etc. will only be measured where it is prescribed by the Engineer for design reasons. 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".			
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES			
	10MPa Concrete			
22	Surface blinding under footings and bases. (LI)	m3	2	
	REINFORCED CONCRETE CAST AGAINST/ON FORMWORK			
	25MPa/19mm Concrete			
23	Tank bases. (LI)	m3	11	
24	Slabs including beams and inverted beams. (LI)	m3	7	
	TEST BLOCKS			
	Test blocks			
25	Making and testing set of three 150 x 150 x 150mm concrete strength test cubes (Provisional)	No	2	
	CONCRETE SUNDRIES			
	Finishing top surfaces of concrete smooth with a steel trowel			
26	Surface beds, slabs, etc. (LI)	m2	36	
	Carried Forward			R

				R
	Brought Forward			
	ROUGH FORMWORK (DEGREE OF ACCURACY III)(CPAP WORK GROUP NO. 111 UNLESS OTHERWISE STATED)			
	Rough formwork to sides			
27	Edges, risers, ends and reveals not exceeding 300mm high or wide. (LI)	m	24	
	Rough formwork to soffits			
28	Slabs, propped up exceeding 1.5m and not exceeding 3.5m high. (LI)	m2	27	
	Rough formwork to form			
29	Opening exceeding 2m and not exceeding 3m girth through not exceeding 300mm slab. (LI)	No	2	
	MOVEMENT JOINTS, ETC.			
	Slip joints between horizontal concrete and brick surfaces with two layers of 3 ply malthoid			
30	Not exceeding 300mm wide. (LI)	m	20	
	Expansion joints with bitumen impregnated fibreboard between vertical concrete surfaces			
31	13mm Joints not exceeding 300mm high. (LI)	m	20	
	REINFORCEMENT(CPAP WORK GROUP NO. 114 UNLESS OTHERWISE STATED)			
	High tensile steel reinforcement to structural concrete work			
32	10mm Diameter bars	t	0.052	
33	12mm Diameter bars	t	0.473	
34	16mm Diameter bars	t	0.608	
	Carried Forward			R

				R
	Brought Forward			
	MASONRY(CPAP WORK GROUP NO. 116 UNLESS OTHERWISE STATED)			
	BRICKWORK IN FOUNDATIONS			
	Brickwork of NFX bricks (14 MPa nominal compressive strength) in class II mortar			
35	One and a half brick walls. (LI)	m2	62	
	BRICKWORK SUNDRIES			
	Chip off projections, fill up crevices, cement wash with 1:6 cement and sand slurry and apply two coats "Brixeal" bitumen emulsion waterproof coating			
36	On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around ties and/or brick reinforcing fabric. (LI)	m2	62	
	Galvanised brickwork reinforcement			
37	150mm Wide reinforcement built in horizontally. (LI)	m	166	
	WATERPROOFING (CPAP WORK GROUP NO. 120 UNLESS OTHERWISE STATED)			
	DAMPPROOFING OF WALLS AND FLOORS			
	One layer of 375 micron embossed polyethylene damp proof course (SANS 952-1985 type B)			
38	In walls. (LI)	m2	8	
	One layer Derbigum SP4 waterproofing membrane sealed by means of 'torchfusion' or Coldbond 90 adhesive with 75mm side laps and 100mm end laps, laid under a ten-year guarantee, etc			
39	On walls. (LI)	m2	113	
40	Sealing edges to brickwork or concrete. (LI)	m2	8	
	Carried Forward			R

	Brought Forward			R
	One layer 250 micron green polyethylene waterproof sheeting (SANS 952-1985 type C) sealed at laps with PVC self-adhesive tape			
41	Under surface beds. (LI)	m2	25	
	PLASTERING(CPAP WORK GROUP NO. 142 UNLESS OTHERWISE STATED)			
	SCREEDS			
	Screeds steel trowelled, on concrete			
42	30mm Thick on floors and landings. (LI)	m2	25	
	INTERNAL PLASTER			
	Cement plaster steel trowelled, on brickwork			
43	On walls. (LI)	m2	51	
	EXTERNAL PLASTER			
	Cement plaster steel trowelled, on brickwork			
44	On walls. (LI)	m2	62	
	PLUMBING AND DRAINAGE(CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)			
	SOIL DRAINAGE			
	Heavy duty (Class 34) uPVC sewer and drain pipes laid in Class B bedding including excavations, bedding, backfilling, compacting to 95% Mod AASHTO density, risk of collapse and dewatering of trenches			
45	110mm Pipes laid in ground including excavation not exceeding 1m deep	m	30	
	Carried Forward			R

	Brought Forward			R
	Extra over uPVC pipes for the following fittings			
46	110mm Bend	No	2	
47	110mm ABC rodding eye	No	1	
	uPVC Gulleys			
48	110mm Diameter gulley trap jointed to drain, complete with hopper head and grid and the whole set on and encased in unreinforced concrete Class B (1:3:5) carried up 75mm above ground as kerb, dished down to grating and finished on all exposed faces in 1:3 cement render with angles rounded, including necessary excavation and formwork	No	1	
	Covers, etc			
49	"BESSANS DU PLESSSIS" 450 x 600 type CCP Heavy Duty manhole single seal cover and frame	No	2	
	ROCK EXCAVATION			
	Rock excavation			
50	Extra over excavation in soft excavation as described for pipe trenches, inspection chambers, etc., at all levels for excavation in soft rock excavation	m3	1	
51	Extra over excavation in soft excavation as described for pipe trenches, inspection chambers, etc., at all levels for excavation in intermediate excavation	m3	1	
52	Extra over excavation in soft excavation as described for pipe trenches, inspection chambers, etc., at all levels for excavation in hard rock excavation	m3	1	
	Testing			
53	Allow for testing the whole of the Soil Drainage to the satisfaction of the Principal Agent and Local Authorities All defective work is to be taken out and replaced at the Contractor's expense and the whole re-tested until found satisfactory		Item	
	Carried to Final Summary of Section No. 4			R

Section No. 4
Bill No. 6
Conservancy Tank (Provisional)
LDM QUANTITY SURVEYORS

SECTION SUMMARY - EXTERNAL WORKS (PROVISIONAL)

Bill No		Page No	Amount
1	V - Drains (Provisional)	153	
2	Covered Walkways (Provisional)	158	
3	Open Walkways (Provisional)	162	
4	Water Tanks (Provisional)	167	
5	Retaining Structures (Provisional)	173	
6	Conservancy Tank (Provisional)	182	

Carried to Final Summary Page R

Section No. 4
LDM QUANTITY SURVEYORS

Item No		Quantity	Rate	Amount

SECTION NO.5

BILL NO.1

BOREHOLE INSTALLATION (PROVISIONAL)

The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (2017 Edition)

SUPPLEMENTARY PREAMBLES

PREAMBLE

A desk top study and a geophysical investigation has been carried out at each school site earmarked for the installation of a borehole and a site drawing will be issued to the Contractor at site handover indicating the most feasible position for the proposed new borehole.

This 'Performance Specification' details the minimum deliverables expected from the Contractor which will lead to the successful installation of the boreholes.

1. DRILLING OF BOREHOLE(S)

Generally rotary air percussion drilling with the application of foam will be required. Some boreholes may require mud flush/rotary or symetrix drilling where drilling targets are specified within unconsolidated geological formations. The assumed drilling method will be specified. For the purpose of this project it is assumed that all drilling will take place within consolidated rock and that normal percussion will be required. Depth of drilling and installation of steel casing within the upper weathered formation will vary and it is assumed that the drilling average will be about 120m; for the purpose of this project it is assumed that weathering occur to an average depth of 25m. Steel casing will be required along this upper zone and all steel casing supplied must conform to SABS 719 and SABS62, (177mm x 4mm).

All drilling work needs to be carried out as per SANS

Carried Forward R

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10299-2: Part 2: The Design, Construction and Drilling of Boreholes under the full time on site supervision of a Geohydrologist.

The following will be required for the project:

i. Prepare all Health and Safety documentation to carry out the work as per the current Occupational Health and Safety Standards;
ii. Need to be registered with the Borehole Water Association of South Africa (BWA) and Groundwater Association of KwaZulu-Natal (GAKZN);
iii. Establishment and de-establishment of a single "Air Percussion" drilling rig per school. All costs to include transportation, accommodation, subsistence, etc;
iv. Provide costs for setting up at each school;
v. Provide cost for drilling 216mm diameter holes down to approximately 25m per borehole (depths will vary), thereafter, 165mm diameter holes down to 120m;
vi. Costs in 1(v) should include for the installation of casing down to 25m;
vii. Provide costs for symetrix percussion drilling 203mm diameter down to 80m, include a cost for casing shoe and ringbit (In sandy areas only);
viii. Provide a cost for developing the borehole(s) and carrying out a blow yield test;
ix. Provide a cost for a sanitary seal and capping of the borehole(s);
x. Penetration rates need to be recorded for each metre drilled;
xi. The borehole "chip" samples need to be bagged per metre and kept. A "chip tray" should be priced for per borehole;
xii. A detailed drillers log needs to be provided on completion of the borehole(s); and
xiii. All surplus rock material needs to be removed off site.

2. PUMP TESTING OF BOREHOLE(S)

All work needs to be carried out as per SANS 10299. The following will be required for the project:

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Brought Forward R

i. Prepare all Health and Safety documentation to carry out the work as per the current Occupational Health and Safety Standards;
ii. Need to be registered with the Borehole Water Association of South Africa (BWA) and Groundwater Association of KwaZulu-Natal (GAKZN);
iii. Establishment and de-establishment of a single pump testing team per school. All costs to include, transportation, accommodation, subsistence, etc;
iv. Provide costs for setting up at each school;
v. Assume pump testing will be between 0.25ℓ/s and 5.0ℓ/s;
vi. Provide costs for pump installation and removal down to approximately 100m;
vii. Provide costs for 4No. x 1hr step drawdown test per borehole to determine a pumping rate for the constant discharge test;
viii. Provide costs for a 12hr and 24 hr constant discharge test per borehole;
ix. Provide costs for monitoring recovery of step test and constant discharge test;
x. Provide costs for groundwater sampling of borehole(s). A 2ℓ water sample will need to be submitted to a SANAS Accredited laboratory for testing i.e. 1.5ℓ bottle for chemistry and 0.5ℓ amber glass bottle for microbiological analysis. The sampling bottles need to be sterile. Cost for laboratory analysis to be included. SANS 241-2015 testing.
xi. Prepare a pump testing data log/report and submit to the appointed hydrogeologist to analyse. (Note this is only the fieldwork component, no interpretation of data).

3. PUMP INSTALLATION FOR BOREHOLE(S)

All work needs to be carried out as per SANS 10299. The following will be required for the project:

i. Prepare all Health and Safety documentation to carry out the work as per the current Occupational Health and Safety Standards;

Carried Forward R

	Brought Forward			R
	ii. Need to be registered with the Borehole Water Association of South Africa (BWA) and Groundwater Association of KwaZulu-Natal (GAKZN); iii. Supply and install a submersible pump pumping up to 2.0ℓ/s; iv. Supply and install a 0.55kw up to 1.5kw 220volt motor. The motor selected will be depending on the requirement per school; v. All electrical and plumbing associated with the submersible pump to SANS (SABS) specifications and as indicated in SANS 10299; vi. All specifications in 3(v) should include joint kit, base plate and fittings, class 10 HDPE pipe, submersible cable, piping, control box, safety rope, electrical connections, etc; vii. Supply and install a manhole ring, cover and lockable galvanised lid; viii. Supply and install a 3m high galvanised tank stand and a 10000 litre tank with a concrete plinth base; ix. Supply and install all above ground piping to the tank stand and from tank stand to a single discharge point approximately 50m away, including trenching and backfilling; x. Supply and install a tap to connect to the tank stand to as indicated in 3(ix); xi. Provide all labour to install the above; and xii. Provide compliance certificates for all work.			
	Borehole Installation			
	Tenderers are to note that the sum included the amount column for this section of the Bill of Quantities, should be the total of all priced items in the Borehole Installation, Bill of Quantities as attached hereafter.			
1	Borehole Installation (transferred from page 53 of 59 on the Borehole BOQ)		Item	
	Carried to Final Summary Page			R

Section No. 5
Bill No. 1
Borehole Installation (Provisional)
LDM QUANTITY SURVEYORS

Item No		Quantity	Rate	Amount

SECTION NO. 6

BILL NO.1

TYPE A - NEW BUILDING (1NO)

ELECTRICAL INSTALLATION (CPAP WORK GROUP NO. 160 UNLESS OTHERWISE STATED)

SUPPLEMENTARY PREAMBLES

ELECTRICAL

1. The work is to be carried out in accordance with SANS 10142 and the Occupational Health and Safety Act of 1993 as amended. The installation is to be tested and compliance certificate submitted on completion of works.
2. Workmanship must comply with good engineering practice.
3. All materials necessary to satisfactorily complete the installation as per the bill of quantities.
4. The scope of work is for the complete electrical installation as shown on the layout drawings / site instruction.
5. The installation is to be covered by a 12 month unconditional guarantee, commencing from date of completion and acceptance of the works.
6. Ablution Block Being Demolished - the contractor to make safe and disconnect the feeder cable from the incomer distribution board and also from the distribution board before the demolition of the ablution block.
7. Refurbished Ablution Block - the contractor to verify that the electrical installation is compliant and advise the electrical engineer.
8. New Ablution Block - refer to electrical drawings layout.
9. Light fittings as per the bill of quantities / site instruction.
10. All surface conduit to be mild steel galvanised.

Carried Forward R

	Brought Forward			R
	11. 2.5mm² uPVC copper insulated wiring in conduit to be used			
	LIGHTNING PROTECTION			
	1. This work is to be carried out by a specialist 2. The test result to be below 10 ohms. 3. 25mm² uPVC conduit dropper to be installed. 4. 50mm² Aluminium earth conductors to be used. 5. 10mm² Aluminium ridge conductor to be used for non-metal roofs. 6. Earth spike to be 1.8m. 7. Stainless steel lugs, bolts and nuts.			
	ELECTRICAL INSTALLATION			
	GUARANTEE			
1	Guarantee the efficient and safe working of the whole installation for 12 months after hand over of the completed building to the Department.	Item		
	EARTHING SYSTEM			
2	Earthing of wash hand basin and all cold and hot water piping, by means of standard copper tape earth strapping at regular intervals of 6m and connecting same to the electrical earth system at the distribution board (2 No wash hand basins)	Item		
	TESTING			
3	After the installation has been completed the Electrical Contractor shall issue a certificate of compliance	Item		
4	Before issuing a certificate of compliance, an accredited person shall inspect and test each new installation or extension of an existing installation for compliance with the relevant standard	Item		
	P& G's			
5	Preliminary and General	Item		
	Carried Forward			R

				R
	Brought Forward			
	DISTRIBUTION BOARDS			
	Distribution boards complete with sheet metal trays, frames, sub frames, bus bars, provision for four future circuit breakers, labeling and legend cards			
6	Distribution board DB 1 as per single line drawing 16016_400, supplied complete with detailed shop drawing and specification including circuit breakers, Earth & Neutral busbars.	No	1	
7	20A CBI / HYMAG SX1-G3 single pole 230 V circuit breaker 5 kA fault level installed in existing main board	No	1	
8	40A CBI / HYMAG SX1-G3 single pole 230 V circuit breaker 5 kA fault level installed in existing main board	No	1	
9	Allow to work on existing distribution board and update legend card		Item	
	DISTRIBUTION CABLES			
	600/1000V rated cables laid in ground or in sleeves. To be protected when installed vertically up wall from ground			
10	10mm² 2 Core Airdec cable	m	78	
11	Termination for 10 mm² 2 core cable above	No	2	
12	4mm² 2 Core uPVC SWA Surfix cable	m	60	
13	Termination for 4mm² 2 core cable above	No	2	
	EARTHWORKS (PROVISIONAL)(CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	EXCAVATION			
14	Excavate for and build cable inspection chamber with half brick sides fitted with 600 x 600 x 600 medium duty cover and frame complete with drain holes. Size internally 600 x 600 x 600mm deep	No	2	
	Carried Forward			R

				R
	Brought Forward			
15	Excavate not exceeding 600mm deep in soft intermediate rock material for cabling and cable pipe trench including bedding, backfilling, compaction and disposal of surplus material	m3	18	
16	Excavate not exceeding 600mm deep in hard rock for and cabling and cable pipe trench including bedding, backfilling,compaction and disposal of surplus material	m3	4	
	SLEEVES			
17	50mm uPVC sleeves	m	12	
18	50mm uPVC long radius bend	No	2	
	LIGHTING AND SMALL POWER			
	Thin walled hot dipped galvanised conduits			
19	20mm Diameter surface mounted on brickwork	m	15	
20	20mm Diameter fixed on timber rafters	m	35	
	Thin walled uPVC conduits			
21	20mm Diameter chased in brickwork	m	65	
22	20mm Diameter fixed on timber rafters	m	96	
	CONDUIT BOXES AND FITTINGS			
23	100 x 100 x 100/50mm Deep hot dipped galvanised box for 20mm diameter conduit in brick or concrete walls including conduit ends and cover	No	3	
24	65mm Round hot dipped galvanised box for 20mm diameter steel conduit in brick or concrete walls or ceiling void including conduit ends and cover	No	9	
	Carried Forward			R

				R
	Brought Forward			
	CONDUCTORS			
	uPVC insulated stranded copper conductors drawn into wire ways			
25	2.5mm²	m	175	
	LIGHT SWITCHES, SWITCHED SOCKET OUTLETS ETC.			
	Switches etc. complete with cover plates fixed in flush boxes			
26	20A Light switch with cover plate	No	3	
27	20A IP65 Double pole Weatherproof Isolator	No	2	
	LUMINARIES AND EQUIPMENT			
	Luminaries or equipment complete with lamps, connections etc. mounted in position			
28	Type A - Magnet/Lihlelight or other approved RML round bulkhead with die cast aluminium base & 1xPL26 Watt lamp complete with electronic control gear	No	9	
29	Type B - 2 x 35W T5 Vapour proof fluorescent light fitting complete with electronic control gear	No	1	
30	Photocells inclusive of enclosure	No	1	
	LIGHTNING PROTECTION			
	ABLUTION BLOCK			
31	Undertake soil resistivity test, witnessed by the Engineer inclusive of submitting a typed test report/certificate		Item	
32	10mm² Aluminium conductor	m	85	
33	50mm² uPVC insulated aluminium earth wire	m	36	
34	Bonding of earth tails to sheet trusses/roof sheeting/tiles	No	8	
	Carried Forward			R

	Brought Forward			R
35	Supply and install 25mm galvanised conduit	m	36	
36	Supply and install stainless steel lugs	No	8	
37	Supply and install stainless steel bolts and nuts	No	8	
38	Supply and install stop cork box	No	8	
39	1,8m Earth spike	No	15	
	TESTING AND CERTIFICATE OF COMPLIANCE			
40	Allow for testing of the complete installation to be witnessed by the Electrical Engineer, including the issue of SABS Certificate of Compliance of Earthing Systems, Annexures of recorded test results and "As Built" drawings as specified.		Item	
	Carried to Final Summary of Section No. 6			R

Section No. 6
Bill No. 1
Type A - New Building
LDM QUANTITY SURVEYORS

Item No		Quantity	Rate	Amount

SECTION NO. 6

BILL NO.2

TYPE B - NEW BUILDING (1NO)

ELECTRICAL INSTALLATION(CPAP WORK GROUP NO. 160 UNLESS OTHERWISE STATED)

SUPPLEMENTARY PREAMBLES

ELECTRICAL

1. The work is to be carried out in accordance with SANS 10142 and the Occupational Health and Safety Act of 1993 as amended. The installation is to be tested and compliance certificate submitted on completion of works.
2. Workmanship must comply with good engineering practice.
3. All materials necessary to satisfactorily complete the installation as per the bill of quantities.
4. The scope of work is for the complete electrical installation as shown on the layout drawings / site instruction.
5. The installation is to be covered by a 12 month unconditional guarantee, commencing from date of completion and acceptance of the works.
6. Ablution Block Being Demolished - the contractor to make safe and disconnect the feeder cable from the incomer distribution board and also from the distribution board before the demolition of the ablution block.
7. Refurbished Ablution Block - the contractor to verify that the electrical installation is compliant and advise the electrical engineer.
8. New Ablution Block - refer to electrical drawings layout.
9. Light fittings as per the bill of quantities / site instruction.
10. All surface conduit to be mild steel galvanised.

Carried Forward R

	Brought Forward			R
	11. 2.5mm² uPVC copper insulated wiring in conduit to be used			
	LIGHTNING PROTECTION			
	1. This work is to be carried out by a specialist 2. The test result to be below 10 ohms. 3. 25mm² uPVC conduit dropper to be installed. 4. 50mm² Aluminium earth conductors to be used. 5. 10mm² Aluminium ridge conductor to be used for non-metal roofs. 6. Earth spike to be 1.8m. 7. Stainless steel lugs, bolts and nuts.			
	ELECTRICAL INSTALLATION			
	GUARANTEE			
1	Guarantee the efficient and safe working of the whole installation for 12 months after hand over of the completed building to the Department.	Item		
	EARTHING SYSTEM			
2	Earthing of wash hand basin and all cold and hot water piping, by means of standard copper tape earth strapping at regular intervals of 6m and connecting same to the electrical earth system at the distribution board (2 No wash hand basins)	Item		
	TESTING			
3	After the installation has been completed the Electrical Contractor shall issue a certificate of compliance	Item		
4	Before issuing a certificate of compliance, an accredited person shall inspect and test each new installation or extension of an existing installation for compliance with the relevant standard	Item		
	P& G's			
5	Preliminary and General	Item		
	Carried Forward			R

				R
	Brought Forward			
	DISTRIBUTION BOARDS			
	Distribution boards complete with sheet metal trays, frames, sub frames, bus bars, provision for four future circuit breakers, labeling and legend cards			
6	Distribution board DB 1 as per single line drawing 16016_400, supplied complete with detailed shop drawing and specification including circuit breakers, Earth & Neutral busbars.	No	1	
7	20A CBI / HYMAG SX1-G3 single pole 230 V circuit breaker 5 kA fault level installed in existing main board	No	1	
8	40A CBI / HYMAG SX1-G3 single pole 230 V circuit breaker 5 kA fault level installed in existing main board	No	1	
9	Allow to work on existing distribution board and update legend card		Item	
	DISTRIBUTION CABLES			
	600/1000V rated cables laid in ground or in sleeves. To be protected when installed vertically up wall from ground			
10	10mm² 2 Core Airdec cable	m	76	
11	Termination for 10 mm² 2 core cable above	No	2	
12	4mm² 2 Core uPVC SWA Surfix cable	m	45	
13	Termination for 4mm² 2 core cable above	No	2	
	EARTHWORKS (PROVISIONAL)(CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	EXCAVATION			
14	Excavate for and build cable inspection chamber with half brick sides fitted with 600 x 600 x 600 medium duty cover and frame complete with drain holes. Size internally 600 x 600 x 600mm deep	No	1	
	Carried Forward			R

				R
	Brought Forward			
15	Excavate not exceeding 600mm deep in soft intermediate rock material for cabling and cable pipe trench including bedding, backfilling, compaction and disposal of surplus material	m3	19	
16	Excavate not exceeding 600mm deep in hard rock for and cabling and cable pipe trench including bedding, backfilling,compaction and disposal of surplus material	m3	4	
	SLEEVES			
17	50mm uPVC sleeves	m	12	
18	50mm uPVC long radius bend	No	2	
	LIGHTING AND SMALL POWER			
	Thin walled hot dipped galvanised conduits			
19	20mm Diameter surface mounted on brickwork	m	15	
20	20mm Diameter fixed on timber rafters	m	35	
	Thin walled uPVC conduits			
21	20mm Diameter chased in brickwork	m	35	
22	20mm Diameter fixed on timber rafters	m	36	
	CONDUIT BOXES AND FITTINGS			
23	100 x 100 x 100/50mm Deep hot dipped galvanised box for 20mm diameter conduit in brick or concrete walls including conduit ends and cover	No	3	
24	65mm Round hot dipped galvanised box for 20mm diameter steel conduit in brick or concrete walls or ceiling void including conduit ends and cover	No	16	
	Carried Forward			R

				R
	Brought Forward			
	CONDUCTORS			
	uPVC insulated stranded copper conductors drawn into wire ways			
25	2.5mm²	m	198	
	LIGHT SWITCHES, SWITCHED SOCKET OUTLETS ETC.			
	Switches etc. complete with cover plates fixed in flush boxes			
26	20A Light switch with cover plate	No	3	
27	20A IP65 Double pole Weatherproof Isolator	No	1	
	LUMINARIES AND EQUIPMENT			
	Luminaries or equipment complete with lamps, connections etc. mounted in position			
28	Type A - Magnet/Lihlelight or other approved RML round bulkhead with die cast aluminium base & 1xPL26 Watt lamp complete with electronic control gear	No	16	
29	Type B - 2 x 35W T5 Vapour proof fluorescent light fitting complete with electronic control gear	No	1	
30	Photocells inclusive of enclosure	No	1	
	LIGHTNING PROTECTION			
	ABLUTION BLOCK			
31	Undertake soil resistivity test, witnessed by the Engineer inclusive of submitting a typed test report/certificate		Item	
32	10mm² Aluminium conductor	m	45	
33	50mm² uPVC insulated aluminium earth wire	m	22	
34	Bonding of earth tails to sheet trusses/roof sheeting/tiles	No	4	
	Carried Forward			R

	Brought Forward			R
35	Supply and install 25mm galvanised conduit	m	16	
36	Supply and install stainless steel lugs	No	4	
37	Supply and install stainless steel bolts and nuts	No	4	
38	Supply and install stop cork box	No	4	
39	1,8m Earth spike	No	10	
	TESTING AND CERTIFICATE OF COMPLIANCE			
40	Allow for testing of the complete installation to be witnessed by the Electrical Engineer, including the issue of SABS Certificate of Compliance of Earthing Systems, Annexures of recorded test results and "As Built" drawings as specified.		Item	
	Carried to Final Summary of Section No. 6			R

Section No. 6
Bill No. 2
Type B - New Building
LDM QUANTITY SURVEYORS

Item No		Quantity	Rate	Amount

SECTION NO. 6

BILL NO.3

TYPE C - NEW BUILDING (1NO)

ELECTRICAL INSTALLATION (CPAP WORK GROUP NO. 160 UNLESS OTHERWISE STATED)

SUPPLEMENTARY PREAMBLES

ELECTRICAL

1. The work is to be carried out in accordance with SANS 10142 and the Occupational Health and Safety Act of 1993 as amended. The installation is to be tested and compliance certificate submitted on completion of works.
2. Workmanship must comply with good engineering practice.
3. All materials necessary to satisfactorily complete the installation as per the bill of quantities.
4. The scope of work is for the complete electrical installation as shown on the layout drawings / site instruction.
5. The installation is to be covered by a 12 month unconditional guarantee, commencing from date of completion and acceptance of the works.
6. Ablution Block Being Demolished - the contractor to make safe and disconnect the feeder cable from the incomer distribution board and also from the distribution board before the demolition of the ablution block.
7. Refurbished Ablution Block - the contractor to verify that the electrical installation is compliant and advise the electrical engineer.
8. New Ablution Block - refer to electrical drawings layout.
9. Light fittings as per the bill of quantities / site instruction.
10. All surface conduit to be mild steel galvanised.
11. 2.5mm² uPVC copper insulated wiring in conduit

Carried Forward R

	Brought Forward			R
	to be used			
	LIGHTNING PROTECTION			
	1. This work is to be carried out by a specialist 2. The test result to be below 10 ohms. 3. 25mm² uPVC conduit dropper to be installed. 4. 50mm² Aluminium earth conductors to be used. 5. 10mm² Aluminium ridge conductor to be used for non-metal roofs. 6. Earth spike to be 1.8m. 7. Stainless steel lugs, bolts and nuts.			
	ELECTRICAL INSTALLATION			
	GUARANTEE			
1	Guarantee the efficient and safe working of the whole installation for 12 months after hand over of the completed building to the Department.	Item		
	EARTHING SYSTEM			
2	Earthing of wash hand basin and all cold and hot water piping, by means of standard copper tape earth strapping at regular intervals of 6m and connecting same to the electrical earth system at the distribution board (2 No wash hand basins)	Item		
	TESTING			
3	After the installation has been completed the Electrical Contractor shall issue a certificate of compliance	Item		
4	Before issuing a certificate of compliance, an accredited person shall inspect and test each new installation or extension of an existing installations for compliance with the relevant standard	Item		
	P& G's			
5	Preliminary and General	Item		
	Carried Forward			R

				R
	Brought Forward			
	DISTRIBUTION BOARDS			
	Distribution boards complete with sheet metal trays, frames, sub frames, busbars, provision for four future circuit breakers, labeling and legend cards			
6	Distribution board DB 1 as per single line drawing 16016_400, supplied complete with detailed shop drawing and specification including circuit breakers, Earth & Neutral busbars	No	1	
7	20A CBI / HYMAG SX1-G3 single pole 230 V circuit breaker 5 kA fault level installed in existing main board	No	1	
8	40A CBI / HYMAG SX1-G3 single pole 230 V circuit breaker 5 kA fault level installed in existing main board	No	1	
9	Allow to work on existing distribution board and update legend card		Item	
	DISTRIBUTION CABLES			
	600/1000V rated cables laid in ground or in sleeves. To be protected when installed vertically up wall from ground			
10	10mm² 2 core Airdec cable	m	86	
11	Termination for 10mm² 2 core cable above	No	2	
12	4mm² 2 core uPVC SWA Surfix cable	m	62	
13	Termination for 4mm² 2 core cable above	No	2	
	EARTHWORKS (PROVISIONAL)(CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	EXCAVATION			
14	Excavate for and build cable inspection chamber with half brick sides fitted with 600 x 600 x 600 medium duty cover and frame complete with drain holes. Size internally 600 x 600 x 600mm deep	No	1	
	Carried Forward			R

				R
	Brought Forward			
15	Excavate not exceeding 600mm deep in soft intermediate rock material for cabling and cable pipe trench including bedding, backfilling, compaction and disposal of surplus material	m3	17	
16	Excavate not exceeding 600mm deep in hard rock for and cabling and cable pipe trench including bedding, backfilling,compaction and disposal of surplus material	m3	4	
	SLEEVES			
17	50mm uPVC sleeves	m	12	
18	50mm uPVC long radius bend	No	2	
	LIGHTING AND SMALL POWER			
	Thin walled hot dipped galvanised conduits			
19	20mm Diameter surface mounted on brickwork	m	8	
20	20mm Diameter fixed on timber rafters	m	28	
	Thin walled uPVC conduits			
21	20mm Diameter chased in brickwork	m	22	
22	20mm Diameter fixed on timber rafters	m	38	
	CONDUIT BOXES AND FITTINGS			
23	100 x 100 x 100/50mm Deep hot dipped galvanised box for 20mm diameter conduit in brick or concrete walls including conduit ends and cover	No	2	
24	65mm Round hot dipped galvanised box for 20mm Diameter steel conduit in brick or concrete walls or ceiling void including conduit ends and cover	No	10	
	CONDUCTORS			
	Carried Forward			R

				R
	Brought Forward			
	uPVC insulated stranded copper conductors drawn into wire ways			
25	2.5mm²	m	179	
	LIGHT SWITCHES, SWITCHED SOCKET OUTLETS ETC.			
	Switches etc. complete with cover plates fixed in flush boxes			
26	20A Light switch with cover plate	No	1	
27	20A IP65 Double pole Weatherproof Isolator	No	2	
	LUMINARIES AND EQUIPMENT			
	Luminaries or equipment complete with lamps , connections etc. mounted in position			
28	Type A - Magnet/Lihlelight or other approved RML round bulkhead with die cast aluminium base & 1xPL26 Watt lamp complete with electronic control gear	No	10	
29	Type B - 2 x 35W T5 Vapour proof fluorescent light fitting complete with electronic control gear	No	1	
30	Photocells inclusive of enclosure	No	1	
	LIGHTNING PROTECTION			
	ABLUTION BLOCK			
31	Undertake soil resistivity test, witnessed by the Engineer inclusive of submitting a typed test report/certificate		Item	
32	10mm² aluminium conductor	m	32	
33	50mm² uPVC insulated aluminium earth wire	m	26	
34	Bonding of earth tails to sheet trusses/roof sheeting/tiles	No	4	
35	Supply and install 25mm galvanised conduit	m	16	
	Carried Forward			R

				R
	Brought Forward			
36	Supply and install stainless steel lugs	No	4	
37	Supply and install stainless steel bolts and nuts	No	4	
38	Supply and install stop cork box	No	4	
39	1,8m Earth spike	No	10	
	TESTING AND CERTIFICATE OF COMPLIANCE			
40	Allow for testing of the complete installation to be witnessed by the Electrical Engineer, including the issue of SABS Certificate of Compliance of Earthing Systems, Annexures of recorded test results and "As Built" drawings as specified		Item	
	Carried to Final Summary of Section No. 6			R

Section No. 6
Bill No. 3
Type C - New Building
LDM QUANTITY SURVEYORS

Item No		Quantity	Rate	Amount

SECTION NO. 6

BILL NO.4

TYPE D - NEW BUILDING (1NO)

ELECTRICAL INSTALLATION (CPAP WORK GROUP NO. 160 UNLESS OTHERWISE STATED)

SUPPLEMENTARY PREAMBLES

ELECTRICAL

1. The work is to be carried out in accordance with SANS 10142 and the Occupational Health and Safety Act of 1993 as amended. The installation is to be tested and compliance certificate submitted on completion of works.
2. Workmanship must comply with good engineering practice.
3. All materials necessary to satisfactorily complete the installation as per the bill of quantities.
4. The scope of work is for the complete electrical installation as shown on the layout drawings / site instruction.
5. The installation is to be covered by a 12 month unconditional guarantee, commencing from date of completion and acceptance of the works.
6. Ablution Block Being Demolished - the contractor to make safe and disconnect the feeder cable from the incomer distribution board and also from the distribution board before the demolition of the ablution block.
7. Refurbished Ablution Block - the contractor to verify that the electrical installation is compliant and advise the electrical engineer.
8. New Ablution Block - refer to electrical drawings layout.
9. Light fittings as per the bill of quantities / site instruction.
10. All surface conduit to be mild steel galvanised.
11. 2.5mm² uPVC copper insulated wiring in conduit

Carried Forward R

	Brought Forward		R
	to be used		
	LIGHTNING PROTECTION		
	1. This work is to be carried out by a specialist 2. The test result to be below 10 ohms. 3. 25mm² uPVC conduit dropper to be installed. 4. 50mm² Aluminium earth conductors to be used. 5. 10mm² Aluminium ridge conductor to be used for non-metal roofs. 6. Earth spike to be 1.8m. 7. Stainless steel lugs, bolts and nuts.		
	ELECTRICAL INSTALLATION		
	GUARANTEE		
1	Guarantee the efficient and safe working of the whole installation for 12 months after hand over of the completed building to the Department	Item	
	EARTHING SYSTEM		
2	Earthing of wash hand basin and all cold and hot water piping, by means of standard copper tape earth strapping at regular intervals of 6m and connecting same to the electrical earth system at the distribution board (2 No wash hand basins)	Item	
	TESTING		
3	After the installation has been completed the Electrical Contractor shall issue a certificate of compliance	Item	
4	Before issuing a certificate of compliance, an accredited person shall inspect and test each new installation or extension of an existing installation for compliance with the relevant standard	Item	
	P& G's		
5	Preliminary and General	Item	
	Carried Forward		R

				R
	Brought Forward			
	DISTRIBUTION BOARDS			
	Distribution boards complete with sheet metal trays, frames, sub frames, busbars, provision for four future circuit breakers, labeling and legend cards			
6	Distribution board DB 1 as per single line drawing 16016_400, supplied complete with detailed shop drawing and specification including circuit breakers, Earth & Neutral busbars	No	1	
7	20A CBI / HYMAG SX1-G3 single pole 230 V circuit breaker 5 kA fault level installed in existing main board	No	1	
8	40A CBI / HYMAG SX1-G3 single pole 230 V circuit breaker 5 kA fault level installed in existing main board	No	1	
9	Allow to work on existing distribution board and update legend card		Item	
	DISTRIBUTION CABLES			
	600/1000V rated cables laid in ground or in sleeves. To be protected when installed vertically up wall from ground			
10	10mm² 2 core Airdec cable	m	86	
11	Termination for 10mm² 2 core cable above	No	2	
12	4mm² 2 core uPVC SWA Surfix cable	m	60	
13	Termination for 4mm² 2 core cable above	No	2	
	EARTHWORKS (PROVISIONAL)(CPAP WORK GROUP NO. 104 UNLESS OTHERWISE STATED)			
	EXCAVATION			
14	Excavate for and build cable inspection chamber with half brick sides fitted with 600 x 600 x 600 medium duty cover and frame complete with drain holes. Size internally 600 x 600 x 600mm deep	No	1	
	Carried Forward			R

				R
	Brought Forward			
15	Excavate not exceeding 600mm deep in soft intermediate rock material for cabling and cable pipe trench including bedding, backfilling, compaction and disposal of surplus material	m3	19	
16	Excavate not exceeding 600mm deep in hard rock for and cabling and cable pipe trench including bedding, backfilling,compaction and disposal of surplus material	m3	4	
	SLEEVES			
17	50mm uPVC sleeves	m	12	
18	50mm uPVC long radius bend	No	2	
	LIGHTING AND SMALL POWER			
	Thin walled hot dipped galvanised conduits			
19	20mm Diameter surface mounted on brickwork	m	9	
20	20mm Diameter fixed on timber rafters	m	29	
	Thin walled uPVC conduits			
21	20mm Diameter chased in brickwork	m	36	
22	20mm Diameter fixed on timber rafters	m	47	
	CONDUIT BOXES AND FITTINGS			
23	100 x 100 x 100/50mm Deep hot dipped galvanised box for 20mm diameter conduit in brick or concrete walls including conduit ends and cover	No	2	
24	65mm Round hot dipped galvanised box for 20mm diameter steel conduit in brick or concrete walls or ceiling void including conduit ends and cover	No	12	
	CONDUCTORS			
	Carried Forward			R

				R
	Brought Forward			
	uPVC insulated stranded copper conductors drawn into wire ways			
25	2.5mm²	m	186	
	LIGHT SWITCHES, SWITCHED SOCKET OUTLETS ETC.			
	Switches etc. complete with cover plates fixed in flush boxes			
26	20A Light switch with cover plate	No	1	
27	20A IP65 Double pole Weatherproof Isolator	No	1	
	LUMINARIES AND EQUIPMENT			
	Luminaries or equipment complete with lamps,connections etc. mounted in position			
28	Type A - Magnet/Lihlelight or other approved RML round bulkhead with die cast aluminium base & 1xPL26 Watt lamp complete with electronic control gear	No	12	
29	Type B - 2 x 35W T5 Vapour proof fluorescent light fitting complete with electronic control gear	No	1	
30	Photocells inclusive of enclosure	No	1	
	LIGHTNING PROTECTION			
	ABLUTION BLOCK			
31	Undertake soil resistivity test, witnessed by the Engineer inclusive of submitting a typed test report/certificate		Item	
32	10mm² aluminium conductor	m	45	
33	50mm² uPVC insulated aluminium earth wire	m	36	
34	Bonding of earth tails to sheet trusses/roof sheeting/tiles	No	4	
35	Supply and install 25mm galvanised conduit	m	18	
	Carried Forward			R

	Brought Forward			R
36	Supply and install stainless steel lugs	No	4	
37	Supply and install stainless steel bolts and nuts	No	4	
38	Supply and install stop cork box	No	4	
39	1,8m Earth spike	No	10	
	TESTING AND CERTIFICATE OF COMPLIANCE			
40	Allow for testing of the complete installation to be witnessed by the Electrical Engineer, including the issue of SABS Certificate of Compliance of Earthing Systems, Annexures of recorded test results and "As Built" drawings as specified		Item	
	Carried to Final Summary of Section No. 6			R

Section No. 6
Bill No. 4
Type D - New Building
LDM QUANTITY SURVEYORS

SECTION SUMMARY - ELECTRICAL INSTALLATION (PROVISIONAL)

Bill No		Page No	Amount
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Carried to Final Summary Page R

Section No. 6
LDM QUANTITY SURVEYORS

FINAL SUMMARY

Section No		Page No	Amount
1	PRELIMINARIES	24	
2	REPAIRS AND RENOVATIONS TO PIT ABLUTIONS (PROVISIONAL)	35	
3	NEW BUILDINGS	150	
4	EXTERNAL WORKS (PROVISIONAL)	183	
5	BOREHOLE INSTALLATION (PROVISIONAL)	187	
6	ELECTRICAL INSTALLATION (PROVISIONAL)	212	
	SUB-TOTAL		R
	VAT @ 15%		R
	Carried to Form of Tender		R

LDM QUANTITY SURVEYORS

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

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:	**DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER**		
Tender no:	**ZNTU04274W**	**Project Code:**	**053448**

SECTION 1

1 EXTENT OF THE WORKS

1.1 EMPLOYERS OBJECTIVES

The upgrade of the school's existing sanitation infrastructure including associated external works.

1.2 OVERVIEW OF THE WORKS

The upgrade of the existing school sanitation infrastructure to the schools including demolitions, construction of new ablution facilities, including external works, new walkways, jojo tanks, borehole installation etc.

1.3 EXTENT OF THE WORKS

Refer to Bills of Quantities and attached drawings for detailed scope of work.

1.4 LOCATION OF THE WORKS

KZN North Coast Region: 28°22'46"S 31°14'36"E

1.5 TEMPORARY WORKS

All temporary work to comply with the Occupational Health and safety Act (Act 85 of 1993)

2 ENGINEERING

2.1 EMPLOYER'S DESIGN

The Employer design and related documentation and specification is as per the Appointed Consultants.

2.2 DESIGN BRIEF

As per the drawings and specifications provided by the appointed Engineers and Architects.

2.3 DRAWINGS

See list of Drawings/Annexures attached to this document.

	2.4	**DESIGN PROCEDURES**
		As per the design, documentation and specification issued by the Appointed Consultants and/or the Employer.
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. Tenderers are referred to www.kzntreasury.gov.za for access to the relevant documents. Tenderers 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**
		As per the conditions stated in form T2.6, in Section 1 of this document.
	3.5	**SUBCONTRACTING PROCEDURES**
		Not Applicable
4		**CONSTRUCTION**
	4.1	**APPLICABLE SANS 2001 STANDARDS FOR CONSTRUCTION WORKS**
		The Contractor is referred to the "ASAQS Model Preambles to Trades - 2017", 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
Project Specific Health and Safety Specification	29
ASAQS Model Preambles for Trades 2017	108
General Electrical Specification	E/1 to E/21
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. Only contractors registered with the Department of Labour in the safe handling of asbestos products are allowed to remove and dispose of any asbestos type material and issue the associated certificates.

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

Tenderers 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 (one technical meeting and one site meeting per month), 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

SECTION 2

SPECIFICATION DATA ASSOCIATED WITH SANS 1921-2004

Clause Numbers	
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:**
	Map Africa Consulting 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:**
	The project would be done classroom block for classroom block and the Contractor must allow for the fact that they would not have all the buildings at the same time to work on. The sequence of the blocks would be determined once the Contractor is on site and in agreement with the Principal of the school.

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. - Roof Sheeting sample. - Gutter sample. - Door sample. - Screed panel 2m x 2m impact test. - Tested trial mix to be approved by the Engineer. - Others as per the Consultants requirements.
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 Tenderer 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 Tenderer 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. Tenderers 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 Tenderer and submitted with the other tender documents at the time of tender. Failure to do so will invalidate the tender. Tenderers are therefore advised to study the 'Construction Safety, Health and Environmental Specification' which is issued as part of this tender document, the ASAQS Model Preambles to Trades - 2017, 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' . Tenderers 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:**
	As per the relevant tender returnable.

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:	053448		
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

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

PART C4. SITE INFORMATION

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

Project title:	DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER		
Tender No.	ZNTU04274W	Project Code:	053448

C4.1 Site Information

C4.1 GENERAL

(a) The nature of ground is assumed to be loose, sandy material, possibly interspersed with soft and hard rock.

(b) 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/staff. The Contractor must take note that storage material on site must be done in a well organized manner and the Contractor must create a workable space which will not disrupt the operation of the school or endanger the learners on the premises. The working area must be clearly demarcated and entrance to the work area must be controlled.

(c) 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) Not Applicable

C4.2 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): **DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER**

Site: GPS CO-ORDINATES: 28°22'46"S 31°14'36"E (S28.37944444; E31.24333333)

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

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PART C5 - DRAWINGS / ANNEXURES

C5.1 - LIST OF DRAWINGS/ANNEXURES

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

Tender No.:	ZNTU04274W	Project Code:	053448

(Where drawings/annexures are issued, document compilers must insert the following paragraph and list the applicable drawings/annexures below.)

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

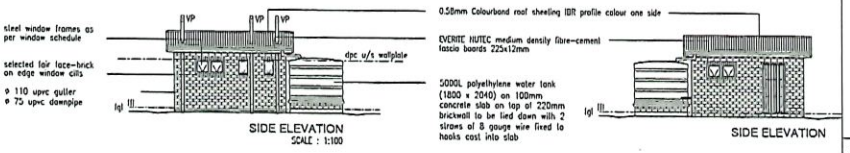
DRAWING NO	DESCRIPTION
ARCHITECTURAL	**VIP**
GR-2S-1T-TB	Grade R - 2 Seater Unisex and Teachers Ablution - Type A (VIP)
4B-TB	4 Seater Boys, (2 Pans, 2 Urinal) Ablution Block Type C (VIP)
4G-TB	4 Seater Girls, (4 Pans) Type D (VIP)
TRH	Toilet Roll Holder
ARCHITECTURAL	**WATERBORNE**
2B-2G-IP-TB-WB	2 Seater Girls, 2 Seater Boys, Teacher / Paraplegic Ablution - Type B (WB)
STRUCTURAL	**VIP**
447/BHEK/300-REV.A	Grade R - 2 Seater Unisex and Teachers Ablution - Type A (VIP)
447/BHEK/302-REV.A	4 Seater Boys, (2 Pans, 2 Urinal) Ablution Block Type C (VIP)
447/BHEK/303-REV.A	4 Seater Girls, (4 Pans) Type D (VIP)
447/BHEK/304-REV.A	Typical Covered Walkway
447/BHEK/305-REV.A	Typical Water Tank Support
447/BHEK/306-REV.A	Typical Soakaway and Septic Tank
447/BHEK/500-REV.B	Typical Elevated Water Support
STRUCTURAL	**WATERBORNE**
447/BHEK/301-REV.A	2 Seater Girls, 2 Seater Boys, Teacher / Paraplegic Ablution - Type B (WB)
ELECTRICAL	**VIP**
001-REV0	Grade R - 2 Seater Unisex and Teachers Ablution - Type A (VIP)
004-REV0	4 Seater Boys, (2 Pans, 2 Urinal) Ablution Block Type C (VIP)
005-REV0	4 Seater Girls, (4 Pans) Type D (VIP)
006-REV0	Typical DB
ELECTRICAL	**WATERBORNE**
003-REV0	2 Seater Girls, 2 Seater Boys, Teacher / Paraplegic Ablution - Type B (WB)

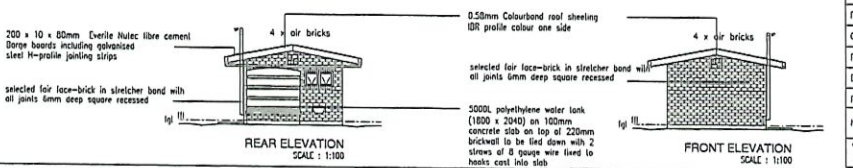
ANNEXURES	
Annexure 1	ASAQS Model Preambles for Trades 2017
Annexure 2	General Electrical Specifications
Annexure 3	Lightning Protection Specifications
Annexure 4	Map of Tender Submission Location
Annexure 5	Joint Venture Agreement
Annexure 6	Project Specific Health and Safety Specification
Annexure 7	Health and Safety Bill of Quantities
Annexure 8	Geotechnical Investigation Report - (If applicable)
Annexure 9	EPWP Employment Contract and EPWP Specification/Checklist
Annexure 10	Attendance Register - Infrastructure and Other Projects
Annexure 11	EPWP Data Collection tool for Phase 3 System
Annexure 12	Structural Engineers Project Specification Booklet

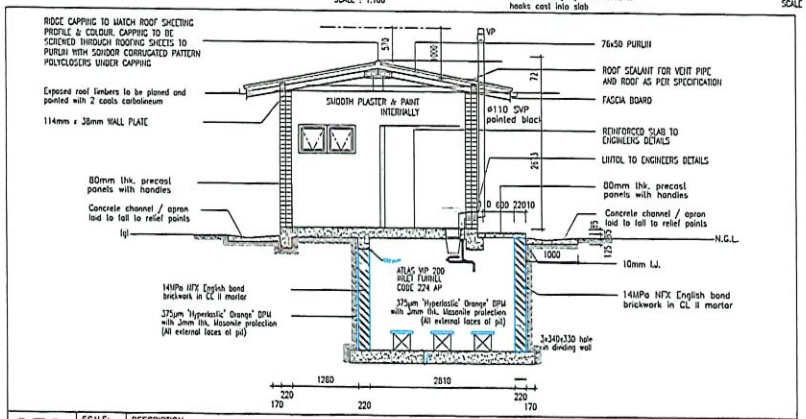
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STANDARD DRAWINGS AND SDP LAYOUTS







SEC	SCALE: 1:50	DESCRIPTION SECTION A-A

refer to dwg 447/300 rev P1 for Engineering drawings

SANITARY FITTINGS TO CONNECT TO SEPTIC TANK

INVERT LEVELS TO BE DETERMINED VIA SURVEY DRAWING

SOAK-AWAY IS DEPENDENT ON GEOTECHNICAL CONDITION OTHERWISE URINAL TO BE CONNECTED TO PIT

FOLLOWING TO BE CONFIRMED BY PRINCIPAL, SCHOOL GOVERNING BODY & PROFESSIONAL TEAM

- Colour of roof sheeting
- Colour of facebrick
- Colour of wall paint
- Colour of doors

FOLLOWING TO BE CONFIRMED ON SITE DUE TO SITE CONDITIONS

- Soak-Away & Evaporation areas
- Position/orientation of building
- Position of jojo tanks

ORIENTATION OF VIP TOILETS

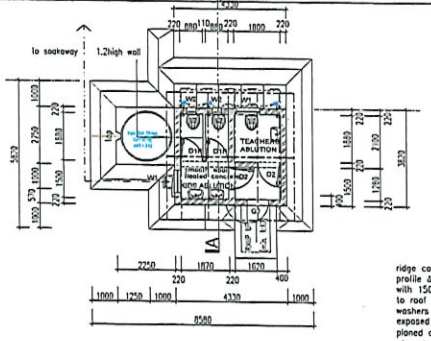
If possible, the Ventpipe should always facing NORTH! Maximum 30° of North is acceptable
This will allow continue exposure to the sun. The pipe will heat up more effectively and a better draft will be created from the pit to the open air above
110mm diameter vent pipe to be painted black

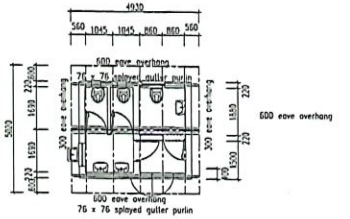
Where double sided toilet blocks – the South side toilets to be vented on the North side

DO NOT INSTALL THE SYSTEM WITHOUT THE FUNNEL!

CONFIRMATION OF INSTALLATION OF BASINS AND ASSOCIATED FITTINGS

ATLAS CHRISTY WHB CODE 945 AP



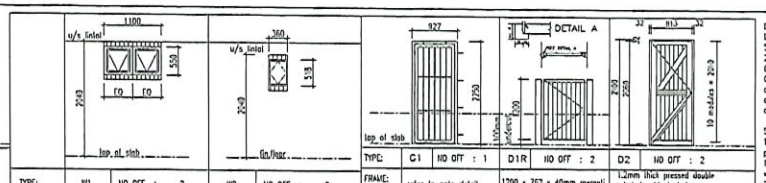


ridge capping to match roof sheeting profile & colour. Girth 550mm with 150mm overlaps and fixed to roof sheeting with bolts and washers as described for roof exposed roof timbers to be sheets planed and painted with 2 coats of carbolineum

ridge capping to match roof sheeting profile & colour. Girth 550mm with 150mm overlaps and fixed to roof sheeting with bolts and washers as described for roof exposed roof timbers to be sheets planed and painted with 2 coats of carbolineum

ROOF TRUSSES:

diagonal bracing on roof trusses designed and manufactured by reconised supplier and to be certified/approved by supervising engineer



	W1	NO OFF : 2	W2	NO OFF : 2	D1R	NO OFF : 2	D2	NO OFF : 2
TYPE:					C1	NO OFF : 1		
FRAME:	SS Industrial Type rolled steel window sections, SABS approved.		SS Industrial Type rolled steel window sections, SABS approved		refer to gate detail		1200 x 762 x 40mm meranti battened door, with timber posts, undercut 100mm from finished floor hl	1.2mm thick pressed double rebated mild steel door frame
GLASS:	6mm obscure safety glass pulled in with steel window putty.		6mm obscure safety glass pulled in with steel window putty.		refer to gate detail			Hot dipped galvanized. Hot painted
FITTINGS:	Approved std brass fittings to suite opening sashes		Approved std brass fittings to suite opening sashes		refer to gate detail		1.0 ea – Union 37651 helping hand indicator bolt 1.0 pair – DORMA DIR-SS-012 102x75x3mm Stainless steel rising butt hinge	
D.BARS:	Nil		Nil					
FINISH:	Galvanised. No painting required.		Galvanised. No painting required.		refer to gate detail			Primed undercoat and two coats gloss enamel
NOTES:	Cores adjacent to window jambs are to have cores filled allowing fixing lugs are to be built-in.		Cores adjacent to window jambs are to have cores filled allowing fixing lugs are to be built-in.		refer to gate detail		as above	Door sel 1

WS	SCALE: 1:50	DET DESCRIPTION: WIN SCHED

DS	SCALE: 1:50	DETAIL DESCRIPTION: DOOR SCHEDULE

DOOR SET 1:
Union 4 Lever Commercial Series Mortice lock 2247-7055 with CP on brass Lower Lever handles CD852-CDCh & CZ8731CH door stop fixed with counter-sunk bolt into anchor bolt.

STANDARD DOOR FRAME:
1.2mm Hol dipped galvanised pressed metal double rebated frame to suit wall thickness with straps for building in. 2 x 100mm Galvanised & welded loose – fixing bull hinges, adjustable chrome striking plate & 2 rubber buffers. Frame to be well rammed with mortar mix to protect from denting when bumped

DOOR SET 2:
SOLID ART 294 WC anodised aluminium mortice indicator bolt.
38mm diameter door stop plugged and screwed to wall with a 50mm long brass screw.

GENERAL SPECIFICATION NOTES:

This specified drawing to be read in conjunction with the WD20 Standard Preambles.

Roof:
0.58mm Colourbond roof sheeting IDR profile colour one side, fixed with leak king roofing screws. mastic sealant at side laps. SONDOR IDR pattern polycloser under ridge capping
Determine the direction of prevailing winds before laying sheets. sheets must project at 50mm beyond purlins at eaves. holes in sheets to be drilled not punched
sheets are to be fixed to 76x50 purlins spaced @ maxed 900cc on 114x38 trusses spaced @ max 1250cc
prefabricated clested roof trusses to be to engineers approval
roof is to be lied down to walls with 30mm x 1.6mm thick and 1.6m long galvanised hoop irons straps built in at least 10 courses
SIGALATION 420 heavy industrial grade aluminium foil based underlay laid taunt over purlin and fixed with galvanised steel straining wires

HURRICANE CLIPS to be provided and secured to purlins and trusses at every intersection externally and internally
galvanised wire to be used.
exterior exposed roof timber to be painted with 2 coats ABE PROVONITE before fixing of roof sheets, fascias and barge boards.

FASCIAS:
EVERITE NUTEC fibre cement sockelless bargeboards
12mm thick x 225mm with aluminium H-profile fascia joiners
Drill for and fix with hot-dip galvanised screw and washers.
Roof pitch to be 11 degrees

BARGEBOARD:
EVERITE NUTEC fibre cement sockelless bargeboards
200mm x 80mm.

Aluminium H-profile barge board joiners
Drill for and fix with hot-dipped galvanised screws and washers.
76 x 50mm trimmer batten fixed underside of purlin ends for barge board fixing.

WINDOWS:
Hol dipped galvanised " SS Industrial Type " metal windows.
No painting required.
6mm obscure glazing with steel putty. No painting necessary.
Refer to window schedule.

DOORS:
Galvanised Steel Single Rebated door frames (1.2mm thick) for 115mm brick walls – not painted with 1 pair of DORMA DRR-SS-012 , 102X75X3MM stainless steel rising butt hinge
1932 x 762 x 40mm Meranti framed, braced and ledged battened doors.
All doors to be primed, undercoat and 2 coats – gloss enamel.

1 rubber door stop plugged and screwed to wall in position where padlock plate would strike wall

FOUNDATIONS / FLOORS:
rafts to Engineers specification

WALLS:
All walls are to comply with "Part K" of the National Building Regulations.

CORODRIK Travertine FDA Face Brick walls in stretcher bond with ruled joints and perpends externally.
CORODRIK COMMONS to be used where to recieve plaster.
CORODRIK ENGINEERING Bricks below ground level in foundation walls.

Brickforce to all courses from window head to underside wallplate.
Galvanised, crimp wire wall ties (7 per square metre – laid staggered.)

External face of inner skin to be painted with bitumen paint.
External cills to be of sloping brick-on-edge rafter course, cills to be 30 degrees.
Internal cills to be EVERITE NUTEC fibre-cement complete with fixing lugs and self-lapping screws.
375 micron embossed damp-proof membrane stepped below all window cills.
Where plaster is required internally (13 – 16mm thick), plaster is to have 1:5 cement:sand mix.
Cement plaster to be painted with "WALL N' ALL' emulsion paint. Colour to be approved by the Department.
Beam filling to underside of roofing sheets.

VERANDAH WALKWAY:
Veranda floor to be graded to fall 50mm and cast in panels at 1850 centres. Control Joints at every 7.4m centres. Finish to be wood float non-slip. Control joints sealed with 10mm Polysulphide sealant with backing strip and softboard.

CONCRETE APRONS / CHANNELS
Concrete aprons laid to a fall of 1:200 and in panels with control joints at every 3m centres on fill compacted to MOD AASHTO 95%.
Control joints sealed with 10mm Polysulphide sealant with backing strip and softboard.

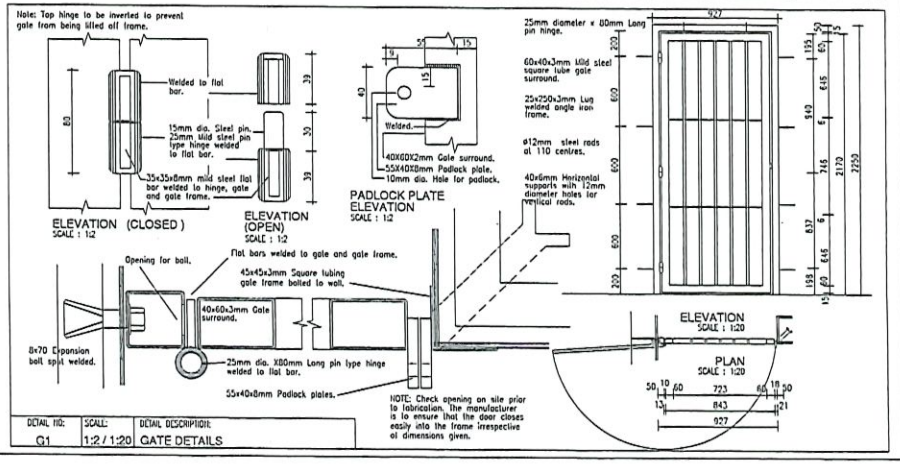
BACKFILL:
Filling to be approved clean earth, well watered and rammed in layers not exceeding 150mm in depth and thoroughly consolidated to a density of 95% MOD AASHTO.

AIR-BRICKS
229 x 152mm Terra-cotta vermin proofed air-bricks built into brick beam filling at approx. 1265mm centres.

SANITARY FITTINGS
ATLAS VIP 200 (Code 222AP)pedestal with foolpiece and lid, Colour granite.
ATLAS BAMOI LONG DROP (Code 631AP) pedestal with foolpiece & lid COLOUR granite.
ATLAS VIP 200 INLET FUNNEL CODE 224 AP
JOLT WASH TROUGH ATLAS 366AP
TOILET ROLL HOLDER PER PAN AS PER DETAIL – TRH-0
6mm Silvered float glass copper backed mirrors with polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in brickwork or concrete

FLOORS:
Raft to engineers specification
microns GUNPLAS USO BLACK waterproofing on
25mm river sand bed on fill compacted to MOD AASHTO 95%.
Soil to be poisoned in accordance with SABS 1165.
(Certificate must be provided)

GN	detail description: GENERAL SPECIFICATION / CONSTRUCTION NOTES



DETAIL NO: G1	SCALE: 1:2 / 1:20	DETAIL DESCRIPTION: GATE DETAILS

STATUS OF ISSUE
FOR CONSTRUCTION
SIGNATURE BY CLIENT DEPARTMENT

Revisions:

Rev. No.	Date	REVISIONS	INIT.
1	11-2-21	R-WIR ADDED	HF

Checked by Consultant
Name N. FRANCIS
Signature
11-2-21 Date
PROJECT MANAGER/ PRINCIPAL AGENT

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PROVINCE OF KWAZULU-NATAL
DEPARTMENT OF PUBLIC WORKS
HEAD OF PUBLIC WORKS
A. GOVENDER

PROJECT
DEPARTMENT OF EDUCATION
SANITATION PROGRAMME
Bhekamakhosi Primary School
Zululand District Municipality
Nobamba Tribal Authority, Mahlabathini
3865

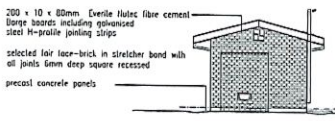
DRAWING DESCRIPTION
GRADE R - 2 SEATER UNISEX & TEACHERS
type A

DRAWN	n. gavu	CHECKED	n. francis	PRINCIPAL AGENT	
DATE	09-02-21	SCALES	AS SHOWN	ARCHITECT	✓
				PROJECT MAN.	
				P& CONSULTANT	

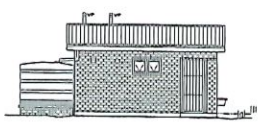
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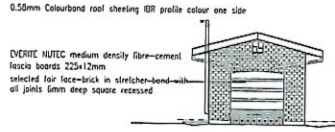
Stamped by Plans Approval Committee



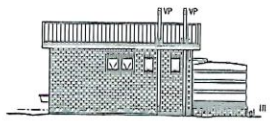
SIDE ELEVATION
SCALE : 1:100



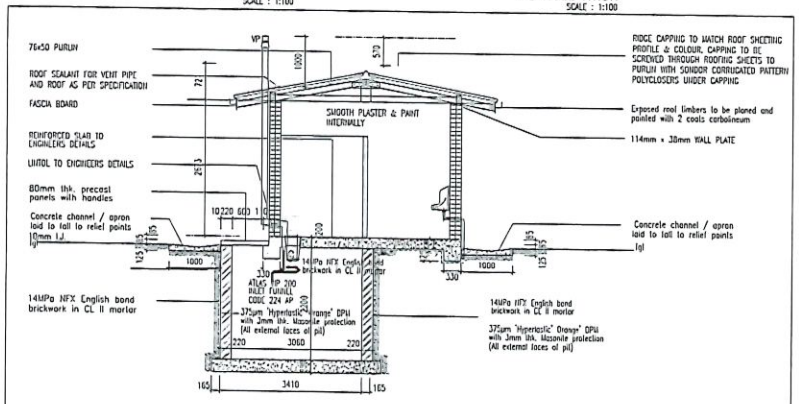
FRONT ELEVATION
SCALE : 1:100



SIDE ELEVATION
SCALE : 1:100



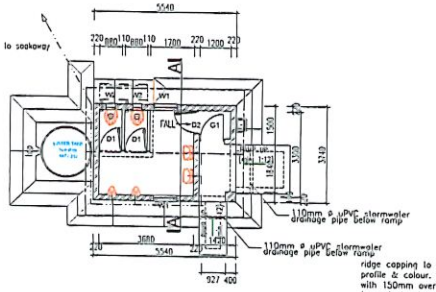
REAR ELEVATION
SCALE : 1:100



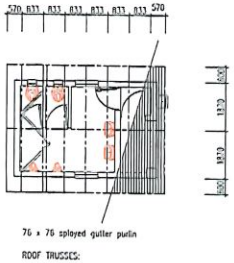
SEC	SCALE: 1:50	DESCRIPTION: SECTION A-A

refer to dwg 447/302 rev P1 for Engineering drawings

SANITARY FITTINGS TO CONNECT TO SEPTIC TANK	ORIENTATION OF VIP TOILETS
INVERT LEVELS TO BE DETERMINED VIA SURVEY DRAWING SOAK - AWAY IS DEPENDENT ON GEOTECHNICAL CONDITION OTHERWISE URINAL TO BE CONNECTED TO PIT	If possible, the Ventpipe should always facing NORTH/ Maximum 30° of North is acceptable 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 110mm diameter vent pipe to be painted black Where double sided toilet blocks – the South side toilets to be vented on the North side DO NOT INSTALL THE SYSTEM WITHOUT THE FUNNEL!
FOLLOWING TO BE CONFIRMED BY PRINCIPAL, SCHOOL GOVERNING BODY & PROFESSIONAL TEAM - Colour of roof sheeting - Colour of facebrick - Colour of wall paint - Colour of doors	
FOLLOWING TO BE CONFIRMED ON SITE DUE TO SITE CONDITIONS Soak-Away & Evaporation areas - Position/orientation of building - Position of jojo tanks	CONFIRMATION OF INSTALLATION OF BASINS AND ASSOCIATED FITTINGS ATLAS CHRISTY WHD CODE 945 AP

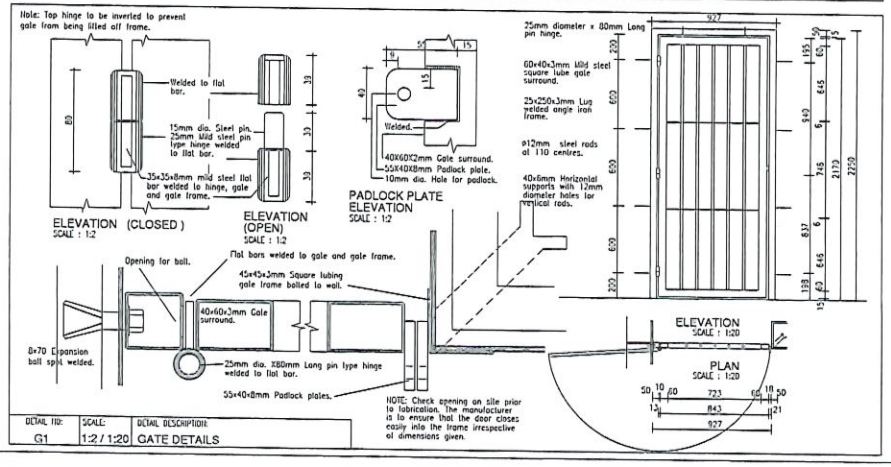


GROUND STOREY PLAN
SCALE : 1:100



ROOF TRUSSES:
diagonal bracing on roof trusses designed and manufacted by recenized supplier and to be certified/approved by supervising engineer

ROOF PLAN
SCALE : 1:100



DETAIL NO: G1	SCALE: 1:2 / 1:20	DETAIL DESCRIPTION: GATE DETAILS

	W1	NO OFF : 2	W2	NO OFF : 2
TYPE:				
FRAME:	SS Industrial Type rolled steel window sections. SABS approved.		SS Industrial Type rolled steel window sections. SABS approved.	
GLASS:	6mm obscure safety glass putlied in with steel window putty.		6mm obscure safety glass putlied in with steel window putty.	
FITTINGS:	Approved std brass fittings to suite opening sashes		Approved std brass fittings to suite opening sashes	
B.BARS:	Nil		Nil	
FINISH:	Galvanised. No painting required.		Galvanised. No painting required.	
NOTES:	Cores adjacent to window jambs are to have cores filled allowing fixing lugs are to be built-in.		Cores adjacent to window jambs are to have cores filled allowing fixing lugs are to be built-in.	

WS	SCALE: 1:50	DETAIL DESCRIPTION: WIN SCHED

	D2	NO OFF : 1	G1	NO OFF : 1	D1	NO OFF : 2
TYPE:						
FRAME:	1.2mm thick pressed double rebated mild steel door frame		refer to gate detail		1.2mm thick pressed double rebated mild steel door frame	
FRAME FINISH	Hot dipped galvanised. flat painted		refer to gate detail		Hot dipped galvanised. flat painted	
DOOR/ GATE	2032 x 813 x 40mm Meranti ledged and braced battened door with 40 x 110mm styles and top rail, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces		refer to gate detail		1932 x 762 x 40mm Meranti ledged and braced battened door with 40 x 110mm styles and top rail, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces 100mm under cut	
DOOR FINISH	Primed undercoat and two coats gloss enamel		refer to gate detail		Primed undercoat and two coats gloss enamel	
FURNITURE	Door set 1		refer to gate detail		Door set 2	

DS	SCALE: 1:50	DETAIL DESCRIPTION: DOOR SCHEDULE

DOOR SET 1:
Union 4 Lever Commercial Series Mortice lock 2247-7855 with CP on brass Gower Lever handles CD882-05CH & CZ8731CH door stop fixed with counter-sunk bolt into anchor bolt.
Rising Butt Hinge to be provided
DOOR SET 2:
SOLID ART 294 WC anodised aluminium mortice indicator bolt.
38mm diameter door stop plugged and screwed to wall with a 50mm long brass screw. Rising bull hinges to be provided
STANDARD DOOR FRAME:
1.2mm Hot dipped galvanised pressed metal double rebated frame to suit wall thickness with straps for building in. 2 x 100mm Galvanised & welded lante – rising bull hinges, adjustable chrome striking plate & 2 rubber bullers. Frame to be well rammed with mortar mix to protect from denting when bumped

GENERAL SPECIFICATION NOTES:

This specified drawing to be read in conjunction with the WD20 Standard Preambles.

Roof:
0.58mm Colourbond roof sheeting IBR profile colour one side, fixed with leak king roofing screws. mastic sealant at side laps. SONDOR IBR pattern polycloser under ridge capping
Determine the direction of prevailing winds before laying sheets. sheets must project at 50mm beyond purlins at eaves. holes in sheets to be drilled not punched
sheets are to be fixed to 76x50 purlins spaced @ maxed 900cc on 114x38 trusses spaced @ max 1250cc
prefabricated cleated roof trusses to be to engineers approval
roof is to be tied down to walls with 30mm x 1.6mm thick and 1.6m long galvanised hoop irons straps built in at least 10 courses
SISALATION 420 heavy industrial grade aluminium foil based underlay laid taunt over purlin and fixed with galvanised steel straining wires

HURRICANE CLIPS to be provided and secured to purlins and trusses at every intersection externally and internally
galvanised wire to be used.
exterior exposed roof timber to be painted with 2 coats ABE PROVONITE before fixing of roof sheets, fascias and barge boards.

FASCIAS:
EVERITE NUTEC medium density fibre-cement fascia boards 12mm thick x 225mm with aluminium H-profile fascia joiners
Drill for and fix with hot-dip galvanised drive screws and washers.
Roof pitch to be 11 degrees

BARGEBOARD:
EVERITE NUTEC fibre cement sockelless bargeboards 200mm x 80mm.

Aluminium H-profile barge board joiners
Drill for and fix with hot-dipped galvanised screws and washers.
76 x 50mm timmber battan fixed underside of purlin ends for barge board fixing.

WINDOWS:
Hot dipped galvanised " SS Industrial Type " metal windows.
No painting required.
6mm obscure glazing with steel putty. No painting necessary.
Refer to window schedule.

DOORS:
Galvanised Steel Single Rebated door frames (1.2mm thick) for 115mm brick walls – not painted with 1 pair of DORMA DRR-SS-012 , 102X75X3MM stainless steel rising butt hinge
1932 x 762 x 40mm Meranti framed, braced and ledged battened doors.
All doors to be primed, undercoat and 2 coats – gloss enamel.
1 rubber door stop plugged and screwed to wall in position where padlock plate would strike wall

FASCIAS:
EVERITE NUTEC medium density fibre-cement fascia boards 12mm thick x 225mm with aluminium H-profile fascia joiners
Drill for and fix with hot-dip galvanised drive screws and washers.

FOUNDATIONS / FLOORS:
refis to Engineers specification

WALLS:
All walls are to comply with "Part K" of the National Building Regulations.
CORDBRIK Travertine FDA Face Brick walls in stretcher bond with ruled joints and perpends externally.
CORDBRIK COMMONS to be used where to recieve plaster.
CORDBRIK ENGINEERING Bricks below ground level in foundation walls.

Brickforce to all courses from window head to underside wallplate. Galvanised, crimp wire wall ties (7 per square metre – laid staggered.)
External face of inner skin to be painted with bitumen paint.
External cills to be at sloping brick-on-edge roller course, cills to be 30 degrees.
Internal cills to be EVERITE NUTEC fibre-cement complete with fixing lugs and self-tapping screws.
375 micron embossed damp-proof membrane stepped below all window cills.
Where plaster is required internally (13 – 16mm thick), plaster is to have 1:5 cement:sand mix.
Cement plaster to be painted with "DULL N' ALL" emulsion paint.
Colour to be approved by the Department.
Drom filling to underside of roofing sheets.

VERANDAH WALKWAY:
Veranda floor to be graded to fall 50mm and cast in panels at 1850 centres. Control Joints at every 7,4m centres. Finish to be wood float non-slip. Control joints sealed with 10mm Polysulphide sealant with backing strip and softboard.

CONCRETE APRONS / CHANNELS
Concrete aprons laid to a fall of 1:200 and in panels with control joints at every 3m centres on fill compacted to MOD AASHTO 95%.
Control joints sealed with 10mm Polysulphide sealant with backing strip and softboard.
BACKFILL:
Filling to be approved clean earth, well watered and rammed in layers not exceeding 150mm in depth and thoroughly consolidated to a density of 93% MOD AASHTO.
AIR-BRICKS
229 x 152mm Terra-colla vermin proofed air-bricks built into brick beam filling at approx. 1265mm centres.
SANITARY FITTINGS
ATLAS VIP 200 (Code 222AP) pedestal with foolpiece and lid, Colour granite.
496 AP Waterless urinal fitting and waste.
30LT WASH TROUGH ATLAS 36GAP
TOILET ROLL HOLDER PER PAN AS PER DETAIL – TRH-0

6mm Silvered float glass copper backed mirrors with polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber bullers to plugs in brickwork or concrete

FLOORS:
Refi to engineers specification on 250 microns GUNPLAS USB BLACK waterproofing on 25mm river sand bed on fill compacted to MOD AASHTO 95%.
Soil to be poisoned in accordance with SABS 1165.
(Certificate must be provided)

GN	detail description: GENERAL SPECIFICATION / CONSTRUCTION NOTES

STATUS OF ISSUE
FOR CONSTRUCTION
SIGNATURE BY CLIENT DEPARTMENT

Revisions:			
1	11-2-21	Roof sheets	HF
Rev. No.	Date	REVISIONS	INIT.

Checked by Consultant
Name: N. FRANCIS
Signature
11-2-21 Date
PROJECT MANAGER/ PRINCIPAL AGENT

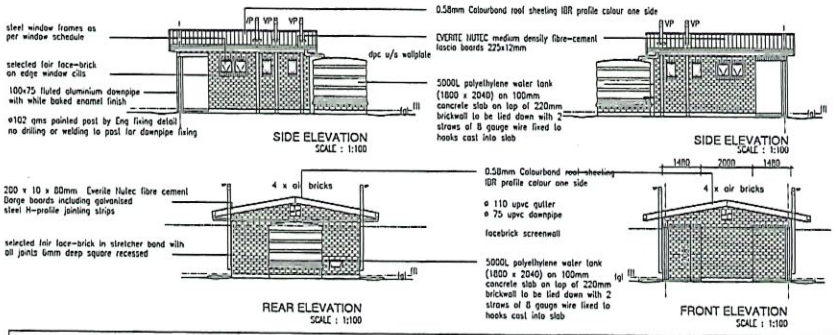
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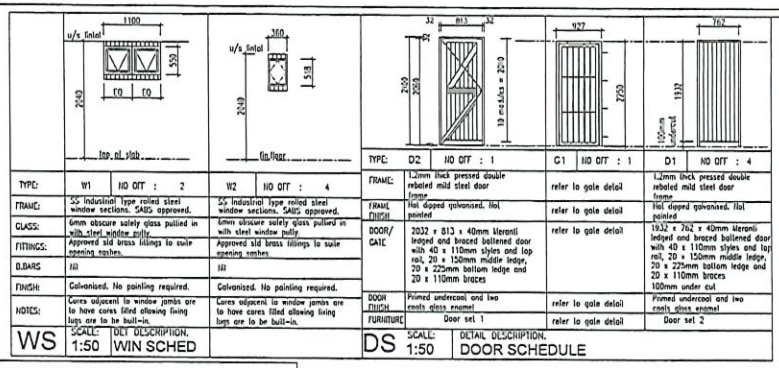
PROVINCE OF KWAZULUNATAL
DEPARTMENT OF PUBLIC WORKS
HEAD OF PUBLIC WORKS
A. GOVENDER

PROJECT
DEPARTMENT OF EDUCATION
SANITATION PROGRAMME
Bhekamakhosi Primary School
Zululand District Municipality
Nobamba Tribal Authority, Mahlabathini
3865

DRAWING DESCRIPTION				type
4 SEATER BOYS 2 PAN 2 URINAL				C
DRAWN: n. gavu	CHECKED: n. francis	PRINCIPAL AGENT		
DATE: 00-02-21	SCALES: AS SHOWN	ARCHITECT		
		PROJECT MAN.		
		YA CONSULTANT		
DRAWING No.: 4D-TB	REVISION: 1	STATUS S-C-A-B-I: C	SHEET SIZE: A1	SHEET: 4/5
Wims No: 060731	Cmis No.: 500108225			

Stamped by Plans Approval Committee





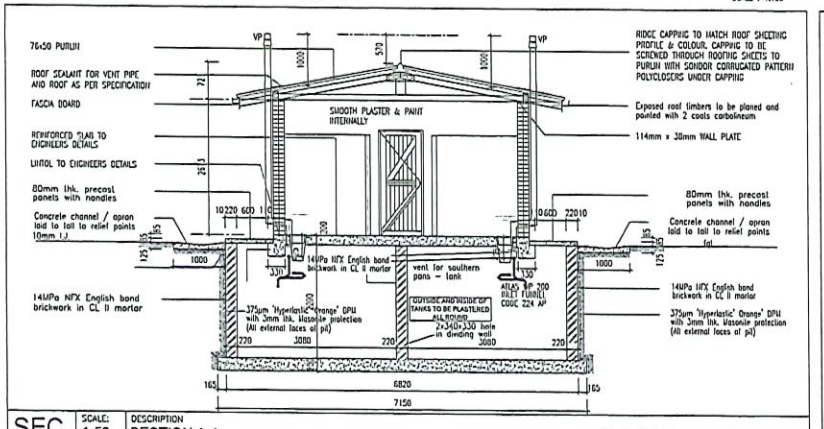
TYPE:	W1	NO OFF : 2	W2	NO OFF : 4
FRAME:	SS Industrial type rolled steel window sections. SABS approved.		SS Industrial type rolled steel window sections. SABS approved.	
GLASS:	6mm obscure safety glass putted in with steel window putty.		6mm obscure safety glass putted in with steel window putty.	
FITTINGS:	Approved std brass fittings to suite opening sashes.		Approved std brass fittings to suite opening sashes.	
D.BARS	Nil		Nil	
FINISH:	Galvanised. No painting required.		Galvanised. No painting required.	
NOTES:	Cores adjacent to window jambs are to have cores filled allowing fixing lugs are to be built-in.		Cores adjacent to window jambs are to have cores filled allowing fixing lugs are to be built-in.	

WS | SCALE: 1:50 | DETAIL DESCRIPTION: WIN SCHED

TYPE:	D2	NO OFF : 1	G1	NO OFF : 1	D1	NO OFF : 4
FRAME:	1.2mm thick pressed double rebated mild steel door frame		refer to gate detail		1.2mm thick pressed double rebated mild steel door frame	
FRAME FINISH	Hot dipped galvanised. Hot painted		refer to gate detail		Hot dipped galvanised. Hot painted	
DOOR/ GATE	2032 x 813 x 40mm Meranti ledged and braced battened door with 40 x 110mm styles and top rail, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces		refer to gate detail		1932 x 762 x 40mm Meranti ledged and braced battened door with 40 x 110mm styles and top rail, 20 x 150mm middle ledge, 20 x 225mm bottom ledge and 20 x 110mm braces 100mm under cut	
DOOR FINISH	Primed undercoat and two coats gloss enamel		refer to gate detail		Primed undercoat and two coats gloss enamel	
FURNITURE	Door set 1		refer to gate detail		Door set 2	

DS | SCALE: 1:50 | DETAIL DESCRIPTION: DOOR SCHEDULE

DOOR SET 1:
Union 4 Lever Commercial Series Mortice lock 2247-7855 with CP on brass Lever handles CB882-052n & CZ8731CH door stop fixed with counter-sunk ball into anchor ball.
Rising Butt Hinge to be provided
DOOR SET 2:
SOLID ART 294 WC anodised aluminium mortice indicator bolt.
38mm diameter door stop plugged and screwed to wall with a 50mm long brass screw. Rising butt hinges to be provided
STANDARD DOOR FRAME:
1.2mm Hot dipped galvanised pressed metal double rebated frame to suit wall thickness with straps for building in.
2 x 100mm Galvanised & welded loose - rising butt hinges, adjustable chrome striking plate & 2 rubber bullers. Frame to be well rammed with mortar mix to protect from denting when bumped



SEC | SCALE: 1:50 | DESCRIPTION: SECTION A-A

refer to dwg 447/303 rev P1 for Engineering drawings

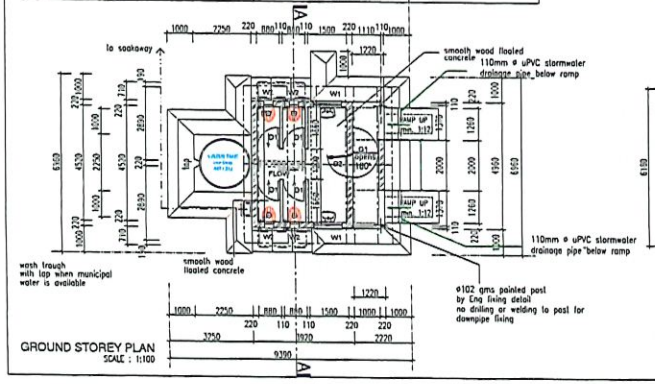
SANITARY FITTINGS TO CONNECT TO SEPTIC TANK OR MUNICIPAL SEWER
INVERT LEVELS TO BE DETERMINED VIA SURVEY DRAWING
SOAK - AWAY IS DEPENDENT ON GEOTECHNICAL CONDITION OTHERWISE URINAL TO BE CONNECTED TO PIT

FOLLOWING TO BE CONFIRMED BY PRINCIPAL, SCHOOL GOVERNING BODY & PROFESSIONAL TEAM
- Colour of roof sheeting
- Colour of facebrick
- Colour of wall paint
- Colour of doors

FOLLOWING TO BE CONFIRMED ON SITE DUE TO SITE CONDITIONS
- Soak-Away & Evaporation areas
- Position/orientation of building
- Position of jojo tanks

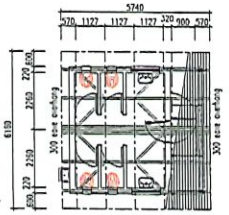
ORIENTATION OF VIP TOILETS
If possible, the Ventpipe should always facing NORTH! Maximum 30° of North is acceptable
This will allow continue exposure to the sun. The pipe will heat up more effectively and a better draft will be created from the pit to the open air above
110mm diameter vent pipe to be painted black
Where double sided toilet blocks - the South side toilets to be vented on the North side
DO NOT INSTALL THE SYSTEM WITHOUT THE FUNNEL

CONFIRMATION OF INSTALLATION OF BASINS AND ASSOCIATED FITTINGS
Only if municipal water is available wash hand basins will be installed
ATLAS CHRISTY WHD CODE 945 AP



GROUND STOREY PLAN
SCALE : 1:100

ridge capping to match roof sheeting profile & colour. Girth 550mm with 150mm overlaps and fixed to roof sheeting with bolts and washers as described for roof exposed roof timbers to be sheets planed and painted with 2 coats of carbolineum



ROOF TRUSSES:
diagonal bracing on roof trusses designed and manufactured by reconised supplier and to be certified/approved by supervising engineer

ROOF PLAN
SCALE : 1:100

GENERAL SPECIFICATION NOTES:

This specified drawing to be read in conjunction with the WB20 Standard Preambles.

Roof:
0.58mm Colourbond roof sheeting IBR profile colour one side, fixed with teak king roofing screws. mastic sealant at side laps. SONDOR IBR pattern polycloser under ridge capping
Determine the direction of prevailing winds before laying sheets. sheets must project at 50mm beyond purlins at eaves. holes in sheets to be drilled not punched
sheets are to be fixed to 76x50 purlins spaced @ maxed 900cc on 114x38 trusses spaced @ max 1250cc
prefabricated cleated roof trusses to be to engineers approval
roof is to be tied down to walls with 30mm x 1.6mm thick and 1.6m long galvanised hoop irons straps built in at least 10 courses
SISALATION 420 heavy industrial grade aluminium foil based underlay laid taunt over purlin and fixed with galvanised steel straining wires

HURRICANE CLIPS to be provided and secured to purlins and trusses at every intersection externally and internally
galvanised wire to be used.
exterior exposed roof timber to be painted with 2 coats ABC PROVONITE before fixing of roof sheets, fascias and barge boards.

FASCIAS:
EVERITE NUTEC medium density fibre-cement fascia boards 12mm thick x 225mm with aluminium H-profile fascia joiners
Drill for and fix with hot-dip galvanised drive screws and washers.
Roof pitch to be 11 degrees

BARGEBOARD:
EVERITE NUTEC fibre cement sockelless bargeboards 200mm x 80mm.

Aluminium H-profile barge board joiners
Drill for and fix with hot-dipped galvanised screws and washers.
76 x 50mm trimmer batten fixed underside of purlin ends for barge board fixing.

WINDOWS:
Hot dipped galvanised " SS Industrial Type " metal windows.
No painting required.
6mm obscure glazing with steel putty. No painting necessary.
Refer to window schedule.

DOORS:
Galvanised Steel Single Rebated door frames (1.2mm thick) for 115mm brick walls - not painted with 1 pair of DORMA DRR-SS-012 , 102X75X3MM stainless steel rising butt hinge
1932 x 762 x 40mm Meranti framed, braced and ledged battened doors.
All doors to be primed, undercoat and 2 coats - gloss enamel.
1 rubber door stop plugged and screwed to wall in position where padlock plate would strike wall

FOUNDATIONS / FLOORS:
rafts to Engineers specification

WALLS:
All walls are to comply with "Part K" of the National Building Regulations.

CORODRIK Travertine FBA Face Brick walls in stretcher bond with ruled joints and perpends externally.
CORODRIK COMMONS to be used where to receive plaster.
CORODRIK ENGINEERING bricks below ground level in foundation walls.

Brickforce to all courses from window head to underside wallplate.
Galvanised crimp wire wall ties (7 per square metre - laid staggered.)

External face of inner skin to be painted with bitumen paint.
External cills to be of sloping brick-on-edge roller course, cills to be 30 degrees.
Internal cills to be EVERITE NUTEC fibre-cement complete with fixing lugs and self-tapping screws.
375 micron embossed damp-proof membrane stepped below all window cills.
Where plaster is required internally (13 - 16mm thick), plaster is to have 1:5 cement:sand mix.
Cement plaster to be painted with 'WALL N' ALL' emulsion paint. Colour to be approved by the Department.
Beam filling to underside of roofing sheets.

VERANDAH WALKWAY:
Veranda floor to be graded to fall 50mm and cast in panels at 1850 centres. Control Joints at every 7.4m centres. Finish to be wood float non-slip. Control joints sealed with 10mm Polysulphide sealant with backing strip and softboard.

CONCRETE APRONS / CHANNELS
Concrete aprons laid to a fall of 1:200 and in panels with control joints at every 3m centres on fill compacted to MOD AASHTO 95%.
Control joints sealed with 10mm Polysulphide sealant with backing strip and softboard.

BACKFILL:
Filling to be approved clean earth, well watered and rammed in layers not exceeding 150mm in depth and thoroughly consolidated to a density of 95% MOD AASHTO.

AIR-BRICKS
229 x 152mm Terra-cotta vermin proofed air-bricks built into brick beam filling at approx. 1265mm centres.

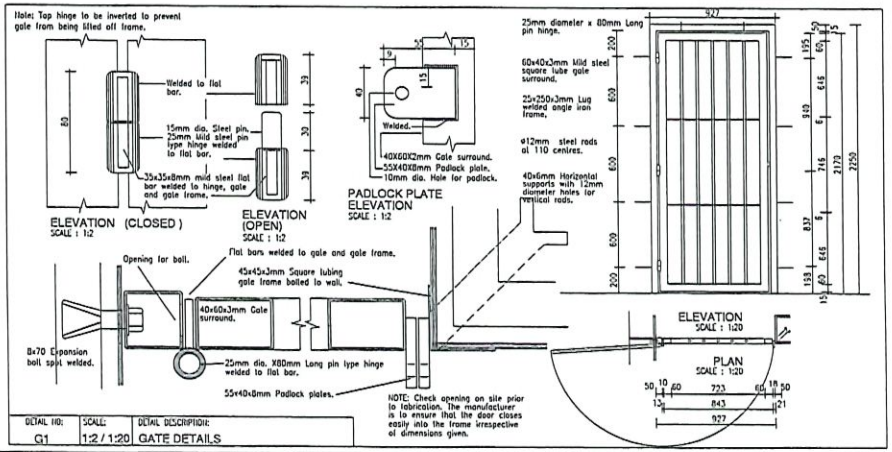
SANITARY FITTINGS
ATLAS WP 200 (Code 222AP) pedestal with footpiece and lid, Colour granite.
TOILET ROLL HOLDER PER PAN AS PER DETAIL - TRH-0

JOLT WASH TROUGH ATLAS 306AP

6mm Silvered float glass copper backed mirrors with polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in brickwork or concrete

FLOORS:
Raft to engineers specification on 250 microns CLINIPLAS UGD BLACK waterproofing on 25mm river sand bed on fill compacted to MOD AASHTO 95%.
Soil to be poisoned in accordance with SABS 1165.
(Certificate must be provided)

GN | detail description: GENERAL SPECIFICATION / CONSTRUCTION NOTES



DETAIL NO: G1 | SCALE: 1:2 / 1:20 | DETAIL DESCRIPTION: GATE DETAILS

STATUS OF ISSUE
FOR CONSTRUCTION
SIGNATURE BY CLIENT DEPARTMENT

Revisions

Rev. No.	Date	REVISIONS	INIT.
1	11-2-21	Earth APRON	NF

Checked by Consultant
Name N. FRANCIS
Signature
11-2-21 Date
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PROVINCE OF KWAZULU-NATAL
DEPARTMENT OF PUBLIC WORKS
HEAD OF PUBLIC WORKS
A. GOVENDER

PROJECT
DEPARTMENT OF EDUCATION
SANITATION PROGRAMME
Bhekamakhosi Primary School
Zululand District Municipality
Nobamba Tribal Authority, Mahlabathini
3865

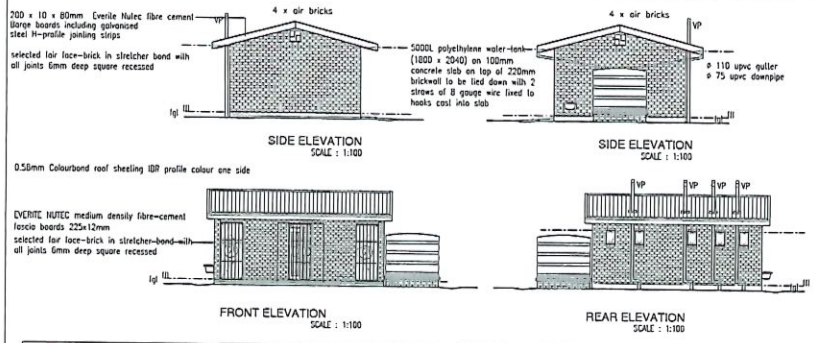
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type: D

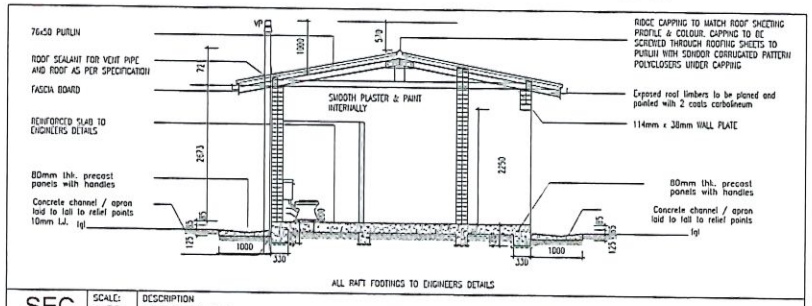
DRAWN	CHECKED	PRINCIPAL AGENT
n. gavu	n. francis	ARCHITECT
DATE: 09-02-21	SCALES: AS SHOWN	PROJECT MAN.
		PA CONSULTANT

DRAWING No.	REVISION	STATUS S-C-AS-I	SHEET SIZE	SHEET
4G-TB	1	C	A1	5/5

Works No	Lmis No.
060731	500108225

Stamped by Plans Approval Committee





SEC | SCALE: 1:50 | DESCRIPTION: SECTION A-A

refer to dwg 447/307 rev P1 for Engineering drawings

SANITARY FITTINGS TO CONNECT TO SEPTIC TANK OR MUNICIPAL SEWER
INVERT LEVELS TO BE DETERMINED VIA SURVEY DRAWING
SOAK - AWAY IS DEPENDENT ON GEOTECHNICAL CONDITION
OTHERWISE URINAL TO BE CONNECTED TO PIT

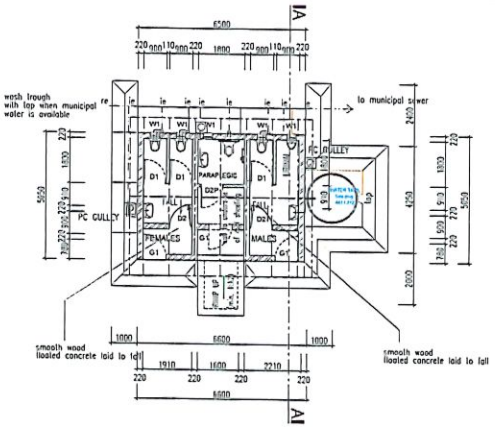
FOLLOWING TO BE CONFIRMED BY PRINCIPAL, SCHOOL GOVERNING BODY & PROFESSIONAL TEAM
- Colour of roof sheeting
- Colour of facebrick
- Colour of wall paint
- Colour of doors

FOLLOWING TO BE CONFIRMED ON SITE DUE TO SITE CONDITIONS
- Soak-Away & Evaporation areas
- Position/orientation of building
- Position of jojo tanks

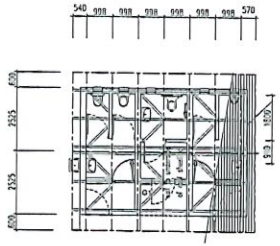
ridge capping to match roof sheeting
profile & colour. Girth 550mm
with 150mm overlaps and fixed
to roof sheeting with bolts and
washers as described for roof
exposed roof timbers to be sheets
planed and painted with 2 coats
of carbolineum

PARAPLEGIC TOILET ACCESSORIES

1 cobra medical pillar top elbow action - 504-21b
side flush lever
derma - eastern back rail DGR -SS-150
derma - flushvalve backrail - DGR-SS-151
derma - side grab rail - DGR-SS-152
Kimberly Klark Professional SD2 toilet tissue dispenser



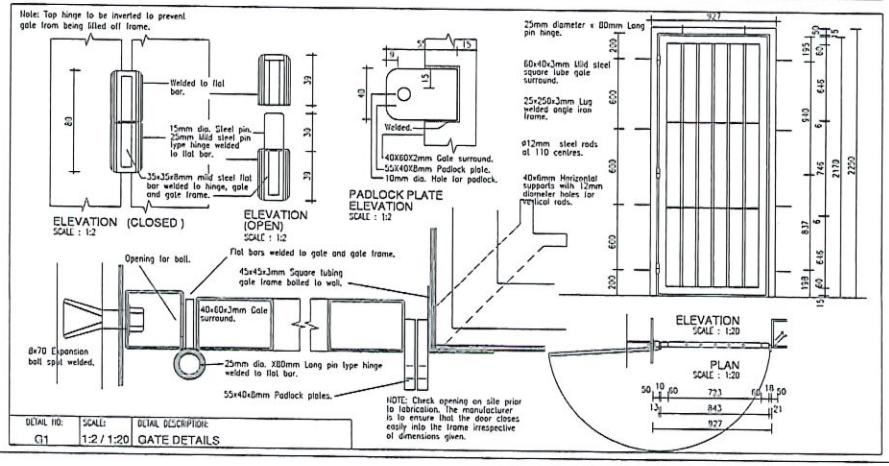
GROUND STOREY PLAN
SCALE : 1:100



76 x 76 splayed gutter purlin

ROOF TRUSSES:
diagonal bracing on roof trusses
designed and manufactured by recognised
supplier and to be certified/approved by
supervising engineer

ROOF PLAN
SCALE : 1:100



DETAIL NO: G1 | SCALE: 1:2 / 1:20 | DETAIL DESCRIPTION: GATE DETAILS

	w/s lintel						
TYPE:	W1	NO OFF : 5	TYPE: D2	NO OFF : 2	D2P(1 required)	G1	NO OFF : 3	D1	NO OFF : 3
FRAME:	SS Industrial Type rolled steel window sections. SABS approved.		FRAME: 1.2mm thick pressed double rebated mild steel door frame		Standard 1.2mm thick residential section double rebated frame.	refer to gate detail		1.2mm thick pressed double rebated mild steel door frame	
GLASS:	6mm obscure safety glass putted in with steel window putty.		FRAME FINISH: Hot dipped galvanized, flat painted		Hot dipped galvanised, flat painted	refer to gate detail		Hot dipped galvanised, flat painted	
FITTINGS:	Approved std brass fittings to suite opening sashes		DOOR/ GATE: 2032 x 813 x 40mm Meranti ledged and braced ballened door with 40 x 110mm styles and top rail, 20 x 150mm middle ledge, 20 x 225mm bollom ledge and 20 x 110mm braces		2032 x 813 x 40mm Meranti ledged and braced ballened door with 40 x 110mm styles and top rail, 20 x 150mm middle ledge, 20 x 225mm bollom ledge and 20 x 110mm braces	refer to gate detail		1932 x 762 x 40mm Meranti ledged and braced ballened door with 40 x 110mm styles and top rail, 20 x 150mm middle ledge, 20 x 225mm bollom ledge and 20 x 110mm braces 100mm under cut	
B.BARS:	NO		DOOR FINISH: Primed undercoat and two coats gloss enamel		Primed undercoat and two coats gloss enamel	refer to gate detail		Primed undercoat and two coats gloss enamel	
FINISH:	Galvanised. No painting required.		FURNITURE: Door set 1		Door set 3	refer to gate detail		Door set 2	
NOTES:	Cores adjacent to window jambs are to have cores filled allowing fixing lugs are to be built-in.								

WS | SCALE: 1:50 | DET. DESCRIPTION: WIN SCHED

DS | SCALE: 1:50 | DETAIL DESCRIPTION: DOOR SCHEDULE

DOOR SET 1:
Union 4 Lever Commercial Series Mortice lock 2247-7855 with CP on brass Gower Lever handles CD862-ASCH & CD8731CH door stop fixed with counter-sunk bolt into anchor bolt.
Fixing Butt Hinge to be provided
DOOR SET 2:
SOLID ART 294 WC anodised aluminium mortice indicator bolt.
38mm diameter door stop plugged and screwed to wall with a 50mm long brass screw. Fixing butt hinges to be provided
STANDARD DOOR FRAME:
1.2mm Hot dipped galvanised pressed metal double rebated frame to suit wall thickness with straps for building in. 2 x 100mm Galvanised & welded base - fixing bolt hinges, adjustable chrome striking plate & 2 rubber bullers. Frame to be well rammed with mortar mix to protect from dentling when bumped

DOOR SET 3
1.0 pair - DORMA DRR-SS-012 102x75x3mm Stainless steel rising butt hinge - Right hand
2.0 each - DORMA DPH3018 390x25mm stainless steel pull handle with flange fixing
1.0 set - Union 2A551 Integral hand indicator bolt for paraplegic wc
1.0 each - Dorma EDC-SS-402 stainless steel adjustable roller bolt
1.0 each - DORMA DDS-SS-017 stainless steel floor stop
1st set of paraplegic accessories by Dorma /Ecco Abloy comply with SANS10400

GENERAL SPECIFICATION NOTES:

This specified drawing to be read in conjunction with the WD20 Standard Preambles.

Roof:
0.58mm Colourbond roof sheeting IBR profile colour one side, fixed with teak king roofing screws, mastic sealant at side laps. SONDOR IBR pattern polycloser under ridge capping
Determine the direction of prevailing winds before laying sheets. sheets must project at 50mm beyond purlins at eaves. holes in sheets to be drilled not punched
sheets are to be fixed to 76x50 purlins spaced @ maxed 900cc on 114x38 trusses spaced @ max 1250cc
prefabricated cleated roof trusses to be to engineers approval
roof is to be tied down to walls with 30mm x 1.6mm thick and 1.6m long galvanised hoop iron straps built in at least 10 courses
SISALATION 420 heavy industrial grade aluminium foil based underlay laid taunt over purlin and fixed with galvanised steel straining wires

HURRICANE CLIPS to be provided and secured to purlins and trusses at every intersection externally and internally
galvanised wire to be used.
exterior exposed roof timber to be painted with 2 coats ABE PROMOTE before fixing of roof sheets, fascias and barge boards.

FASCIAS:
EVERITE NUTEC medium density fibre-cement fascia boards
12mm thick x 225mm with aluminium H-profile fascia joiners
Drill for and fix with hot-dip galvanised drive screws and washers.
Roof pitch to be 11 degrees

BARGEBOARD:
EVERITE NUTEC fibre cement sockelless bargeboards
200mm x 80mm.

Aluminium H-profile barge board joiners
Drill for and fix with hot-dipped galvanised screws and washers.
76 x 50mm trimmer batten fixed underside of purlin ends for barge board fixing.

WINDOWS:
Hot dipped galvanised " SS Industrial Type " metal windows.
No painting required.
5mm obscure glazing with steel putty. No painting necessary.
Refer to window schedule.

DOORS:
Galvanised Steel Single Rebated door frames (1.2mm thick) for 115mm brick walls - not painted with 1 pair of DORMA DRR-SS-012 , 102X75X3MM stainless steel rising butt hinge
1932 x 762 x 40mm Meranti framed, braced and ledged ballened doors.
All doors to be primed, undercoat and 2 coats - gloss enamel.
1 rubber door stop plugged and screwed to wall in position where padlock plate would strike wall

FASCIAS:
EVERITE NUTEC medium density fibre-cement fascia boards
12mm thick x 225mm with aluminium H-profile fascia joiners
Drill for and fix with hot-dip galvanised drive screws and washers.
FOUNDATIONS / FLOORS:
rafts to Engineers specification

WALLS:
All walls are to comply with "Part K" of the National Building Regulations.
CORODRIK Travertine FDA Face Brick walls in stretcher bond with ruled joints and perpends externally.
CORODRIK COMMONS to be used where to recieve plaster.
CORODRIK ENGINEERING Bricks below ground level in foundation walls.
Brickforce to all courses from window head to underside wallplate. Galvanised crimp wire wall ties (7 per square metre - laid staggered.)
External face of inner skin to be painted with bitumen paint.
External cills to be of sloping brick-on-edge roller course, cills to be 30 degrees.
Internal cills to be EVERITE NUTEC fibre-cement complete with fixing lugs and self-tapping screws.
375 micron embossed damp-proof membrane stepped below all window cills.
Where plaster is required internally (13 - 16mm thick), plaster is to have 1:5 cement:sand mix.
Cement plaster to be painted with 'WALL N' ALL' emulsion paint. Colour to be approved by the Department.
Beam filling to underside of roofing sheets.

VERANDAH WALKWAY:
Veranda floor to be graded to fall 50mm and cast in panels at 1850 centres. Control Joints at every 7,4m centres. Finish to be wood float non-slip. Control joints sealed with 10mm Polysulphide sealant with backing strip and sallboard.

CONCRETE APRONS / CHANNELS
Concrete aprons laid to a fall of 1:200 and in panels with control joints at every 3m centres on fill compacted to MOD AASHTO 95%.
Control joints sealed with 10mm Polysulphide sealant with backing strip and sallboard.

BACKFILL:
Filling to be approved clean earth, well watered and rammed in layers not exceeding 150mm in depth and thoroughly consolidated to a density of 95% MOD AASHTO.

AIR-BRICKS
229 x 152mm Terra-cotta vermin proofed air-bricks built into brick beam filling at approx. 1260mm centres.

SANITARY FITTINGS
ATLAS AQUARIUS CLOSED COUPLE TIOLET(570AP) toolpiece and lid, COLOUR granite
496 AP Waterless urinal fitting and waste.
ATLAS CHRISTY WHB CODE 945 AP
TOILET ROLL HOLDER PER PAN AS PER DETAIL - TRH-0
JOLT WASH TROUGH ATLAS 3664P
"Cobra Waterteck" -FULL ACCESSORIES PER BASIN,PAN & URINAL
6mm Silvered float glass copper backed mirrors with polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber bullers to plugs in brickwork or concrete

FLOORS:
Raft to engineers specification on 250 microns GUNPLAS USB BLACK waterproofing on 25mm river sand bed on fill compacted to MOD AASHTO 95%.
Soil to be poisoned in accordance with SABS 1165.
(Certificate must be provided)

GN | detail description: GENERAL SPECIFICATION / CONSTRUCTION NOTES

STATUS OF ISSUE
FOR CONSTRUCTION
SIGNATURE BY CLIENT DEPARTMENT

Revisions			
1	11-2-21	B-WB ADDED	MF
Rev. No.	Date	REVISIONS	INIT.

Checked by Consultant
Name: N. FRANCIS
Signature
11-2-21 Date
PROJECT MANAGER
PRINCIPAL AGENT

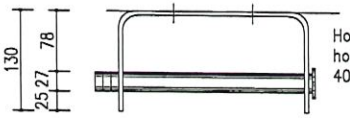
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PROVINCE OF KWAZULU-NATAL
DEPARTMENT OF PUBLIC WORKS
HEAD OF PUBLIC WORKS
A. GOVENDER

PROJECT: DEPARTMENT OF EDUCATION
SANITATION PROGRAMME
WATERBORNE TOILETS
Bhekamakhosi Primary School
Zululand District Municipality
Nobamba Tribal Authority, Mahlabathini
3865

DRAWING DESCRIPTION: 2 SEATER FEMALES, 2 SEATER MALES, 1 TEACHER PAKA			type: B-WB
DRAWN: n. gavu	CHECKED: n. francis	PRINCIPAL AGENT	
DATE: 09-02-21	SCALES: AS SHOWN	ARCHITECT: Y, PROJECT MAN., PA CONSULTANT	
DRAWING No.: 2B-2G-IP-TB-WB	REVISION: 1	STATUS S-C-AS-T: C	SHEET SIZE: A1
			SHEET: 3/5
Wims No: 060731	Emis No.: 500108225		
Stamped by Plans Approval Committee			

Bend a 3mm thick steel plate as shown, with 2 x 30 holes to support roller. Fix to wall with 2 x 8mm dia. rawl bolts



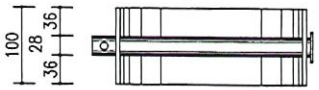
PLAN

Hole for padlock on one side of toilet roll holder and on the other side weld a 40mm x 3mm thick steel plate.

27 dia. x 2mm thick steel pipe toilet roll holder.

Note:–
Provide one toiet roll holder for girls toilet and one toilet roll holder for boys toilet– as shown on plan.

Steel to be finished with one coat zinc–chromate primer, one universal undercoat and two coats gloss enamel paint in approved colour.



ELEVATION

All edges and sharp corners of bent plate are rounded to a radius of 1mm.

Supply one padlock per holder.
N.B. All padlocks must be opened by one key
Supply one key for every 5 padlocks.

DETAIL No:	SCALE:	DETAIL DESCRIPTION
TRH	1:5	DETAIL TOILET ROLL HOLDER

STATUS OF ISSUE
FOR TENDER

SIGNATURE BY CLIENT DEPARTMENT

Revisions

Rev. No.	Date	REVISIONS	INIT.

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06–09–18
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PROVINCE OF KWAZULUNATAL
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A. GOVENDER

PROJECT
DEPARTMENT OF EDUCATION
SANITATION PROGRAMME
VIP TOILETS

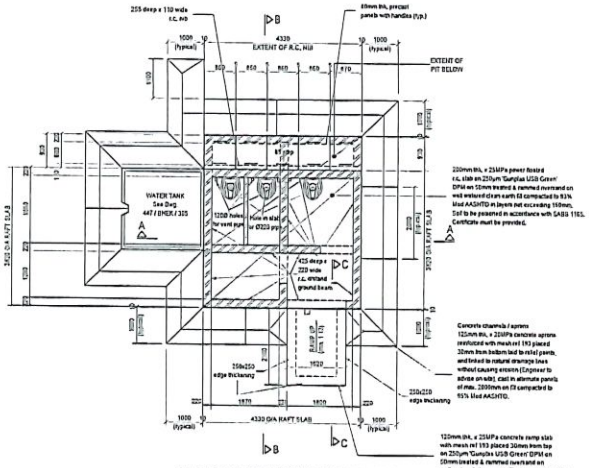
DRAWING DESCRIPTION	type
TOILET ROLL HOLDERS	TRH

DRAWN	CHECKED		
n. gavu	n. francis	PRINCIPAL AGENT	
		ARCHITECT	Y
DATE	SCALES	PROJECT MAN.	
06-09-18	AS SHOWN	XA CONSULTANT	

DRAWING No.	REVISION	STATUS S–C–AB–T	SHEET SIZE	SHEET
TRH	0	T	A3	1/1

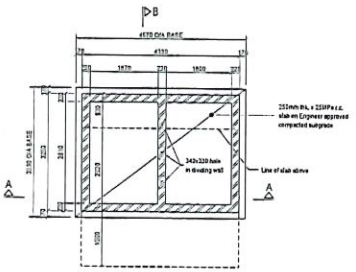
Wims No	Emis No.
064539	

Stamped by Plans Approval Committee

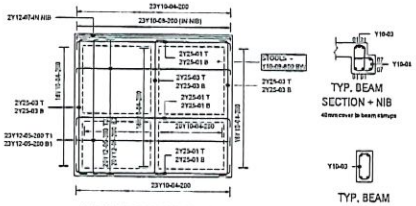


PLAN ON UPPER FOUNDATION / APRONS

ALLOW FOR 150mm SELECTED SUB-BASE COMPACTED TO 98% Mod AASHTO, TO ENGINEERS INSTRUCTION ON SITE.



PLAN ON PIT FOUNDATION



UPPER RAFT FOUNDATION REINFORCEMENT LAYOUT

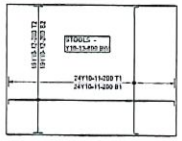
25mm cover to side all round
40mm cover to beam stirrups

TYP. BEAM SECTION + NIB

40mm cover to beam stirrups

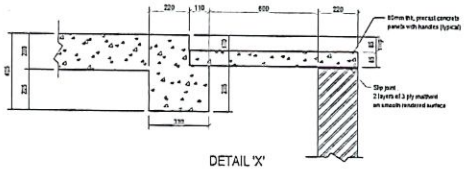
TYP. BEAM SECTION

40mm cover to beam stirrups

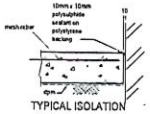


PIT FOUNDATION REINFORCEMENT LAYOUT

50mm cover to slab all round

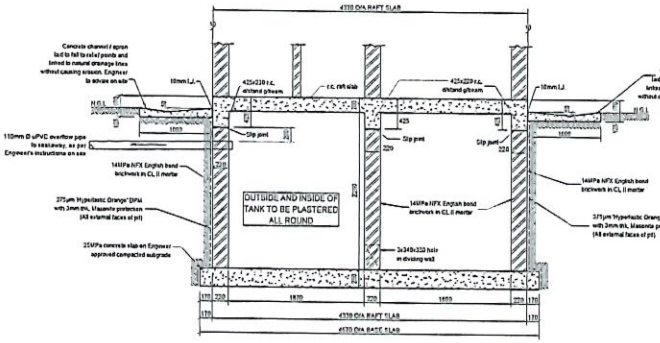


DETAIL 'X'

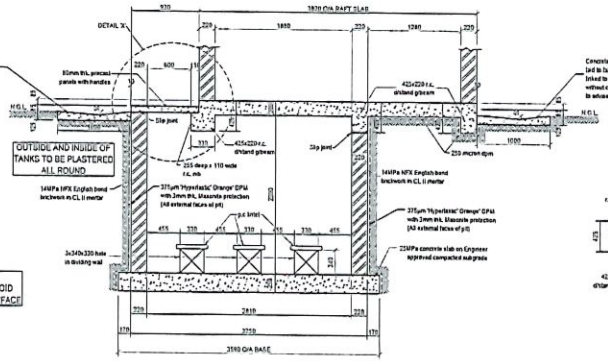


TYPICAL ISOLATION JOINT DETAIL (I.J.)

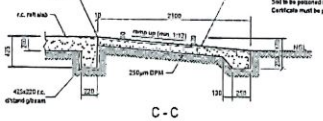
MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUMBER	MARK	B C	BENDING A	B	C	D	E/F
UPPER RAFT FOUNDATION	1	12	Y25	4830	12	B1	35	4730				
		12	Y25	4180	12	B2	35	3720				
		120	Y10	1180	120	D4	60	340	140			
		48	Y12	3930	48	H4	35	3720				
		40	Y12	4430	40	H6	35	4220				
		2	Y12	4410	2	D7	35	4220				
		72	Y10	1080	72	D8	60	250	170			
		10	Y10	1280	10	D9	60	330	110	310		
PIT FOUNDATION	1	48	Y10	3700	48	L1	35	3490				
		36	Y10	4800	36	L2	35	4590				
		45	Y10	1200	45	L3	60	350	120	350		



A - A



B - B



C - C

FOR CONSTRUCTION

NOTES

1. ALL LEVELS AND DIMENSIONS TO BE CHECKED ON SITE.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS.
3. ALL CONCRETE WORK TO COMPLY WITH SABS 1200G.
4. CONCRETE CLASS :-
   a) PILECAPS & GROUND BEAMS = 25 MPa
   b) STRIP FOOTINGS & BASES = 25 MPa
   c) COLUMNS, SHEAR & LIFT WALLS = 30 MPa
   d) SLABS, BEAMS & STAIRCASES = 25 MPa
   e) RETAINING WALLS = 25 MPa
   f) SURFACE BEDS = AS NOTED
   g) BLINDING = 10 MPa
5. COVER TO REINFORCEMENT :-
   AS INDICATED ON DRAWING
6. ALL FOUNDATION EXCAVATIONS TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
7. ALL REINFORCING PIKING TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
8. SIX CUBES TO BE TAKEN PER POUR, THREE TO BE TESTED AT SEVEN DAYS, THE REMAINDER AT TWENTY EIGHT DAYS, THE RESULTS TO BE FORWARDED TO THE ENGINEER.
9. CONTRACTOR TO CONSTRUCT A BLINDING LAYER IF SOIL CONDITIONS RESULT IN REINFORCEMENT COVER NOT BEING MAINTAINED.
10. ALL STRUCTURAL CONCRETE TO BE CURED FOR A MINIMUM OF FIVE DAYS.
11. BRICKWORK SHOWN HATCHED ARE LOAD BEARING. ALL LOAD BEARING BRICKWORK TO BE 14MPa MPA. TOP OF ALL BRICKWORK TO RECEIVE 2 LAYERS OF 3 PLY MALTHOID ON SMOOTH RENDERED SURFACE.
12. ALL SINGLE SKIN BRICKWORK TO BE STOPPED 2 COURSES BELOW SOFFIT OF SLAB AND COMPLETED AFTER PROPS HAVE BEEN REMOVED.
13. ALL CONCRETE PLASTER AND BRICKWORK PLASTER INTER-FACES TO RECEIVE V-JOINTS.
14. THE ENGINEER REQUIRES 24HRS NOTICE FOR ALL INSPECTIONS.

Note :

The locality and the no. off toilet blocks to be :

1. In compliance with National Environmental Legislation and the Water Act.
2. Determined by the Principal Agent.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECTS LAYOUT

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR CONSTRUCTION	YR	10/05/2021

Professional person: M IAAR PrTechEng — REGISTRATION: 20067211

LDM
Solutions For The Built Environment
YOUR LDM CO. ZA

PROJECT
WIMS NO. 060731
DEPARTMENT OF EDUCATION
WATER & SANITATION PROGRAMME

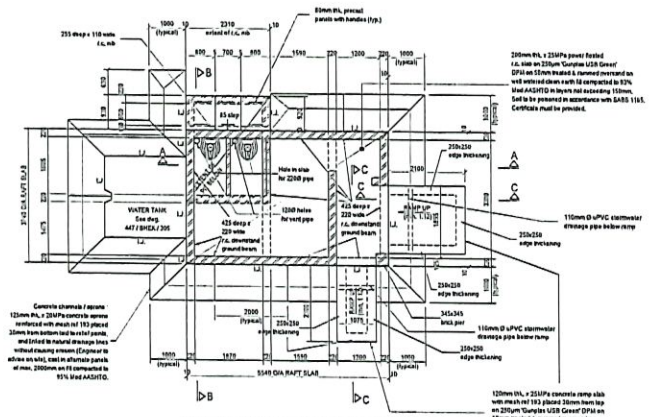
DETAILS
BHEKAMAKHOSI PRIMARY SCHOOL
TYPE 'A'
TYPICAL GRADE-R ABLUTION
(2No. WC + 2No. URINALS + 1No. PARAPLEGIC WC)
STRUCTURAL LAYOUTS & DETAILS

MAP AFRICA CONSULTING ENGINEERS
CESA
SABS

DESIGNED	P.H	COPYRIGHT RESERVED	SCALES 1:75 1:25 1:20 1:10
DRAWN	Y.R		
APPROVED	P.H.		DATE 06/07/2016

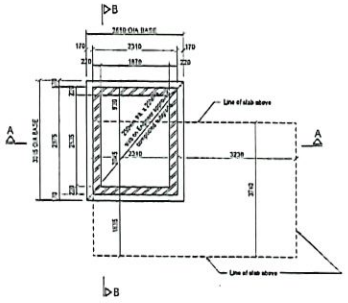
DRAWING No. 447 / BHEK / 300 REV A

NOTE: ALL PRECAST PRODUCTS TO BE MANUFACTURED BY A PRECAST CONCRETE SPECIALIST

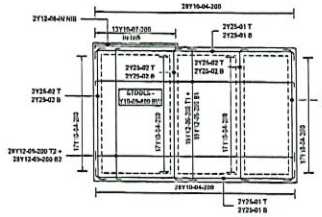


PLAN ON UPPER FOUNDATION / APRONS

ALLOW FOR 150mm SELECTED SUB-BASE COMPACTED TO 98% Mod AASHTO. TO ENGINEERS INSTRUCTION ON SITE.



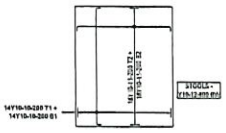
PLAN ON PIT FOUNDATION



UPPER RAFT FOUNDATION REINFORCEMENT LAYOUT

25mm cover to slab all round
40mm cover to beam stirrups

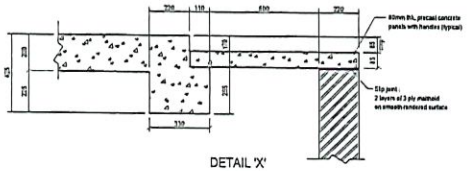




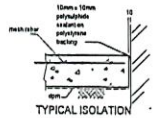
PIT FOUNDATION REINFORCEMENT LAYOUT

50mm cover to slab all round

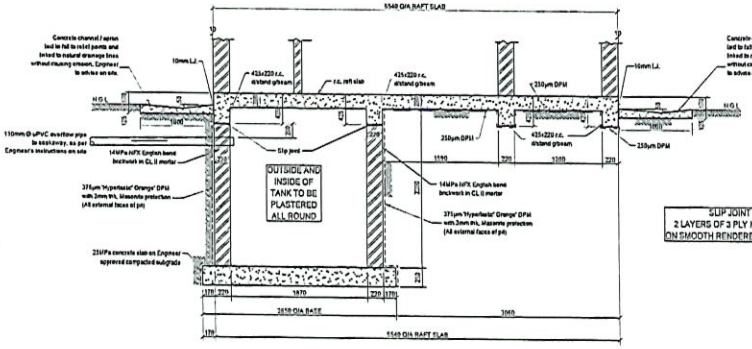
MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUMBER	MARK	S C	BENDING A	B	C	D	Ø/r
UPPER RAFT FOUNDATION	1	8	Y25	5800	8	01	35	6440				
		16	Y25	4600	16	02	35	3840				
		124	Y10	1180	124	04	60	340	140			
		56	Y12	3850	56	05	35	7640				
		28	Y12	5650	36	06	35	8440				
		13	Y10	1680	13	07	60	350	170			
		2	Y12	2450	2	08	35	2210				
		10	Y10	1200	50	09	83	350	110	350		
PIT FOUNDATION	1	24	Y10	3450	24	10	35	3210				
		26	Y10	2750	26	11	35	2510				
		25	Y10	1200	25	12	83	350	120	350		



DETAIL 'X'

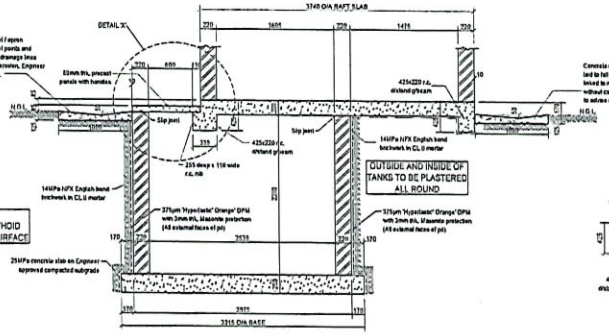


TYPICAL ISOLATION JOINT DETAIL (I.J.)

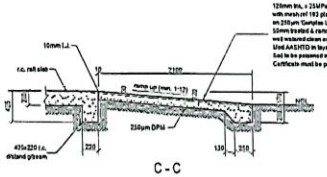


A - A

SLIP JOINT :
2 LAYERS OF 3 PLY MALTHOID ON SMOOTH RENDERED SURFACE



B - B



C - C

FOR CONSTRUCTION

NOTES

1. ALL LEVELS AND DIMENSIONS TO BE CHECKED ON SITE.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS.
3. ALL CONCRETE WORK TO COMPLY WITH SANS 10200.
4. CONCRETE CLASS :-
   a) PILECAPS & GROUND BEAMS = 25 MPa
   b) STRIP FOOTINGS & BASES = 25 MPa
   c) COLUMNS, SHEAR & LIFT WALLS = 30 MPa
   d) SLABS, BEAMS & STAIRCASES = 25 MPa
   e) RETAINING WALLS = 25 MPa
   f) SURFACE BEDS = AS NOTED
   g) BLINDING = 10 MPa
5. COVER TO REINFORCEMENT :- AS INDICATED ON DRAWING
6. ALL FOUNDATION EXCAVATIONS TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
7. ALL REINFORCING FIXING TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
8. SIX CUBES TO BE TAKEN PER POUR, THREE TO BE TESTED AT SEVEN DAYS, THE REMAINDER AT TWENTY EIGHT DAYS. THE RESULTS TO BE FORWARDED TO THE ENGINEER.
9. CONTRACTOR TO CONSTRUCT A BLINDING LAYER IF SOIL CONDITIONS RESULT IN REINFORCEMENT COVER NOT BEING MAINTAINED.
10. ALL STRUCTURAL CONCRETE TO BE CURED FOR A MINIMUM OF FIVE DAYS.
11. BRICKWORK SHOWN HATCHED ARE LOAD BEARING. ALL LOAD BEARING BRICKWORK TO BE 14MPa NFX. TOP OF ALL BRICKWORK TO RECEIVE 2 LAYERS OF 3 PLY MALTHOID OR SMOOTH RENDERED SURFACE.
12. ALL SINGLE SKIN BRICKWORK TO BE STOPPED 3 COURSES BELOW SOFFIT OF SLAB AND COMPLETED AFTER PROPS HAVE BEEN REMOVED.
13. ALL CONCRETE PLASTER AND BRICKWORK PLASTER INTER-FACES TO RECEIVE V-JOINTS.
14. THE ENGINEER REQUIRES 24HRS NOTICE FOR ALL INSPECTIONS.

Note :

The locality and the no. off toilet blocks to be :

1. In compliance with National Environmental Legislation and the Water Act.
2. Determined by the Principal Agent

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECTS LAYOUT

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR CONSTRUCTION	YR	10/11/2021

Professional person: LENAH PiTechEng — registration 20067211

LDM Solutions for The Built Environment www.ldm.co.za

PROJECT
WIMS NO. 060731
DEPARTMENT OF EDUCATION
WATER & SANITATION PROGRAMME

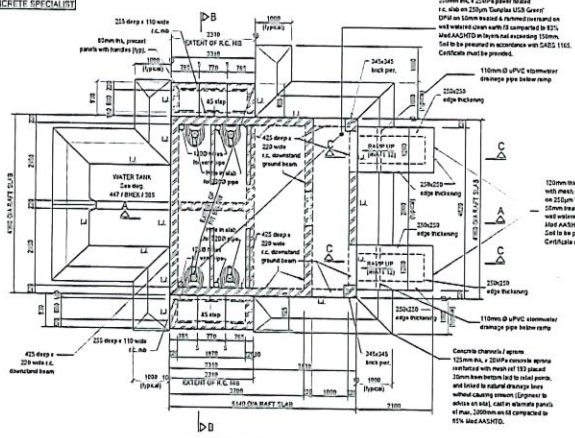
DETAILS
BHEKAMAKHOSI PRIMARY SCHOOL
TYPE 'C' (PIT ABLUTION)
TYPICAL LEARNERS BOYS ABLUTION
(2No. WC + 2No. URINALS)
STRUCTURAL LAYOUTS & DETAILS

MAP AFRICA CONSULTING ENGINEERS
CESA SABS ISO 9001
PLOT 161, MOSHA HOUSE, 144 MALEBOGO ROAD, FERNDALE RD, RANDBURG
email : admin@mapafrica.co.za
tel (011) 3952929 fax (011) 3952930

DESIGNED	P.J.V	SCALE: 1:75 1:25 1:20 1:10
DRAWN	Y.R	COPYRIGHT RESERVED
APPROVED	P.J.V.	DATE 06/07/2016

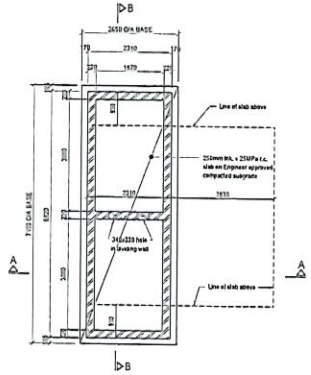
DRAWING No. 447 / BHEK / 302 REV A

NOTE : ALL PRECAST PRODUCTS TO BE MANUFACTURED BY A PRECAST CONCRETE SPECIALIST

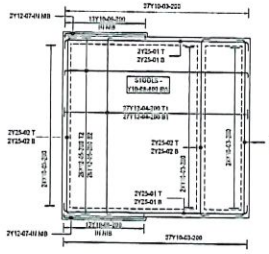


PLAN ON UPPER FOUNDATION / APRONS

ALLOW FOR 150mm SELECTED SUB-BASE COMPACTED TO 98% Mod AASHTO. TO ENGINEERS INSTRUCTION ON SITE.

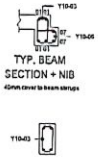


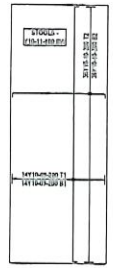
PLAN ON PIT FOUNDATION



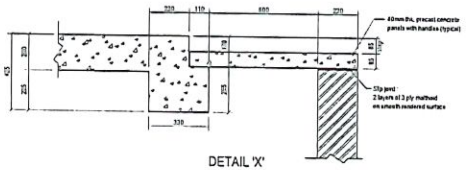
UPPER RAFT FOUNDATION REINFORCEMENT LAYOUT

25mm cover to slab all round
40mm cover to beam stirrups

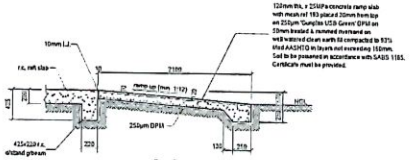




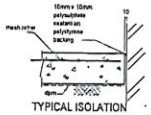
MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUMBER	MARK	S C	BENDING A	B	C	D	E/r
UPPER RAFT FOUNDATION	1	8	Y25	5400	8	01	35	5040				
		72	Y25	7250	72	02	35	6800				
		126	Y10	1160	126	03	03	340	140			
		54	Y12	5104	54	04	35	4460				
		52	Y12	5250	52	05	35	5040				
		28	Y10	1010	28	06	03	230	170			
		4	Y12	2450	4	07	25	2210				
		56	Y10	1220	56	08	03	350	110	350		
PIT FOUNDATION	1	28	Y10	7250	28	09	35	7050				
		72	Y10	2750	72	10	35	2550				
		40	Y10	1220	40	11	03	350	120	350		



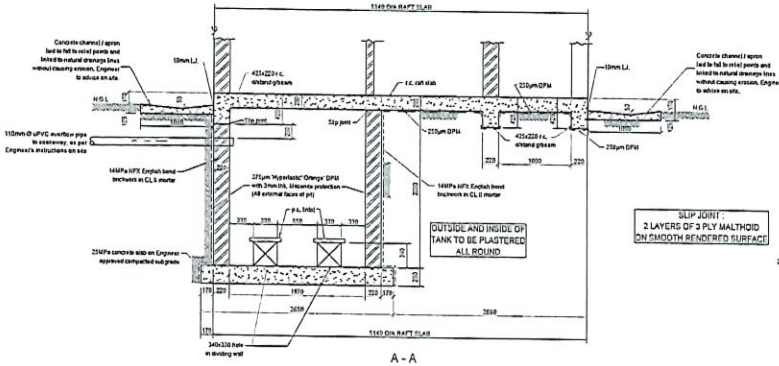
DETAIL 'X'



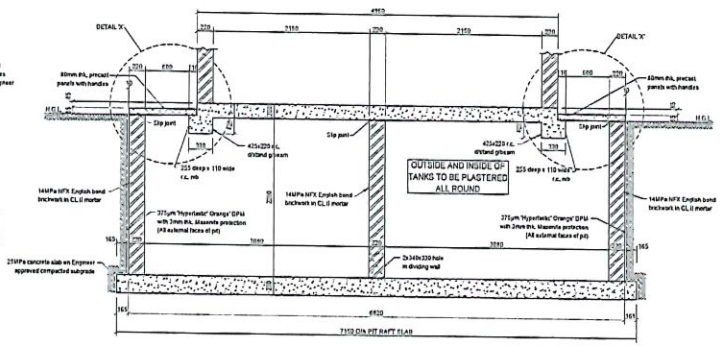
C - C



TYPICAL ISOLATION JOINT DETAIL (I.J.)



A - A



B - B

FOR CONSTRUCTION

NOTES

1. ALL LEVELS AND DIMENSIONS TO BE CHECKED ON SITE.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS.
3. ALL CONCRETE WORK TO COMPLY WITH SABS 1200G.
4. CONCRETE CLASS :-
   a) FILECAPS & GROUND BEAMS = 32 MPa
   b) STRIP FOOTINGS & BASES = 25 MPa
   c) COLUMNS, SHEAR & LIFT WALLS = 30 MPa
   d) SLABS, BEAMS & STAIRCASES = 25 MPa
   e) RETAINING WALLS = 25 MPa
   f) SURFACE BEDS = AS NOTED
   g) BLINDING = 10 MPa
5. COVER TO REINFORCEMENT :- AS INDICATED ON DRAWING
6. ALL FOUNDATION EXCAVATIONS TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
7. ALL REINFORCING FIXING TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
8. SIX CUBES TO BE TAKEN PER POUR, THREE TO BE TESTED AT SEVEN DAYS, THE REMAINDER AT TWENTY EIGHT DAYS. THE RESULTS TO BE FORWARDED TO THE ENGINEER.
9. CONTRACTOR TO CONSTRUCT A BLINDING LAYER IF SOIL CONDITIONS RESULT IN REINFORCEMENT COVER NOT BEING MAINTAINED.
10. ALL STRUCTURAL CONCRETE TO BE CURED FOR A MINIMUM OF FIVE DAYS.
11. BRICKWORK SHOWN HATCHED ARE LOAD BEARING. ALL LOAD BEARING BRICKWORK TO BE 14MPa NFX. TOP OF ALL BRICKWORK TO RECEIVE 2 LAYERS OF 3 PLY MALTHOID ON SMOOTH RENDERED SURFACE.
12. ALL SINGLE SKIN BRICKWORK TO BE STOPPED 2 COURSES BELOW SOFFIT OF SLAB AND COMPLETED AFTER PROPS HAVE BEEN REMOVED.
13. ALL CONCRETE PLASTER AND BRICKWORK PLASTER INTER-FACES TO RECEIVE V-JOINTS.
14. THE ENGINEER REQUIRES 24HRS NOTICE FOR ALL INSPECTIONS.

Note

The locality and the no. off toilet blocks to be :

1. In compliance with National Environmental Legislation and the Water Act.
2. Determined by the Principal Agent

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECTS LAYOUT

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR CONSTRUCTION	YR	19/12/2021

Professional person id NAIR Pillay&Pra [illegible] registration 2200707211

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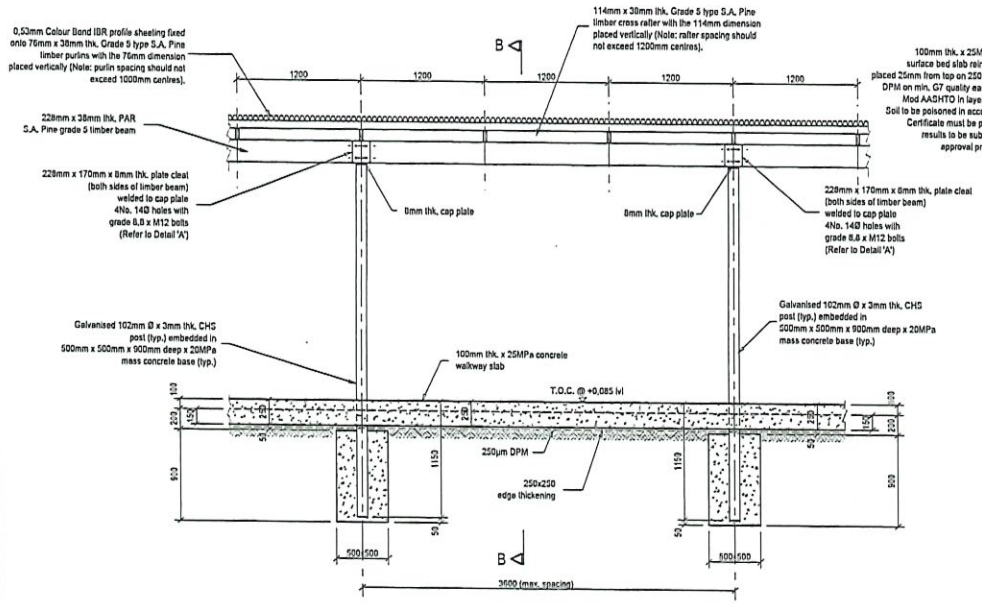
PROJECT
WIMS NO. 060731
DEPARTMENT OF EDUCATION
SANITATION PROGRAMME

DETAILS
BHEKAMAKHOSI PRIMARY SCHOOL
TYPE 'D' (PIT ABLUTION)
TYPICAL LEARNERS GIRLS ABLUTION (4No. WC)
STRUCTURAL LAYOUTS & DETAILS

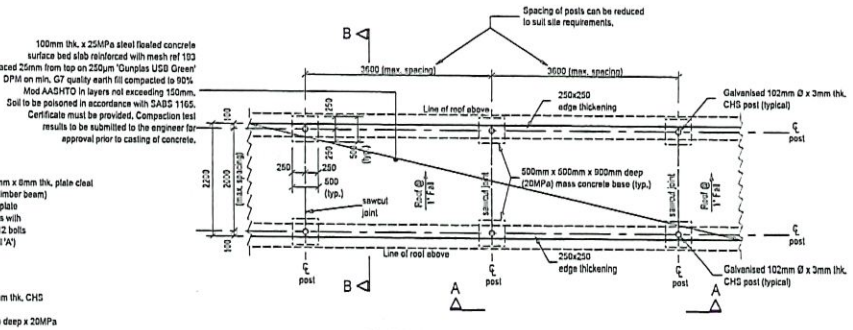
MAP AFRICA CONSULTING ENGINEERS
CESA SAICE
WHITE HILL MASTER OFFICE, 544 PRETORIUS STREET, HATFIELD, PRETORIA
e-mail : [illegible]
TEL (012) 3911410

DESIGNED	P.J.N.	COPYRIGHT RESERVED	SCALES 1:75 1:25 1:20 1:10
DRAWN	Y.J.		
APPROVED	P.J.N.		DATE 06/07/2016

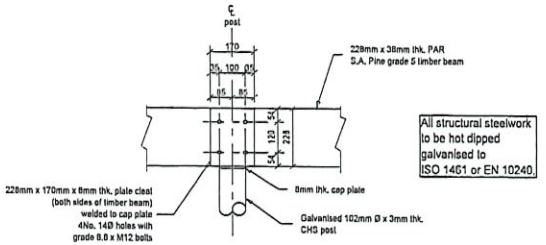
DRAWING No. 447 / BHEK / 303 REV. A



ELEVATION A - A



PART PLAN ON WALKWAY SLAB

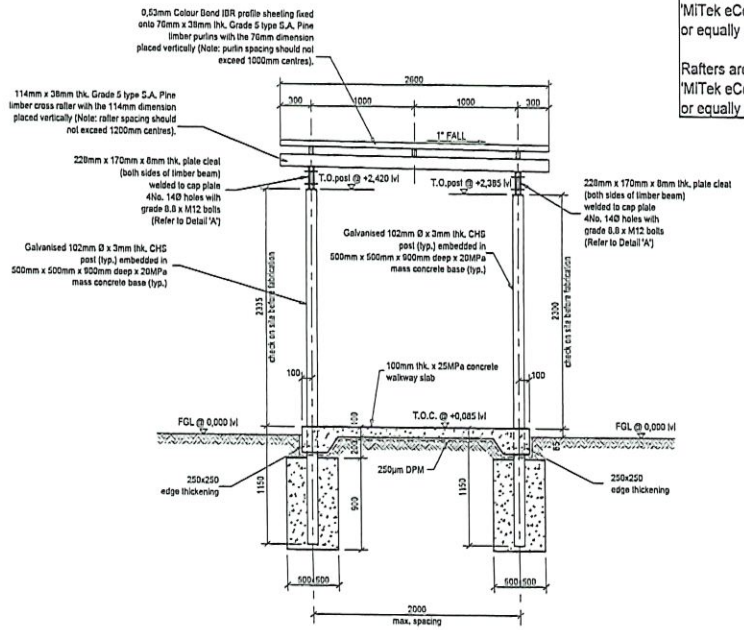


DETAIL 'A'

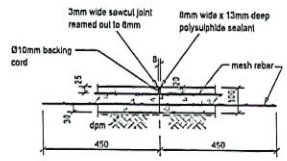
All structural steelwork to be hot dipped galvanised to ISO 1461 or EN 10240.

Note :
Purlins are to be fixed to rafters with 'MiTek eCo Purlinclips (Code: EPURCLIP)' or equally approved on both sides of purlin.

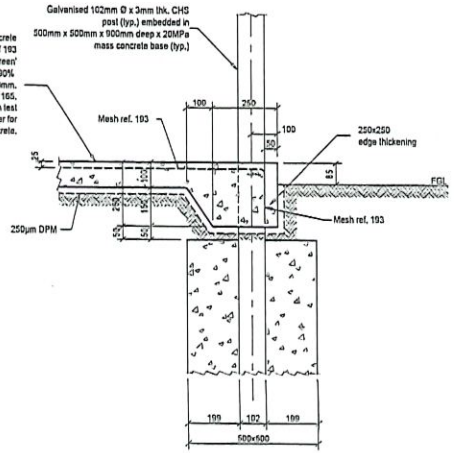
Rafters are to be fixed to beams with 'MiTek eCo Hurricaneclips (Code: EHURR)' or equally approved on both sides of rafter.



SECTION B - B



TYPICAL SAW-CUT JOINT DETAIL



TYPICAL EDGE THICKENING DETAIL

FOR CONSTRUCTION

NOTES

1. ALL LEVELS AND DIMENSIONS TO BE CHECKED ON SITE.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS.
3. ALL CONCRETE WORK TO COMPLY WITH SABS 1200G.
4. CONCRETE CLASS :- (unless otherwise shown)
   a) PILECAPS & GROUND BEAMS = 25 MPa
   b) STRIP FOOTINGS & BASES = 25 MPa
   c) COLUMNS, SHEAR & LIFT WALLS = 30 MPa
   d) SLABS, BEAMS & STAIRCASES = 25 MPa
   e) RETAINING WALLS = 25 MPa
   f) SURFACE BEDS = 20 MPa
   g) BLINDING = 10 MPa
5. COVER TO REINFORCEMENT AS INDICATED ON REINFORCEMENT LAYOUTS
6. ALL FOUNDATION EXCAVATIONS TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
7. ALL REINFORCING FIXING TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
8. SIX CUBES TO BE TAKEN PER POUR. THREE TO BE TESTED AT SEVEN DAYS, THE REMAINDER AT TWENTY EIGHT DAYS. THE RESULTS TO BE FORWARDED TO THE ENGINEER.
9. CONTRACTOR TO CONSTRUCT A BLINDING LAYER IF SOIL CONDITIONS RESULT IN REINFORCEMENT COVER NOT BEING MAINTAINED.
10. ALL STRUCTURAL CONCRETE TO BE CURED FOR A MINIMUM OF FIVE DAYS.
11. BRICKWORK SHOWN HATCHED ARE LOAD BEARING. ALL LOAD BEARING BRICKWORK TO BE 14MPa NFX. TOP OF ALL BRICKWORK TO RECEIVE 2 LAYERS OF 3 PLY MALTHOID ON SMOOTH RENDERED SURFACE.
12. ALL SINGLE SKIN BRICKWORK TO BE STOPPED 2 COURSES BELOW SOFFIT OF SLAB AND COMPLETED AFTER PROPS HAVE BEEN REMOVED.
13. ALL CONCRETE PLASTER AND BRICKWORK PLASTER INTER-FACES TO RECEIVE V-JOINTS.
14. THE ENGINEER REQUIRES 24HRS NOTICE FOR ALL INSPECTIONS.

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR CONSTRUCTION	YR	10/02/2021

Professional person MJNAIR Pr.Tech.Eng registration 200670211

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Solutions for The Built Environment
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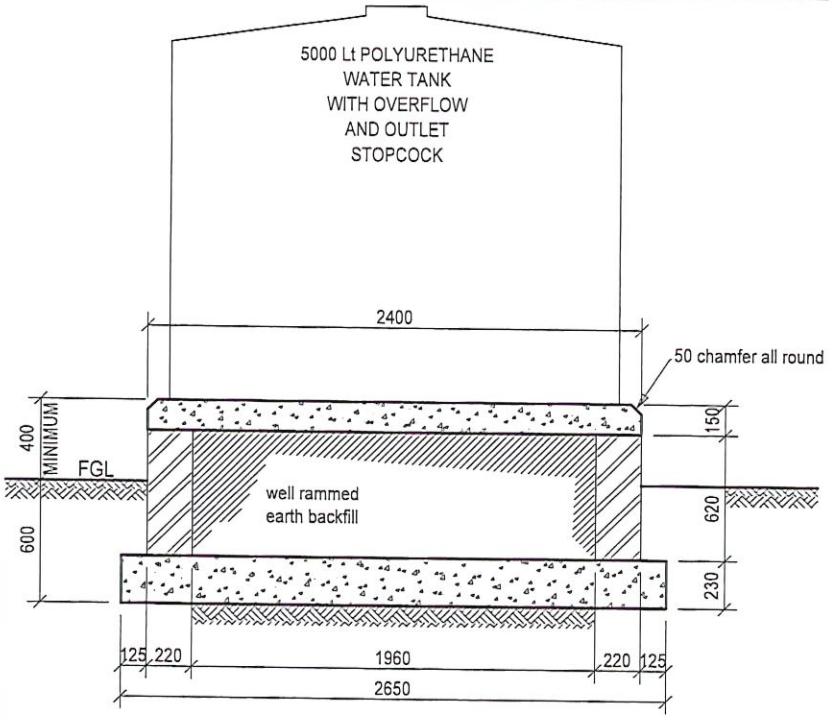
PROJECT
WIMS NO. 060731
DEPARTMENT OF EDUCATION
SANITATION PROGRAMME

DETAILS
BHEKAMAKHOSI PRIMARY SCHOOL
DETAILS OF TYPICAL COVERED WALKWAY
STRUCTURAL LAYOUT

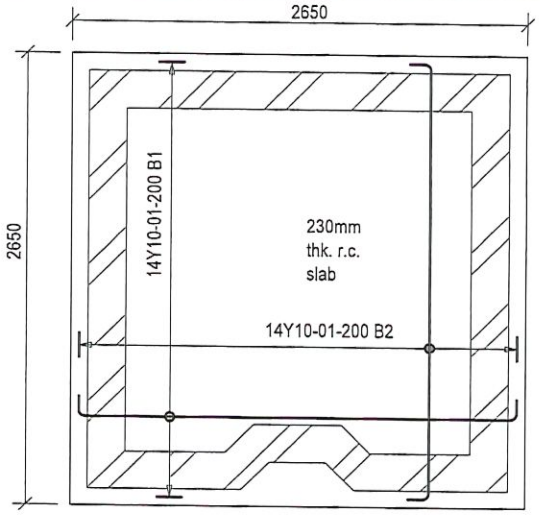
MAP AFRICA CONSULTING ENGINEERS
CESA
SABS ISO 9001
SUITE 102, NASHUA HOUSE, 144 HAZENDO ROAD, MORNINGSIDE, DURBAN
e-mail : admin@mapafrica.co.za
FAX (031) 3092929 TEL. (031) 3095831

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DRAWN	YR		1:25 1:10
APPROVED	PN	PL	DATE 01/07/2016

DRAWING No. 447 / BHEK / 304 REV A

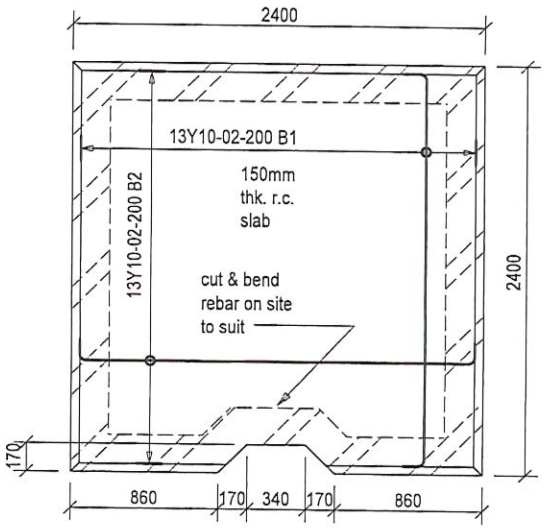


TYPICAL SECTION



PLAN ON FOOTING

50mm cover to reinforcement all round



PLAN ON TANK SUPPORT SLAB

25mm cover to reinforcement all round

NOTES:
1. SEE ARCHITECTS LAYOUT FOR LOCATION OF TANK.
2. ALL FOUNDATION EXCAVATIONS TO BE COMPACTED TO A MINIMUM OF 93%MOD AASHTO PRIOR TO CONCRETE BEING CAST.
3. MINIMUM 25MPa CONCRETE STRENGTH AT 28 DAYS
4. MINIMUM 14MPa NFX BRICKWORK IN CLASS II MORTAR

Water Tank – ' strapping' down specifications

All water tanks are to be strapped down (at each of the 4 stubs on top of the tank) to the supporting concrete base with 2 no. off 4mm diameter fully galvanized stay wires (allow for 'turnbuckles' to tighten each of the 'double strap' stay wires). Each of the ' double strap' stay wires are to be tied to a M12 eye bolt of which is to be drilled and fixed to the 4 corners of the concrete supporting base. The specification for the eye bolt is as follows : galvanised mild steel - M12 eye bolt with 25mm eye inside diameter and with 80mm long shank.

FOR CONSTRUCTION

REV.	DESCRIPTIONS	BY	DATE
A	ISSUED FOR CONSTRUCTION	Y.R	10/02/2021

professional person M.NAIR PrTechEng — registration 200670211

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A
	1	28 26	Y10 Y10	2750 2500	28 26	01 02	35 35	2550 2300

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MAP AFRICA CONSULTING ENGINEERS

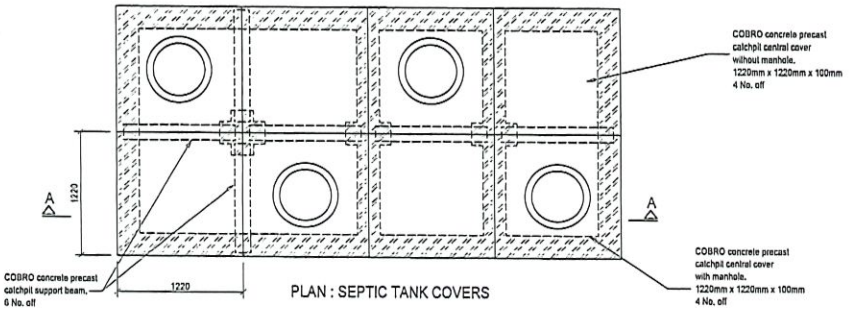
PROJECT
WIMS NO. 060731
DEPARTMENT OF EDUCATION
WATER & SANITATION PROGRAMME

DATE 06/09/2018

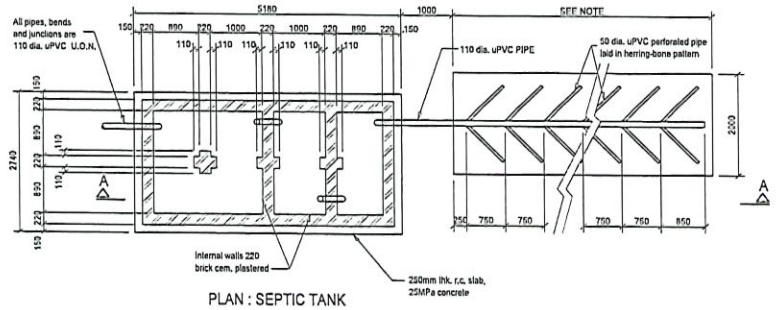
REVISION A

DETAILS
BHEKAMAKHOSI PRIMARY SCHOOL
TYPICAL WATER TANK SUPPORT
CONCRETE & REINFORCEMENT
LAYOUT & DETAILS

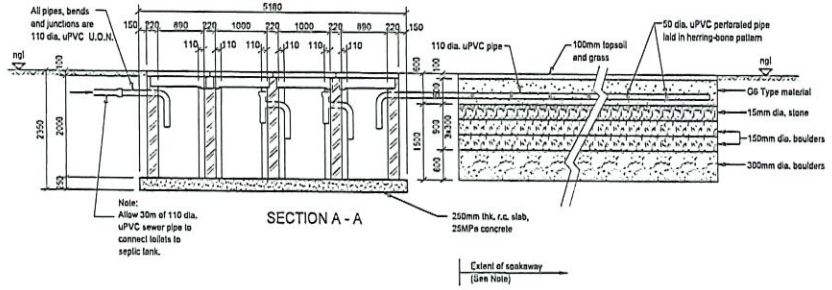
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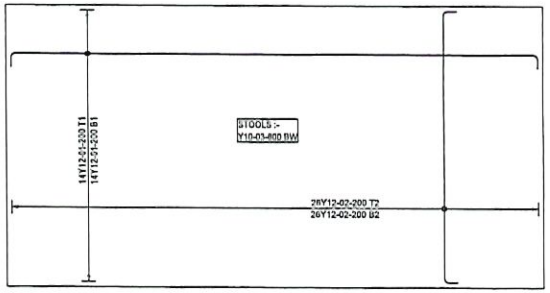
PLAN : SEPTIC TANK COVERS



PLAN : SEPTIC TANK



SECTION A - A



TANK BASE SLAB
REINFORCEMENT LAYOUT

50mm cover to slab all round

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
BASE SLAB	1	28	Y12	5300	28	01	35	5080				
		52	Y12	2850	52	02	35	2640				
		30	Y10	1200	30	03	83	350	115	350		

	8	10	12	16	20	25	32	40	TOT
R									
Y		22	263						286
TOT		22	263						286

NOTE :
THE POSITION AND EXTENT (SIZE) OF THE SOAKAWAY AND EVAPOTRANSPIRATION AREA WILL DEPEND ON :
1. PERCOLATION TEST RESULTS.
2. POSITION OF EXISTING AND/OR NEW BOREHOLES.
3. POSITION OF EXISTING WATERCOURSES, WETLANDS, ETC.
4. ENVIRONMENTAL CONCERNS, WHERE APPLICABLE.

FOR CONSTRUCTION

NOTES

1. ALL LEVELS AND DIMENSIONS TO BE CHECKED ON SITE.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS.
3. ALL CONCRETE WORK TO COMPLY WITH SABS 1200G.
4. CONCRETE CLASS :- (unless otherwise shown)
   a) PILECAPS & GROUND BEAMS = 25 MPa
   b) STRIP FOOTINGS & BASES = 25 MPa
   c) COLUMNS, SHEAR & LIFT WALLS = 30 MPa
   d) SLABS, BEAMS & STAIRCASES = 25 MPa
   e) RETAINING WALLS = 25 MPa
   f) SURFACE BEDS = 30 MPa
   g) BLINDING = 10 MPa
5. COVER TO REINFORCEMENT AS INDICATED ON REINFORCEMENT LAYOUTS
6. ALL FOUNDATION EXCAVATIONS TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
7. ALL REINFORCING FIXING TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
8. SIX CUBES TO BE TAKEN PER POUR. THREE TO BE TESTED AT SEVEN DAYS, THE REMAINDER AT TWENTY EIGHT DAYS. THE RESULTS TO BE FORWARDED TO THE ENGINEER.
9. CONTRACTOR TO CONSTRUCT A BLINDING LAYER IF SOIL CONDITIONS RESULT IN REINFORCEMENT COVER NOT BEING MAINTAINED.
10. ALL STRUCTURAL CONCRETE TO BE CURED FOR A MINIMUM OF FIVE DAYS.
11. BRICKWORK SHOWN HATCHED ARE LOAD BEARING. ALL LOAD BEARING BRICKWORK TO BE 14MPa NFX. TOP OF ALL BRICKWORK TO RECEIVE 2 LAYERS OF 3 PLY MALTHOID ON SMOOTH RENDERED SURFACE.
12. ALL SINGLE SKIN BRICKWORK TO BE STOPPED 2 COURSES BELOW SOFFIT OF SLAB AND COMPLETED AFTER PROPS HAVE BEEN REMOVED.
13. ALL CONCRETE PLASTER AND BRICKWORK PLASTER INTER-FACES TO RECEIVE V-JOINTS.
14. THE ENGINEER REQUIRES 24HRS NOTICE FOR ALL INSPECTIONS.

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR CONSTRUCTION	YR	11/02/2021

Professional person MJAIR PrTechEng registration 20067021

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PROJECT
WIMS NO. 060731
DEPARTMENT OF EDUCATION
WATER & SANITATION PROGRAMME

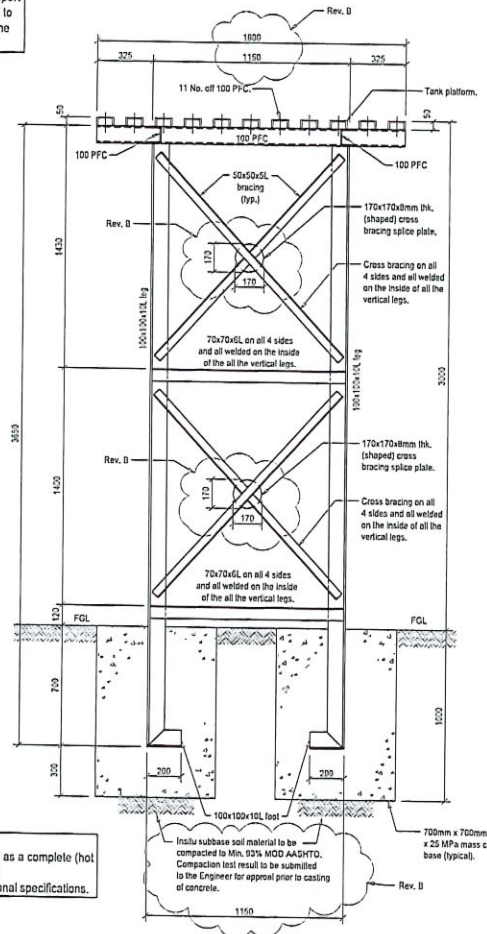
DETAILS
BHEKAMAKHOSI PRIMARY SCHOOL
TYPICAL SOAKAWAY AND SEPTIC TANK
STRUCTURAL LAYOUT & DETAILS

MAP AFRICA CONSULTING ENGINEERS
CESA SABS ISO 9001
SUITE 102, NASHUA HOUSE, 14A MAZENOD ROAD, MORNINGSIDE, DURBAN
e-mail : admin@mapafrica.co.za
FAX (031) 3092929 TEL (031) 3095831

DESIGNED	MN	COPYRIGHT RESERVED	SCALES 1:50 1:25
DRAWN	YR		
APPROVED	PN	PL	DATE 01/07/2016

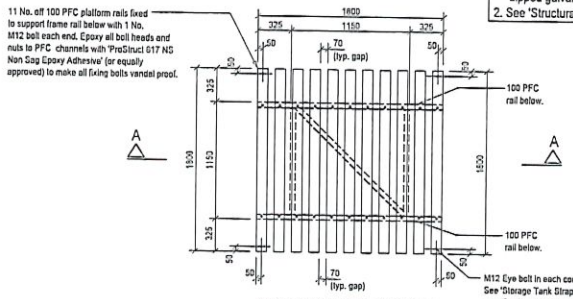
DRAWING No. 447 / BHEK / 306 REV A

NOTE :
This elevated water tank support structure has been designed to support a 5000Lt Polyethylene Water Tank.



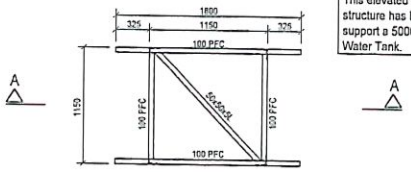
SECTION A - A

NOTE :
1. Water tank support structure supplied as a complete (hot dipped galvanised) welded structure.
2. See 'Structural Steel Notes' for additional specifications.



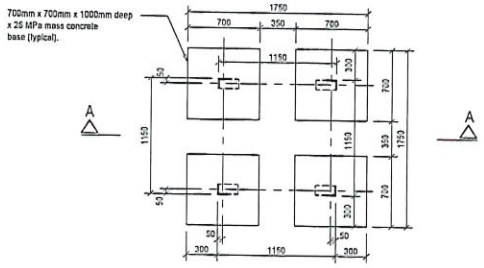
PLAN ON TANK PLATFORM

NOTE :
1. Water tank support structure supplied as a complete (hot dipped galvanised) welded structure.
2. See 'Structural Steel Notes' for additional specifications.



PLAN ON TANK PLATFORM SUPPORT FRAME

NOTE :
This elevated water tank support structure has been designed to support a 5000Lt Polyethylene Water Tank.



PLAN ON FOUNDATION

Polyethylene Water Storage Tank – 'strapping' down specifications :

All water storage tanks are to be strapped down (at each of the 4 slabs on top of the tank) to the supporting tank platform (100 PFC) with 2 No. off 4mm diameter fully galvanized stay wires (allow for 'turnbuckles' to tighten each of the 'double strap' stay wires). Each of the 'double strap' stay wires are to be tied to a M12 eye bolt of which is to be bolted to the 100 PFC on each of the 4 corners of the tank platform. The specification for the eye bolt is as follows : galvanised mild steel - M12 eye bolt and nut with 25mm eye inside diameter and with 50mm long shank all 'epoxied' to the 100 PFC after installation with 'ProSirud 617 NS Non Sag Epoxy Adhesive' (or equally approved) to make eye bolts vandal proof.

Structural Steel Notes :-

1. All work in accordance with sans 1200H.
2. All welds to be min. 6mm continuous fillet welds.
3. All steelwork to be grade S355JR.
4. All bolts to be grade 8.8 bolts.
5. All steelwork to be hot dipped galvanised to ISO 1461 or EN 10240 (unless otherwise noted). Galvanising certificate for all steelwork is to be submitted to the engineer on completion.
6. 2 sets of fabrication drawings to be provided to engineer for approval before commencing fabrication.
7. Certificates confirming the grade stress of all steelwork and bolts specified is to be submitted to the engineer on completion.
8. The structural steelwork contractor is to verify all setting out dimensions on site prior to fabrication.

FOR CONSTRUCTION

General Notes :

1. All levels and dimensions to be checked on site.
2. This drawing is to be read in conjunction with the Architectural drawings.
3. All concrete work is to comply with SABS 1200G.
4. Concrete Class :-

a) Pilecaps & Ground Beams	= 25 MPa
b) Strip Footings & Bases	= 25 MPa
c) Columns, Shear Walls & Lift Shaft Walls	= 30 MPa
d) Slabs, Beams & Staircases	= 25 MPa
e) Retaining Walls	= 25 MPa
f) Surface Bed Slabs	= 30 MPa
g) Raft Slabs	= 30 MPa
h) Raft Slab Ground Beams	= 30 MPa
i) Blinding	= 10 MPa

5. Cover to reinforcement :- As indicated on drawings.
6. All foundation excavations are to be inspected by the Engineer prior to casting of concrete.
7. All reinforcing fixing is to be inspected by the Engineer prior to casting of concrete.
8. Six concrete cubes to be taken per pour. Three cubes to be tested at seven days, the remainder at twenty eight days. The results are to be forwarded to the Engineer for review and approval.
9. The Contractor is to construct a blinding layer if soil conditions result in reinforcement cover not being maintained.
10. All structural concrete is to be cured for a minimum of five days.
11. All brickwork shown 'hatched' are load bearing. All load bearing brickwork is to be 14MPa NFX bricks in Class 2 mortar. The top of all load bearing brickwork (at all concrete interfaces) is to receive 2 layers of 3 ply mailhold placed on a smooth rendered surface.
12. All single skin brickwork is to be stopped 2 courses below the soffit of the slab and completed after the props have been removed.
13. All concrete plaster and brickwork plaster interfaces to receive V-joints.
14. The Engineer requires 24 hours notice for all inspections.

REV	DESCRIPTION	BY	DATE
B	GUSSET PLATE ADDED	NH	12/03/2021
A	ISSUED FOR CONSTRUCTION	YR	22/11/2019

professional person M.NAIR PrTechEng registration 200670211

CLIENT

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PROJECT

WIMS NO. 064756
DEPARTMENT OF EDUCATION
WATER AND SANITATION PROGRAMME

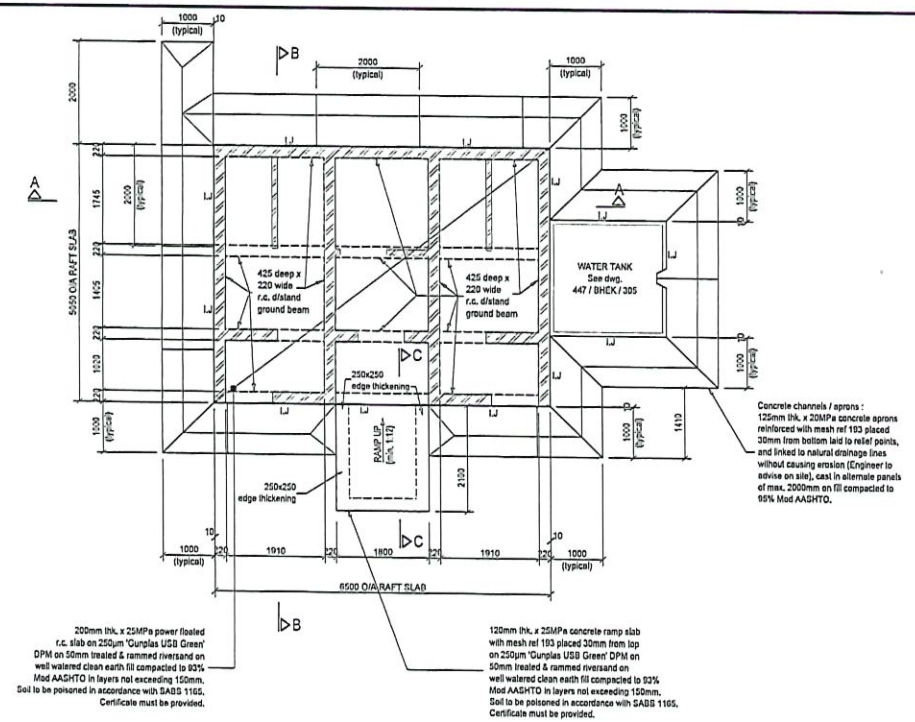
DETAILS

BHEKAMAKHOSI PRIMARY SCHOOL
TYPICAL ELEVATED WATER TANK SUPPORT STRUCTURE FOR 5000 Litre WATER TANK
STRUCTURAL STEEL LAYOUT & DETAILS

MAP AFRICA CONSULTING ENGINEERS
SUITE 102, WHEELER HOUSE, 14A DE MAZENOD ROAD, MORNINGSIDE, DURBAN
e-mail : admin@mapafrica.co.za
FAX (031) 3032929 TEL. (031) 3085831

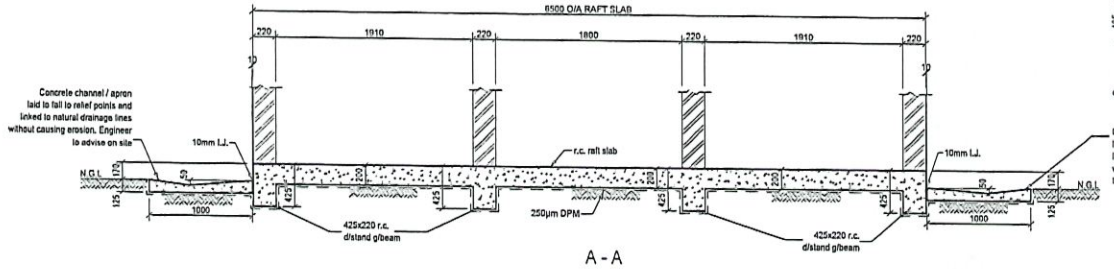
DESIGNED	M.N.	COPYRIGHT RESERVED	SCALES 1:25 1:15
DRAWN	Y.R.		
APPROVED	M.N.	PL	DATE 01/07/2016

DRAWING No. 447 / BHEK / 500 REV B

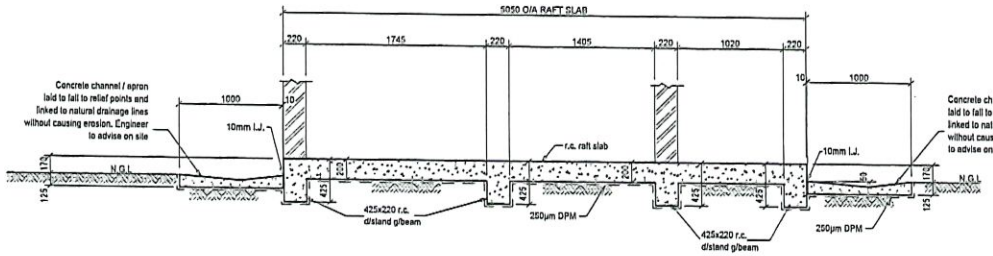


PLAN ON RAFT FOUNDATION / APRONS

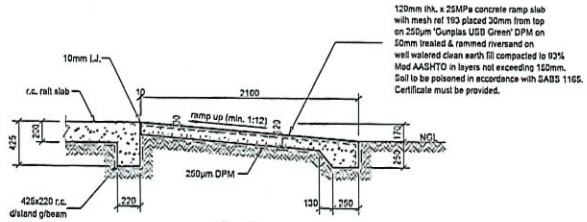
ALLOW FOR 150mm SELECTED SUB-BASE COMPACTED TO 98% Mod AASHTO TO ENGINEERS INSTRUCTION ON SITE.



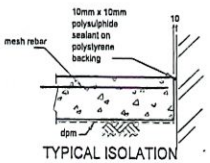
A - A



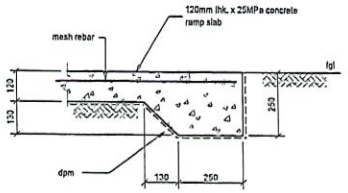
B - B



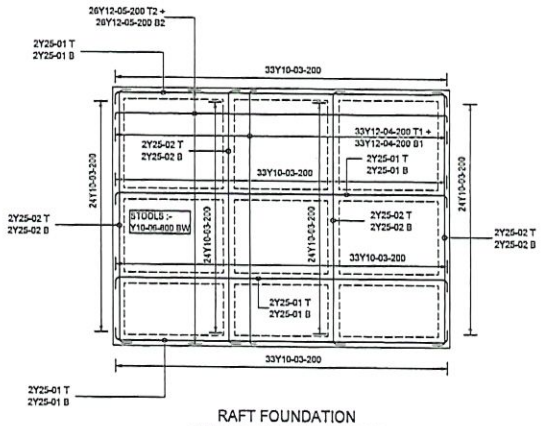
C - C



TYPICAL ISOLATION JOINT DETAIL (I.J.)



TYPICAL EDGE THICKENING DETAIL



RAFT FOUNDATION REINFORCEMENT LAYOUT

25mm cover to slab all round
40mm cover to beam stirrups



TYP. BEAM SECTION

40mm cover to beam stirrups

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
RAFT FOUND	1	16	Y25	6800	16	01	35	6400				
		16	Y25	5350	16	02	35	4950				
		228	Y10	1100	228	03	60	340	140			
		66	Y12	5150	66	04	35	4950				
		52	Y12	6600	52	05	35	6400				
		65	Y10	1200	65	06	83	350	110	350		

NOTES

1. ALL LEVELS AND DIMENSIONS TO BE CHECKED ON SITE.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS.
3. ALL CONCRETE WORK TO COMPLY WITH SABS 1200G.
4. CONCRETE CLASS :- (unless otherwise shown)
   a) PILECAPS & GROUND BEAMS = 25 MPa
   b) STRIP FOOTINGS & BASES = 25 MPa
   c) COLUMNS, SHEAR & LIFT WALLS = 30 MPa
   d) SLABS, BEAMS & STAIRCASES = 25 MPa
   e) RETAINING WALLS = 25 MPa
   f) SURFACE BEDS = 30 MPa
   g) BLINDING = 10 MPa
5. COVER TO REINFORCEMENT AS INDICATED ON REINFORCEMENT LAYOUTS
6. ALL FOUNDATION EXCAVATIONS TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
7. ALL REINFORCING FIXING TO BE INSPECTED BY THE ENGINEER PRIOR TO CASTING OF CONCRETE.
8. SIX CUBES TO BE TAKEN PER POUR. THREE TO BE TESTED AT SEVEN DAYS, THE REMAINDER AT TWENTY EIGHT DAYS. THE RESULTS TO BE FORWARDED TO THE ENGINEER.
9. CONTRACTOR TO CONSTRUCT A BLINDING LAYER IF SOIL CONDITIONS RESULT IN REINFORCEMENT COVER NOT BEING MAINTAINED.
10. ALL STRUCTURAL CONCRETE TO BE CURED FOR A MINIMUM OF FIVE DAYS.
11. BRICKWORK SHOWN HATCHED ARE LOAD BEARING. ALL LOAD BEARING BRICKWORK TO BE 14MPa NFX. TOP OF ALL BRICKWORK TO RECEIVE 2 LAYERS OF 3 PLY MALTHOID ON SMOOTH RENDERED SURFACE.
12. ALL SINGLE SKIN BRICKWORK TO BE STOPPED 2 COURSES BELOW SOFFIT OF SLAB AND COMPLETED AFTER PROPS HAVE BEEN REMOVED.
13. ALL CONCRETE PLASTER AND BRICKWORK PLASTER INTER-FACES TO RECEIVE V-JOINTS.
14. THE ENGINEER REQUIRES 24HRS NOTICE FOR ALL INSPECTIONS.

Note :

The locality and the no. off toilet blocks to be :

1. In compliance with National Environmental Legislation and the Water Act.
2. Determined by the Principal Agent.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECTS LAYOUT

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR CONSTRUCTION	YR	11/02/2021

Professional person MJAM PrTechEng registration 20007021

LDM Solutions For The Built Environment WWW.LDM.CO.ZA

PROJECT
WIMS NO. 060731
DEPARTMENT OF EDUCATION
WATER & SANITATION PROGRAMME

DETAILS
BHEKAMAKHOSI PRIMARY SCHOOL
TYPE 'B-WB' (WATERBORNE ABLUTION)
TYPICAL TEACHERS ABLUTION
(2No. MALE + 2No. FEMALE + 1No. PARAPLEGIC)
STRUCTURAL LAYOUTS & DETAILS

MAP AFRICA CONSULTING ENGINEERS
CESA SABS ISO 9001
SUITE 102, NASHUA HOUSE, 144 MAZENOD ROAD, MORNINGSIDE, DURBAN
e-mail : admin@mapafrica.co.za
FAX (031) 3092929 TEL. (031) 3095831

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DRAWN	YR		
APPROVED	PN	PL	DATE 07/07/2016

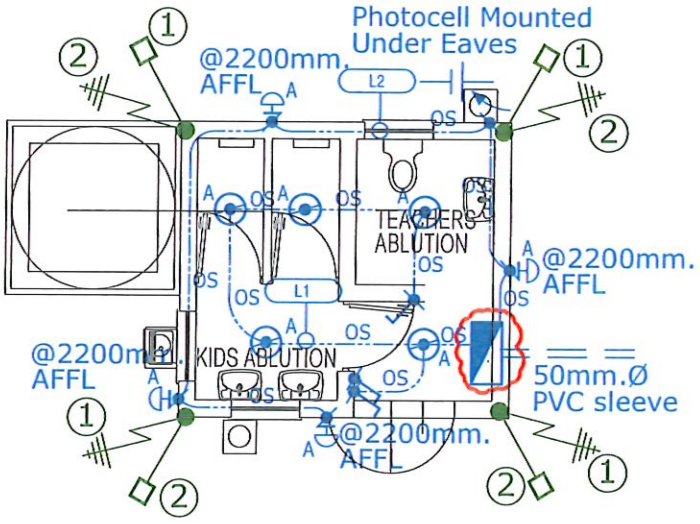
DRAWING No. 447 / BHEK / 301 REV A

FOR CONSTRUCTION

LIGHTNING PROTECTION NOTES

1) 25mm.Ø PVC CONDUIT DROPPER BUILT INTO BRICKWORK
2) EARTH SPIKE

Note: Only applicable to schools that have an existing and functional power supply



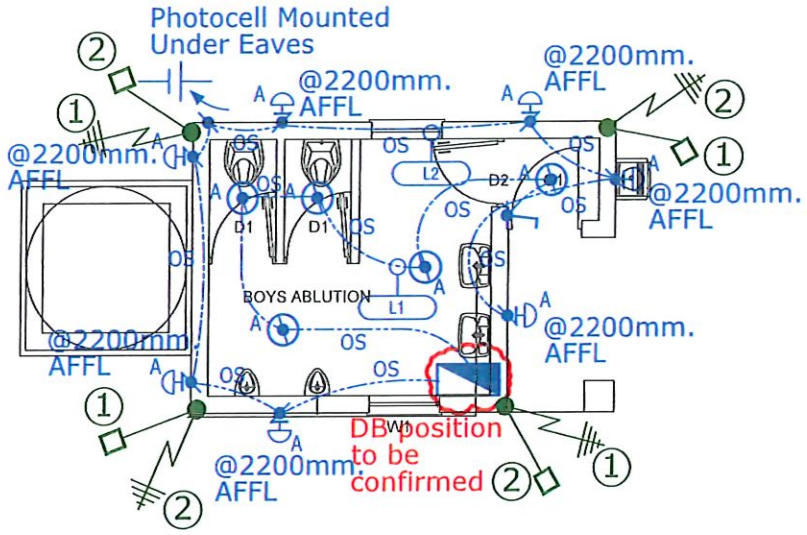
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	REV	DATE	BY	DESCRIPTION		SIGN
LDM Solutions For The Built Environment	DATE 11/2/21	SCALE 1:100		TITLE: WIMS No. 060731:Bhekamakhosi Primary School	PROJECT No. 16016_97	CHKD.
	DESIGNED G.Chetty	DRAWN C.G		Type A-VIP - Grade R - 2 Seater Unisex and Teachers Ablution Block Lighting Layout	DRAWING No.: 001	
					SHEET No.:	REV. 0

LIGHTNING PROTECTION NOTES

1) 25mm.Ø PVC CONDUIT DROPPER BUILT INTO BRICKWORK
2) EARTH SPIKE

Note: Only applicable to schools that have an existing and functional power supply



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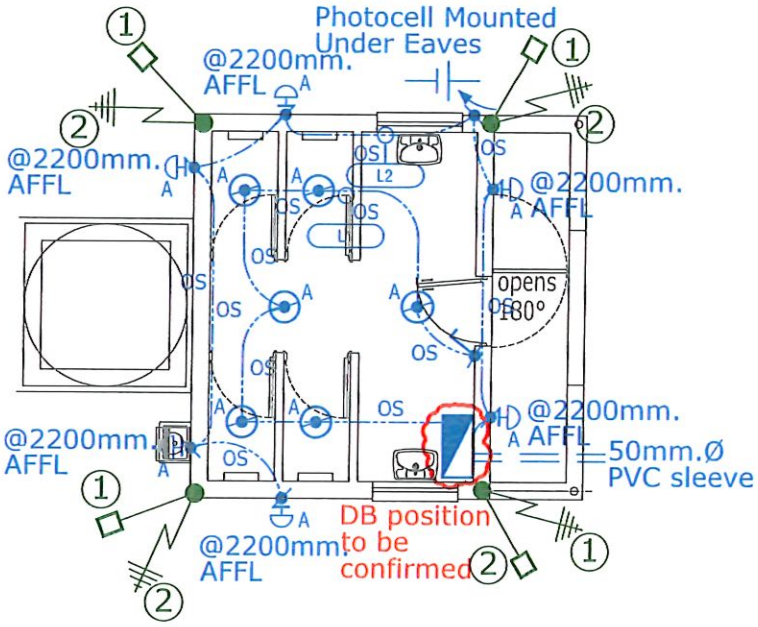
LDM
Solutions For The Built Environment

DATE	SCALE	TITLE:	PROJECT No.	CHKD.
11/2/21	1:100	WIMS No. 060731:Bhekamakhosi Primary School	16016_97	
DESIGNED	DRAWN	Type C-VIP - 4 Seater Boys, (2 Pan, 2 Urinal) Ablution Block Lighting Layout	DRAWING No.: 004	
G.Chetty	C.G		SHEET No.:	REV. 0

LIGHTNING PROTECTION NOTES

1) 25mm.Ø PVC CONDUIT DROPPER BUILT INTO BRICKWORK
2) EARTH SPIKE

Note: Only applicable to schools that have an existing and functional power supply



FOR CONSTRUCTION

FILE NAME:

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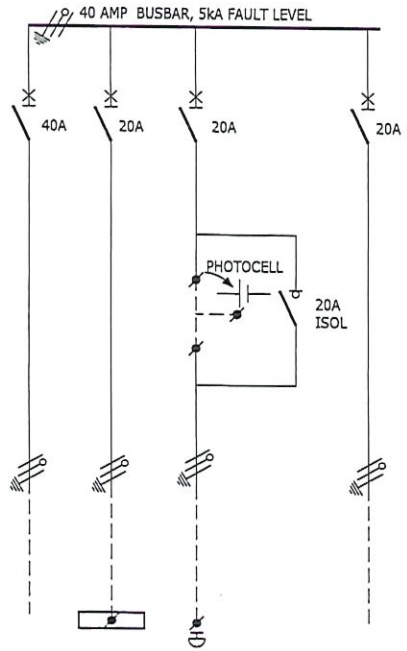
REV	DATE	BY	DESCRIPTION	SIGN
0	11/2/21	CG	Original Issue	

LDM
Solutions For The Built Environment

DATE	SCALE
11/2/21	1:100
DESIGNED	DRAWN
G.Chetty	C.G

TITLE:
WIMS No. 060731:Bhekamakhosi Primary School
Type D-VIP - 4 Seater Girls (4 Pans) Ablution Block Lighting Layout

PROJECT No.	CHKD.
16016_97	
DRAWING No.: 005	
SHEET No.:	REV. 0

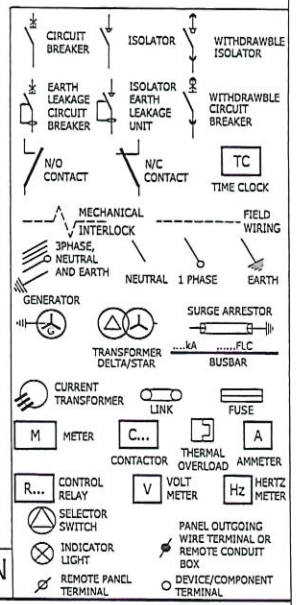


GENERAL NOTES:

A) DROPPERS/TAILS TO BE RATED FOR I^2t LET THROUGH
B) HARNESSED WIRING TO BE DERATED.
C) TUFFNOL BRACES NOT TO BE USED ABOVE 10kA.
D) COPPER BUSBARS TO BE CONTINUOUS RATED.
E) ENCLOSURE TO BE IP65.
F) PHASING R.W.B. TOP TO BOTTOM, LEFT TO RIGHT, BACK TO FRONT.
G) INTERNAL TEMPERATURE TO BE LIMITED TO 5° ABOVE ABOVE AMBIENT - MAX. 40°C.
H) CABLE ENTRIES AND GENERAL ARRANGEMENT TO SUIT INSTALLATION CONSTRAINTS.

ADDITIONAL NOTES:

1. ALL CIRCUIT BREAKERS, ISOLATORS AND EARTH LEAKAGE TO BE TYPE 2 CURVE AND EQUIPMENT TO BE CBI.
2. EARTH LEAKAGE TO BE 60A ISOLATOR WITH INTEGRAL 30mA.
3. SURFACE MOUNTED DB WITH ARCHITRAVE.
4. DB COLOUR TO BE WHITE.
5. DB TO BE TOP AND BOTTOM ENTRY
6. BUSBAR TO BE SHROUDED
7. EARTH & NEUTRAL BAR TO BE EASY ACCESSIBLE.
8. SUFFICIENT SPACE REQUIRED FOR SAFE ACCESS FOR REWIRNG.
9. ACCESS ZONE REQUIRED THROUGH SHROUD
10. ALL 3 PHASES AND SINGLE PHASE OUTGOING CIRCUIT BREAKERS TO BE LABELLED WITH DESCRIPTION OF SERVICES AND CIRCUIT Nos. AS PER DRAWING.



FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CHKD.
0	Original Issue	CG	11/2/21	

ENGINEER	DRAWN	DATE:	SCALE:	CHKD.
G.Chetty	C.G	Feb 21	n.t.s	
			PAPER SIZE: A3	

PROJECT No.	DRAWING No.	SHEET:	REV.
16016_97	006	1 of 1	0

File Name : Lyr:0:1:A3

TITLE: WIMS No. 060731:Bhekamakhosi Primary School

DRAWING TITLE: Typical DB for Toilet Blocks
Single Line Diagram

LDM
Solutions For The Built Environment

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

PROVISIONAL SITE PLAN

VIP ABLUTION BLOCKS	
TYPE	DESCRIPTION
A	2 SEATER UNISEX & TEACHERS (GRADE R)
C	4 SEATER BOYS- 2 PANS & 2 URINALS
D	4 SEATER GIRLS- 4 PANS

WATERBORNE ABLUTION BLOCKS	
TYPE	DESCRIPTION
B(T)-WB	2 SEATER FEMALES 2 SEATER MALES PARAPLEGIC

EXISTING BUILDINGS	
BLOCK	BUILDING TYPE
A	EXISTING BOYS & GIRLS ABLUTION BLOCK
B	EXISTING MALE & FEMALE STAFF ABLUTION BLOCK
C1-C3	EXISTING ADMIN. & CLASSROOM BLOCKS
D	EXISTING GUARD HOUSE

KEY

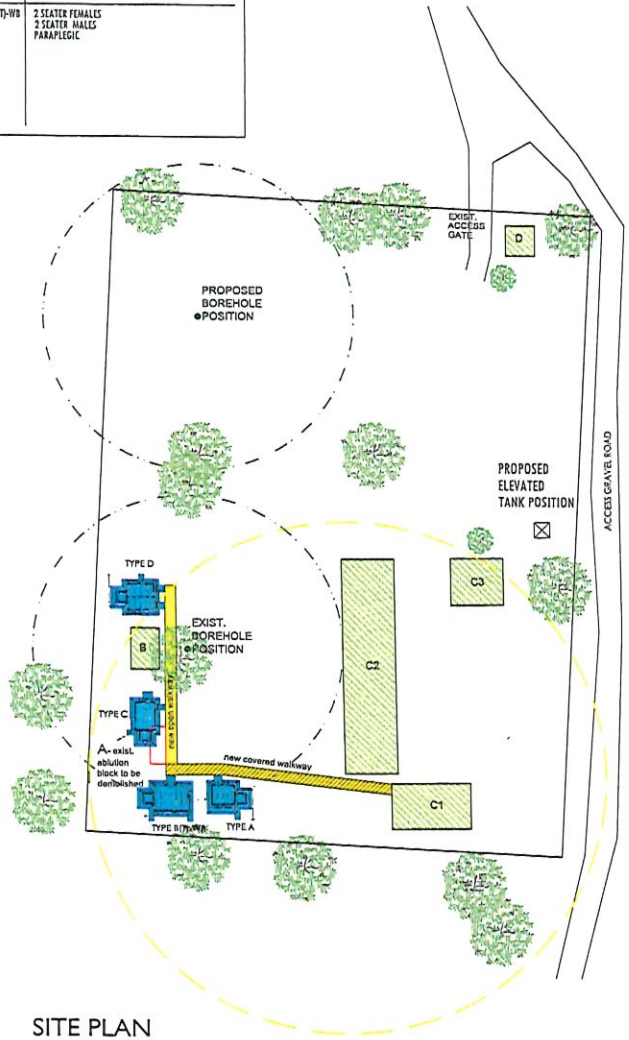
- EXISTING BUILDINGS
- EXISTING ABLUTION TO BE DEMOLISHED
- PROPOSED NEW TOILETS
- PROPOSED COVERED WALKWAY 2.2M WIDE
- PROPOSED COVERED WALKWAY 2.2M WIDE
- 50M PARAPLEGIC RADIUS
- 30M BOREHOLE CLEARANCE RADIUS
- APPROX. PERCOLATION TEST PIT POINT

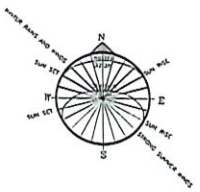
EARTHWORKS

MAJOR EARTHWORKS REQUIRED

RETAINING WALLS

RETAINING WALLS REQUIRED





SITE PLAN

SCALE 1:500

28°22'46"S 31°14'36"E (S28.37944444; E31.24333333)

1. Please note that the site boundaries do not depict ownership boundaries in the 'notional site plan'. These 'notional' boundaries represent nearest fence lines and the layouts is solely for reference information purposes only
2. For accurate and true ownership boundaries, cadastral survey diagrams must be obtained



PRE-CONSTRUCTION SITE AERIAL PHOTOGRAPH
NOT TO SCALE

STATUS OF ISSUE
FOR CONSTRUCTION
SIGNATURE BY CLIENT DEPARTMENT

Revisions			
1	01-04-19	New ablution positions revised	
Rev. No.	Date	REVISIONS	INIT.

Checked by Consultant
Name N. FRANCIS
Signature
20-04-19
Date

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PRINCIPAL AGENT

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UNIT 12
THE CORNER
40 WESTWAY AVE
GLEN ASHLEY

PROVINCE OF KWAZULU-NATAL
DEPARTMENT OF PUBLIC WORKS
HEAD OF PUBLIC WORKS
A. GOVENDER

PROJECT
DEPARTMENT OF EDUCATION
SANITATION PROGRAMME
uLundi Local Municipality (Zululand)
Bhekamakhosi Primary School
Nobamba Tribal Authority,
Mahlabathini, 3865

DRAWING DESCRIPTION
SITE PLAN LAYOUT
TYPE A, B(T)-WB, C, D

DRAWN	CHECKED	PRINCIPAL AGENT	
n. mokoena	n. francis	ARCHITECT	Y
DATE	SCALES	PROJECT MAN.	
20-04-19	AS SHOWN	YA CONSULTANT	

DRAWING No.	REVISION	STATUS	SHEET SIZE	SHEET
N13-BhekPS	1	C	A1	1/5

Works No.	Lmis No.	Revision
060731	500108225	1

Stamped by Plant Approval Committee

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

ANNEXURES

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

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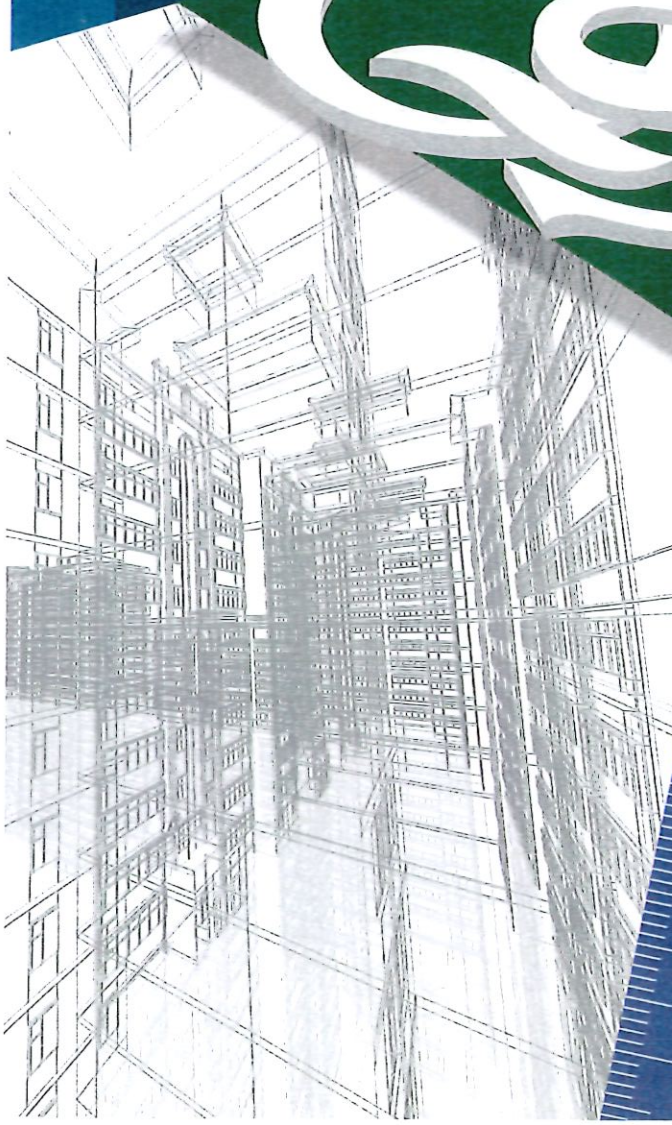
ANNEXURE 1

ASAQS MODEL PREAMBLES FOR ALL TRADES (2017)

GENERAL PREAMBLES FOR TRADES 2017

ISBN: 978-0-620-74577-2





The Association of South African Quantity Surveyors

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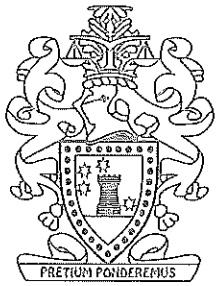
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MLC CONSTRUCTION COST CONSULTANTS

Electronic Version



GENERAL PREAMBLES FOR TRADES

2017

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THE ASSOCIATION OF SOUTH AFRICAN QUANTITY SURVEYORS

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MESSAGE FROM THE PRESIDENT

The publication of this General Preambles for Trades – 2017 bears testimony to the fact that the Association of South African Quantity Surveyors and its members are committed to the ongoing production of outstanding resources of enduring value to the quantity surveying profession and the built environment at large.

Significant documents such as these contribute to the body of knowledge so highly esteemed by our profession and those associated with us. They enhance the provision of professional services by providing the guidelines and standardization so critical to contractual documentation in the construction industry.

This document is another example of our profession rising to the challenge in the face of change and producing a leading resource that will guide its members for years to come. It sets a standard for the professional service we offer to our valued clients and communities, both within and beyond our borders.

I take this opportunity to thank Professors Hans Wegelin and Carl Klopper for their excellent work in producing this document, resulting in another outstanding contribution to the profession. Since it takes progress such as this to maintain our position of strength and keep us at the forefront of change, I wish to invite more of our members to assist us in this endeavour.

Please receive this document with my best wishes.

Dr Stephan Molusiwa Ramabodu

President

The Association of South African Quantity Surveyors

2016/2017

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The document

This document is published by THE ASSOCIATION OF SOUTH AFRICAN QUANTITY SURVEYORS (ASAQS) and replaces an existing ASAQS publication titled "Model Preambles for Trades 2008". The contents of the last-mentioned publication have been augmented and updated and are presented in a different style in this document

It is intended that this document will be used by reference only in the text of bills of quantities or lump sum documents and will not be reproduced and bound therein

The basic philosophy

These preambles have been designed with the view of expediting the production of bills of quantities and, as a by-product, enhancing standardisation of documentation by facilitating and promoting the usage of abbreviated descriptions in the text of bills of quantities

Users' attention is drawn to the fact that the contents of this document cover materials and workmanship encountered in a significant majority of building projects (as indicated by the introduction of the word "general" in the revised title). It is by no manner of means exhaustive. It is therefore to be anticipated that some items in the bills of quantities will still require full descriptions and supplementary preambles in the text

Wherever possible, reference has been made in these preambles to South African National Standards (*SANS*) to describe materials and methods. This includes the third revision of *SANS* 10400 The Application of the National Building Regulations and the linked parts of *SANS* 2001 Construction Works which cover building and civil engineering work, replacing *SANS* 1200

It is incumbent on users of these preambles to have ready access to the relevant standards. Where applicable *SANS* do not exist, reference has been made to other accredited standards. *SANS* are available online at www.sabs.co.za

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SANS NUMBERING IN CONSTRUCTION STANDARDS

SANS specification: *SANS* and number, e.g.

SANS 227 burnt clay masonry units

SANS code of practice: 1 plus four digits, e.g.

SANS 10082 Timber buildings

SANS BS standard: *SANS* and number, e.g.

SANS 6927 Building construction - Jointing products - Sealants - Vocabulary

SANS EN standard: 5 plus four digits, slash *EN* plus number, e.g.

SANS 50197-1 / EN 197-1 Cement Part 1: Composition, specifications and conformity criteria for common cements

SANS ISO standard: *SANS* and number, slash *ISO* and number, e.g.

SANS 140 / *ISO* 140 Acoustics - Measurement of sound insulation in buildings

SANS SM (standard method): *SANS* and 5 or 6 plus three digits, e.g.

SANS 5900 Warpage and squareness of refractory bricks

SANS 6056 Sulphide content of water

There is no longer a distinction between a specification, a code of practice, or a standard method; they are now all referred to as *standards*

Standards should be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits

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Units, symbols, meaning of terms

Units of measurement, symbols

The units of measurement are metric units as standardised by the "Système International d'Unités" (SI). Note that the comma is the decimal indicator in Europe and South Africa, formally adopted by the *ISO* and the *IEC* as well, and that numerals are grouped into groups of three for readability, separated by a space, e.g. 1 233,55

The following unit symbols (not abbreviations) and notations may appear in this document:

°C	degrees Celsius	L	litre
g	gram	m	metre
H_z	Hertz	m^2	square metre
h	hour	m^3	cubic metre
d	day		
kN	kilonewton	mm	millimetre
kPa	kilopascal	MPa	megapascal
kW	kilowatt	t	tonne
<	less than	>	greater than

Explanation of terms

The following terms and initialisms appear in italics in the text. Their meaning as to this document is hereby explained:

AAAMSA

Association of Architectural Aluminium Manufacturers of South Africa

applicable standard

a national or recognised standard applicable to the works, implying that the relevant standard is a contract document, a copy of which shall be kept in the site office for reference when requested

described / as described

described / as described in the bill of quantities, supplementary preambles, on *drawings* or in a project-specific specification

BS

British Standard

coastal region

area between the coastline and an imaginary line 30 km inland, including the entire area of jurisdiction of any local authority falling within this region

(colon) :

"shall be"; or "shall comply with"; or "shall comply with the requirements of"; e.g. "clay roof tiles: *SANS* 632" means "clay roof tiles shall comply with *SANS* 632"

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competent person

person who is qualified by virtue of his education, training, experience and contextual knowledge to make a determination regarding the performance of a building or part thereof in relation to a functional regulation or to undertake such duties as may be assigned to him in terms of these regulations, as further defined in *SANS* 10400

comply

meet *described* standards

directed

as directed by the Employer's principal agent

drawings

the *drawings* forming part of the contract documents, and any modification thereof or additions thereto delivered to the contractor during the execution of the works; *drawings* include schedules

EN

European Norm

IEC

International Electrotechnical Commission

ISO

universal short name of the International Organization for Standardization, a worldwide federation of national standards bodies of which South Africa, Botswana and Zimbabwe are members and Namibia, Angola, Zambia and Mozambique are correspondent members

MOD AASHTO

an internationally accepted test to determine the density of compacted material such as soil filling, expressed as a percentage of the maximum compaction of the filling at various moisture contents as determined in a laboratory

NHBRC

National Home Builders Registration Council

SANS

South African National Standard

suitable

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

to manufacturer's instructions

the manufacturer's instructions at the time of tender

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A. GENERAL

A.1 Application of clauses

These General Preambles for Trades, where applicable, and any Supplementary Preambles contained in the bills of quantities, form part of the descriptions of items in the bills of quantities

Where descriptions or Supplementary Preambles contained in the text of the bills of quantities differ from these General Preambles for Trades, the descriptions and Supplementary Preambles shall take precedence

Except where otherwise *described*, all preambles contained in any individual Trade Preamble shall apply equally to any work of a similar nature in all other trades

A.2 Materials and workmanship

Materials and workmanship shall be to the approval of the Employer's principal agent and shall be executed in accordance with the relevant manufacturer's written recommendations and instructions where applicable. Materials destined for permanent installation into the works shall not be used for any temporary purposes

A.3 Proprietary products

For the purposes of submission of tenders, rates for items *described* in the bills of quantities by trade names, catalogue references, etc. are for the particular type and manufacture specified

Where products or materials etc. other than those specified are used, adjustments in the rates will be made if necessary

A.4 Assembling

Rates for manufactured items shall include assembling complete and handing over in proper working order

A.5 References in descriptions

Any references given in brackets at the end of certain descriptions refer to the relevant references on the *drawings* or schedules

A.6 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.7 Application of the national building regulations

All work shall be executed in accordance with the requirements of *SANS* 10400

A.8 Accuracy in buildings

Dimensional and positional accuracy of the buildings and their component parts: *SANS* 10155 Grade II unless otherwise *described*

A.9 Reference to other documents

References in these General Preambles for Trades to other documents, including *SANS* and *BS*, pertain to the latest edition thereof including all amendments thereto at the date for submission of the tender

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B. DEMOLITIONS

B.1 Demolitions and disposal of buildings and other structures, breaking up and removal of paving, etc.

Applicable standard: SANS 2001- Construction works Part BS1 Site clearance

Additional clause:

Unless otherwise *described*, materials salvaged from the demolitions shall become the property of the Contractor, who may allow credit in respect thereof where provided for in the bills of quantities. Such materials may not be re-used in any new work without written permission from the Employer's principal agent

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C. ALTERATIONS

C.1 Alterations

a) ensure the stability of all structures during alteration work

b) give notice when any electrical installations, water supply pipes, telephone and other services are to be disconnected or altered

c) take all precautions necessary to prevent any nuisance from dust

C.2 Materials from the alterations, credit, etc.

a) materials recovered from the alterations (except where *described* as to be re-used or to be handed over to the Employer) shall become the property of the Contractor, who may allow credit in respect thereof where provided for in the bills of quantities

b) materials *described* as "removed" shall be removed from the site immediately

c) materials *described* as "handed over to the Employer" shall be dismantled where necessary, stored under cover on the site where *directed* and protected from damage, until required

d) materials *described* as "set aside for re-use" shall be dismantled where necessary, cleaned, stored under cover and protected from damage until required for re-use. Allow for and make good any damage caused to such materials during removal, storage or reaffixing

C.3 Disposal of debris etc.

a) remove from the site all materials, debris and rubbish resulting from the alterations

C.4 Making good damaged work

a) make good in all trades to existing work where damaged or disturbed through alterations with all necessary new materials to match the existing

C.5 Forming new openings or altering openings in existing walls

a) where new openings are formed or openings altered in existing walls, break out the wall above the opening and insert new brick, in situ concrete or prestressed concrete lintels, complete with all necessary reinforcement, formwork, turning pieces, etc. Build up the jambs and portions of the openings as described with new brickwork or blockwork properly toothed and bonded to existing. Close cavities of hollow walls where necessary and make good finishes all round and into reveals

C.6 Building up openings

a) where existing openings are given in number as built-up, prepare the existing surfaces all round as necessary, properly tooth and bond brickwork or blockwork to existing, wedge-up to underside of existing lintel and make good finishes on both sides

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D. Earthworks

D.1 Site clearance (removal and disposal of vegetation, trees, etc.)

Applicable standard: SANS 2001-Construction works Part *BS*1: Site clearance

D.2 Earthworks (general)

Applicable standard: SANS 2001-Construction works Part BE1: Earthworks (general)

D.3 Sinkholes and subsidence

Applicable standard: SANS 2001-Construction works Part BE3: Repair of sinkholes and subsidences in dolomite land

D.4 Classification of materials to be excavated

"Hard rock": granite, quartzitic sandstone or rock of similar hardness, the removal of which requires drilling, wedging and splitting, or the use of explosives

"Soft rock": hard material, the removal of which warrants the use of pneumatic tools and includes hard shale, ferricrete, compact ouklip and material of similar hardness

"Earth": all ground other than that classified as "hard rock" or "soft rock", including made-up ground and loose stones or concrete pieces not exceeding 0,03 m^3 in volume

D.5 Filling

D.5.1 Filling generally

a) filling over site: spread, levelled, watered and consolidated in layers nor exceeding 300 mm thick

b) filling under floors and backfill to trenches and holes: *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*

D.5.2 Hardcore

a) hardcore: broken stone or other approved hard material graded from 25 mm to 75 mm with the finer material on top, spread, levelled and consolidated

D.6 Soil insecticides

Applicable standard: *SANS* 10124 The application of soil insecticides for the protection of buildings

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E. Concrete, formwork and reinforcement

E.1 Structural works

Applicable standard: SANS 2001-Construction works Part CC1: Concrete works (structural)

E.2 Minor works

Applicable standard: SANS 2001-Construction works Part CC2: Concrete works (minor works)

E.3 Foundations

Applicable standard: SANS 2001-Construction works Part CM2: Strip footings, pad footings and slab-on-the-ground foundations for masonry walling

E.4 Strongrooms

Strongrooms: *SANS* 10052

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F. Precast concrete

F.1 Structural works

Applicable standard: SANS 2001-Construction works Part CC1: Concrete works (structural)

F.2 Minor works

Applicable standard: SANS 2001-Construction works Part CC2: Concrete works (minor works)

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G. Masonry

G.1 Masonry walling

Applicable standard: SANS 2001-Construction works Part CM1: Masonry Walling

G.1.1 Materials

burnt clay masonry units

a) burnt clay masonry units: *SANS* 227 unless otherwise described

- class of common units: NFP for general masonry above damp-proof level to be plastered; NFX for masonry exposed to damp or in contact with the ground (e.g. foundation walls, manholes), or for fair face work
- nominal dimensions: 222 x 106 x 73 mm unless otherwise described
- nominal compressive strength: to table 1 of *SANS* 2001-Construction works Part CM1
- uniformity of colour and texture of face units: provide sample of 20 units
- grade of efflorescence: normal for internal walls not exposed to damp; special for visible unplastered foundation walls, retaining walls and free-standing walls
- limits of water absorption: 6—14%
- limits of moisture expansion: 0,20%
- required marking: designation on each dispatch or consignment note

concrete masonry units

b) concrete masonry units: *SANS* 1215

- nominal compressive strength: *SANS* 2001-Construction works Part CM1 table 1
- average drying shrinkage: normal (0,06%)
- required marking: designation on each dispatch or consignment note

mortar

c) sand: to *SANS* 1090 unless otherwise *described*

d) mortar class: II unless otherwise *described*

reinforcement

e) brick reinforcement in corrosive areas:

- in *coastal regions*: galvanised to *SANS* 121, or stainless steel
- in tidal splash zones: stainless steel
- non-metallic ties (engineered polymer) may be used instead of stainless steel ties

f) metal tie type: butterfly or modified PWD

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G.1.2 Work

a) single-leaf bond: stretcher

b) multileaf bond: stretcher bond with leaves connected with crimp wire ties at <450 mm horizontal and vertical spacing and staggered, unless otherwise described

c) position of control and articulation joints: to *SANS* 10400-K unless otherwise *described*

G.1.3 Additional requirements

a) wall ties in partial fill insulated cavity walls:

- to have drip in centre of residual cavity
- tie spacing: *SANS* 10164 (2,5/m² or 600 mm vertical, 660 mm horizontal and staggered)
- tie spacing around openings and construction joints: <300 mm vertical

b) tie mortar cover: 15 mm minimum to outside face of mortar joint

c) ancillary fabricated components for masonry, e.g. ties, brackets, lintels, shelves, anchors, meshwork: galvanised to *SANS* 121 in *coastal regions*

d) clay facing units (face bricks): manufacturer/supplier to provide the following in writing:

- the required application e.g. type of building, finish etc.
- the degree of exposure to weather conditions, proximity to the sea etc.
- track record of the preferred brick in the area of the building
- an undertaking or warranty that the bricks delivered will be suitable
- colour expectations in the case of face bricks
- acceptable levels of breakage during delivery to site

e) common solid masonry mortar joints:

- to be raked out to receive plaster finish
- to be flushed off where walls are to be bagged or fair-faced

f) hollow masonry mortar joints:

- not to be raked out to receive plaster

g) cramps for wood door frames: 500 x 32 x 1,6 mm hot dip galvanised steel lugs for building in, twice screwed to the outside of frames at 300 mm from bottom and top and intermediately at not exceeding 900 mm apart

G.2 Glass blockwork

G.2.1 Materials

a) glass blocks: *BS EN* 1051

b) mortar: class II

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G.2.2 Laying

a) bond: straight horizontal and vertical joints

b) coating: surface on which first course is laid to be coated with bitumen emulsion or similar material to permit movement of blocks

c) reinforcement: every fifth horizontal joint, and vertical joints at 1 m maximum centres, with 25 – 65 mm wide corrosion resistant metal strips or mesh, nailed to the adjacent walls or columns, or with 6 mm diameter hot dip galvanised reinforcing rod drilled 50 mm deep into surrounding structure

d) isolation joint: 15 mm clear space to be allowed at sides and top of glass block panel; front of space to be filled with polyurethane backing strip and silicone sealant

e) joints: 10 mm, struck back and smoothed

f) waterproof grout: where wall is exposed to rain

G.3 Paving

tiles on screed

a) screed to *SANS* 2001-Construction works Part EM2; fix tiles in tile adhesive with sealed isolation joints against fixed objects

tiles on waterproofing

b) on bitumen systems: bed tiles in bitumen and stone chip key

paving slabs on insulation panels

c) precast concrete paving slabs: *SANS* 541; laid loose on insulation panels as *described* elsewhere

paving slabs on adjustable pads

d) precast concrete paving slabs: *SANS* 541; laid on patent adjustable underlay pads to keep tiles 20 – 40 mm clear of waterproofing; joints between slabs: 5 mm, left open; paving surface: level or to follow gradient as *described*

G.4 Natural stonework

Rubble walling

a) natural irregular stone: local koppieklip

b) size: between 150 and 600 mm in section

c) mortar: class III (50L common cement:0 – 80L lime:300L sand)

d) laying: stones are to be laid on their natural quarry beds

e) joints: 25 – 50 mm wide cement mortar class II, finished 25 mm deep square recessed

f) bond: mainly large stones to homogeneous random pattern

g) levelling up: tops of walls are to be levelled up with selected long and flat stones; wall faces are to be kept even

h) tieing through stones every 1 m² in double-faced walls

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i) attachment devices where rubble walls are to be joined to brick-, block-, or concrete work: 20 x 3 mm L-shaped stainless steel bonding lugs shot-nailed to background at 1 m intervals and staggered

j) reference panel: required

Ashlar walling and wall linings

k) stone: natural stone with high compressive strength and good durability, sourced from an approved quarry, dimensioned for use in ashlar walls and wall linings

l) joints: 3 mm

m) pointing: exposed joints to be 12 mm deep, raked out and filled with suitable grout

n) matching where relevant: slabs of natural stone shall match as to veining, colour and texture; each slab to be numbered and fixed in the same relative position

o) ashlar work shall be cleaned down and covered up to prevent soiling during progress of the remaining work, removed upon completion and cleaned down again

G.5 Insulation

G.5.1 To wall cavities

a) full fill cavity insulation:

- cavity width: equal to the required insulation thickness
- to be filled with rigid insulation board or fibre batts

b) partial fill cavity insulation:

- to be filled with rigid insulation board only
- insulation to be held tightly against outer face of inner leaf with *suitable* retaining discs or extra wire ties
- a residual cavity of >35 mm to be maintained to permit moisture drainage

c) loose fill:

- loose fill insulation to be pumped/blown in cavities of existing walls through holes drilled in outer leaf, by specialist installer; holes refilled after completion, and to match surrounding face brickwork when relevant

d) insulation shall be butt joined tight against window/door frames

G.5.2 To external face of walls

a) patent system of EPS external insulation bonded and mechanically fixed to dry, sound and flat surface, finished with reinforced polymeric plaster, unless otherwise *described*

b) by registered specialist strictly to supplier instructions

G.5.3 Under precast concrete paving slabs

a) high density polystyrene insulation panels of required thickness with tight butt joints, to *SANS* 204

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G.6 Miscellaneous

Hoop iron ties between concrete and masonry work, roof ties, cramps and dowels to frames, etc.: *as described*

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H. Waterproofing

H.1 Materials

reinforced bitumen membrane

a) flexible polyester and/or fibreglass reinforced APP polymer modified bitumen membrane: *BS EN* 13707 or the subject of an active Agrément Certificate

b) anti-root: in all planted areas

c) bonding: heat-fused on primed surfaces

reinforced liquid membrane

d) in situ reinforced liquid membrane

e) of light colour

f) reinforcement: non-woven needle-punched polyester or polypropylene fibre fabric with a mass of 125—150 g/m² for roofs and 95–100 g/m² for parapet walls

slip/protection layer

g) 0,25 mm polymer sheeting: *SANS* 952 type C (green)

geomembranes

h) thermoplastics sheeting: *SANS* 1526

H.2 Application

a) waterproofing system: according *to manufacturer's instructions*, including priming procedures, to leave roof, internal wet areas like showers and plant rooms, and below-ground structures in a watertight condition

b) slip/protection layers, blinding layers, metal lath, ventilators etc.: as *described*

H.3 Waterproofing surface finishes/protection

a) slip/protection layer: single layer bituminous felt or double layer HDPE sheet as *described*

b) tile, paving units or panel finish: neatly cut to fit tightly along perimeter

H.3.1 Exposed non-trafficable areas

paint

a) on plain bituminous systems: heavy brush or two coats of bituminous based aluminium paint to *SANS* 802

b) on other systems: *suitable* ultra-violet block as recommended by waterproofing manufacturer

crushed stone

c) layer of light coloured non-absorbent crushed stone of 25 mm nominal size on slip/protection layer or on insulation of required thickness to *SANS* 204

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H.4 Joint fillers/sealants

H.4.1 Materials

a) building construction jointing and sealant products vocabulary: *SANS* 6927

b) two-part gun grade polysulphide sealants: *SANS* 110

c) one part low modulus silicone rubber sealant: *SANS* 1305, type 1 for building joints

d) one part high modulus fungus proof silicone rubber sealant: *SANS* 1305, type 2 for glazing and sanitary ware

e) two-part polurethane base sealant: *SANS* 1077, type 1 pouring grade, self-levelling

f) two-part polurethane base sealant: *SANS* 1077, type 2 gun grade, non sag

g) preformed elastomeric compression joint seals: *SANS* 1023 type 1

H.4.2 Installation

preparation

a) joints: clean and dry

b) backing strip: inserted to ensure correct sealant thickness

c) correct primer: appled to sides of joints

d) bond-breaking material: where required

e) edges: masked to ensure neat and clean edges

sealing

f) *to manufacturer's instructions*

g) thickness: not less than half the width of the joint

h) joints to be sealed: around door and window frames, movement joints, joints between walls and columns, floor joints, and other joints where sealing is indicated or to the requirements of *SANS* 204

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I. Roof coverings, claddings, etc.

I.1 General

underlays

a) reflective foil laminate: *SANS* 1381-4 class B (reinforced, one surface reflective), and mark-bearing

b) polymer undertile film: *SANS* 952 type E (white), mark-bearing

I.2 Slates, tiles and shingles

I.2.1 Materials

a) concrete roof tiles and accessories: *SANS* 542 and mark-bearing

b) clay roof tiles: *SANS* 632 and mark-bearing

c) natural slate tiles: from an approved quarry, with two holes per tile, drilled (not punched)

d) fibre-cement slates: *SANS* 803, and mark-bearing

e) metal roofing tiles: *SANS* 1022, and mark-bearing

f) accessories: to match roofing material

g) fixing materials: hot dip galvanised steel *SANS* 121 in inland regions, or stainless steel grade 304 in coastal regions or corrosive atmospheres, except for clay tiles where all fixings shall be stainless steel

- length of nails: to penetrate battens to a minimum depth of 25mm
- steel wire: 1,6 mm diameter, galvanised

h) mortar for bedding and pointing: 3 parts sand to 1 part cement, pigmented to match tiles

i) sawn softwood timber battens: *SANS* 1783-4

I.2.2 Fixing of tiles

a) Fixing of tiles: *SANS* 10062 Fixing of Interlocking Roof Tiles

I.3 Thatch roofing

a) thatch type: *as described*

b) thickness and minimum mass of thatching: *SANS* 10400-L

c) lightning protection: required

I.4 Profiled sheeting of metal, fibre-cement, plastic, etc.

Installation: *SANS* 10237 Roof and side cladding

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I.4.1 Metal sheeting

profile

a) corrugated: 17,5 mm deep, 76 mm pitch, pierced-fix

b) trapezoidal (box rib /IBR) 36 mm deep, 172 mm pitch, pierced-fix



c) trapezoidal clip-on: >40 mm deep, <180 mm rib centres, with beading rolled into trough bottom, concealed-fix, or the subject of an active Agrément Certificate



d) standing seam: 50 mm deep, 203 (x 2 for double trough = 406) or 445 mm (single trough) seam centres, with beading rolled into trough bottom, concealed-fix, or the subject of an active Agrément Certificate



steel

e) hot dip zinc coated coil sheeting: *SANS* 3575/*SANS* 14713, coating grade Z275 for rural and urban inland regions or Z600 for *coastal regions* or aggressive atmospheric conditions

f) aluminium/zinc coated sheet: *SANS* 9364/*SANS* 14788, coating grade AZ150 for rural and inland regions or AZ200 for *coastal regions* or aggressive atmospheric conditions

g) required coating marking: thickness, material quality and coating thickness on the reverse side of each sheet at 1 m intervals

aluminium alloy

h) natural mill finish aluminium alloy: *SANS* 903 type 3004- temper H14 or alloy A1-Mn1 or A1-Mg2

i) required marking: thickness on each sheet

stainless steel

j) stainless steel: grade 304

prepainted metal

k) prepainted metal sheet: *SANS* 1845

l) required prepainting marking: at 1m intervals on underside of sheet, or on delivery slip: trade name, type

I.4.2 Fibre-cement sheet

a) fibre-cement sheet: *SANS* 685/9933

b) thickness: 5 mm

c) profile: corrugated 57 mm deep, 178 mm pitch (Big-six)

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I.4.3 Glass-reinforced polyester sheet

a) glass-reinforced polyester sheet: *SANS* 1150

b) required marking: trade name, type, class, light-transmission grading, mass, weathering side in case of type 1, on each sheet

I.4.4 Polycarbonate sheet

a) grade: sheeting grade with a co-extruded layer of UV stabilised polymer on the weathering side

I.4.5 Fasteners and washers

a) fasteners and washers: *SANS* 1273

I.4.6 Installation

a) installation: *to manufacturer's instructions* or to an active Agrément Certificate

trough ends on metal trough roofs with slopes less than15°

b) trough ends: downturned 15 mm at eaves to form drip; upturned 30 mm at high ends to form stop-end

c) bend with *suitable* tool (not hammer) without tearing the sheet.

I.4.7 Miscellaneous

a) finishing of roof: with necessary ridging, closers, upturns, downturns, drips and capillary interstices to provide a watertight and vermin and insect proof construction

b) of similar material and fasteners as roofing

ridging

c) on corrugated metal roof sheeting: 460 mm girth with roll-top, lapped 225 mm at heading joints and beaten into corrugations; close roll-top at bottom of hips and at gable ends

d) on trapezoidal roof sheeting (lapped or interlock) and on standing seam roofing to fall >7°: 430 mm girth without roll-top, lapped 225 mm at heading joints and provided with serrated closers

e) on narrow standing seam roofing to fall <7°: single-length over-ridge sheet with top 12 mm of seams sawn or snipped at ridge position and bent, cuts to be covered with rib caps set in *suitable* sealant

f) on fibre-cement roofing: fibre-cement corrugated or plain adjustable or fixed ridges; corrugations to be filled under plain wings of fibre-cement ridging with 1:5 cement:sand mortar

movement joints

g) watertightness and freedom of movement of structural movement joints shall be ensured under all conditions

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I.5 Thermal insulation

I.5.1 Materials

a) required R-value/thickness: *SANS* 204

b) required fire performance classification of thermally insulated building envelope systems: *SANS* 428

rigid board

c) expanded polystyrene (EPS) board: *SANS* 53163 type regular when covered, flame retardant when exposed

d) extruded polystyrene (XPS) board: *SANS* 53164, density 32 kg/m^3, compressive strength 160–310 kPa depending on thickness

e) expanded polyurethane (EPU) board: *SANS* 53165

fibre mats/batts

f) fibrous thermal insulation mats/batts: *SANS* 1381-1

reflective foil

g) reflective foil: *SANS* 1381-4

metal faced insulation panels

h) metal faced panels bonded to an insulation core: *SANS* 54509 and mark-bearing

I.5.2 Installation

a) installation: *SANS* 204, to fit snugly between rafters

b) insulation to be kept clear of incandescent and halogen downlighters/transformers

c) electrical and other safety issues shall be observed, e.g. defective wiring, adequate lighting during installation

pitched roof insulation

d) reflective foil under roof covering: with air space of >25 mm between foil and solid surfaces and with reflective surface facing down

flat roof insulation

e) material: rigid EPS insulation density 32D

I.6 Flat sheet metal

I.6.1 Material

a) copper sheeting: 0,6 mm x 600 mm wide high purity cold rolled copper *SANS* 404/405

b) boarding: 20/22 mm thick solid tongue-and-groove softwood to *SANS* 629 of genus Pinus, flooring grade, light density group, non-end-matched

c) roofing felt: range 111 containing 80% wool, density 333 g/m^2

d) fixing clips: 0,6 mm x 40 mm wide copper

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e) clout nails: hard drawn copper wire 2,8 mm diameter x 22 mm with barbed shank

f) screws: brass, flat head

I.6.2 Laying

a) softwood boarding: screw fixed onto battens with counter-sunk brass screws

b) roofing felt: nailed onto boarding with copper clout nails with butt joints

c) copper sheet: formed with both edges bent up 90 degrees to form troughs 510 mm wide

d) standing seams: formed with double welts in direction of fall

e) clips: formed of same material as roof and folded into seams at 300 mm centres and nailed to boarding with copper clout-head nails

f) eaves: 100—120 mm wide sheet laid at eaves, nailed to boarding with copper nails and bent down with roof covering to form drip

g) head wall (parapet walls, ventilation pipes and chimneys): sheet troughs bent up

h) gutters and spouts: formed from copper sheet of 0,6 mm thickness, with movement joints in gutters every 10 m

i) movement: all sheeting securely fixed without restricting thermal movement; nails and screws to be finished flush when covered by copper

I.7 Flashings

I.7.1 Material

a) flashings and counter-flashings: sheet metal (reinforced liquid membrane is prohibited)

b) fibre-cement roofs: 6 mm fibre-cement apron flashing finished off with metal counter-flashing against walls, or sill or U-flashing where required in vertical cladding, all according *to manufacturers instructions*

c) on tiled roofs: steel sheet hot dip galvanised class Z275 for inland regions, or class Z600 or copper for coastal/corrosive regions, thickness 0,6 mm

d) on sheet metal roofs: material similar to roofing sheets; side-wall flashings: >75 mm high, >200 mm wide or to cover at least two ribs of profiled metal sheeting; head-wall flashings: purpose made flashings incorporating serrated closers and poly closers to suit metal roof profile, manufactured to roof angle – do not bend on site; counter-flashings: >150 mm high, with anti-capillary fold; end laps: >150 mm for flashing; >75 mm for counter flashings; flashing nails: same material as flashing

e) flashings to pipes >50 mm diameter: tapered sheet metal collar of diameter to fit around pipe, soldered or sealed to holed flange at same angle as pitch of roof; flashings to pipes <50 mm diameter: tapered sheet metal collar only

I.7.2 Fixing

a) sheet metal flashings: cut, joined, lapped and formed to make a watertight finish

b) fixing of flashings: to walls with 75 mm long flashing nails with a 20 mm hook

- at ends and at 400 mm centres in between

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- flashing nails: driven into wall above line of flashing turn-up, hook of flashing nail used to keep flashing in position (nails shall not be driven through flashing)

c) fixing of flashings to roof sheets: at <600 mm centres or on each alternate rib

d) undertile flashings: placed under roof tiles on battens at gable, parapet or chimney walls, to discharge onto roof covering or into eaves gutters

e) chimney gutters: supported on high side of chimney on suitable boarding; turned up 100 mm against chimneys and > 225 mm up the roof slope; chimney gutters lapped onto side flashings or undertile flashings

f) counter-flashings: fixed in 25 mm deep formed joints in masonry or pre-formed into concrete, kept in place with short rolls of cut-off sheet metal, and joints filled solid with 1:3 cement:sand mortar; counter-flashings shall not be punctured

g) pipe flashing >50 mm diameter: flanges shall be fixed to roof sheets by means of roof screws similar to those used to fix the roof sheets, or by means of pop rivets; pipe flashings <50 mm: collars shall be soldered onto roof sheet; collars shall be sealed around pipe with suitable clamp and sealant

h) valley linings:

- to consist of ridging turned around, without roll for steep slopes, or with roll for low slopes
- lapped 225 mm minimum
- valley linings to discharge into eaves gutters
- valley lining sides: folded back to form open beads in the case of slate and tile covered roofs

i) exposed verges of corrugated steel roofs: finish with roll flashing

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J. Carpentry and Joinery

J.1 Structural timberwork (flooring)

Applicable standard: SANS 2001- Construction works Part CT1: Structural Timberwork (flooring)

J.2 Structural timberwork (roofing)

Applicable standard: SANS 2001-Construction works Part CT2: Structural Timberwork (roofing)

J.3 Structural laminated timber

Structural laminated timber: *SANS* 1460

J.4 Timber buildings

Applicable standard: Timber buildings: *SANS* 10082

J.5 Fascias and barge boards

fibre-cement

a) fibre-cement sheets: *SANS* 803

fixing

b) drilled, countersunk and screwed at 750 mm maximum centres with 5 x 50 mm sherardized screws

c) fixed to purlins, tilting battens or verge battens, and into ends of roof beams; in case of purlins, stub beams shall be built into gable walls between purlins to carry verge battens

d) board joints: covered with 50 mm girth x 0,5 mm thick H-profile galvanised sheet metal cover strips

J.6 Joinery materials

J.6.1 Solid wood

hardwood

a) hardwood: *SANS* 1099

b) grade: clear and free of sapwood for visible faces; semi-clear for faces that will not be visible

c) required marking: trade name, grade (clear grade—red, semi-clear grade—blue) on one piece in each bundle

softwood

d) softwood: *SANS* 1783-3

e) grade: clear and free of sapwood for visible faces; semi-clear for faces that will not be visible

f) preservative treatment: required for exterior work

g) required marking: trade name on one end, grade on other end (clear grade – black; semi-clear grade – red) on each piece

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laminated timber

h) laminated timber: *SANS* 1460

i) type: furniture (F)

j) appearance and finish: sanded and smoothed (G)

k) preservative treatment: required for softwood exterior work

l) required marking: application, exposure class, type, appearance and finish on each board

J.6.2 Wood board

plywood and composite board

a) plywood and composite board: *SANS* 929

b) required marking: trade name, exposure class, thickness, grade, preservative treatment on each board

decorative melamine-faced boards (MFB)

c) decorative melamine-faced boards (MFB): *SANS* 1763

d) required marking: *SANS* 1763 + 'MFB' + thickness + abrasion and lamina thickness + Z

fibreboard

e) fibreboard: *SANS* 540

f) required marking: type on each board

particle board

g) particle board: *SANS* 50312

h) required marking: *SANS* 50312 / *EN* 312

oriented strand board (OSB)

i) oriented strand board (OSB): *SANS* 472

J.6.3 Polymer laminate and solid surfaces

high pressure decorative laminates (HPL)

a) high pressure decorative laminates (HPL): *SANS* 4586

b) required marking: *SANS* 4586 + type + resistance, e.g. HPDL—*SANS ISO* 4586—P333

continuous pressed laminates (CPL)

c) continuous pressed laminates (CPL): *SANS* 1762/4586

polymer solid surfacing material

d) synthetic work surfaces: consisting of acrylic and/or polyester resin and mineral fillers

e) joints: seamless

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J.6.4 Miscellaneous

adhesives

a) terminology and classification: *SANS* 10183 part 1

b) requirements for structural applications: *SANS* 10183 part 2

c) requirements for non-structural applications: *SANS* 10183 part 3

d) phenolic and aminoplastic resin *SANS* 1349

steel tubes for furniture

e) steel tubes for furniture *SANS* 657 part 4, and mark-bearing

J.7 Joinery

general

a) joinery fittings: manufactured in climate zone where it is to be installed

b) joinery workshop: equipped with modern machinery manned by skilled personnel

c) wood sizes *as described* are exact finished sizes

d) overall sizes: to be checked on site before starting any joinery

e) storing of materials: in a safe and dry place

f) proprietary materials: applied according *to manufacturer's instructions*

g) wood member lengths: provided in single lengths whenever possible; unavoidable joints to be placed over supports

h) joints: mechanical (grooved, doweled, feathered, screwed, proprietary plates) plus adhesive; angle joints: to conceal end grain of natural wood or the edge of laminated or particle board

i) arrises in solid wood: slightly rounded; vulnerable or exposed arrises: pencil rounded (3 mm radius)

j) fixings: not visible except inside cupboards or drawers; in open units, or where unavoidable, screws with matching caps shall be used; in natural solid wood surfaces with clear finishes: countersunk to 6 mm below surface and plugged with matching dowels glued in

k) exposed panel pin heads: punched and filled with stopping; stopping to match wood in case of clear finishes

l) exposed edges of decorative laminate board: post formed

m) exposed edges of veneered composite board: solid wood edging to match veneer and to full thickness of board

n) parts exposed to moisture (e.g. near sinks, wash basins, floors): moisture resistant or exterior grade board shall be used

o) edges of raw board cutouts: seal to prevent moisture ingress

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grain, pattern

p) grain or pattern: grain of all fitted visible clear-finished timber, or pattern of laminates when relevant, to run vertically on vertical surfaces and parallel to walls on horizontal surfaces, wherever practicable

q) veneer on any one fitting to match in grain and colour; veneer on pairs of doors to match

plinths

r) plinths: to be formed with front and back members and full height cross members at <900 mm centres; plinths to be scribed to floor and secured to wall to provide a level platform for carcasses

tops

s) solid hardwood tops: boards in single lengths or, if not possible, with staggered end joints, jointed with grooved, cross-tongued and glued joints or with grooved rebated and glued joints stopped 25 mm back from visible ends

t) moisture resistant particle board tops: faced with high pressure decorative laminates with postformed exposed edges

u) fixing: tops to be screwed to framework to allow for movement: with rebated hardwood clamps or metal cleats at 300 mm centres, screwed from underneath

backs

v) backs to fittings: hardboard unless otherwise *described*

w) bevelling: all exposed edges

drawers

x) drawers: 12 mm softwood front, sides and back, grooved for 6 mm tempered hardboard bottom, screwed to 16 mm drawer face, unless otherwise *described*

shop painting

y) joinery shall be delivered on site fully painted, unless otherwise *described*

fixing

z) joinery shall be fixed only after the space is fully enclosed and secure, all wet work is complete and dry, and airconditioning, lighting, site and stormwater works are complete

aa) joinery shall be fixed to masonry or concrete walls with *suitable* frame fixing anchors; the necessary blocking pieces and subframes shall be provided to take up inaccuracies of wall and floor faces; where exposed hardwood is to be anchor fixed, screw heads shall be sunk and pelleted

bb) vermin proofing in all food handling areas: all carcass joints with walls and floors, and cable entries, to be sealed with silicone beads

J.8 wood skirtings, quadrant beads, rails, etc.

a) skirtings of 68 mm and higher: with hollow-rounded backs

b) fixing to walls:

- in long lengths, with splayed heading joints and mitred corner joints

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- with concealed fixings at not exceeding 600 mm centres
- quadrant beads in angle at junction with floor (where *so described*): fixing with panel pins to skirtings (not to floor boards)

J.9 Wood window/door frames

a) mechanical performance: *SANS* 613

b) hardwood: *SANS* 1099, clear grade, of species *as described*

c) softwood: *SANS* 1783-3, clear grade, of species *as described*

d) joints (structural): mortise and tenon

e) rebated frames: shaped out of solid wood (lay-on door or casement stops are prohibited)

f) haunches: top rails of door frames to be provided with bevelled haunches for building in

g) glazing beads: with mitred corners, tacked lightly in place before delivery

J.10 PVC-U window/door frames

a) PVC-U window and door frames for external use: *SANS* 1553.

J.11 Polymer compound window/door frames

a) polymer material: unsaturated polyester (UP) resin: *SANS* 713

b) to *comply* with minimum safety, heat distortion and compressive strength requirements

J.12 Wood doors

a) wood doors: *SANS* 545 and mark bearing

b) required marking on edge or top of each door: manufacturer, exposure class, performance class; in case of flush doors, position of coat rails ('CR') and closer blocks ('CB')

flush panel doors

c) edge finish: concealed

additional clauses

d) batten doors for external use, or framed panel and glass doors for external or internal use: 44 mm thick, of hardwood (including doors to be painted), mortise and wedge tenoned, with the tenon showing on the outside edge of styles; middle rails in such a position that a mortice lock will not destruct the tenon joint

e) single swing double doors: with rebated meeting stiles

f) veneer on pairs of doors: to match in grain and colour

g) performance rating stamp on door: not to be removed until inspected in the hung position

sealing

h) if not prefinished, doors shall be sealed, or knotted and primed, on all four edges immediately after delivery on site

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K. Ceilings, partitions and access flooring

K.1 Ceilings

K.1.1 Nailed-up ceilings

timber brandering

Applicable standard: SANS 2001-Construction works Part CT2: Structural Timberwork (roofing)

additional requirements:

a) size, and span (truss or beam spacing):

Truss or beam spacing	Dimensions, mm	
	Soft wood	Eucalyptus
6.4 mm gypsum plaster ceiling board		
<1000	38 x 38	32 x 32
1000 – 1200	38 x 50	38 x 38
1200 – 1400	50 x 75	38 x 50
4 or 6 mm fibre-cement ceiling board		
<1050	38 x 38	32 x 32
1050 – 1500	38 x 50	38 x 38

b) where roof trusses or beams are spaced at more than the required spacing for the intended brandering size, brandering size shall be increased, or support brandering by means of 38 x 114 mm sawn softwood ceiling joists shall be hung between and parallel to trusses or beams on 38 x 38 mm hangers from 38 x 76 mm runners fixed at 1 500 mm centres at right angles and on top of tie-beams of trusses or on top of beams, or at right angles in between tie beams/beams

c) where heavy light fittings are to be suspended, supporting timber shall be installed

d) patent steel brandering: hot dip galvanised steel sheet lipped channel brandering system including suspension brackets with adjusting slots

- size or span: 1 200 mm maximum or according *to manufacturer's instructions*
- fixing: suspension bracket to be nailed or screwed to side of timber truss/beam
- levelled out by means of adjusting slot
- perimeter trim: standard or shadowline *as described*

gypsum plasterboard

e) gypsum plasterboard: *SANS* 266

f) hard wall gypsum plaster, where *so described*, to be applied to supplier's instructions with smooth polished surface

g) spacing of brandering: 400 mm (300 mm when plastered)

fibre-cement board

h) fibre-cement board: *SANS* 803

i) spacing of brandering: 600 mm

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cover strips

j) cover strips to gypsum plaster and fibre-cement board joints:

- H-profile prepainted galvanised steel, aluzinc or plastic; or
- gypsum plaster board; or
- hardwood: species, profile, etc. *as described*

tongue and groove wood boarding

k) tongue and groove wood boarding: *SANS* 1039

l) secret nailed with lost-head oval wire nails and with end joints staggered

plywood boarding

m) 3-ply to *SANS* 929, of exposure class, veneer species, grade etc. *as described*

wood strip

n) hardwood: species *as described*

o) fixed with panel pins

cornices

p) gypsum coved cornice: *SANS* 622; or

q) polystyrene core coved cornice: paper covered; or

r) hardwood: species, profile, etc. *as described*

timber brandered trap door

s) 650 x 650 mm minimum clear opening in ceiling to be trimmed with 38 x 100 mm sawn softwood trimmers spiked to beams or trusses

t) trap door: formed of brandering and ceiling board as for ceiling

u) fillets to carry trap door in closed position: 50 x 13 mm hardwood nailed or screwed to ceiling around trap door opening; corners to be mitred

v) trap door to be hinged with one pair 75 mm steel hinges screwed to frame, so that trap door opens 180 degrees on to top of ceiling brandering, unless otherwise *described*

pressed steel trap door

w) 0,6 mm pressed steel ceiling trap door, hinged to open 180 degrees onto ceiling, in 25 x 25 x 3 mm T-profile steel frame

x) clear opening: >650 x 650 mm

y) frame: screw fixed to ceiling brandering

K.1.2 Suspended ceilings

performance

a) fire resistance in minutes, tested to *SANS* 10177

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b) airborne sound insulation rating: *SANS* 717/10218

c) deflection requirements: to South African Building Interior Systems Association (SABISA).

d) structural performance requirements: all anticipated loads, e.g. luminaires, smoke detectors, air grilles, wind loads, point loads to be safely supported

board

e) mineral fibre board: EN 13964 unless otherwise *described*

suspension fittings

f) patent suspension fittings: cold-formed hot dip galvanised steel T's, hold down clips, suspension rods and hooks, suspension clips, T suspension plates, lipped wall angles, shadowline wall angles and wall channel trim

installation

g) according to *manufacturer's instructions*

K.1.3 Thermal insulation

materials

a) required R-value/thickness: *SANS* 204

b) required fire performance classification of thermally insulated building envelope systems: *SANS* 428

fibre mats/batts

c) fibrous thermal insulation mats/batts: *SANS* 1381-1

loose fill

d) loose fill (granules, pellets): *SANS* 1381-2

e) cellulose loose fill (wood based): *SANS* 1381-6

installation

f) bulk insulation; neatly cut to fit snugly between rafters

g) insulation to be kept clear of incandescent and halogen downlighters/transformers

h) electrical and other safety issues (e.g. defective wiring, adequate lighting during installation): to be observed

K.2 Partitions

performance

a) structural requirements: *SANS* 10160

b) wall deflection requirements: South African Building Interior Systems Association (SABISA)

c) required fire resistance in minutes: *SANS* 10177

d) required sound insulation grading: *SANS* 717/10218

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boards

e) gypsum plasterboard: *SANS* 266

f) fibre-cement board: *SANS* 803

studs and tracks

g) metal studs and tracks: hot dip galvanised steel with wall thickness and size *complying* with the structural requirements of the installed system

h) timber studs: *SANS* 10082: for load-bearing or non-load-bearing walls *as described*

aluminium extrusions

i) extruded aluminium sections: alloy 6063 or 6261 in temper T5 or T6, of wall thickness and strength to meet the structural requirements

j) anodizing: *SANS* 1407

powder coating

k) powder coating: *SANS* 1274

l) by applicators approved by the powder manufacturer

glass

m) glass: *SANS* 1263/50572

n) required marking in case of safety glass: permanently on each pane, visible after installation.

drywall partitions, light weight internal walls

o) framed system clad with gypsum or fibre-cement board, doors, glazing, trim, skirtings, etc.: *as described*

demountable partitions

p) patent system complete with studs, braces, door and glazing frames, apertures, trims, skirtings, etc.: *as described*

cubicle partitions

q) patent system complete with stiles, panels, doors and accessories, etc.: *as described*

operable partitions

r) patent operable partitions consisting of full-height panels of 1200 mm wide 75mm thick, hung on tracks manually operated and stackable

s) frames: aluminium alloy

t) panels: medium density fibreboard backed with sound insulation materials

u) hinges: recessed

v) seals: all round each panel to achieve the required sound insulation

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installation

w) according *to manufacturer's instructions*

K.3 Access flooring

a) raised access flooring: *SANS* 1549

b) fire resistance in minutes as tested to *SANS* 10177: *as described*

c) sound insulation single-number grading rated to *SANS* 717/10218: *as described*

d) class: *as described*

e) floorpanel covering: *as described*

installation

f) according *to manufacturer's instructions*

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L. Floor coverings, wall linings, etc.

L.1 Preparation

a) all building operations that may damage the floor or lining to be completed before laying flooring or lining

b) embedded pipes, conduit, cables, etc.: in position and tested

c) substrate: dry and clean; in case of porous or dusty base, a primer shall be applied to improve bond between base and adhesive when relevant

d) defects in base: levelling or smoothing compounds to be applied only to repair minor surface irregularities, and *to manufacturer's instructions*

e) edge/dividing/feature strips, where *described*: to be in position before flooring is laid

f) sufficient acclimatisation period for the material, when relevant, shall be allowed

L.2 Materials

primers and adhesives

a) primers, adhesives, additives, patching and repair compounds and waterproofing compounds: low-VOC proprietary products supplied by one manufacturer, suitable for the work at hand, compatible with the floor covering and substrate and applied *to manufacturer's instructions*

L.3 Thermoplastic and similar flexible covering materials

a) semi-flexible vinyl tiles: *SANS* 581

b) flexible vinyl flooring: *SANS* 786

c) linoleum sheeting or tiles: *as described*

d) rubber sheeting or tiles: recycled rubber of density between 800 to 1500 kg/m^3, of light colour and of thickness, size, and texture *as described*

e) accessories: skirtings, trim, nosings, etc.: *as described*

laying

f) laying: *SANS* 10070 and *to manufacturer's instructions*

g) pattern: *as described*, continued through door openings connecting rooms with similar flooring

h) joints in sheet flooring: welded

finishing

i) cleaned and polished with two coats polymer floor dressing to *SANS* 1042

L.4 Wood flooring (solid and laminate) on solid substrates

materials

a) solid wood panels: unpacked, stored dry and under cover, allowed free air circulation to bring panels to equilibrium moisture content

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solid wood strip, block, parquet, mosaic, etc.

b) density: >640 kg/m³ at moisture content of 12%

c) strip: tongued, grooved and end-matched

d) block dimensions: face width 57—90 mm, length 200—500 mm, thickness >20 mm

e) parquet flooring: >6 mm thick

faced plywood or fibreboard

f) factory assembled in panels of random lengths, and in widths up to 300 mm depending on species

g) thickness: not less than 18 mm when laid on battens

h) edges: tongued and grooved to produce a tight sliding fit and a flush joint on face side of strip, and end-matched

decorative melamine laminate

i) decorative melamine laminate flooring: EN 13329

j) thickness: 8 mm

k) *suitable* for floating application to a fully supporting substrate

l) provided with patent interlocking system

m) built-in insulating underlay: where *described*

battens

n) battens: sawn softwood timber to *SANS* 1783-4

o) battens for sprung floors: laminated softwood

damp proof membrane

p) over-slab damp proof membranes: polymer film to *SANS* 952 class C (green) or an Agrément certificated polyethylene sheet

movement joints

q) movement joint strip: *suitable* patent

L.4.1 Installation

preparation

a) partitions: to be in place before floating floors are laid

installation in general

b) not to be laid over underfloor heating without written approval of the flooring manufacturer and/or the installer

c) panels or strips to be laid in same direction as angle of light incidence; where this is of no consequence, panels or strips are to be laid parallel to longest side of room

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d) pattern to be continued through door openings connecting rooms with similar flooring

e) movement joints: 20 mm clear space against all fixed objects including door frames, and every 10 m in both directions; plaster finish on walls shall be stopped or cut back short of finished floor level to ensure skirting covers the joint

nail down

f) damp-proof membrane to be laid over concrete substrates on the ground; sheets to be lapped by 300 mm

g) battens to be fixed at 400 mm centres to substrate except in cases of sprung floors where battens are to be laid floating on *suitable* resilient pads

h) space between battens to be filled with cement-sand mix where underfloor heating is installed

i) flooring strips to be secret-nailed to battens through the tongue at an angle of 45°; header joints may occur in the spaces between battens, provided that each length of flooring is nailed to at least two supports; header joints to be random staggered

glue down

j) adhesive to be spread evenly on substrate with a serrated trowel

k) panels to be placed accurately on setting out lines

l) panels to be firmly tapped in position within open time of adhesive

floating

m) damp-proof membrane to be laid over concrete substrate on the ground; sheets to be lapped by 300 mm

n) foam underlay to be laid as recommended by manufacturer over entire floor area

o) joints: patent click jointing system with random staggered end joints

p) manufacturer's accessories shall be used for intermediate joints, movement joints, skirtings, split-level treatments, nosings, and marrying to other flooring materials

finishing solid flooring

q) sanding: when relevant, adhesive shall be completely cured before starting sanding operations

r) sanding shall be done with a mechanical floor sander in one operation (fine only) to a smooth and even surface

s) untreated wood floors: finished with one coat clear wax polish

finishing faced plywood or fibreboard panels

t) prefinished panels: clean down

u) panels having to be sanded: only after having made absolutely certain of the process before attempting this work, and only with prior permission

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L.5 Textile flooring

L.5.1 Materials

textile flooring

a) textile flooring (pile construction): *SANS* 1375

b) textile flooring (needle punched construction): *SANS* 1415

carpet underlays

c) carpet underlays: *SANS* 1419, with fire and location grade similar to floor covering grade

accessories and fixing materials

d) as recommended by carpet manufacturer

e) stair nosings to have distinct colour difference from carpet

f) where fire ratings are critical: non-flammable contact adhesives to be used only

L.5.2 Installation

a) according *to manufacturer's instructions*

b) coverings from the same production run shall be used to ensure uniform colour and texture in one area

c) direction of seams and pile: pile to lie down stairs; longitudinal seams to be placed away from traffic areas; cross seams to be placed in crotch of stairs

d) full widths to be started on door side of room; carpets under doors to be finished within thickness of closed door

e) to prevent bow-wave effects under wheels (for example in medical institutions), carpet shall be stuck to floor with *suitable* adhesive

f) where no protective nosings occur, stair nosings to have a minimum radius of 12,5 mm

g) covering shall be secured at each crotch between riser and tread by carpet gripper lengths or by means of adhesive

h) continuity of level between covering and stair nosing shall be ensured by fixing nosing to suitable spacers, e.g. hardboard or plywood strips with adhesive and screws

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M. Ironmongery

M.1 General

a) sherardizing on ferrous products: *SANS* 53811

b) electroplating: *SANS* 135/136/2081/2082

c) powder coating: *SANS* 1274 type 6

M.2 Fasteners

a) fasteners: *SANS* 1700

b) metal screws for wood: *SANS* 1171

c) masonry anchors: proprietary expansion or chemical type

d) plugs: proprietary plastic

e) mild steel nails: *SANS* 820

f) required marking: protective coating on container

M.3 Locks, latches and associated furniture for doors

a) locks, latches, etc. (domestic type): *SANS* 4

padlocks

b) padlocks: *SANS* 1533

keys

c) two keys to every lock; no key shall pass more than one lock unless *described* as "en suite"

d) cylinder locks and locks *described* as "en suite": clearly marked with consecutive numbers and each key punched with the corresponding number of the relevant lock

e) proprietary key control security systems: details to be submitted where required

M.4 Hinges

hinges for lightweight doors

a) type (piano, pivot, flush, european–hidden, adjustable, strap): *as described*

hinges for medium to heavy doors

b) type: butt hinges for doors opening 90°; projecting hinges for doors opening 180° when frames are set back from wall faces.

c) aluminium hinges: high tensile aluminium with fixed stainless steel pins in nylon bushes, and with nylon washers to each knuckle joint

d) doors fitted with closers shall be provided with low-friction bearing hinges

e) exterior or security doors opening out shall be provided with fixed pin or security hinges

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M.5 Door closers

a) single action overhead door closers: *SANS* 1510

b) manual action: with adjustable closing and latching speed

c) floor spring sets, consisting of a floor spring unit let into the floor and with bottom and top door strap of size and finish *as described*

M.6 Blinds

a) indoor venetian blinds: *SANS* 947

- cross-straps: flutter-proof
- screws: cadmium-plated.

M.7 Number/name plates

symbolic safety signs

a) symbolic safety signs: *SANS* 1186

installation

b) signage shall be fixed level and plumb, securely mounted with concealed theft-resistant fixings

c) self-adhesive signs shall be fixed free of bubbles and creases

M.8 Drawer runners/slides

a) type, load capacity, extension: *as described*

M.9 Fixing

a) ironmongery for doors shall be delivered in individual complete sets for each door, as follows:

- clearly labelled to show its intended location
- in a separate dust and moisture proof package
- including the necessary templates, fixings and fixing instructions

b) correct handing to be verified on site before supplying

c) ironmongery to be fixed with matching screws

d) locks to be eased and adjusted on completion; closers to be adjusted to suit

e) keys to be handed over at completion; cylinders to which contractor had key access during construction to be replaced with new cylinders with other keys

f) all keys to be labeled with coloured plastic tags

g) curtain rail/rod brackets and tie-backs to be plugged and screwed to wall

h) rails/rods to project 300 mm past reveals wherever possible, or continuous over windows occurring in series.

i) safety signs to be fixed according to *SANS* 1186 in positions as shown in *drawings*

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j) ironmongery to be protected during construction

M.10 Proprietary kitchen cupboards

a) proprietary kitchen cupboards: *SANS* 1385

b) required marking on casing of every unit: trade name, production lot

c) sizes: supplier/manufacturer is responsible for checking sizes on site and for providing detail layout drawings before any work is started

d) cupboards to be fixed according *to manufacturer's instructions*

e) all joints between work tops and walls shall be sealed

f) all cupboard components shall be inspected and left in perfect working order after fixing

g) cupboards shall be protected from damage

M.11 Proprietary steel furniture

a) proprietary steel furniture: *SANS* 757

b) powder coated finishes: *SANS* 1274

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N. Structural steelwork

N.1 Structural steelwork

Applicable standard: SANS 2001-Construction works Part CS1: Structural steelwork

Additional clauses:

a) steel wire rope (cables): *SANS* 2408

b) structural steel tubes: *SANS* 657 part 1, and mark-bearing

c) shackles: *SANS* 2415

d) thimbles: *SANS* 2262

welding

e) visible welds: continuous, ground smooth

N.2 Coating

a) type: *as described*

b) preparation of steel surfaces: *SANS* 10064

hot dip galvanizing

c) hot dip galvanised coatings on prefabricated iron and steel products: *SANS* 121 / ISO1461

- steel composition: for industrial/mining purposes: Si 0,125 — 0,30% with P <0,02%; for architectural purposes: Si 0,03 with P <0,01% or Si 0,15 — 0,25% with P <0,02%

paint or varnish

d) corrosion protection of structural steel of not less than 3 mm thickness by paint or varnish: *SANS* 12944

- all paint shall be sourced from one manufacturer
- paint system testing: laboratory tests to *SANS* 12944-6

N.3 Light steel frame building

a) Light steel frame building: *SANS* 517, or a rational design by a *competent person*

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O. Metalwork

O.1 Metals

O.1.1 Steel

a) steel: commercial quality mild steel

b) corrosion protection of manufactured work before delivery to site:

- preparation of surfaces: *SANS* 10064
- coating: zinc phosphate primer or, where so *described*, hot dip galvanizing to *SANS* 121 / *ISO* 1461

c) welding: visible welds continuous and ground smooth

d) dressing: cut edges to be dressed to remove dross, burrs and irregularities; holes to be dressed where required to remove burrs and protruding and/or sharp edges

O.1.2 Stainless steel

a) stainless steel: austenitic (300 series) stainless steel grade 304, or grade 316 in coastal areas

b) finishes: annealed and pickled mill finish/polished/coloured/etched/mirrored/electropolished *as described*

O.1.3 Aluminium

a) extrusions: 6063-T6 alloy and temper; sheets and strips: 1200-H4 alloy and temper

b) construction:

- joints to be formed in an approved manner to be practically invisible
- screw heads, pins, rivets, etc. to be concealed as far as possible
- 300 series stainless steel screws and bolts to be used for jointing and fixing

c) finishes: mill finish/anodising to *SANS* 999/powder coating to *SANS* 1274/1578/1796 // matt/satin/high-gloss/hammertone/textured as described

d) protection:

- surfaces of aluminium work in contact with other materials when fixed to be suitably insulated with non-absorbent insulating material to prevent corrosion
- all aluminium work to be protected against damage, deterioration or discoloration caused by mortar droppings, paint, etc. by taping with removable tape, covering with temporary casings or with motor oil

O.2 Doors, windows, curtain walling, shopfronts, etc.

O.2.1 Performance

Unless otherwise *described*, the following performance standards are required to be met:

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mechanical performance

a) mechanical performance of doors, windows, curtain walling, shopfronts, etc. in respect of wind action (deflection and structural strength), water penetration, air penetration and operation within the confines of the perimeter of the main frame, irrespective of the framing material: *SANS* 613

b) design wind pressure: *SANS* 10160

c) atmospheric temperature range: between -10°C and 35°C

d) plastic, shrinkage and creep deflection of floor slabs: *as described*

thermal performance

e) U-value and Solar Heat Gain Factor, including permissible air leakage: *SANS* 204, or as supplied by the glazing manufacturer as verified according to the test method ASTM C 1199 and ISO 9050 for U-values, and given in NFRC / SAFIERA 100-2004 for SHGC values, or be custom product assessed from suppliers, manufacturers, industry associations (including their online resources), and from competent assessors, who must have assessed the products in the manner prescribed by SAFIERA, or be the subject of a rational design by a *competent person*

fire resistance

f) fire resistance: *as described*

sound insulation

g) sound insulation: *as described*

O.2.2 General requirements

a) fittings to be removable after windows have been glazed

burglar bars

b) solid mild steel or aluminium alloy, of pattern as described

c) bars at peg stays or latches to be kinked where required

insect screens

d) metal gauze screen frames: pressed steel with baked enamel finish, or extruded aluminium with natural anodised finish, filled with 1,5 x 1,5 mm mesh fibreglass gauze, *as described*

installation

e) install *to manufacturer's instructions* where applicable

f) service units at completion and leave in perfect working order

O.2.3 Steel frame units

a) factory finish: prepared to *SANS* 10064 and primed with zinc phosphate to *SANS* 1319 inland, or hot dip galvanised to *SANS* 121 / *SANS* 14713 in the *coastal region* or corrosive atmospheres

hot-rolled steel framed units

b) hot-rolled mild steel framed units: *SANS* 727

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pressed steel clisco type window frames

c) pressed steel clisco type window frames: *SANS* 1311

pressed steel door frames

d) pressed steel door frames: *SANS* 1129

- frames for continuous power floated floors without screeds or toppings to be *suitable* for surface placing without damage to the floor and without compromising proper building in of the frame or the fitment of standard doors
- steel thickness: *as described*
- frames for double swing doors: jambs with V-shaped centres to fit rounded edges of doors, and plain heads or transoms, holed and prepared to receive top centres of spring hinges
- buffers: two rubber buffers on lock side rebate of every frame

pressed steel door and frame combination

e) doors: 1,2 mm thick pressed steel with 40 mm edge, > two V-shaped vertical ribs over full door height, and three horizontal rails

f) frame: single rebate pressed metal door frame to *SANS* 1129

g) lock box: 1,6 mm pressed steel

h) hinges: 1 pair 100 mm steel

cold-rolled steel frame units

i) patent cold-rolled tubular steel profile frame with integrated fittings and gaskets

j) galvanised to 200 g/m^2 and prepainted to ASTM D3663 for PVDF fluorocarbon, or AAMA 605.2.92 for baked organic coating

O.2.4 Aluminium framed units

a) AAAMSA certified as to performance, glazing, surface finishing, ironmongery, fasteners, product certification and, where *described*, energy rating

b) anodising: *SANS* 999.

c) powder coating: *SANS* 1796, minimum thickness for all areas: 0,06 mm

O.2.5 Skylights and curtain walling

a) a *competent person's* certificate on design loading compliance shall be obtained

b) sloping glazing to have an overhang where it sheds rainwater on significant vertical surfaces

c) glazing bars to allow for water penetration and effective drainage to outside

d) condensation: to be removed through guttered weep system

e) screws and fixing bolts: covered with plastic head caps

O.2.6 Adjustable glass louvre units

a) *suitable* for hand or longarm operation

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b) glass: with polished edges

c) louvre units shall be fixed

- after window frame has been painted, when relevant
- with stainless steel or chromium plated brass dome-head screws

d) louvres shall be serviced at completion and left in perfect working order

O.2.7 Fire doors and fire shutters

a) fire doors and fire shutters: *SANS* 1253

b) installation: *SANS* 1253 Annex E

O.2.8 Garage doors

up-and-over garage doors

a) solid door panel of steel or wooden framework clad in weather boarding, tipping upward into horizontal open position and balanced by springs

sectional overhead doors

b) curtain of hinged panels sliding upwards and inwards in channel guides and balanced by springs

O.2.9 Roller shutter doors

a) curtain of interlocking slats or grilles running in channel guides from a spring loaded barrel, mounted overhead on steel support brackets

b) assembly bolted or welded to the building structure

c) automatic operation to be supplied with light, safety reverse, manual override, and remote control

d) electrical operation to include remote push button starter, limit switch assembly, emergency hand operator in event of power failure, and electromagnetic brake

O.2.10 Strongroom/record room doors, ventilators

strongroom and vault doors

a) strongroom and vault doors: *SANS* 949

b) required marking: manufacturer's name on outside of door; door category on inside of door

fire-resisting record room doors

c) fire-resisting record room doors: *SANS* 1015

d) required marking: "FIRE RESISTANT ONLY" , manufacturer's door number

ventilators for strongrooms

e) double ended steel telescopic ventilator sleeves of <127 x 127 mm internally and suitable for wall thickness, fitted with baffle plates and flame proof wire gauze screen; face plates <225 x 225 mm on both sides, the outer face plate fitted with drop shutter mechanism operating from a fusible metal plug; sleeves and baffle plates not less than 2 mm thick

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installation

f) bolted to walls with lugs provided

g) in openings formed in walls after plastering has been completed

h) *to manufacturer's instructions*

i) grouted solid in class I mortar

j) door to clear finished floor by 25 mm

k) ventilator(s) built into openings formed in the walls in class I mortar, grouted in solid

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P. Plastering

P.1 Screeds, toppings, terrazzo

P.1.1 Materials

cement and aggregate

a) cement for screeds: *SANS* 50197-1 type CEM I or CEM II

b) cement for toppings: *SANS* 50197-1

c) cement extenders: *SANS* 1491

d) aggregate for screeds: concrete sand (not a plaster sand) passing through a 5 mm sieve; where a smooth surface is required, concrete sand may be blended with plaster sand in the proportion of 4:1

e) aggregate for toppings: aggregate from natural sources: *SANS* 1083

Nominal aggregate size, mm	Minimum thickness of topping, mm
6,7	25
13	40
¼ thickness of topping, maximum 19	>40

f) aggregate for terrazzo: marble aggregate consisting of equal parts of sizes ranging from 3 to 4 mm and 4 to 6 mm

proprietary surface treatments

g) form: dry shakes, coatings or screeds as described

h) colouring pigment: *BS* 1014 or *BS EN* 12878

mesh reinforcement

i) welded steel fabric for reinforcement of topping when so described: *SANS* 1024, of fabric reference number 193 or 245

P.1.2 Mix

screed

a) 1 part cement to 3½ parts sand, or 50 kg (one bag) cement to 130 L sand (two wheelbarrows)

b) mixing: by hand or preferably by forced-action mechanical mixer for 3 minutes

c) use within 45 min.

topping

d) mix proportions of *described* grade may be arrived at by a process of mix design or by the use of recognised tables of trial mixes with South African aggregates

terrazzo

e) 1 part cement to 2 parts marble aggregate

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consistency

f) slump: 40 – 50 mm as measured by the standard slump test to *SANS* 5862

colouring pigment

g) application: mix with dry cement, or add to freshly laid surface as a dry shake

P.1.3 Preparation

a) all piped services shall be in position in base; services shall not be buried in toppings or screeds

b) base concrete shall be hard and strong, free of cracks and reasonably accurate to required level; clean, hard concrete shall be exposed by chipping if necessary and all dust removed, preferably using an industrial vacuum cleaner

c) surface shall be wetted for four hours before laying only if concrete is absorptive; free water shall be removed before grouting (concrete can be tested for absorptiveness by pouring a cupful of water onto the surface; if water is absorbed within a few minutes, suction warrants that the surface should be wetted; if not, do not wet)

d) bay forms for toppings shall be prepared to coincide with joints in base

e) edge/dividing/feature strips shall be in position before casting

P.1.4 Laying

a) grout: a mix of about ½ L water per kg cement, or a proprietary bonding agent, shall be brushed over the surface 10 to 20 minutes before applying screed or topping; bonding agents shall be applied *to manufacturer's instructions*; to be used within 30 minutes of mixing

b) screed or topping mix to be spread, compacted, and lightly wood-floated to required thickness

screeds

c) guide strips of screed mix to be laid to establish levels

d) screeds to be laid in panels as large as possible in one operation without intermediate joints

e) screeds not to be covered with a floor finish shall be laid in panels not exceeding 9 m² or to acceptable pattern

f) screed thickness: 25 – 50 mm

- on stair treads: 20 mm
- on stair risers and skirtings: 10 mm
- on flat concrete roofs to receive waterproofing: minimum thickness 40 mm and to fall

g) exposed salient angles: round to 20 mm radius

toppings

h) levels shall be established by means of bay forms

i) bays shall be cast in chequerboard fashion in panels not exceeding 9 m² or cast continuously with sawn contraction joints as *described* hereinafter

j) topping thickness: 25 – 40 mm

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k) mesh reinforcement: placed as close to the upper surface as is permissible

terrazzo

l) screed mix to be spread, compacted and lightly wood floated to 25 mm thickness as *described* hereinbefore; edge/feature/dividing strips shall be set into screed to form panels not exceeding 1 m², or to pattern as *described*; while screed is still plastic, terrazzo mix shall be spread and compacted in bays to thickness of 15 mm and trowelled to level surface

P.1.5 Finishing

screeds and toppings

a) ordinary finish: surface left as finished by wood floats to smooth or non-slip finish

b) hard finish:

- surface bull-floated immediately after levelling before any excess moisture or bleed water appears on the surface
- finish shall be left undisturbed for two to four hours (longer in cold weather), bleed water and laitance on surface shall be removed
- surface floated again, and steel trowelled until desired texture is obtained
- power trowels shall be used if areas are large
- surface finished with carpet-faced floats or soft brushes or broom to desired texture

c) water or dry cement shall not be added at any stage; premature and overtrowelling shall be avoided

pigmentation

d) integral application: mix shall be laid in two thicknesses in one operation, the lower unpigmented thickness brought up to 6 mm of the finished level, and the upper pigmented thickness laid with the required amount of pigment mixed with the dry cement before adding water

e) dry shake application: added to the final surface and trowelled in to an acceptable finish and pattern

grinding and polishing

f) surface shall be ground after four days by wet mechanical process until aggregate is fully exposed and surface is even and smooth or non-slip as required

g) small or awkward surfaces shall be ground by hand with carborundum stone

h) surface shall be washed clean

P.1.6 Joints

isolation joints

a) against walls, columns or other fixed objects

b) 20 mm wide through full thickness of topping, screed or terrazzo

c) to coincide with isolation joints in base

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intermediate sawn contraction joints

d) in continuously cast unreinforced topping only

e) halfway through topping thickness with concrete saw

f) panels shall not exceed 9 m², or shall be to pattern *as described*

g) top edges of joints: arris-rounded with a radius of 3 – 5 mm

patent movement joint systems

h) patent movement joint system with flexible inserts shall be used where so *described*

i) fixed through pre-drilled holes using cross-head stainless steel screws and plugs at 300 mm centres on both sides of joint

joint sealing

j) joints subjected to heavy traffic: filled with a *suitable* semi-rigid epoxy

k) joints shall be sealed with a *suitable* elastomeric material where so described

P.1.7 Surface regularity

a) degree of surface regularity: II (*SANS* 10155) 5 mm along a 3 m straight-edge in any direction, and gradual, unless otherwise *described*

b) deviation of floor finish from datum level: ±15 mm and gradual; less near door openings or other defined areas where levels are required to be accurate.

P.1.8 Skirtings

a) 75 mm high, unless otherwise *described*, and of same material as floor finish and in same operation

b) hollow rounded at junction between floor and skirting, top edge level with slightly rounded edge

c) to project 10 mm from face brick and bagged wall surfaces, 5 mm from face of plastered walls, and flush with tiled wall surfaces

P.1.9 Curing

a) surface shall be cured for at least seven days by

- uniform application of a liquid membrane-forming compound *complying* with AASHTO M148 type 1-D or type 2 *to manufacturer's instructions*, or
- ponding water on surface, or
- covering with sand which is kept moist, or
- covering with plastic sheeting

b) curing time shall be extended in cold weather when ambient temperature falls below 10°C

P.1.10 Inspection, testing and repair

a) screeds or toppings shall be inspected as late as possible in the construction programme

b) adhesion of screeds or toppings to base shall be tested by tapping surface with a hammer or end of a rod; hollow sound indicates lack of adhesion

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c) rejected panels shall be isolated by sawing with a mechanical concrete saw in an acceptable pattern, removed and relaid, using the same procedure as above, starting with preparation of the base

P.2 Epoxy flooring

a) type: seamless epoxy mortar floor

b) epoxy mortar: epoxy resin mixed with *suitable* aggregate of *described* colour and size

application

c) *to manufacturer's instructions*

d) on scabbled or sandblasted surface to provide necessary grip

e) surface to be primed with low-viscosity epoxy

f) final epoxy finish to be applied by trowel or by self-levelling, to thickness and finish *as described*

g) sample panel: required

h) movement joints: defined by separate metal strips on both sides of joint

P.3 Plaster

P.3.1 Cement plaster

Applicable standard: SANS 2001-Construction works Part EM1: Cement plaster

a) sand: *SANS* 1090

b) admixtures: not permitted

additional items

c) full width structural joints shall be maintained through plaster

d) plaster surfaces to be tiled shall be scored

P.3.2 Gypsum plaster

a) hardwall gypsum skimming plaster: proprietary retarded hemi-hydrate finishing plaster

b) application: to supplier's instructions

P.3.3 Lime plaster

a) lime: *SANS* 523

b) mix: *SANS* 523 Annex C

P.3.4 Insulating plaster

a) aggregate of low density: *SANS* 794, density 800 – 960 kg/m^3 (clinker), unless otherwise *described*

b) mix: 1:9 or according to supplier's instructions

c) low-density foamed mixes by specialist suppliers: prohibited without permission by Employer's principal agent

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P.3.5 Barite plaster

a) plaster grade barium sulphate (BaSO4)

b) sand: *SANS* 1090

c) mix: one part cement to two parts sand to three parts barite by mass

d) thickness: 15 – 30 mm

P.3.6 Dividing strips, edge trims, etc.

a) *as described*

P.3.7 Metal lathing

a) expanded metal, unless otherwise *described*: *SANS* 190, hot dip galvanised in external plaster, stainless steel in corrosive atmospheres

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Q. Tiling

Q.1 Materials

ceramic and porcelain wall and floor tiles

a) ceramic wall and floor tiles: *SANS* 1449

b) porcelain wall and floor tiles, fully vitrified: *SANS* 13006 group B1a, water absorption ≤0,5%

c) moisture expansion limit: <0,06% for external floors, and for internal floors in wet and/or cold areas

d) scratch hardness on the MOHS scale: >4 for walls; >7 for floors

e) required marking on tile and/or packaging: trade name, country of origin, group, dimensions, class of resistance of glazed tiles to acids and alkalis, surface abrasion resistance of glazed tiles

stone tiles

f) natural stone: from an approved quarry

g) cast stone: *BS* 1217

concrete tiles

h) precast concrete tiles: *SANS* 541

i) terrazzo tiles: precast concrete with a terrazzo facing: *BS EN* 13748

mosaic

j) tesserae glued to brown paper or water resistant synthetic mesh fabric in squares of approximately 300 x 300 mm

profiled and decorative tiles

k) skirting, dado, bullnose and other profiled or decorative tiles: *as described*

accessories

l) movement joint strip: of depth that allows fixing to the substrate or background: *as described*

m) stair nosing and movement joint strip: with polyurethane or PVC infills: *as described*

adhesive

n) proprietary adhesive *BS EN* 13007, of *suitable* type

o) adhesive and associated systems: from one manufacturer

grout

p) proprietary grout: *BS EN* 13007 of *suitable* type and colour

Q.2 Tiling work

preparation

a) all adjacent rough construction work shall be complete and all services in background shall be installed and tested before commencing tiling work

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b) backgrounds shall be examined, defects shall be rectified and allowed to dry to equilibrium moisture content; dust, loose matter, efflorescence and laitance shall be removed

c) in the case of smooth and dense concrete: surfaces shall be keyed with a priming agent as recommended by the adhesive manufacturer prior to application of the adhesive

d) fields, borders and patterns shall be set out, where relevant

bedding

e) tiling units shall be bedded in adhesive according to tile and/or adhesive *manufacturer's instructions*

f) white tile adhesive shall be used for white marble or marble with a delicate colour

g) field tiles shall be bedded with straight joints in both directions, unless otherwise described

h) wall field tiles shall be cut only along edges and bottom of field

i) floor patterns shall be continued through openings connecting areas with similar tiling

j) internal sills where walls are tiled: joints to coincide with wall tile joints when of similar material

k) external sills to be

- symmetrical about opening, with cut tiles at sill ends
- to slope and projection as described
- tucked under and behind drip in wood or aluminium window frames, and under leg of steel window frame without removing or bending window lugs

l) shower thresholds to slope towards shower

Q.3 Jointing

joint width

a) consistent throughout

b) pressed ceramic and porcelain tiles:

- internal: 2 mm
- internal for large format wall tiles: >3mm, regardless of any instruction from the tile manufacturer
- external: >3 mm

c) extruded floor tiles: 6 – 10 mm

d) terrazzo tiles: 1,5 – 3 mm

e) stone tiles: butt-jointed

joint depth

f) at least equal to thickness of tile but >6 mm

grouting and pointing

g) grout joints of width <3 mm; point wider joints

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h) proprietary grout mixes: applied *to manufacturer's instructions*

i) epoxy compound or acid-proof cement mortar shall be used if tiles are *described* as acid-proof

j) grout shall be worked into joints with a squeegee until joints are filled flush with surface

k) joints: to be tooled to level surface slightly below tile edge

Q.4 Movement joints

in situ movement joints

a) formed by a temporary filler strip that is removed when tiling is sufficiently firm, leaving a clean and straight open joint

b) sealed with an elastomeric material where so *described*

preformed compression joint strip

c) PVC or metal profile with *suitable* flexible infill

d) extended to substrate and keyed into adhesive bed or fixed through pre-drilled holes using *suitable* fixers as tiling proceeds

e) level with, or slightly below, floor surface

isolation (perimeter) joints

f) isolation joint width: 10 mm

g) formed around perimeter of floor, columns, kerbs, steps and plant bases

h) joint formed adjacent to skirting in areas where hygiene is important

i) sealed with an elastomeric material where so *described*

intermediate joints

j) open to same width as grouted tile joint

k) position:

- at 3 m centres maximum externally, or internally in wet areas or in areas where large thermal movement or vibration is expected
- at 10 m centres maximum internally in areas of up to 500 m² of floor
- at 5 m centres maximum internally in areas exceeding 500 m² of floor
- over supporting walls or beams on suspended concrete or timber floors
- where different background materials meet

l) adjust spacing to coincide with structural features like columns

m) left open or sealed with an elastomeric material where so *described*

structural joints

n) joint width: same as structural joint width in substrate

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o) to align with structural joints in the substrate or background

p) in the case of structural joints in substrates or backgrounds being irregular, not straight, or not coinciding with that of the tiling: a decision as to its treatment is to be obtained

q) seal with an elastomeric material where so *described*

Q.5 Cleaning

a) tiled surface to be sponged with water and polished with clean, dry cloth

b) acid cleaners, scouring powder or abrasive cleaning materials are not to be used

c) absorbent floor finishes: to be protected with an application of non-slip wax polish or suitable proprietary sealer where so *described*

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R. Plumbing and drainage

R.1 Rainwater disposal

R.1.1 Eaves gutters and down pipes

Materials

galvanised steel

a) hot dip zinc-coated steel sheet: *SANS* 3575/4998 Z275 or AZ150 for inland regions, Z600 or AZ200 for *coastal regions*

b) nails, bolts and screws: zinc-plated or sherardized steel

c) brackets: mild steel strip hot dip galvanised *SANS* 121 after manufacture

copper

d) copper sheet: high purity cold rolled copper *SANS* 404/405

e) brackets, nails, bolts and screws: copper or stainless steel

aluminium

f) aluminium sheet: aluminium alloy: *SANS* 903 type 304-temper H14 or ally A1-Mn1 or A1-Mg2

g) brackets, nails, bolts and screws: aluminium alloy or stainless steel

PVC

h) PVC-U gutters and downpipes: *SANS* 11

i) brackets: aluminium alloy

Installation

j) *to manufacturer's instructions* where relevant

k) sheet metal gutter lengths to be lapped >20 mm; sealed with suitable sealant over full lap before riveting

l) gutters to be laid in brackets to slight fall to outlets, nailed/screwed to roof timber at 2 m maximum centres in the case of sheet metal gutters, at 1 m in the case of PVC-U gutters, and at angles and outlets

m) sheet metal gutters to be bolted to brackets close to underside of gutter bead with 6 mm diameter gutter bolts

n) overflow (to be formed on site in one stop-end in every sheet metal gutter run): a 20 mm lipped weir overflow over full gutter width

o) gutters shall fall to outlets without ponding

p) downpipes shall be fixed to walls, 25 mm clear of finished wall face, seam towards wall when relevant, with 25 x 1,6 mm hot dip galvanised mild steel holderbats, bolted around pipe in two halves, and with 6 mm diameter hot dip galvanised steel spiral nail driven into wall, at least twice per downpipe length and at 2 m maximum centres

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R.1.2 Flat roof, balcony and floor drainage

roof and balcony outlets

a) type: patent outlet with grating, or pipe without grating, as described

b) patent outlet type:

- ductile iron consisting of flanged funnel-shaped head with outlet threaded to take standard mild steel hot dip galvanised pipes, and with removable domical gratings for roofs or flat gratings for car parks, secured by centre hook bolt
- outlet heads to be cast with necessary pipework into concrete, at such a level that ponding does not occur after waterproofing

floor outlets

c) with removable grating

d) grease and solids trap: easy-clean

e) with tapered bottom for installation on 100 mm diameter pipe or clamp coupling

f) set at such a level that ponding does not occur after flooring is installed

outlet downpipes

g) PVC-U pipes: *SANS* 967

h) hot dip galvanised steel pipes with screwed ends: *SANS* 62

i) hot dip galvanised malleable cast iron fittings: *SANS* 14

R.2 Stormwater drainage

R.2.1 Earthworks

Applicable standard: SANS 2001-Construction works Part DP1: Earthworks for buried pipelines and prefabricated culverts

R.2.2 Pipes and culverts

Applicable standard: SANS 2001 Construction works Part DP5: Stormwater drainage

pipes

a) concrete pipes and associated fittings: *SANS* 677

b) fibre-cement pipes and associated fittings: *SANS* 819

c) PVC-U pipes and associated fittings: *SANS* 791/1601

d) GRP pipes and associated fittings: *SANS* 1748-1

e) PP pipes and associated fittings: *SANS* 8773

f) PE pipes and associated fittings: *SANS* 4427

culverts

g) precast concrete culverts *SANS* 986 type portal

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R.2.3 In situ concrete stormwater channels

a) concrete: grade 30

b) rainwater channels and spill basins to be cast on well rammed earth filling

c) channel floors to be layed to even fall of 1:250 minimum or *as described*

d) angles and sweeps around gulleys to be neatly formed without changing channel profile

e) stop-ends to be formed at tops of gradients

f) channels to be finished on exposed surfaces with 2:1 sand:cement plaster, trowelled smooth with rounded salient angles

g) rainwater channels to be cast with isolation joints against walls and with keyed or doweled construction joints at 1,8 m maximum centres along its length

h) concrete spill basins to be cast to shape, size and finish *as described*

R.2.4 Agricultural drains

a) pipes: 100 mm diameter agricultural drain pipes

b) pattern: main drain with branch spreader drains to pattern and lengths as shown in *drawings*

c) trenches: 600 mm wide x >700 mm deep at >2 m apart

d) laying:

- on 150 mm thick bed of clean, hard, durable stone graded from 35—75 mm, and covered after laying with same to 280 mm above tops of pipes
- pipes with open joints
- each joint covered with a flat stone to prevent infiltration of soil
- lower end of main drain plugged with 2:1 cement mortar

e) filling: stone filling in trenches to be covered with *suitable* plastic sheeting and trenches filled with earth filling, lightly rammed

R.3 Sewerage

R.3.1 Earthworks

Applicable standard: SANS 2001-Construction works Part DP1: Earthworks for buried pipelines and prefabricated culverts

R.3.2 Sewers (>160 mm)

Applicable standard: SANS 2001- Construction works Part DP4: Sewers

a) types of pipe, diameter, gradient, etc.: *as described*

R.3.3 Sewers for buildings

Applicable standard: *SANS* 2001-Construction works Part DP7: Sewers for Buildings

a) type of pipe, diameter, gradient etc.: *as described*

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R.3.4 Surface boxes, manhole covers, gulley gratings, frames

a) polymer concrete surface boxes, manhole and inspection covers, gulley gratings and frames: *SANS* 1882, and mark-bearing

b) cast iron, cast steel, rolled steel combined with concrete gulley tops and manhole tops for vehicular and pedestrian areas: *SANS* 50124 / EN 124, and mark-bearing

c) installation: top of dished gullies >150 mm above finished ground level or 50 mm above permanent paving

R.3.5 Grease interceptors

a) material, type, capacity and size: to approval of the local authority unless otherwise *described*

R.3.6 Pit latrines

a) masonry type: *as described* in *NHBRC* Home Building Manual Part 11 and relevant details, internal size of pit 750 x 1 500 x 2 000 mm minimum deep; exposed end of floor slab covered with precast concrete panels

b) waterless ventilated improved pit (VIP) latrine: consisting of a structurally lined and ventilated underground pit, floor slab, ventilated wall enclosure with roof and door, toilet pedestal, toilet seat and lid

c) patent type: installed *to manufacturer's instructions* or to the requirements of an active Agrément Certificate

d) to the approval of the local authority

R.3.7 Conservancy tanks, septic tanks and french drains

a) conservancy tanks, septic tanks and french drains: *SANS* 10400-P, of type, construction and capacity *as described*

b) patent type: installed *to manufacturer's instructions* or to the requirements of an active Agrément Certificate

R.4 Water supply

R.4.1 Earthworks

Applicable standard: SANS 2001-Construction works Part DP1: Earthworks for buried pipelines and prefabricated culverts

R.4.2 Below ground medium pressure pipelines

Applicable standard: SANS 2001-Construction works Part DP2: Medium pressure pipelines

a) type of pipe, size, etc.: *as described*

R.4.3 Below ground water installation for buildings

Applicable standard: SANS 2001-Construction works Part DP6: Below ground water installations for buildings

a) type of pipe, size, etc.: *as described*

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R.4.4 Above ground water installation

materials

a) pipes, and associated fittings recommended by pipe manufacturer: material *as described*, supplied from one source

b) water supply and distribution system components: *SANS* 1808

c) float valves: *SANS* 752

installation

d) pipes: according *to manufacturer's instructions*

e) measures to avoid unsightly pipework before any chasing or cutting for pipework is started: to be agreed upon

f) fixing of pipes <20 mm: chased or surface fixed *as described*

g) fixing of pipes >20 mm: surface fixed or run in ducts

h) surface fixing on internal walls: in neat straight horizontal and vertical runs to internal walls only, after plastering, with hot dip galvanised cast iron holderbats to *SANS* 1209, or plastic holderbats for copper or polypropylene pipes, at centres according *to manufacturer's instructions*; clear space of 15 mm to be left between pipe and finished wall

i) surface fixing on external walls: prohibited except for short runs of vertical rising main from ground level to floor level

j) chasing:

- not in wall faces that are to receive roof flashing
- in solid masonry only, not deeper than one third of wall thickness vertically and not more than one sixth of wall thickness horizontally; avoid horizontal chasing where possible
- in walls constructed of structural masonry and hollow blocks: only with permission, or locate pipes in cavities during construction
- chases, holes and recesses: not to impair strength or stability of walls, or reduce fire resistant properties of walls
- chases in masonry walls to be filled with class II mortar once pipes are in position

k) fastening of pipes to roof timber

- with hot dip galvanised mild steel or copper pipe clips screwed on
- polypropylene hot water pipes: supported continuously
- polypropylene cold water pipes: not closer than one metre from hot water geysers

l) bends to be used in preference to elbows if practicable; if a reduction in size of pipe takes place at an angle, the bend or elbow shall be the size of the larger pipe

m) no air may lodge in pipes; a proper fall shall be maintained

n) expansion shall be provided for in long lengths of pipes

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o) long- screws or *suitable* couplings shall be inserted at convenient points to provide for alterations and repairs

p) unions to be provided at inlets and outlets to geysers

testing

q) entire water reticulation system shall be filled with water

r) air shall be evacuated

s) water in system shall be pressurised to one-and-a-half times the expected design working pressure by means of a pump, maintained for four hours

t) system to be inspected for leakages and repair

u) after connecting to mains system shall be inspected again

R.4.5 Water storage tanks

a) accessories: inlet, outlet, overflow pipe connections, float valve of same bore as supply pipe

b) drip tray in roof space: *SANS* 1848

R.5 Electric geysers and solar water heaters

R.5.1 Electric geysers

a) geysers: *SANS* 151

b) required marking: capacity, working pressure, mounting position, design, standing loss per 24h in kWh, moisture resistance class, colour coding (yellow—50 kPa, blue—100 kPa, black—200 kPa, brown—300 kPa, red—400 kPa, green—600 kPa)

c) installation: to *SANS* 10254 and *to manufacturer's instructions*, including drip trays

d) preset geyser thermostat to 50°C

R.5.2 Solar water heaters

a) domestic solar water heaters: *SANS* 1307, mark-bearing

R.6 Pipe insulation

a) bonded preformed mineral fibre pipe sections: *SANS* 1445-3, mark-bearing with expected maximum service temperature and exposure conditions; an adequate vapour barrier to pipe sections intended for use in temperatures below ambient shall be provided

b) insulation exposed to weather and sunlight to be covered with protective material as recommended by insulation manufacturer/supplier

c) bends and tees shall be tightly mitred

R.7 Gas supply

Gas installation: *SANS* 10087

R.8 Fire equipment

a) all fire equipment to approval of local authority

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fire hydrants

b) fire hydrants: *SANS* 1128 part 1

fire hose reels

c) fire hose reels: 30 m long x 20 mm diameter light duty rubber fire hose, fixed base, couplings, connections, branch pipes and nozzles: *SANS* 543 and *SANS* 1128 part 2

d) reels fixed against walls with *suitable* frame anchors or expansion bolts at a height of 2 100 mm from floor to spindle, or to height *as described*

e) enclosed in security cupboards with clear acrylic cover and suitable closer where so *described*

portable fire extinguishers

f) general purpose, non-refillable fire extinguishers: *SANS* 1322 and mark-bearing

g) water, foam or dry powder rechargeable extinguishers: *SANS* 1910

h) CO_2 type extinguishers: portable rechargeable carbon dioxide extinguishers: *SANS* 1567 and mark-bearing

i) BCF type extinguishers: halogenated hydrocarbon fire extinguishers: *SANS* 1151 and mark-bearing

j) extinguishers shall be hung on wall hooks screwed and plugged to wall

k) enclosed in security cupboard with clear acrylic cover and suitable closer where so *described*

R.9 Sanitary plumbing

R.9.1 Sanitary appliances

a) fitted with waste, plug and chain as required

baths

b) acrylic baths: *SANS* 1402/50198

c) handles: where so *described*

basins

d) glazed ceramic wash-hand basins: *SANS* 497

e) stainless steel wash-hand basins: *SANS* 906

wash troughs

f) stainless steel wash troughs: *SANS* 906

g) concrete wash troughs:

- of reinforced concrete, with reeded front
- drainers to be of reinforced concrete with lip to fit over side of trough and fixed to trough with copper dowels and to wall with bracket supplied by manufacturer
- pedestals to be of reinforced concrete

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- pedestals to be bedded on floor, and trough on pedestals, with 1:2 cement-sand mortar

water closets

h) glazed ceramic water closets: *SANS* 497

flushing cisterns

i) glazed ceramic flushing cisterns: *SANS* 497

j) plastic flushing cisterns: *SANS* 821

k) cistern flush valves: *SANS* 1509

urinals

l) glazed ceramic urinals: *SANS* 497

m) stainless steel urinals: *SANS* 924

sinks

n) glazed ceramic sinks: *SANS* 497

o) stainless steel sinks with draining boards for domestic use: *SANS* 242

p) stainless steel sinks for institutions: *SANS* 907

shower enclosures

q) shower enclosures

- shower enclosures for domestic purposes: *SANS* 549
- glass: *SANS* 1263
- anodizing: *SANS* 999
- powder coating: *SANS* 1274/1578/1796

bains marie

r) bains marie and hot cupboards: *SANS* 1174

R.9.2 Taps, valves, showerheads

a) water taps (metallic): *SANS* 226, class as *suitable* to dynamic supply pressure

b) water taps (plastic bodies): *SANS* 1021, class as *suitable* to dynamic supply pressure

c) taps for cold and hot water: mark-bearing blue and red respectively

d) aerators: where so *described*

e) wall type taps: with sliding flange

f) single control mixer taps: *SANS* 1480

g) flush valves: *SANS* 1240, type *as described*

h) showerhead: type: *as described*

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R.9.3 Traps

a) plastic waste traps: *SANS* 1321, part 1

b) rubber waste traps: *SANS* 1321 part 2

R.9.4 Miscellaneous

a) holders, shelves, cabinets: *as described*

R.9.5 Installation of sanitary fittings generally

a) protective wrappings to be left in position for as long as possible

b) fixing shall be in a manner that will facilitate future removal

c) installation shall be *to manufacturer's instructions*

d) fixed securely; using manufacturer's brackets and fixing methods wherever possible; using frame anchors for fixing brackets –not screwed and plugged

e) water closet pans bedded in 1:3 cement-sand mortar; squat pans in grade 10 concrete

f) open sides of build-in type baths bricked up

g) acrylic baths bedded in 1:5 cement-sand mortar on masonry, or bedded solidly on dry river sand or concrete

h) shower heads at 2 100 mm above shower floor level

i) urinals at 610 mm from floor to front lip of urinal bowl

j) all joints sealed

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S. Electrical works

S.1 Earthworks

Applicable standard: SANS 2001-Construction Works Part DP1: Earthworks for buried pipelines and prefabricated culverts

S.2 Cable ducts (underground)

Applicable standard: SANS 2001-Construction Works Part DP3: Cable ducts

S.3 Materials and installation

S.3.1 Wiring

Electrical wiring: *SANS* 10142–The wiring of premises

conduits

a) conduits: *SANS* 950/61386

b) embedded in wall chases with cement mortar and clamps

c) not chased in wall faces that are to receive roof flashing

d) fixed on wall surfaces and in roof spaces with clamps

e) embedded in concrete surface beds

f) surface fixing level, plumb, and in straight lines

conductors

g) PVC isolated copper conductors: *SANS* 150

electric cables

h) PVC armoured copper cable: *SANS* 1574/1411

distribution board and meter cabinets

i) prepainted pressed steel with door and latch: *SANS* 1973, with isolator, earth leakage protection unit: *SANS* 767, and circuit breakers where required

j) cabinets on walls: built in or surface mounted, *as described*

k) all functions in distribution board labelled with legend card provided

switches and sockets

l) switches: *SANS* 60669, including dimmer, remote-control, isolating and time-delay switches *as described*

plug and socket systems

m) 3 pin 16 Amp wall switch sockets: *SANS* 164

n) boxes and enclosures with covers: *SANS* 1085/60670

o) boxes for switches: built in at 1 500 mm above floor level or *as described*

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p) boxes for sockets: built in at 300 mm above floor level except above work tops where these shall be 1 200 mm above floor level or *as described*

q) telephone or television points: boxes built in at 300 mm above floor level or as described, connected by conduit to roof space and through roof overhang to nearest telephone connection or television antenna; conduit to be provided with draw wire

S.3.2 Fittings

luminaires

a) type: *as described*

b) luminaires: *SANS* 60598, complete with lamps, ballasts, control gear and earth terminals; control gear within luminaires to be mark-bearing

c) luminaires fixed at as late a stage as possible, and protected from damage

d) all luminaires earthed

stove, hob, oven, cooker hood

e) stoves: *SANS* 153

f) commercial kitchen extraction systems: *SANS* 1850

S.4 Testing

a) local authority to be informed at completion of electrical installation for inspection

b) a copy of the electrical test certificate to be provided before handing over

S.5 Lightning protection

To *SANS* 10313/*SANS* 61024

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T. Mechanical works

T.1 Installation

a) equipment and services shall

- be installed level and plumb; securely fixed; reticulated services neatly organised
- be fixed directly to structure wherever possible, independently of suspended ceilings; trimmed around holes or penetrations through non-structural elements

b) fire and acoustic rating integrity of suspended ceilings etc. shall be maintained

c) movement in both structure and services shall be allowed for

d) cables, ducts, trays, pipes etc. shall be concealed unless installed in plant spaces, ceilings, riser cupboards, etc.

e) heavy items of equipment shall be provided with permanent fixtures for lifting as recommended by the manufacturer

T.2 Building penetrations

a) pipes that operate under pressure shall not be embedded in concrete or surfacing material

b) penetrations through fire rated elements shall be sealed according to fire regulations

c) penetrations through non-fire rated elements around conduits and sleeves, and around cables within sleeves shall be sealed; if the building element is acoustically rated, the rating shall be maintained

d) roof penetrations shall be sealed with metal upstand flashings and counter flashings –the use of fabric reinforced paint or bitumen is prohibited

e) primed metal or PVC sleeves shall have a diameter sufficient to allow 12 mm space around interior pipe (or pipe insulation) or cable

T.3 Location and access

All services and equipment shall be located and arranged so that:

a) inspection and maintenance operations can be carried out with minimum inconvenience and disruption to building occupants or damage to the building structure or finishes

b) services and equipment are readily accessible for inspection and maintenance and arranged so that inspection and maintenance can be carried out in a safe and efficient manner

T.4 Vibration suppression

Transmission of vibration from rotating equipment to building elements shall be minimised by means of:

- flexible connections,
- inertia bases,
- restricting of maximum rotation speed to 1500 r/min,
- isolation mountings or spring mountings

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U. Glazing

U.1 Materials

glass

a) float glass (basic soda lime silicate glass): *SANS* 50572

b) safety and security glass: *SANS* 1263

- symbol 1 (impact), 2 (burglar/vandal) or 3 (bullet) to be engraved permanently and visible after glazing on each sheet

c) pattern glass: where relevant, direction of pattern shall be established before cutting

d) low-emissivity glass (low-e): spectrally selective coated glass to *BS EN* 1096

e) glass louvres: 6,5 mm NS safety glass, regardless of length or width, with polished edges

f) frameless doors: 10 mm thick safety glass for internal use and 12 mm thick safety glass for external use, unless otherwise *described*

g) insulated glass (double glazing): factory-prepared sealed insulated glazing units (SIGU), consisting of two panes of clear float glass separated by a sealed spacer to entrap a dehydrated air gap, indelibly mark-bearing with the trade name of the assembler/manufacturer visible after installation

h) work on glass: *SANS* 1817

U.2 Glazing

U.2.1 Glazing in frames

Applicable standard: SANS 2001-Construction works Part CG1: Installation of glazing

U.2.2 polymer glazing

a) polymer glazing: *as described*

U.2.3 Patent glazing

gaskets and sealants

a) elastomeric structural glazing and panel gaskets: *SANS* 635

b) sealants: compatible with extrusion surface, glazing tape and glass, backed by regular test reports regarding adhesion of sealant to aluminium frame in accordance with ASTM/C 794-80 (standard test for adhesion-peel of elastomeric joint sealants)

c) adhesion of sealant to aluminium, whether anodised or organic coated:

- capable of maintaining an ultimate adhesive bond strength between aluminium and sealant of 0,828 MPa
- design stress not to exceed 0,138 MPa
- glazing contractor to test adhesion of cured sealant on representative test joints on site before proceeding with installation
- tests to be carried out periodically throughout installation period

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d) only freshly manufactured sealant shall be used

e) only compatible accessory materials shall be used as recommended by the sealant manufacturer, for example degreasing solvents, primers, back-up material with integral bond breaker, spacer and setting blocks

f) sealant cavities shall be completely filled

quality assurance

g) disciplined quality assurance during all stages of fabrication and installation shall be ensured

h) factory glazing is preferred over site glazing

U.2.4 Protection and cleaning

a) glass shall be protected against harmful splashes and weld splatter

b) glass shall be cleaned as soon as practicable after installation with mild soap and water

c) cleaning materials shall not be harmful to plastic glazing materials and glazing compounds

U.3 Mirrors

a) silvered float glass mirrors: *SANS* 1236, class A with chamfered and/or polished edges as described

b) privacy mirrors: clear glass with mirrored venetian strips for visual privacy and/or security

c) stainless steel mirrors: 0,9 mm thick bright annealed mirrored stainless steel

d) glass mirrors shall be fastened with chromium plated mirror screws to wall, allowing 3 mm air space at back for ventilation, or with vertical strips of double sided tape; mirrors larger than 1 m^2 shall be supported with additional clips, anchors or beads

e) stainless steel mirrors shall be fastened with screws and/or glue in an *acceptable* manner

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V. Paintwork

V.1 Materials

a) materials shall be *suitable* for their intended purpose and for the surface to which they are to be applied

b) all paint shall be restricted to one manufacturer where possible; complete paint systems – primer, undercoat and finishing coat – to be as recommended by the same manufacturer

c) containers to reach site unopened, bearing *SANS* -mark and specification number when relevant

d) exterior quality paint shall be used for exterior work

primers

e) alkali-resistant plaster primers: *SANS* 1416

f) primers for interior and exterior wood: *SANS* 678.

g) zinc phosphate primers for steel: *SANS* 1319.

h) pretreatment, wash or etching primers (one- or two-pack) for metals: of *suitable* type

i) primer-sealers, penetrating primers, masonry sealers, bonding liquid and universal primers for plaster, concrete, brick, block and stone: of *suitable* quality or the subject of an active Agrément Certificate

undercoats

j) universal undercoats: *SANS* 681

finishing paints

k) alkyd high gloss finishing paint: *SANS* 630

l) decorative paint for interior use: *SANS* 515

m) emulsion paint: *SANS* 1586

n) textured emulsion wall coating: *SANS* 1227

o) aluminium paint, general purpose: *SANS* 682

p) micaceous iron oxide paint, masonry paint, cement paint and lime-wash: of *suitable* quality or the subject of an active Agrément Certificate

varnishes, varnish stains, stains and sealers

q) varnish or varnish stains for interior use: *SANS* 887

r) stains: water-borne or solvent-borne as described

s) sealers: water-borne acrylic exterior quality, *suitable* for application on the material to be coated; sealers for wood to contain fungicides that inhibit the development of blue-stain fungi

bituminous and tar-based coatings

t) bituminous aluminium paint: *SANS* 802

u) other bitumen-based coatings: of *suitable* quality (preferably the subject of an active Agrément Certificate)

specialized coatings

v) two-pack epoxy primers, two-pack coal-tar epoxy coatings, one- and two-pack epoxy and polyurethane coatings, cellulose coatings, and vinyl primers, undercoats and finishes: of *suitable* quality (preferably the subject of an active Agrément Certificate)

knotting, stopping, fillers

w) knotting for the treatment of knots in wood: quick-drying resin solution or an aluminium primer

x) stopping and fillers: *suitable* to fill holes and imperfections in the material to be painted

y) fillers: oil-based, emulsion-based or supplied in powdered form

stirring

z) paint materials to be stirred before use and at intervals during use unless the manufacturer's instructions state otherwise

thinning

aa) paint to be thinned only to improve penetration or facilitate application, for example on surfaces of high or variable porosity, or for spray application; thinner type and proportion: as recommended by the manufacturer

two-pack materials

bb) manufacturer's instructions regarding mixing proportions, induction period (standing time), pot life and the possible extension of pot life shall be observed

V.2 Preparation of surfaces

a) time shall be allowed for the drying of surface moisture

b) work by others that might affect painting shall be completed

c) factory-primed components: the primer shall be in a satisfactory condition; if not, remedial action shall be taken

d) excess pipe jointing material shall be removed

e) ironmongery, light fittings and other removable fittings that can be contaminated shall be removed, marked, stored and refixed after completion

f) fittings that cannot be removed shall be masked

g) cracks between frames, skirtings, cornices etc. and walls shall be sealed with paintable acrylic sealant

h) surfaces not to be painted shall be protected

cleaning

i) all surfaces shall be cleaned of dirt, grease, soot, mould and marks

j) cleaning shall be limited to dry abrading and dusting wherever possible

- by means of stiff brush (not wire), abrasive paper, emery cloth, steel wire wool or nylon fibre pads as required

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- always sandpaper wood in direction of grain
- pencil marks and other surface discolouration shall be removed
- in the case of window frames, care shall be taken not to scratch the glass, especially with abrasive paper
- dusting: after dusting down, floors shall be sweeped or vacuumed; sweeping or dusting whilst painting is in progress is prohibited

k) superficial dirt may be removed by washing:

- with a solution of sugar soap, household detergent, cleaning powder or mild soap
- using proprietary cleaning materials strictly in accordance with the manufacturer's instructions
- rinsing surfaces with clean water before the solution dries
- allowing to dry before coating
- proprietary emulsion cleaners or degreasing solutions may be used for removing heavy deposits of oil or grease

existing coatings

l) existing coatings shall be kept only when in a sound condition and compatible with the coating to be applied

m) complete or partial removal of any coating shall be done under condition of poor adhesion, flaking, peeling, blistering, cracking, crazing and severe chalking or powdering, and when adhesion is generally sound but with a rough surface

n) complete removal shall be done if the coating to be applied is not compatible with the existing one; seek specialist information from the manufacturer in case of doubt

o) removal shall be by burning off or by the use of paint removers, washing, scraping, abrading, steam, abrasive blast cleaning or other suitable method

burning off

p) burning off shall be done using a blowtorch or hot-air gun

q) care shall be taken not to burn or crack the background

r) all flammable materials shall be removed from the work area while burning off is in progress

s) other methods shall be used on wood that is to be refinished with a clear coating system, on carved or heavily moulded woodwork, or for removal of highly flammable coatings

t) means of extinguishing fires shall be readily available when burning off

paint removers

u) type: *suitable* for the removal of the coating at hand

v) alkaline (or caustic) type paint removers shall not be used on zinc or aluminium

w) solvent type paint removers: use under conditions of proper ventilation and the removal of possible sources of ignition

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x) paint removers shall be applied liberally and in sufficient applications to enable easy removal

y) surfaces shall be cleaned *to manufacturer's instructions* when removal is complete

abrasive blast cleaning

z) abrasive blast cleaning: *SANS* 10064

aa) care shall be taken not to damage the background

bb) surrounding surfaces shall be masked

treatment of organic growth

cc) mould (mildew) and algae (green and black stains) shall be removed before painting by scraping or brushing, blast-cleaning or high-pressure water cleaning, followed by the application of a *suitable* fungicidal wash such as a solution of 1 part bleach to 4 parts water or, in the case of proprietary materials, *as directed* by the manufacturer

dd) washes shall be applied in dry weather

ee) a further application of fungicidal wash shall be applied after removal of the dead organisms to delay re-establishment of the growth

ff) allow to dry before overcoating

V.3 Colours

a) colours of undercoats to match finishing coat but with enough difference to be able to distinguish between coats

b) colour samples of finishing coats shall be prepared before any bulk paint is purchased

c) identification colour marking (e.g. pipes transporting different fluids/gases): *SANS* 10140

V.4 Preparation for painting

a) paint systems: most suited to the environment, compatible with substrate and other components of the system

b) manufacturer's instructions shall be followed and manufacturer's recommendations in respect of temperature and its relation to curing time and pot life shall be observed

c) all coats of paint and varnish shall be sandpapered and left to dry before the next coat is applied

d) no painting shall be done when conditions are unsuitable, for example dust, insufficient light, direct sunlight or inclement weather; paint shall not be applied if the ambient temperature is <10>35°C, or if the relative humidity is <10>85%

e) all surrounding surfaces shall be masked when spray-painting; spray painting in windy weather is prohibited

V.5 Knotting, stopping, filling and priming

a) knotting: to cover wood knots

b) stopping: for stopping up holes, wide cracks, open joints and similar imperfections, including the repair or removal and replacement of defective glazing putties

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c) cement plaster or a proprietary plaster repair product shall be used for stopping holes in plaster;

d) all plaster repairs, fillers etc. on walls shall be spot primed with a masonry primer once fully cured

e) fillers: for filling and levelling, for example shallow depressions, open grain, surface roughnesses, nail and screw heads, fine cracks and restoration of the original film thickness where this was locally damaged

f) stopping and fillers shall be applied by flexible putty knife on broad surfaces, and by brush on mouldings; surfaces shall be allowed to dry and shall be rubbed down to a smooth surface

g) woodwork to be built in shall be primed or sealed before building in or fixing; this applies to structural timber, all frames, all six sides of a door, and to rebates and backs of beads in glazing apertures

V.6 On-site pre-treatment and priming of non-ferrous metals and stainless steel

aluminium

a) smooth aluminium surfaces (sheets, extrusions and aluminized steel): degrease, and lightly abrade or pretreat with a twin-pack vinyl wash primer, followed by one coat zinc phosphate primer

b) rough aluminium surfaces (castings and sprayed metal coatings): lightly abrade, remove dust and dirt; sprayed metal coatings might require washing; pretreat sprayed metal coatings with a wash primer or etching primer immediately after application of the coating, followed by one coat zinc phosphate primer

zinc, zinc aluminium alloy and sprayed coatings

c) zinc sheet, zinc-coated steel (hot dip galvanised, sherardized or electroplated), and zinc aluminium alloy coated steel (hot dip): degrease, and lightly abrade or pretreat with a wash or etching primer, followed by one coat zinc phosphate primer

d) sprayed zinc and zinc aluminium alloy coatings: wash if required, and pretreat with a wash or etching primer, preferably immediately after application of the coating, followed by one coat zinc phosphate primer

e) where hot dip galvanised steel was unavoidably welded on site: clean joint and repair coating using a zinc rich paint or epoxy

copper, brass and bronze

f) copper, brass and bronze coatings: degrease, and lightly abrade or pretreat with a wash or etching primer

lead

g) lead: wet abrade and pretreat with a wash or etching primer

cadmium coatings

h) cadmium coatings: degrease and lightly abrade or pretreat with a wash or etching primer

tin coatings

i) tin coatings: degrease and lightly abrade

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chromium and nickel coatings

j) chromium and nickel coatings (if corroded): abrade and pretreat with a wash or etching primer

stainless steel

k) stainless steel: degrease and lightly abrade or pretreat with a wash or etching primer

V.7 Application of paint

a) paint shall be applied by brush, roller or spray-gun as required

brush or roller

b) wood surfaces shall be primed by brush only, well worked in

c) brushes and rollers shall be cleaned after use and hung to dry

spray gun

d) spray painting is allowed only where this is the accepted method of application

e) spray painting shall be by air spray, airless spray or electrostatic spray of appropriate type, suitable to the material and type of work

f) adjacent surfaces not to be sprayed are to be masked or otherwise protected

g) conventional primers shall not be spray-applied

h) spraying equipment shall be cleaned every time after use, or when changing the paint colour, by spraying copious amounts of thinner or solvent through the spray gun

general

i) paint coats are to be applied *to manufacturer's instructions*

j) paint coats shall be allowed to dry before applying subsequent coats

k) colours: to sample

l) tints of undercoats: distinguishable from succeeding coats.

V.8 Paint systems for on-site application

Paint system and colours: *as described*

V.8.1 Cement-based surfaces, brick and stone

(cement plaster, concrete, brick, block and stone; fibre-cement goods; cement-based boards, tiles and panels; glass-fibre reinforced cement (GRC) cladding)

alkyd paint

a) one coat alkali-resistant primer; or, for plaster only,

b) a water-thinned primer, followed by, for interior work only,

c) one universal undercoat and one coat alkyd gloss finish; or

d) two coats alkyd semi-gloss or matt finish; or, for exterior work,

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e) one universal undercoat and one or two coats alkyd gloss finish

emulsion paint

f) a water-thinned first coat of emulsion paint on surfaces of high or variable porosity; and, for interior work only,

g) two coats matt, high-opacity finish "contract" emulsion paint to *SANS* 1586 grade 4; or

h) one coat matt, high-opacity finish "contract" emulsion paint to *SANS* 1586 grade 4, spray applied; or, for exterior work,

i) two or three coats matt or semi-gloss finish general purpose emulsion paint, or

j) for fibre-cement roofs in *coastal areas*, an anti-fungicidal paint

textured emulsion paint

k) *suitable* primer; and, for interior work only,

l) one coat sand-textured paint, over-painted if required

masonry paint

m) *suitable* primer; and

n) mineral type masonry paint for interior or exterior work; or, for exterior work only,

o) two coats smooth or fine-textured solvent-borne or emulsion-based masonry paint; or

p) one or two coats heavy-textured solvent-borne masonry paint; or

q) one coat heavy-textured emulsion-based masonry paint.

cement paint

r) two coats cement paint for interior or exterior work (not on gypsum plaster)

masonry sealers

s) one or two coats according *to manufacturer's instructions*

lime wash

t) two coats lime wash, applied with a block brush.

V.8.2 Ferrous metals

a) clean iron and steel; total film thickness shall be 115 to 145 µm

alkyd paint on blast-cleaned surfaces

b) two coats solvent-borne primer; and

c) one coat solvent-borne undercoat; and

d) two coats alkyd gloss finish

alkyd paint on manually cleaned surfaces

e) two coats etching primer (one-pack or two-pack) or zinc phosphate primer; and

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f) one coat solvent-borne undercoat; and

g) two coats alkyd gloss finish

alkyd paint on factory primed surfaces

h) inspect primer for soundness and touch up where required, and

i) one coat solvent-borne undercoat; and

j) two coats alkyd gloss finish

alkyd paint on cast iron

k) remove bitumen until clean, sound substrate is achieved

l) paint one coat metal primer, and one coat high gloss alkyd paint, or

m) two coats general purpose semi-gloss emulsion paint

micaceous iron oxide paint on blast-cleaned or manually cleaned surfaces

n) two coats micaceous iron oxide paint, high-build type

aluminium paint on blast-cleaned or manually cleaned surfaces

(fencing material)

o) two coats aluminium paint

heat-resistant paint

p) heat-resistant paint system on steel: of *suitable* type, applied according *to manufacturer's instructions*

V.8.3 Wood

alkyd paint on interior wood

a) wood primer; and

b) one coat universal undercoat and one coat alkyd gloss finish; or

c) two coats alkyd gloss finish

alkyd paint on interior plywood doors

d) water-borne primer (check compatibility with water-repellant organic solvent preservatives); and

e) one coat universal undercoat and one coat alkyd gloss finish; or

f) two coats alkyd gloss finish

alkyd paint on exterior softwood and plywood

g) one coat solvent or water-borne semi-transparent primer (base coat); followed by

h) one or two coats universal undercoat; and

i) one or two coats alkyd gloss finish

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textured coatings on exterior softwood and plywood

j) one coat solvent-borne or aluminium textured primer; and

k) one or two coats emulsion or solvent-borne textured coating

alkyd paint on exterior hardwood

l) one coat aluminium primer; and

m) one or two coats universal undercoat; and

n) two coats alkyd gloss finish

paint on exterior plywood doors

o) transparent preservative primer/base coat; and

p) multi-coat paints formulated for improved performance according to manufacturer's recommendations, gloss finish

alkyd paint on wood fibre and particle board

(hardboard, mediumboard, medium density fibreboard (MDF) and softboard not factory-primed or sealed)

q) one coat primer-sealer or water-thinned primer or aluminium primer; or

r) one coat alkali-resistant primer for flame-retardant treated board; or

s) one coat aluminium wood primer for bitumen-impregnated softboard; or

t) one coat resin-based wood primer or primer-sealer or water-thinned primer or aluminium primer for particle board; and

u) one coat universal undercoat and one coat alkyd gloss finish; or

v) two coats alkyd semi-gloss finish

emulsion paint on wood fibre and particle board

(hardboard, mediumboard, medium density fibreboard (MDF) and softboard not factory-primed or sealed)

w) no primer, except for absorbent board in which case first coats shall be thinned; or

x) one coat alkali-resistant primer for flame-retardant treated board; or

y) no primer for bitumen-impregnated softboard; or

z) no primer for particle board, except for single layer board in which case a resin-based primer shall be applied; and

aa) two or three coats semi-gloss finish general purpose emulsion paint

alkyd paint on softwood or hardwood gates and fences

bb) one coat solvent-borne or aluminium primer; and

cc) one or two coats universal undercoat; and

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dd) two coats alkyd gloss finish

transparent finish systems for wood (interior)

ee) decorative wood stain, as required; and

ff) one or two coats interior alkyd, urethane or urethane/alkyd resin varnish, on worktops, or

gg) one or two coats urethane varnish, two-pack or moisture-curing, for surfaces requiring exceptional abrasion resistance, or

hh) one or two coats wood sealer suitable for interior use

transparent finish systems for wood (exterior)

ii) two or three coats exterior wood sealer

V.8.4 Plaster board

(ceilings, bulkheads, partitions)

alkyd paint

a) a primer-sealer or water-thinned primer; and

b) one coat universal undercoat; and

c) one coat alkyd semi-gloss finish; or

d) two coats alkyd semi-gloss finish

emulsion paint

e) two coats matt, high hiding, scrub resistant emulsion paint on walls

f) two coats matt utility grade emulsion paint on ceilings and bulkheads

V.8.5 Plastics

paint on unplasticized polyvinyl chloride (PVC-U)

a) two-pack wash primer followed by conventional alkyd gloss or emulsion paint finish system; or

b) a long-life coating of a specialized type, such as two-pack polyurethane or epoxy

paint on glass-reinforced polyester (GRP)

c) remove wax coating; and

d) one coat two-pack epoxy primer; and

e) one coat two-pack polyurethane

paint on plastic coatings on metals

f) paint systems on plastic coatings on metals shall be of a *suitable* type

paint on polystyrene

g) two coats matt utility grade emulsion paint

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paint on glass

(glass, glazed brick, terracotta, faïence, ceramic tiles and vitreous enamel)

h) a conventional alkyd gloss or emulsion paint finish system; or

i) a long-life coating of a specialized type, such as two-pack polyurethane or epoxy.

V.8.6 Intumescent paint

a) *suitable* intumescent paint on structural steelwork, electrical cables, PVC pipes, wood and thatch by brush, roller or spray where *described*, to achieve the required fire resistance

V.9 Signwriting and gilding

To be executed by *competent persons*

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W. Paperhanging

wallpaper

a) type, pattern, colour: *as described*

preparation

b) plaster surfaces shall be mature and dry

c) a primer coat shall be applied on very porous plaster only

d) loose or blistering paint on previously painted surfaces shall be removed

e) surfaces shall be cleaned down and filled with *suitable* filler to a smooth surface

f) wood surfaces are to be knotted, primed, stopped and sanded down

hanging

g) wallpaper: hung vertically with close-fitted and plumb vertical joints; no horizontal joints are allowed; adjacent sheets shall match in pattern

h) tightly fitting against skirtings, ceilings, door frames and windows

i) patent wallpaper adhesive shall be applied to the back of the wallpaper using a brush

j) wallpaper shall be hung while adhesive is still wet

k) lightly rolled to remove air bubbles

l) spills to be wiped with damp cloth

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X. External work

X.1 Landscaping

X.1.1 Definition of terms

a) topsoil: soil composed of 15—25% clay, 10% silt and 65—75% sand with a minimum of 2% organic material, or red soil mixed with kraal manure in the ratio of 1 m^3 kraal manure to 6 m^3 red soil; topsoil to be free from deleterious matter and weed seeds

b) compost: properly decomposed organic material, free from deleterious salts, waste products and impurities and with a pH-value between 4 and 7

c) mulch: mixture of organic material such as leaves, straw, small particles of bark, etc., free from fungus, disease, etc.

d) lime: agricultural lime of approved manufacture

e) fertilizer: mixture of material complying with the specification under Law 36 of 1947; order and store in plastic bags

X.1.2 Contouring

Applicable standard: SANS 2001 – Construction works Part BE1: Earthworks (general)

X.1.3 Cleaning of site

a) site shall be cleaned for planting by removing existing grasses, weeds, foreign material and stones larger than 50 mm diameter before commencement of soil preparation

b) site shall be cleaned for hydroseeding by clearing out existing natural grasses without damage to the latter; remove loose foreign material from bare patches

X.1.4 Preparation

soil for grass sods

a) existing topsoil: loosened throughout to a depth of 100 mm and thoroughly mixed with 2:3:2 fertiliser in the ratio of 20 kg fertiliser to 150 m^2 of topsoil

b) wetted, leveled off and compacted slightly on flat surfaces and mildly on inclined surfaces

soil for ground cover and shrub beds

c) existing topsoil: loosened throughout to a depth of 200 mm and thoroughly mixed with 2:3:2 fertiliser in the ratio of 30 kg fertiliser to 150 m^2 of topsoil and with compost in the ratio of 6 m^3 compost to 100 m^2 of topsoil

d) wetted, leveled off and compacted slightly on flat surfaces and mildly on inclined surfaces

soil for shrubs

e) holes: 450 x 450 x 450 mm deep for shrubs in bags 10 kg or larger; excavated material placed aside

f) holes shall be filled with a mix of two parts excavated soil and one part compost

g) fertiliser: 500 g 2:3:2 and 200 g bone phosphate added and mixed throughout per shrub hole

h) soil shall be compacted slightly with due allowance for decrease in volume

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soil for trees

i) holes: 900 x 900 x 900 mm deep for trees; excavated material placed aside

j) base of hole shall be finished with fall in general direction of slope of site

k) holes shall be filled with a mix of two parts excavated soil and one part compost

l) fertiliser: one kg 2:3:2 and 300 g of bone phosphate added and mixed throughout

m) soil shall be compacted slightly with due allowance for decrease in volume

soil for hydroseeding

n) all visible bare patches of existing soil shall be scarified 100 mm deep in both directions at 500 mm centres

o) clods larger than 50 mm diameter shall be broken up, raked and leveled off

X.1.5 Plant quality

a) all plant material shall be from a registered nursery

b) plants shall be typical of their species or variety with normal densely developed branches and vigorous and healthy root system

c) plants shall be free from damaged parts, parasites, fungus, disfiguring knots, insects, pests and infestation

d) grass sods: approximately 1000 mm long and 500 mm wide and of uniform thickness; sods shall be clipped short and soil base shall be free from stones and clods

e) ground covers: well bushed with high leaf density and height of 300 mm above ground level, delivered ex nursery in minimum 4 kg bag containers

f) shrubs: multi-stemmed with generous side branches and well bushed to ground; shrubs shall be >500 mm high as measured from crown of roots to outer leaf circumference, delivered ex nursery in minimum 4 kg bag containers except where specifically *described* otherwise

g) trees: >1,5 metre in height as measured from crown of roots to average top of tree (not to highest branch) and stem diameter >25 mm at ground level except where *described* otherwise

h) pruning wounds shall be limited to 25 mm in size, showing vigorous bark growth all round

i) all dead plants shall be replaced free of charge

j) plants shall be stored under nursery conditions

X.1.6 Planting

grass sods

a) grass sods shall be laid close together on wet prepared topsoil; joints and hollows shall be filled with topsoil

b) area reduction shall be allowed for

c) surface shall be rolled to keep surface tolerance to a minimum and to allow a gradual change in slope at berms and embankments

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d) planted area shall be thoroughly irrigated after laying and rolling

ground covers

e) ground covers: planted in prepared topsoil and in holes somewhat larger than the plant bulb and at least 200 mm deep so that top of bulb coincides with finished level

f) edges of ground cover beds shall be worked upwards to a height of 100 mm and compacted

g) planted area shall be thoroughly irrigated after planting

shrubs

h) shrubs shall be removed from containers and planted in backfilled holes so that top of soil originally in the containers is level with the finished ground level

i) compacted around shrubs including 500 mm diameter x 150 mm deep soil dams formed around each shrub

j) plants shall be thoroughly wetted after planting with 25 L of water per shrub

trees

k) at distances from buildings, drains and freestanding walls that take into account the type of soil, especially expansive soils, and species and mature height of tree (see tree distance guidelines in *SANS* 10400-H Annex E)

l) trees shall be removed from containers and planted in backfilled holes so that top of soil originally in containers is level with finished ground level

m) compacted around trees including 1000 mm diameter x 150 mm deep soil dams around each tree

n) plants shall be thoroughly wetted after planting with 40 L of water per tree

X.1.7 Hydroseeding

a) shall take place on prepared soil

b) watering: 10 000 L per hectare

c) fertiliser: lime at 4 t per hectare worked into the soil

d) superphosphate: 0,3 t per hectare worked into the soil

e) 2:3:2 shall be applied at 0,5 t per hectare with seed mix

f) LAN: 0,5 t per hectare worked into soil after 6 and 12 weeks

g) anti-erosion compound: 200 kg per hectare with seed mix

h) mulch: 400 kg per hectare with seed mix

i) germinating agent: as per specialist's instruction

j) seed mix: *as described*

X.1.8 Tree supports

a) every tree shall be supported with a 2,5 m long x 50 mm diameter treated eucalyptus stake driven 500 mm into soil

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b) trees shall be tied to stakes with two steel wires sleeved in 300 mm long plastic hose-pipe section

X.1.9 Precast concrete tree rings

a) rings shall be in two halves, of size as described

b) halves shall be placed firmly and horizontally in soil dams around trees

c) grass sods shall be trimmed around tree rings where applicable

X.1.10 Maintenance

a) plant material: maintained for the *described* period including at least three months of the growing season namely the September to March period:

b) all planted areas shall be kept free from weeds, soil loosened around ground covers, shrubs and trees, once every two weeks

c) shrubs and trees shall be pruned regularly according to accepted horticultural practice

d) sick or dead plants shall be replaced immediately

e) grass sod areas shall be mown weekly and cut grass removed

f) all hydroseeded veld grass areas shall be mown once every 3 months and cut grass removed

g) 2:3:2 fertiliser shall be applied at a rate of 5 kg per 100 m^2 of grass sod area once monthly

h) planted areas shall be watered once per week during September to March and once every fortnight during April to August as follows: shrubs 25 L at a time; trees 40 L at a time

X.2 Retaining structures

X.2.1 Gabions

Applicable standard: SANS 1200 Standardized specification for civil engineering construction Section DK: Gabions and pitching

materials

a) hexagonal woven steel wire mesh gabions and revet mattresses: *SANS* 1580

laying

b) bases shall be prepared

c) cages shall be assembled on site and filled with clean, hard, unweathered boulders or rock fragments with minimum size two-thirds of basket thickness or 300 mm, whichever is smallest

X.2.2 Concrete retaining blocks

blocks

a) concrete retaining blocks: *SANS* 508

geomembranes

b) thermoplastic geomembranes: *SANS* 1526

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preparation

c) position and depth of existing buried services shall be ascertained before excavating; damage to existing services shall be avoided

d) level and compacted earth foundation trench shall be prepared, of depth *as described*

e) compacted granular base material such as crushed rock or gravel shall be laid where so *described*

f) concrete strip foundations shall be laid where so *described*

g) behind wall when so *described*, provision shall be made for:

- perforated drain pipe with positive gravity flow to outlets
- aggregate blanket drain
- geofabric covering

placing

h) units shall be stacked by hand, without mortar, true to line, level and in pattern *as described*

i) *suitable* granular backfill shall be placed and compacted

j) geofabric reinforcement shall be laid when so *described*

k) walls shall be cleaned, debris and pockets cleared, ready to accept planting

X.3 Roadwork

X.3.1 Materials

a) bituminous premix road surfacing:

- prime coat of cutback bitumen to *SANS* 308
- semi-gap graded crushed stone 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

- bituminous road tar binder: *SANS* 748
- clean, dry quartzite sand

b) precast concrete segmental paving blocks: *SANS* 1058

c) burnt clay paving units: *SANS* 1575

d) precast concrete paving slabs: *SANS* 541

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e) in-situ concrete: see E Concrete, formwork and reinforcement

f) sand for bedding and jointing of flexible paving

- free of soluble salts or contaminants likely to cause efflorescence or staining
- moisture content: 5 – 8%
- grading limits:

Sieve size (mm)	% passing
9,25	100
4,75	95-100
2,36	80-100
1,18	50-85
0,60	25-60
0,30	10-30
0,15	5-15

g) jointing sand: to pass a 1,18 mm sieve, containing 10 – 50% material passing a 0,075 mm sieve

h) mortar for rigid paving:

- sand with fineness modulus in the region of 2,2 – 4,0 to minimize permeability
- mortar: *SANS* 2001-Construction works Part CM1, class I external, class II internal
- use minimum water

i) infill concrete: grade 25/10

X.3.2 Preparation

site clearance

Applicable standard: SANS 2001-Construction Works Part BS1: Site clearance

earth works

Applicable standard: SANS 2001-Construction Works Part BE1: Earthworks (general)

subgrade

a) excavation: to achieve finished levels and falls as described

b) soft spots and biodegradable material shall be removed and replaced with *suitable* filling material

c) installation of all sub-soil drainage pipes shall be complete

d) compaction: to 90% *MOD AASHTO*; taking special care to compact trenches and around manholes – stabilised with 5% cement prior to compaction if so *directed*

sub-base for flexible paving

e) sub-base material and construction: *as described*

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f) paving surface profile shall be formed on finished surface of sub-base (irregularities in surface are not to be made up with bedding sand)

concrete sub-base for rigid paving

g) sub-base concrete: grade 10 to *SANS* 2001-Construction Works Part CC2: Concrete works (minor works) to thickness and with reinforcement *as described*

weed killer

h) area to be paved shall be treated with suitable weed killer where so *described* (taking care that trees or shrubs that have to be retained are not affected)

levels, falls, pattern

i) kerbs and edge restraints shall be complete and levels and falls correct

j) pattern, edges, cutting of units etc. shall be confirmed before laying

X.3.3 Laying

flexible block/brick paving

Applicable standard: SANS 1200 MJ Standardized specification for civil engineering construction: Segmental paving long axis square to line of traffic flow

a) Pavers shall be laid true to line and level on loose and evenly spread sand bedding of compacted thickness 25 ± 10 mm

b) full units shall be laid first

c) joints: 2 – 6 mm wide

d) areas in which a full unit will not fit shall be filled with clean-cut units or, if less than 25% of a full unit, with concrete left for at least 24 h before compacting

e) surface shall be compacted as soon as practicable, not closer than 1 m from free edges or working faces, with high frequency, low amplitude mechanical flat plate vibrator capable of producing a centrifugal force of 7 – 16 kN at a frequency of approximately 75 – 100 Hz on a plate size of 0,35 – 0,5 m^2; sufficient passes to compact sand bedding to 15 – 35 mm thickness; at least two passes

f) joint filling sand: brushed into joints after first pass and excess sand removed on completion

g) concrete anchor beams: cast across steeply inclined roads where so *described* or *directed*

flexible slabs

h) bedding: clean river sand

i) joints: filled with class I cement mortar and strike off with jointer, or left open where so *described* or *directed*

rigid block/brick paving

j) base concrete shall be clean

k) pavers shall be set out with string, templates or gauge rods, or entire area dry laid

l) 1:1 cement:fine sand slurry shall be brushed over the surface

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m) clay pavers with high absorption rate shall be dipped in water before laying; otherwise not wetted

n) each paver shall be buttered, bedded solid in mortar, and joint filled in one operation

o) joints shall be tooled flush or bucket handle

p) 10 mm movement joints shall be provided at 4,5 m intervals at right angles in both directions, and against edge restraints such as buildings, manholes and columns

q) movement joints shall be filled with *suitable* sealant where so *described* or *directed*

in situ concrete paving

r) see E Concrete, formwork and reinforcement as hereinbefore

cutting

s) pavers shall be cut with a masonry disc cutter

accuracy

t) gradual allowed deviation under 3 m straight edge: 10 mm maximum

u) allowed difference in level between adjacent units: 3 mm maximum

v) allowed deviation of line of pattern: 15 mm in 3 m maximum

cleaning

w) paving shall be left clean and free from stains

X.4 Concrete culverts, kerbs and channels

X.4.1 Materials

a) precast concrete culverts: *SANS* 986, portal type

b) kerbs, edgings and channels: *SANS* 927

c) mortar: *SANS* 2001-Construction works Part CM1, class I

d) bedding material: crushed stone, sinter, slag, sand or suitable porous material with a particle size of 13 mm maximum

e) backing concrete: grade 15

f) sealant: *as described*

X.4.2 Laying

a) trenches for kerbs and channels shall be excavated to below required level and backfilled with >70 mm of bedding material, compacted to required level and slope to density of >90% *MOD AASHTO*

b) kerbs and channels shall be bedded on 50 mm thick bedding material with 10 mm joints filled in with mortar (joints shall be well wetted before jointing)

c) kerbs and channels shall be laid in 1 000 mm maximum lengths for straight, or curved kerbs with a radius of >20 m, in 500 mm maximum lengths for curved kerbs with a radius between 4 and 20 m, or 300 mm maximum for radii up to 4 m

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d) 12 mm wide movement joints shall be provided in channels at intervals not exceeding 20 m and left open, or filled with polysulphide when dry where so *described* or *directed*

e) backs of kerbs shall be supported with well-compacted backing concrete

f) filling in behind kerbs shall be with *suitable* material in layers not exceeding 150 mm, and wetted and compacted to 90% *MOD AASHTO* density

g) concrete units shall be protected against damage and discolouration

accuracy

h) maximum deviation of any edge, centre line or vertical surface from *described* position: 25 mm

i) maximum allowed deviation of any invert level: 10 mm

X.5 Fencing

X.5.1 Line wire and chain-link mesh fencing

a) zinc-coated fencing line wire (plain and barbed): *SANS* 675, of zinc coating class "light" for inland areas and "heavy" for coastal or corrosive regions

b) chain-link (diamond) mesh fencing and wire accessories: *SANS* 1373/675/10244

straining eye bolts

c) straining eye bolts: 10 mm diameter x 300 mm threaded mild steel bolt with eye, washer and nut, hot dip galvanised to *SANS* 121 / *SANS* 14713
(permanent wire pullers are prohibited)

posts, stays, standards and droppers

d) precast concrete posts: prestressed alkali aggregate reactive concrete

e) wood posts, stays and droppers: preservative treated to *SANS* 1288 hazard class H4: hardwood *SANS* 457-3, 145—174 mm diameter posts and stays, 32—50 mm droppers

f) posts shall be provided with necessary holes for hinges, straining bolts, binding wire etc.

erection

g) fence route: cleared, roughly leveled to obtain uniform gradient

h) holes: excavated 400 x 400 x 800 mm deep for posts and 300 x 300 x 600 mm deep for stays

i) posts and stays: planted in grade 15 concrete to 50 mm above ground level with chamfered top surface: at gates, ends, corners, intersections and at intermediate distances not exceeding 90 m, or at acute changes in level

j) stays: provided to all straining posts in direction of line of fence

k) standards: driven 450 mm deep into ground at 3 m centres

l) straining wire: threaded through holes in standards at bottom, top and intermediate centres not exceeding 300 mm for wire fencing, or at intermediate centres not exceeding 600 mm for wire mesh fencing; bound around posts or straining eye bolts, and strained

m) droppers: bound to straining wire with binding wire

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n) wire mesh cover: where *described*, tensioned and bound securely to straining wire at every third mesh; roll ends joined with a spiral to form a continuous fence; welded mesh tied or clipped to straining wire at 300 mm centres; roll ends trimmed by overlapping 100 mm

o) in the case of PVC-coated wire, care shall be taken not to crack or puncture the coating

p) any damaged protective coatings shall be made good

q) preservative treated timber shall not be cut where it will be below ground

r) fence shall be checked on completion; hinges greased; projecting bolt threads cut off; bolt ends burred over to prevent nut removal and coated with bitumen paint

fencing gates

s) steel gates: with tubular frames and wire or mesh filling

t) gates shall be hung on adjustable hinges

u) gates shall be supplied with steel spring or U-shaped catches, drop bolts and locking devices, as *described*

v) drop bolts to drop in *suitable* length of pipe set in concrete to 30 mm above ground level

finish

w) finish to gates and accessories: two coats bituminous aluminium paint to *SANS* 682 grade 1 inland; hot dip galvanised to *SANS* 121/14713 in the *coastal region* or corrosive atmospheres

X.5.2 Weld mesh fencing

a) material, mesh size, finish: *as described*

b) erection: according *to manufacturer's instructions*

X.5.3 Barbed tape fencing

a) barbed tape security barriers: *SANS* 1620, of material and form *as described*

b) erection: according *to manufacturer's instructions*

X.5.4 Palisade fencing

steel

a) steel palisade fences and gates: *SANS* 301-12

b) pale points: forked or spiked

c) panels: 3 m length, safety bolted to steel posts

d) pale height: as *described*

e) posts planted in grade 15 concrete bases in accordance with the manufacturer's instructions

concrete

f) posts, rails and pales: steel reinforced precast concrete grade 30

g) bolts: galvanised carriage bolts

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h) posts: planted in 600 x 600 x 600 mm concrete base at approximately 2 m centres

i) rails: bolted to posts (two per bay)

j) pales: bolted to rails (nine per bay)

k) bolts: countersunk on both sides with holes grouted solid

l) erection: according *to manufacturer's instructions*

X.5.5 Electric fencing

a) electric fencing system: stranded wire on plastic or porcelain isolators on brackets, complete with energizer, batteries etc. as required

b) wire: galvanised A grade high-tensile steel inland, or stainless steel for *coastal areas* or corrosive atmospheres

c) electric fencing safety: *SANS* 10222-3/60335-2

X.5.6 Gate automation

a) electric gate motor: with battery backup, crush protection, fine position control and remote control

b) theft-resistant cages: with padlock where *so described*

X.5.7 Private swimming pool fencing

a) private swimming pool fencing: *SANS* 1390, of height and protective coating *as described*

X.6 Precast concrete panel walling

a) precast concrete posts and panels: *SANS* 1372

b) posts: planted 500 mm deep in grade 15 concrete at approximately 1,6 m centres

c) panels: slipped in between posts, and leveled

X.7 Timber decking

X.7.1 Materials

poles

a) softwood: *SANS* 457-2

b) hardwood: *SANS* 457-3

c) preservative treated to *SANS* 1288 hazard class H3 when above ground, class H4 when in ground contact

d) top diameter: colour marked

e) required marking: metal tag with hazard class on each pole or bundle

sawn structural softwood

f) sawn softwood *SANS* 1783-2 grade 5

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sawn structural hardwood

g) sawn hardwood (Eucalyptus) *SANS* 1707-1 grade 5

structural laminated timber

h) structural laminated timber: *SANS* 1460

i) exposure class: 1 (exterior)

j) type: G (stocklam)

k) stress grade: 5

l) preservative treatment of softwood: *SANS* 1288 hazard class H3

m) fire retardant treatment: where so *described*

n) required marking: on each piece a combination of code letters: application, exposure class, type, appearance and finish, stress grade, e.g. S2GP5.

deck boarding

o) softwood: industrial planed wood: *SANS* 1783-3

p) hardwood: planed strip flooring: *SANS* 281

q) shape: rectangular (not tongue and groove) with arris rounded edges

r) in long lengths

s) preservative treatment: *SANS* 1288 hazard class H3

fixings

t) brackets, shoes, threaded rod, etc.: mild steel, hot dip galvanised to *SANS* 121 / *SANS* 14713

u) nails, bolts, nuts, washers: *SANS* 1700, hot dip galvanised to *SANS* 121 / *SANS* 14713

v) screws: countersunk head to *SANS* 1171, of material *as described*

balustrades

w) material, construction, etc.: *as described*

X.7.2 Installation

a) poles: plant in ground, or fix on brackets cast into concrete footings as described

b) poles planted in 300 mm diameter holes in ground on a bed of gravel or concrete; holes backfilled with gravel, tamped and topped up with a collar of 200 mm concrete, shaped sloping away from pole

c) structure of poles, beams, joists, cross bracing and strutting: bolted to comply with *SANS* 10082; bolt heads, washers and nuts: recessed

d) joists: spaced at centres less than 20 x deck plank thickness

e) decking boards: fixed at right angles to joists with a space of 7 mm between boards

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f) boards: fixed with screws with countersunk heads; plugged with matching wood where so described

g) holes: pre-drilled to prevent splitting

h) board header joints: supported on double joists; space shall be left for ventilation between board heads

i) end grain: protect with metal caps where so described

j) top surfaces of rails: chamfered or rounded to assist the shedding of rainwater; round all sharp edges

X.7.3 Wood finish

a) wood: sealed with one coat of *suitable* sealant or oil before installation

b) end-grain: sealed as the work proceeds after sawing to length

c) finish: three coats sealant or oil after installation

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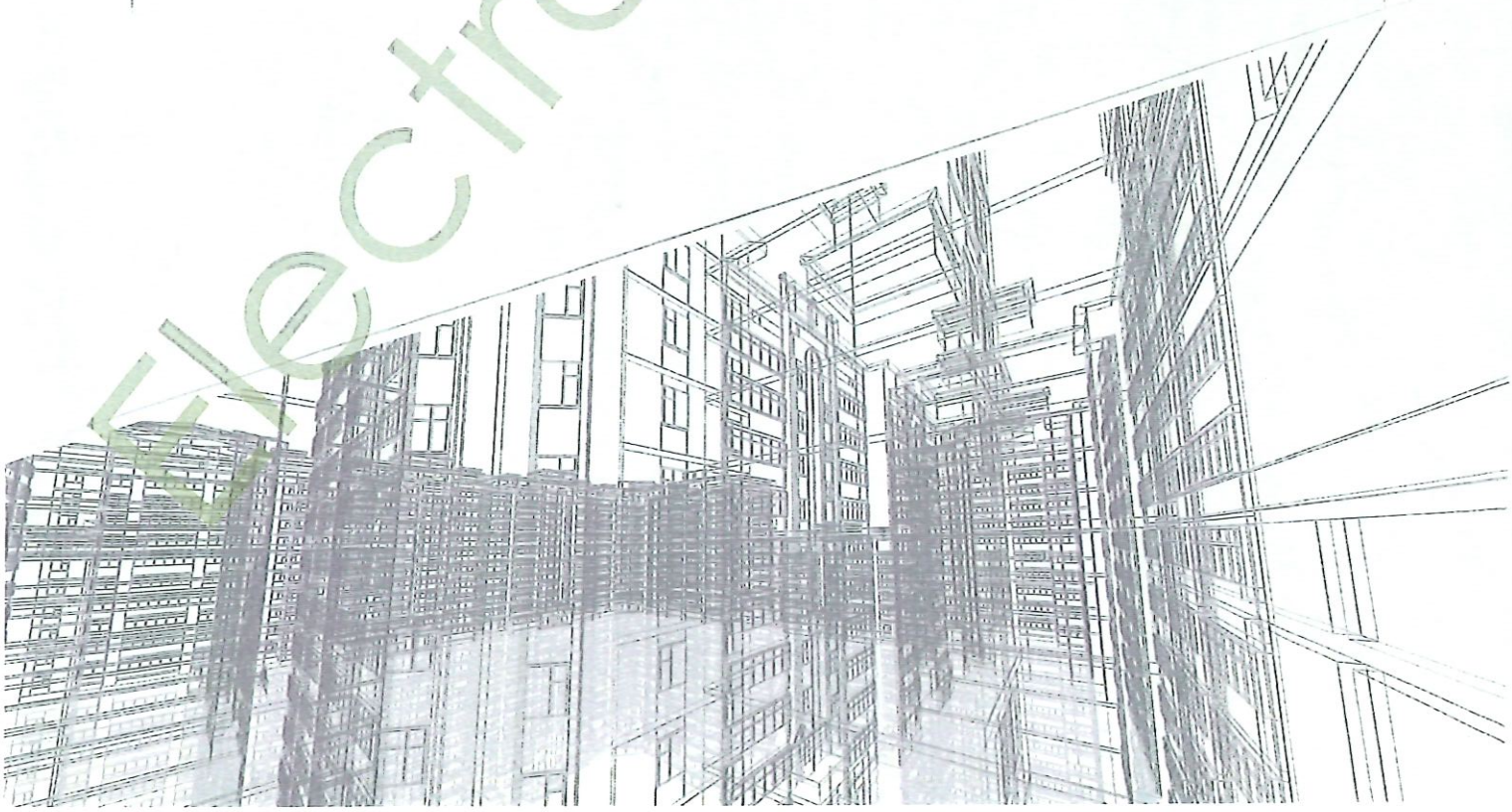
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DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

ANNEXURE 2

GENERAL ELECTRICAL SPECIFICATIONS

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

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

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.

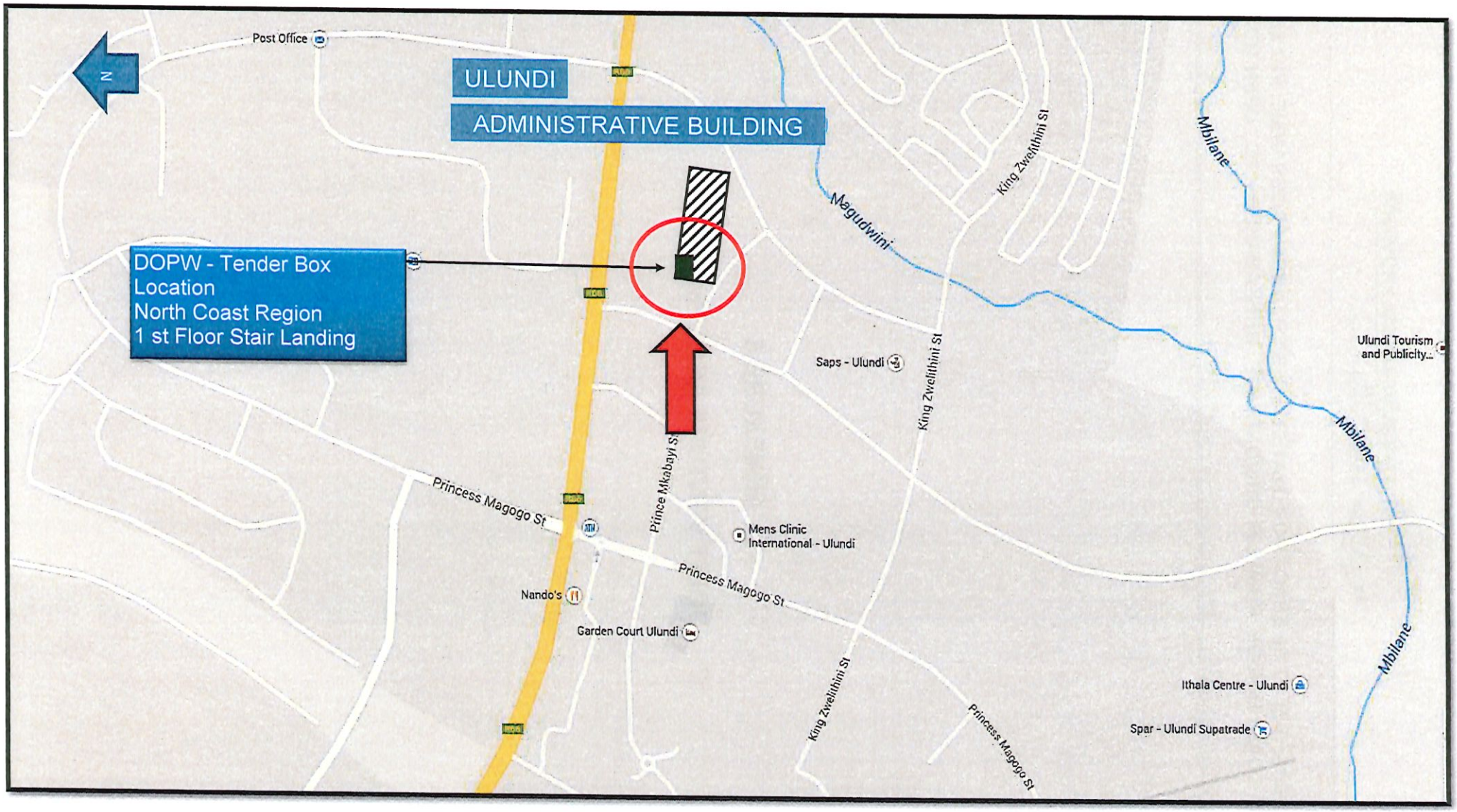
N.B. : The maximum useful length of a dead-ended trench earth is 80 metres.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

ANNEXURE 4

MAP OF BID SUBMISSION LOCATION


N
Post Office
ULUNDI
ADMINISTRATIVE BUILDING
DOPW - Tender Box
Location
North Coast Region
1 st Floor Stair Landing
Maguduwini
King Zwelithini St
Mbilane
Saps - Ulundi
Ulundi Tourism and Publicity...
Princess Magogo St
Prince Mkabayi St
Mens Clinic International - Ulundi
Nando's
Garden Court Ulundi
Ithala Centre - Ulundi
Spar - Ulundi Supatrade

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

ANNEXURE 5

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)*

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

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 Committee,

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

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

ANNEXURE 6

PROJECT SPECIFIC HEALTH AND SAFETY SPECIFICATION

public works

Department:
Public Works
PROVINCE OF KWAZULU-NATAL

Occupational Health and Safety Specification

(OHSE SPEC)

Project Name:	Bhekamakhosi Primary School
OHS Rep.:	NI Nyawo
Region:	North Coast
District:	Zululand
Ward no.:	N/A

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7. Annexures

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1. Introduction

The *KwaZulu Natal Department of Public Works* is deemed as the **"Client"** in terms of the definitions of Construction Regulations of 2014as published in *Government Gazette No. 37305*.TheConstruction Regulations of 2014under *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.

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;

"**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 following project pending any change of scope which may necessitate changes to the OHSE Specification;

BHEKAMAKHOSI PRIMARY SCHOOL; DEPARTMENT OF EDUCATION SANITATION PROGRAMME

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***

4. Contractual Issues

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.

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.

The Client or its duly appointed Construction H&S Agent 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.

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.

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.

5. Administrative Requirements

a) 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"**. A copy of the notification once stamped by a DoL Official must be submitted to the client prior to commencing with construction work.

6. Appointment of a Fulltime/ Part time Safety Officer

The Principal Contractors will have to appoint a competent Construction H&S Officer as per the following criteria;

- *Number of employees onsite between 30 but below 50 – Part Time Safety Officer shall be appointed and will be onsite at least 2 days a week*
- *Number of employees above 50 – Fulltime Safety Officer should be appointed.*
- *Should the project require a Construction Work Permit – a Fulltime Safety Officer should be appointed.*

Further to the above criteria, should the Client or its Representative having considered the risks present and lack of compliance to the Occupational Health and Safety Act, Act 85 of 1993 and its applicable Regulations the Client or its Representative may issue an instruction that a Part/ Full Time Construction Health and Safety Officer must be appointed, such a requirement will have to be met.

Annexure A

Structure of the Detailed OHSE Plan

A detailed OHSE Plan is to be submitted by the successful tenderer as per section 8 above. The following are the minimum standard legal documentation that must form part of the OHSE Plan based on the risks attached in executing this project –

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1. The notification to commence with construction work made to the Provincial Director of Labour using Annexure 2.(*Filled in only to be submitted on approval of the Safety Plan*)
2. Letter of Good Standing with Compensation Commissioner or Compensation insurer
3. 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.
4. Pre-Construction risk assessment
5. Relevant checklists and registers.
6. Site specific OHSE Organogram
7. Preliminary Induction Program
8. Demolition Plan (Where applicable)
9. Environmental Management Plan (Registered Sewage Contractor)
10. Proof of competency for the following legal appointees;

10.1. Construction Manager –(Detailed CV reflecting qualification, relevant experience and references from previous clients)

10.2. Construction Work Supervisor - Detailed CV reflecting qualification, relevant experience and references from previous clients.

10.3. Construction H&S Officer – SAMTRAC or equivalent

10.4. Risk Assessor – SAMTRAC or equivalent

10.5. Fall Protection Planner -SAMTRAC or equivalent

10.6. Demolition work Inspector – Registered Engineer or Technologist

10.7. Electrician – wireman's licence

Legal appointments to be appointed	
Prior Site Handover	**After Site Handover on commencement with Construction work**
• Construction Manager • Assistant Construction Manager/s • Construction Work Supervisor • Assistant Construction Work Supervisors • Construction H&S Officer • Risk Assessor • Fall Protection Planner	• Scaffold Erectors • Scaffold Inspectors • Excavation Inspector • Explosive actuated fastening device controller • First Aider • Emergency co-ordinator • Fire Marshalls • Fire team members • Portable Electrical tool Inspector • Hand tools inspector • Housekeeping inspector • Stacking and storage inspector • Temporary electrical installation inspector • Flammable liquids Storage Inspector • Hazardous substance storage inspector • Demolition Inspector and supervisor

Annexure B

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.
Public Safety	• When working in a occupied facility the 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 and make provisions for the implementation of all reasonably practicable measures to ensure the health and safety of the occupants of the building.
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.
Bylaws	• The Principal Contractor must incorporate any aspects of the Local Municipal 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 *See the attached baseline risk assessment to be considered by both the designer and the principal contractor.*
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
Structures	• To comply with CR (11)
Temporary work	• To comply with CR (12)

Excavations	• To comply with CR(13) and the following; • If the risk exists of a person in an excavation being enclosed in an event of a collapse the following will apply; shoring sufficient to prevent enclosure, any excavated material must be placed at least 1metre from the edge and at the maximum angle of repose to the horizontal. • No excavation may affect the stability of any adjoining structure or road unless steps have been taken as identified by an Engineer or a Technologist. • Adequate provisions must be made to ensure that water is drained from excavations where water may enter such excavations as a result of seepage or rain • All excavations made by the Principal or Sub Contractors must be barricaded by means of solid barricading and barricading tape may only be used to make such barricading more visible
Scaffolding	• To comply with CR(16) and the following; • Scaffolding Inspectors and Scaffolding Erectors must be different individuals. • Scaffold Harness must be used on Scaffolding, normal Harnesses may not be used on scaffolding • Sufficient Scaffolding material e.g., tags, trapdoors etc. need to be on site as determined by the activities on site • Scaffold bases may not be supported by materials such as bricks and chipboard. Suitable material needs to be used as per SANS 10085
Explosive actuated fastening device	• To comply with CR (21)
	•
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)**
Water environments	• To comply with **CR (26)**
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 such as asbestos 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. No Visitors may enter the site without Safety Shoes/Boots and Hardhats. 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
Vessels under Pressure (VUP)	To comply with Pressure Equipment Regulations as published in Government Notice R. 734 dated 15 July 2009.
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 In the event that Earth Moving Machinery is present on site the following must be adhered to: • Drivers of vehicles must be instructed to avoid parking behind earth moving machinery in order to ensure that their vehicles are visible to the operators of earth moving machinery. • Right of way must be afforded to earth moving machinery at all times. • Vehicles must only be permitted to park, where possible, in designated areas
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. • *Disposal certificate from a registered sewage disposal site*
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.

Annexure C

CONTRACTOR'S SAFETY, HEALTH AND ENVIRONMENTAL DECLARATION FOR TENDERS

INTRODUCTION

In terms of *Construction Regulation 5(1)(h)* 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 has 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.

Signature:..... Date:.....
(*Person duly authorised to sign on behalf of Tenderer*)

Annexure D
Baseline Risk Assessment

Main Activity	Sub Activity	Safety	Health	Environmental	Public Safety	Control Measures	Responsible Person
Site Establishment	Off-loading materials and equipment	Struck by falling objects , caught between surface, unsafe lifting position , sharp edges	Cuts, abrasions , brusing ,backstrain , death	None	None if work area access properly controlled	Supervision, safe systems of work , signage and barricading, training etc.	Contractor
	Fencing/ Hoarding the site	Struck by tools, sharp objects,tripping, Hidden services ,	cuts, abrasion, heat exhaustion	None	Tripping, cuts	Use of gloves and safe systems of work and supervision.	Contractor
	Placing equipment and site office on site	Struck by tools, tripping, carrying heavy objects, struck by moving vehicles	Back strain, cuts, abrasion, heat exhaustion, fractures, death	Contamination of natural resources due to leaking fuel and oil	Tripping hazard , Noise, struck by moving vehicles,	Training and safe systems of work and supervision.PPE	Contractor

Main Activity	Sub Activity	Safety	Health	Environmental	Public Safety	Control Measure	Responsible Person
Desludging Only by Registered Sewage Contractor	Isolation of services	Falls, caught between area, confined space	Back strain, odour	None	None	Confined space training, Wearing Required PPE	Contractor
	Desluge By (machine nozzles)	Falls, caught between areas, confined space	Back strain, odour	None	None	Training in pre-use inspection, maintenance; Training in using correct tools, inspection; Wearing required PPE *(i.e. Overalls, hard hats, safety shoes, goggles, etc.)*	Contractor
	Handling and disposal	Spillage, Odour,	Odour	None	None	Containers must be secure, Trained personnel to handle, Wearing required PPE *(i.e. Overalls, hard hats, safety shoes, goggles, etc.)*	Contractor Contractors to provide proof of safe desludging and disposal certificate from a registered sewage disposal site.

Main Activity	Sub Activity	Safety	Health	Environmental	Public Safety	Control Measure	Responsible Person
Demolition work (Per Demolition Plan)	Isolation of services	Electrocution, struck by tools, sharp edges,	Burns, respiratory failure, cuts, abrasions, death	None	None	Training, PPE, safe work procedures and supervision	Contractor
	Mechanical Demolition	Injury from flying debris, falls by machine through basements, Instability of outer walls demolished	Noise, eye damage, abrasions, dust inhalation, fatalities	Fire risk, disturbance of biodiversity	Noise, unauthorised persons (fatalities)	Machine operator and site Forman to Inspect, PPE (Ear Plugs, Goggles and gauntlets), safe systems of work	Contractor
	Manual Demolition	Injury from flying debris, sharp objects, struck by tools, inadequate scaffold usage	Noise, eye damage, abrasions, dust inhalation, Fall at heights, fatalities	Flying debris, disturbance of biodiversity	Noise, unauthorised persons (fatalities)	Appoint Scaffold inspector and erector. PPE (Ear plugs, Goggles and gloves/gauntlets and safe systems of work.	Contractor
	Rubble Removal	Tripping, struck by, bumping against,, machine colliding with vehicles &People	Back strain, heat exhaustion, bruising,, cuts, abrasions, death	spilling of diesel, petrol or oil	Noise, dust, collisions, death	Training, PPE, safe work procedures and supervision	Contractor

Main Activity	Sub Activity	Safety	Health	Environmental	Public Safety	Control Measures	Responsible Person
Excavations for underground sewer connection	Setting out for excavations	Tripping, struck by, bumping against,	Back strain, dust inhalation, cuts and abrasions	none	none	Training, PPE, Barricading, safe systems of work and supervision.	Contractor
	Digging of Excavations manually	Struck by tools , tripping, Falling into excavations, Hidden services	Back strain, heat exhaustion, bruising,, cuts, abrasions, death	Spilling of oil, diesel, petrol	Noise, dust, collisions, death	Training, PPE, Barricading, safe systems of work and supervision.	Contractor
	Digging of Excavations by machines	Machinery colliding with people and vehicles, machine coming into contact with hidden services. Heated surfaces	Fractures, death ,	Contamination of environmental resources due to leaking of fuel, diesel and oil	Dust, noise, death, severe cuts and abrasions	Flag man, traffic control, reverse hooters reflective vest, proper barricading, signage and safe systems of work and supervision.	Contractor

Main Activity	Sub Activity	Safety	Health	Environmental	Public Safety	Control Measures	Responsible Person
Brick work	Cement mixing	Striking against area, sharp edge, hazardous substance	Cuts &abrasions, inhalation of duct, contact dermatitis	Cement spillage	None	Training, PPE, safe systems of work and supervision	Contractor
	Brick work and Plastering	Rough surfaces, hazardous substances, flying particles, falling objects	Cuts, abrasions, burns, fractures, death	None	None	Training, PPE, safe systems of work and supervision	Contractor
	Scaffolding Erection	Struck by, tools, bumping against, falls	Cuts, abrasions, fractures, death	none	none	Training, PPE, safe systems of work and supervision	Contractor
Installation of Roof Trusses and Roof Covering	Installation of roof Trusses	Falls, Struck by, hands caught between,	Back strain, cuts, abrasions, Heat exhaustion, noise, fractures and death/	None	None	Training, PPE, safe systems of work and supervision	Contractor
	Fitting of battens or purlins	Falls, Struck by, hands caught between,	Back strain, cuts, abrasions, Heat exhaustion, noise, fractures and death	None	None	Training, PPE, safe systems of work and supervision	Contractor
	Fitting of roof sheets	Falls, struck by, bumping against objects, sharp edges	Back strain, cuts, abrasions, Heat exhaustion, noise, fractures and death etc.	none	Sheets being fitted falling on public	Training, PPE, safe systems of work and supervision	Contractor

Main Activity	Sub Activity	Safety	Health	Environmental	Public Safety	Control Measures	Responsible Person
Fitting Doors/windows	Fitting doors/windows into frames /openings	Struck by items, hands caught between areas, falling items, sharp edges, noise, dust	Cuts, abrasions, fractures, death	none	None	Training, PPE, safe systems of work and supervision	Contractor
	Fitting glass panes	Struck by items, hands caught between areas,, falling items, sharp edges	Cuts, abrasions, fractures, severe injuries, death	None	None	Training, PPE, safe systems of work and supervision	Contractor
Fitting Gutters and Down Pipes	Securing Hangers	Struck by falling tools and equipment, Falling from heights, cuts and abrasions' electrocution	Back strain, fractures, cuts, electrocution , death	none	None	Training, PPE, safe systems of work and supervision	**Contractor**
	Placement of gutters	Struck by falling tools and equipment, Falling from heights, cuts and abrasions, electrocution	Back strain, fractures, cuts, electrocution , death	none	None	Training, PPE, safe systems of work and supervision	**Contractor**
	Fitting down pipes and brackets	Struck by falling tools and equipment, Falling from heights, cuts and abrasions	Back strain, fractures, cuts, electrocution , death	none	None	Training, PPE, safe systems of work and supervision	**Contractor**

Main Activity	Sub Activity	Safety	Health	Environmental	Public Safety	Control Measures	Responsible Person
Plumbing	Chasing	Electricity, moving part, entanglement, struck by flying items, sparks, noise , dust	Electrocution, cuts abrasions, dust inhalation, noise induced hearing loss	None	None	Training, PPE, safe systems of work and supervision	Contractor
	Chiselling	Struck by tools, hands caught between areas, Flying particles	cuts, abrasions, dust inhalation, fractures	None	None	Training, PPE, safe systems of work and supervision	Contractor
	Excavations	Struck by tools , tripping, Falling into excavations,	Back strain, heat exhaustion, bruising,, cuts, abrasions, death	None	None	Training, PPE, Barricading, safe systems of work and supervision.	Contractor
	Compaction	Noise , dust ,Flammable substances ,struck by, vibration	Muscular strain, dust inhalation , noise induced hearing loss	None	None	Training, PPE, safe systems of work and supervision	Contractor
	Fitting of fixtures	Noise , dust, sharp edges, bumping against ,	Muscular strain, dust inhalation , noise induced hearing loss	None	None	Training, PPE, safe systems of work and supervision	Contractor
	Soldering of pipes	Hazardous substances , heated surfaces, flammable substances, Sharp edges	Inhalation of hazardous vapour ,burns, noise induced hearing loss	None	None	Training, PPE, safe systems of work and supervision	Contractor

Main Activity	Sub Activity	Safety	Health	Environmental	Public Safety	Control Measures	Responsible Person
Walkways and V-drains	Preparation and levelling	Tripping ,bumping against, Poor working positions, dust	Muscular strain ,dust inhalation , abrasions	none	None	Training, PPE, safe systems of work and supervision	Contractor
	Compaction (Sub base)	Noise , dust ,Flammable substances ,struck by, vibration	Muscular strain, dust inhalation , noise induced hearing loss	None	None	Training, PPE, safe systems of work and supervision	Contractor
	Compaction and Concrete levelling	Noise Dust, hazardous substances, , struck by, vibration	Muscular strain, dust inhalation , noise induced hearing loss, burns	Concrete spillage	None	Training, PPE, safe systems of work and supervision	Contractor
	Paving	Poor working position ,caught between surfaces, dust	Muscular strain , dust inhalation, abrasions	None	None	Training, PPE, safe systems of work and supervision	Contractor

Main Activity	Sub Activity	Safety	Health	Environmental	Public Safety	Control Measures	Responsible Person
Installation of Jojo Tanks	Preparation and levelling	Struck by tools, cuts and abrasions, heat exhaustion	Heat stroke, cuts and lacerations	None	None	Training, PPE usage and proper supervision of employees	Contractor
	Concrete mixing and pouring	Inhalation of dust, struck by tools, back injuries	Cuts and lacerations, abrasions, heat stroke, dust inhalation	Concrete spillage	None	Training, PPE usage and proper supervision of employees	Contractor
	Installation of tanks	Back injuries, struck by tools, heat exhaustion	Sprains and cuts	None	None	Back injuries, struck by tools, heat exhaustion	Contractor
	Paving	Poor working position ,caught between surfaces, dust	Muscular strain , dust inhalation, abrasions	None	None	Training, PPE, safe systems of work and supervision	Contractor

Main Activity	Sub Activity	Safety	Health	Environmental	Public Safety	Control Measures	Responsible Person
Bore-hole	Preparation and levelling	Tripping ,bumping against, Poor working positions, dust	Muscular strain ,dust inhalation , abrasions	None	None	Training, PPE, safe systems of work and supervision	Contractor
	Drilling	Noise , dust ,Flammable substances ,struck by stones, vibration	Muscular strain, dust inhalation , noise induced hearing loss	Underground water systems	None	Training, PPE, safe systems of work and supervision	Contractor
	Water pump installation	Poor working position ,caught between surfaces, dust	Muscular strain, dust inhalation , noise induced hearing loss, burns	None	None	Training, PPE, safe systems of work and supervision	Contractor
	Compaction and Concrete levelling	Noise Dust, hazardous substances, , struck by, vibration	Muscular strain , dust inhalation, abrasions	Concrete spillage	None	Training, PPE, safe systems of work and supervision	Contractor

Prepared by: N I NJAWO

Signature:

Date: 11/06/2019

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

ANNEXURE 7

HEALTH AND SAFETY BILL OF QUANTITIES

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.	-			
1.2	Re-medicals - yearly	Nr.	-			
	TOTAL					
2	**PERSONAL PROTECTIVE EQUIPMENT**					
2.1	Overalls	Nr.				
2.2	Hard Hats	Nr.				
2.3	Safety boots/shoes	Nr.				
2.4	Gloves	Nr.				
2.5	Gumboots steel toe cap	Nr.				
2.6	Safety glasses	Nr.				
2.7	Reflector Bibs	Nr.				
2.8	Barricading Material	M				
2.9	Dust masks	Box 20				
	TOTAL					
3	**FIRE FIGHTING**					
3.1	Fire extinguishers - 4.5Kg	Nr.				
3.2	Surveys - Annual Service	Nr.				
	TOTAL					
4	**HEALTH AND SAFETY PERSONNEL**					
4.1	Safety Manager	Nr.				
4.2	Safety Officer	Nr.				
4.3	Construction Phase Safety, Health, Environmental and Waste Management Plan	Nr.				
	TOTAL					
5	**FACILITIES**					
5.1	Provision of ablution facilities	Nr.				
5.2	Service and maintenance of ablution facilities	Nr.				
5.3	Provision of eating areas	Nr.				
5.4	Cleaning of Lay down and other storage areas	Nr.				
5.5	Wash hand basin	Nr.				
5.6	Hot and Cold running water	Nr.				
5.7	Degreasing & Toilet soap	Nr.				
	TOTAL					
6	**FALL PREVENTION / PROTECTION**					
6.1	Safety harnesses with double lanyards	Nr.				
6.2	Safety harnesses with Scaffold hooks	Nr.				
6.3	Lifelines and vertical fall arrest systems	Nr.				
6.4	Scaffolding – material, erection and inspection (Estimate for project)	Nr.				
6.5	Temporary hand railing material and kick flats	Nr.				
6.6	Chin Straps	Nr.				
	TOTAL					

7	**FIRST AID**					
7.1	Replenishment of boxes and other supplies	Nr				
	TOTAL					
8	**TRAINING**					
8.1	SHE Representative	Nr.				
8.2	First Aid Level 1	Nr.				
8.3	Fire Fighting	Nr.				
	TOTAL					
9	**SIGNAGE**					
9.1	All Signage as required by Law, regulatory, warning and information	Nr.				
9.2	Posters for awareness	Nr.				
	TOTAL					
10	**ELECTRICAL**					
10.1	Replacement of Locks required for lockouts	Nr.				
10.2	Replacement of tags	Nr.				
10.3	Replacement for Permit books	Nr.				
10.4	Replacement of Calipers	Nr.				
	TOTAL					
11	**OTHERS (Project Specific)**					
11.1		Nr.				
	TOTAL					
GRAND TOTAL TO BE CARRIED TO THE PRELIMINARIES AND GENERAL IN BILL OF QUANTITIES						

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ANNEXURE 8

GEOTECHNICAL INVESTIGATION REPORT - (IF APPLICABLE)

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

ANNEXURE 9

EPWP EMPLOYMENT CONTRACT AND EPWP SPECIFICATION/CHECKLIST

(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
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ANNEXURE 10

ATTENDANCE REGISTER - INFRASTRUCTURE & OTHER PROJECTS

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: DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

Project Code: 053448 Tender No ZNTU04274W

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						

EXPANDED PUBLIC WORKS PROGRAMME
Creating opportunities towards human fulfilment

Project name:

Project Employment Data Management and Reporting Requirements – to be included in the tender documents for the Department of Public Works

NB: All information, documents and files stated herein must be available for Auditor

No.	Information / Document	Comments
1	**Monthly Reports**	
1.1	Monthly reports to be submitted in the specified **Employment Data Collection Form** • This is a monthly schedule where monthly attendance, training and other aspects of participants (labourers) is summarised. The Employment Data Collection Form must provide credible data that corresponds with the Payroll Register and Proof of payment.	
1.2	**Payroll Register** • Which is a list of each participant (labourer) who was paid for each month and which would include the amount of the wage paid.	
1.3	**Proof of payment** • Which is a download from the payment system or a bank statement reflecting all participants paid and the amounts paid	
1.4	**Payment Register/Pay sheet signed by workers** • Where proof of payment is not available, a payment register must be submitted. This is a schedule where participants sign as an acknowledgement of receipt of wages for the number of days worked at a stipulated daily rate.	
1.5	**ID size photos** • Every participant must have an ID size photo taken within the first month of employment and photo to be supplied to the Department.	
2	**Records to be filed and updated monthly on site**	
2.1	Identity Document (ID) copies • Every new (at the beginning of employment) participant to provide a certified South African ID copy that is not older than 3 months	
2.2	Daily attendance register showing full name and gender (To correspond with Proof of payment and payroll register and monthly report in the Data Collection Form)	
2.3	Employment Contracts indicating date signed by both the employer and the employee and witnesses if applicable	
2.4	Payslips for all payments made to participants indicating the number of days worked	

No.	Information / Document	Comments
2.5	Document where beneficiaries completed / provided their bank account details	
2.6	Completed Beneficiary/participants list-simplified form	
2.7	Project coordinates	
2.8	Project progress report	
3	**Training**	
3.1	Training attendance registers for ALL training attended by participants Number of training days and Training should be reported as follows; 1. Number of people trained 2. Number of people that received accredited training 3. Number of people that received non-accredited training 4. Profile of the participants (Women, Disabled, Youth) 5. Percentage of participants who worked on the project after receiving training.	As and when training is provided
4	**UIF**	
4.1	Evidence to confirm that UIF for participants has been paid for the employment duration.	
5	**COIDA**	
	Evidence that the participants of the project are included in the Employers monthly provisions for COIDA. Evidence that the Employer paid the relevant contributions as required by the Compensation Commissioner.	
6	**COMMUNITY LIASON 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, to be conducted in the presence of local structures and the contractor representative, in order to assist the Contractor in the procurement of any local labour, etc. required for this project. The Contractor is to liaise with the CLO and afford him any assistance needed in ensuring sound working relations with the local community.	

No.	Information / Document	Comments
	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 and submit 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 twice 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:.....	

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PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

ANNEXURE 11

EPWP DATA COLLECTION TOOL

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: 053448 Project location name (area):_____

Name of Project: DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

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) Unknowr (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 Schoi (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: 053448

Name of Project: DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

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: DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

Project Code: 053448

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														
7														
8														
9														
10														
11														
12														
13														
14														
15														

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	

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

DPW: DEPARTMENT OF EDUCATION: WATER AND SANITATION PROGRAMME: PHASE 3A: NORTH COAST REGION: COMPLETION CONTRACT : BHEKAMAKHOSI PS - OPEN TENDER

ANNEXURE 12

STRUCTURAL ENGINEERS PROJECT SPECIFICATION BOOKLET

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MAP AFRICA
CONSULTING ENGINEERS

WIMS NO. 064539
DEPARTMENT OF EDUCATION
WATER & SANITATION
PROGRAMME

TYPICAL DETAILS AND SPECIFICATIONS BOOKLET

SEPTEMBER 2018

PRELIMINARY

Prepared For :

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SECTION 1
GENERAL SPECIFICATIONS

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REPAIRS TO EXISTING ROOF SHEETING

1. PREPARE AND CLEAN EXISTING SURFACE WHERE THE ROOF APPEARS TO BE LEAKING.
2. APPLY A GENEROUS COAT OF SIKA RAIN TITE BY BRUSH OR ROLLER.
3. EMBED THE SIKA RAIN TITE MEMBRANE INTO THE BASE COAT WHILE IT IS STILL WET.
4. REMOVE AND SMOOTH OUT AIR POCKETS AND CREASES.
5. APPLY A SECOND COAT OF SIKA RAIN TITE ONTO THE MEMBRANE.
6. WHEN TOUCH DRY, APPLY AN ADDITIONAL COAT OF SIKA RAIN TITE.
7. REPAIRED AREA OF ROOF SHEETING TO BE PAINTED WITH 2 COATS OF PAINT. COLOUR TO MATCH EXISTING ROOF SHEETING.

NOTE: REFER TO MANUFACTURERS SPECIFICATIONS ON SIKA RAIN TITE

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	GENERAL SPECIFICATIONS: REPAIRS TO EXISTING ROOF SHEETING	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 100

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A. ASBESTOS ROOF SHEETING

1. ANY PERSON WHO ERECTS, MAINTAINS, ALTERS, RENOVATES, REPAIRS OR DISMANTLES ASBESTOS ROOF SHEETING, GUTTERS, FASCIA BOARDS AND BARGE BOARDS SHALL ENSURE THAT:
   a) WRITTEN WORK PROCEDURES ARE LAID DOWN AND FOLLOWED TO PREVENT THE RELEASE OF ASBESTOS DUST INTO THE ENVIRONMENT.
   b) ALL RUN-OFF WATER MUST BE FILTERED BEFORE ENTERING THE STORMWATER SYSTEM.
   c) FULL COMPLIANCE WITH THE DEPARTMENT OF LABOUR REQUIREMENTS IN TERMS OF THE SAFE REMOVAL AND/OR THE SAFE REPAIR (PATCHING) OF THE ASBESTOS ROOF SHEETING.
   d) NOTIFICATION IN TERMS OF AN ASBESTOS PLAN MUST BE SUBMITTED TO AN APPROVED INSPECTION AUTHORITY AND THEN TO THE DEPARTMENT OF LABOUR FOR APPROVAL PRIOR TO WORKING ON ANY ASBESTOS ROOF SHEETING.

2. IF ANY HOLES ON THE SHEETING ARE LARGER THAN 75mm X 75mm OR OTHERWISE BADLY DAMAGED OR CRACKED IN MANY AREAS OF THE SHEET, THEN THE EXISTING ASBESTOS ROOF SHEET MUST BE REMOVED AND REPLACED WITH NUTEC FIBRE CEMENT ROOF SHEETING. PROFILE AND COLOUR TO MATCH THE EXISTING ROOF SHEETING. REFER TO ITEM 1 ABOVE FOR THE DEPARTMENT OF LABOUR REQUIREMENTS FOR THE SAFE HANDLING OF ASBESTOS SHEETING.

3. WHEN REMOVING AND REPLACING THE ENTIRE ASBESTOS ROOF SHEETING WITH NUTEC ROOF SHEETING, ENSURE THAT THE NEW TIMBER PURLINS ARE 76 X 50 GRADE 5 TYPE SA PINE TIMBER WITH THE 76mm DIMENSION PLACED VERTICALLY. NOTE : PURLIN SPACING SHOULD NOT EXCEED 900mm CENTRES. THE USE OF 76 X 50 GRADE 5 TYPE SA PINE TIMBER PURLINS ARE ONLY ACCEPTABLE WHEN TRUSS SPACINGS DO NOT EXCEED 1200mm CENTRES. WHERE TRUSS SPACINGS EXCEED 1200mm CENTRES, THE CONTRACTOR IS TO ENGAGE THE ENGINEER FOR FURTHER RECOMMENDATIONS.

B. STEEL ROOF SHEETING

1. SHEETING SPECIFICATION FOR A COMPLETE NEW ROOF: USE 0,53mm COLOUR BOND OR 0,55mm COLOUPLUS (A-150) IBR PROFILE SHEETING, SUPPLIED IN SINGLE LENGTHS (FROM ROOF RIDGE TO EAVES GUTTER) FIXED ONTO 76 X 50 GRADE 5 TYPE SA PINE TIMBER PURLINS WITH THE 76mm DIMENSION PLACED VERTICALLY. NOTE : PURLIN SPACING SHOULD NOT EXCEED 900mm CENTRES. THE USE OF 76 X 50 GRADE 5 TYPE SA PINE TIMBER PURLINS ARE ONLY ACCEPTABLE WHEN TRUSS SPACINGS DO NOT EXCEED 1200mm CENTRES. WHERE TRUSS SPACINGS EXCEED 1200mm CENTRES, THE CONTRACTOR IS TO ENGAGE THE ENGINEER FOR FURTHER RECOMMENDATIONS.
   COLOUR OF THE NEW SHEETING TO MATCH THE ROOF SHEETING ON EXISTING CLASSROOM BLOCKS OR OTHERWISE DIRECTED BY PROJECT MANAGER.
2. MINOR DAMAGE TO EXISTING STEEL ROOF SHEETING: REMOVE AND REPLACE DAMAGE ROOF SHEETING WITH NEW STEEL SHEETING. NEW SHEETING TO MATCH THE EXISTING SHEETING PROFILE, TYPE, OVERALL THICKNESS AND COLOUR. SHEETING TO BE SUPPLIED IN SINGLE LENGTHS (FROM ROOF RIDGE TO EAVES GUTTER).

C. CONCRETE ROOF TILES

1. ALL DAMAGED AND CRACKED CONCRETE ROOF TILES ARE TO BE REMOVED AND REPLACED WITH NEW CONCRETE TILES TO MATCH THE EXISTING ROOF TILES. COLOUR OF THE NEW CONCRETE TILES TO MATCH THE EXISTING ROOF TILES.

D. DAMAGED ROOF TRUSSES REPLACED WITH COMPLETE NEW 'GANG NAILED' ROOF STRUCTURE

1. EXISTING DAMAGED TIMBER ROOF TRUSSES TO BE REMOVE AND CARTED OF SITE.
2. THE INSTALLATION OF THE GANG-NAILED ROOF STRUCTURE BY THE MAIN CONTRACTOR IS TO BE : **A DESIGN, SUPPLY, INSTALL AND CERTIFY** CONTRACT.
3. IT IS THE RESPONSIBILITY OF THE MAIN CONTRACTOR TO SUBMIT THE REQUIRED TR1 AND TR2 CERTIFICATES TO US FOR OUR RECORDS AT THE RELEVANT STAGE OF THE PROJECT. THE TR1 AND TR2 CERTIFICATES CERTIFY THAT THE OVERALL ROOF STRUCTURE IS STRUCTURALLY STABLE.
4. IT IS THE RESPONSIBILITY OF THE MAIN CONTRACTOR TO ENSURE THAT THE APPROVED COMPETENT PERSON (REGISTERED WITH ECSA) ISSUING THE TR1 CERTIFICATE HAS INSPECTED THE SITE, COMPLIED WITH ALL THE REQUIRED SPECIFICATIONS AS NOTED ABOVE, AND HAS PROVIDED HIS OWN SPECIFICATIONS / DRAWINGS FOR THE TRUSS TIE-DOWNS, BRACING, ETC.
5. THE TR1 CERTIFICATE CONFIRMS THAT THE GANG-NAILED ROOF TRUSSES HAVE BEEN DESIGNED BY AN APPROVED COMPETENT PERSON (REGISTERED WITH ECSA) AND THE TR2 CERTIFICATE CONFIRMS THAT THE INSTALLATION OF THE GANG-NAILED ROOF TRUSSES ON SITE HAS BEEN INSPECTED, CHECKED FOR COMPLIANCE WITH THE ROOF TRUSS SHOP DRAWINGS AND APPROVED BY AN APPROVED COMPETENT PERSON (REGISTERED WITH ECSA).

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO.064539 DEPARTMENT OF EDUCATION WATER &SANITATION PROGRAMME	GENERAL SPECIFICATIONS: REPLACEMENT OF DAMAGED ROOFS AND TRUSSES	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 101

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DAMAGED CEILINGS AND CORNICES

1. REMOVE DAMAGED CEILING AND CART RUBBLE OFF SITE.
2. PREPARE SURFACE TO RECEIVE NEW CEILING.
3. CONSTRUCT NEW CEILING WITH 9.5mm THICK GYPSUM BOARD. 44mm □10mm TIMBER COVER STRIP OR PLASTIC M□STRIP□TO BE INSTALLED AT CEILING JOINTS. ALL TO BE INSTALLED ACCORDING TO MANUFACTURER□S SPECIFICATIONS.
4. CONSTRUCT CEILING CORNICES WITH NUTEC EVERITE 75mm COVED CORNICES. ALL TO BE INSTALLED ACCORDING TO MANUFACTURES SPECIFICATIONS.
5. ALL CEILING BOARDS TO BE FIXED ONTO NEW 38mm □50mm (WITH 50mm DIMENSION PLACED VERTICALLY) GRADE 5 SA PINE TIMBER BATTENS. BATTENS SPACING TO BE MAX. 400mm C/C.
6. ALL MATERIALS TO BE SABS APPROVED.

RECOMMENDED TIMBER BATTEN SI□ES FOR 9.5mm □k. GYPSUM CEILING BOARDS	
TIMBER JOIST / TRUSS SPACING	TIMBER BATTEN SI□E
□1000mm	38mm □38mm GRADE 5 SA PINE
1001mm □ 1200mm	38mm □50mm GRADE 5 SA PINE (WITH 50mm DIMENSION PLACED VERTICALLY)
1201mm □ 1400mm	50mm □76mm GRADE 5 SA PINE (WITH 76mm DIMENSION PLACED VERTICALLY)
□1401mm	CONSULT WITH APPOINTED STRUCTURAL ENGINEER.

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	GENERAL SPECIFICATIONS: REPLACE DAMAGED CEILINGS AND CORNICES	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 102

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REPLACEMENT OF SISALATION :

1. REMOVE EXISTING ROOF SHEETING AND STORE FOR RE□USE OR TO BE ASSESSED (BY THE APPOINTED STRUCTURAL ENGINEER) ON SITE IF ROOF SHEETING NEEDS TO BE REPLACED.
2. INSTALL MULTIPURPOSE ROOF SISALATION. SPECIFICATION □SISALATION MULTIPURPOSE LIGHT DUTY 439. ALL TO BE INSTALLED ACCORDING TO MANUFACTURER□S SPECIFICATION.
3. RE□INSTALL OR REPLACE ROOF SHEETING AS RE□UIRED / INSTRUCTED BY THE APPOINTED STRUCTURAL ENGINEER.
4. ALL MATERIAL TO BE SABS APPROVED.

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER &SANITATION PROGRAMME	GENERAL SPECIFICATIONS: REPLACE DAMAGED SISALATION	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 103

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NOTE: BATCHING AND MIXING MATERIAL :

- 1 BAG OF CEMENT HAS A VOLUME OF 33 LITRES.
- 1 BUILDERS WHEELBARROW HAS A VOLUME OF 65 LITRES WHICH IS EQUIVALENT TO 2 BAGS OF CEMENT.
- DO NOT SPLIT BAGS WHEN BATCHING EXCEPT FOR SMALL OR NO STRUCTURAL WORK.
- USE A CONCRETE MIXER OR HAND MIXER ON A DRY, CLEAN, NON-ABSORBENT SURFACE.
- WHEN MIXING CONCRETE BY HAND, FIRST MIX THE CEMENT, SAND AND WATER THOROUGHLY AND MIX THE STONE LAST - THIS SAVES A LOT OF EFFORT.
- MIX UNTIL COLOUR AND WORKABILITY IS UNIFORM.
- ALL CONCRETE TO BE VIBRATORED WHEN PLACING.
- CONCRETE CUBE TEST RESULTS TO BE SUBMITTED TO THE ENGINEER AS PER BELOW:
  - > 3No. CUBES TESTS FOR 7 DAY RESULTS
  - > 3No. CUBES TESTS FOR 28 DAY RESULTS

CONCRETE STRENGTH	CEMENT (50KG BAGS)	SAND (WHEELBARROWS)	STONE (WHEELBARROWS)	WATER (LITRES)
20 MPa	2	4	4	55
25 MPa	2	3	3	55

TYPICAL CONCRETE MIX DESIGN

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	CONCRETE MIX DESIGN FOR 20MPA CONCRETE AND 25MPA CONCRETE	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 104

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GUTTERS AND DOWNPIPES

1. GUTTERS AND DOWNPIPES TO A COMPLETELY NEW ROOF :

   ALL GUTTERS TO BE SEAMLESS 110mm HALF ROUND uPVC GUTTERS - ALL TO SUPPLIER'S SPECIFICATIONS.
   DOWNPIPES TO BE 75mm DIAMETER uPVC DOWNPIPES, ALL FIXED AS PER SUPPLIER'S SPECIFICATIONS.
   NOTE: GUTTER BRACKETS ARE TO BE FIXED AT A MAXIMUM OF 750mm CENTRES.

2. GUTTER SUPPORT :

   NUTEC FASCIA BOARDS ARE TO BE FIXED (AT MAXIMUM 750mm CENTRES) TO A 114X38 (GRADE 5) SA PINE TIMBER CLOSURE PIECE OF WHICH IS FITTED AT THE GUTTER END OF THE VERANDAH OVERHANG AND BETWEEN ALL ROOF TRUSSES TO SUPPORT THE NEW FASCIA BOARD AND GUTTERS.

3. COMPLETE DAMAGE TO ALL EXISTING ALUMINIUM GUTTERS AND DOWNPIPES ONLY :

   INSTALL NEW GUTTERS AND DOWNPIPES AS PER ITEM 1 ABOVE.

4. MINOR DAMAGE (IN SMALL SECTIONS) TO EXISTING GUTTERS AND DOWNPIPES (PVC, NUTEC, ALUMINIUM, ETC.) :

   REMOVE ONLY THE DAMAGED SECTIONS OF GUTTERS AND DOWNPIPES AND REPLACE WITH NEW GUTTERS AND DOWNPIPES TO MATCH EXISTING IN MATERIAL, PROFILE, TYPE AND COLOUR.

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	REPLACEMENT OF GUTTER AND RAINWATER DOWNPIPES	2016.07.06	C
		PROJECT No. 447	SKETCH No. SK 105

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REPLACING GLAZING

1. REMOVE EXISTING PUTTY.
2. RUB THE WINDOW FRAME WITH A WIRE BRUSH TO REMOVE ANY REMAINING GLAZING PUTTY OR OLD CAULK FROM THE GROOVES.
3. SAND THE WINDOW FRAME LIGHTLY WITH GRIT SANDPAPER TO REMOVE STUCK-ON CAULK, PUTTY OR WOOD SPLINTERS.
4. ALIGN THE GLAZING WITH THE GROOVE IN THE FRAME AND PUTTY INTO PLACE. USE 4mm thk. (SABS APPROVED) CLEAR GLAZING FOR ALL WINDOWS.
5. HOLD A METAL PUTTY KNIFE AT A LOW ANGLE TO THE WINDOW FRAME AND PUSH THE KNIFE ALONG THE WINDOW FRAME TO REMOVE THE EXCESS PUTTY.

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	REPLACING GLAZING	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 106

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ROOF SHEETING PAINT SPECIFICATION

1. EXISTING ASBESTOS ROOF AND EXISTING FIBRE CEMENT ROOF:
   EXISTING ASBESTOS ROOF COVERING AND FIBRE CEMENT ROOF COVERING & ASSOCIATED RAINWATER PRODUCTS TO BE HIGH PRESSURE POWER CLEANED OR IN SOME CIRCUMSTANCES SCRUBBED CLEAN. APPLY 2 COATS DULUX ROOFGUARD EXTERIOR ROOF COATING WITH SOLARFLEX PROPERTIES.
2. EXISTING GALVANISED STEEL ROOF:
   PLEASE ENSURE SURFACES ARE SOUND, CLEAN AND HAVE BEEN CORRECTLY PREPARED USING APPROPRIATE PRIMERS WHERE RELEVANT. THEN APPLY 2 COATS OF DULUX ROOFGUARD EXTERIOR ROOF COATING WITH SOLARFLEX PROPERTIES.
   APPLICATION TO BE WITH A BRUSH OR ROLLER. RE COAT AFTER 4 HOURS. TOUCH DRY AFTER 1 HOUR.
   PLEASE NOTE COVERAGE MAY VARY ACCORDING TO SURFACE POROSITY.

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	GENERAL SPECIFICATIONS: ROOF SHEETING PAINT SPECIFICATIONS	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 107

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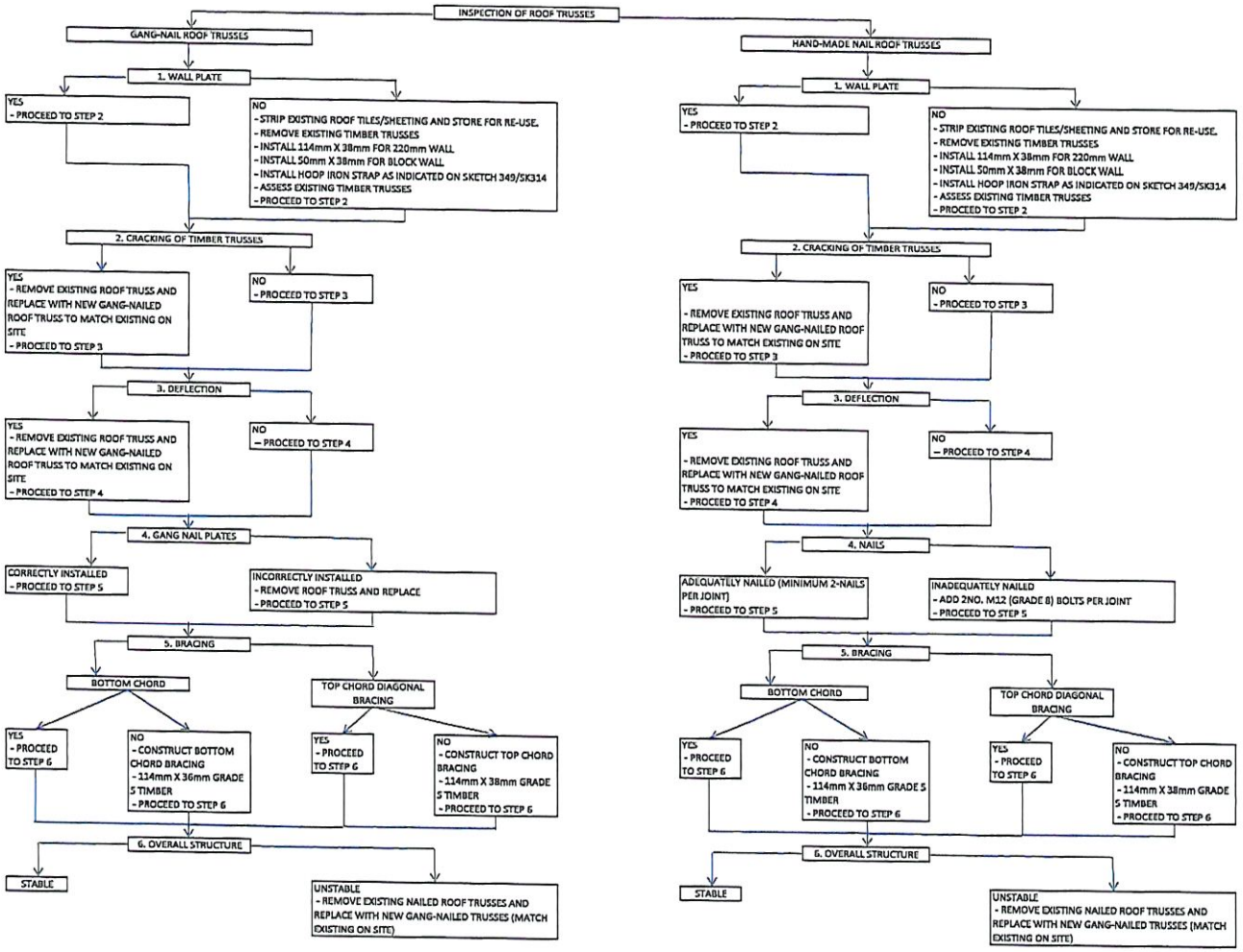
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NEW DOORS

1. DOOR FRAMES
   GALVANISED STOCK STEEL DOUBLE REBATED DOOR FRAMES (1.2mm THICK) FOR 115mm AND 230mm WALLS - NOT PAINTED WITH 1 PAIR OF 100mm GALVANISED STEEL LOOSE-PIN HINGES WELDED IN POSITION

2. DOORS
   MERANTI DOORS AS PER ARCHITECTS LAYOUT. ALL DOORS TO BE PRIMED, UNDERCOATED AND PAINTED WITH 2 COATS OF GLOSS ENAMEL PAINT.

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 053895 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	GENERAL SPECIFICATIONS: NEW DOORS	2016.07.06	A
		PROJ. No. 447	SKETCH No. Sk 108



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PROJECT:
WIMS NO. 064539
DEPARTMENT OF EDUCATION
WATER & SANITATION
PROGRAMME

DETAILS:
ROOF TRUSS INSPECTION
SPECIFICATIONS

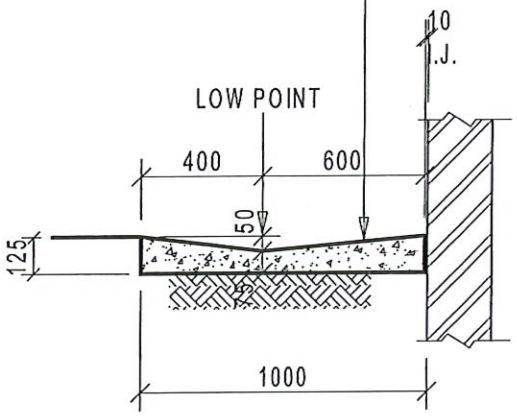
DATE	REVISION
2016.07.06	B
PROJ. No.	SKETCH No.
447	Sk 109

SECTION 2
STRUCTURAL TYPICAL DETAILS AND SPECIFICATIONS

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CONCRETE CHANNELS/APRON:
125mm thk. X 20MPa CONCRETE APRONS
REINFORCED WITH MESH REF 193 PLACED 30mm
FROM BOTTOM LAID TO A FALL TO RELIEF POINTS
CAST IN ALTERNATE PANELS OF 2000mm ON
FILL COMPACTED TO 95% MOD AASHTO.
COMPACTION TEST RESULTS TO BE SUBMITTED
TO THE ENGINEER FOR APPROVAL PRIOR TO CASTING.



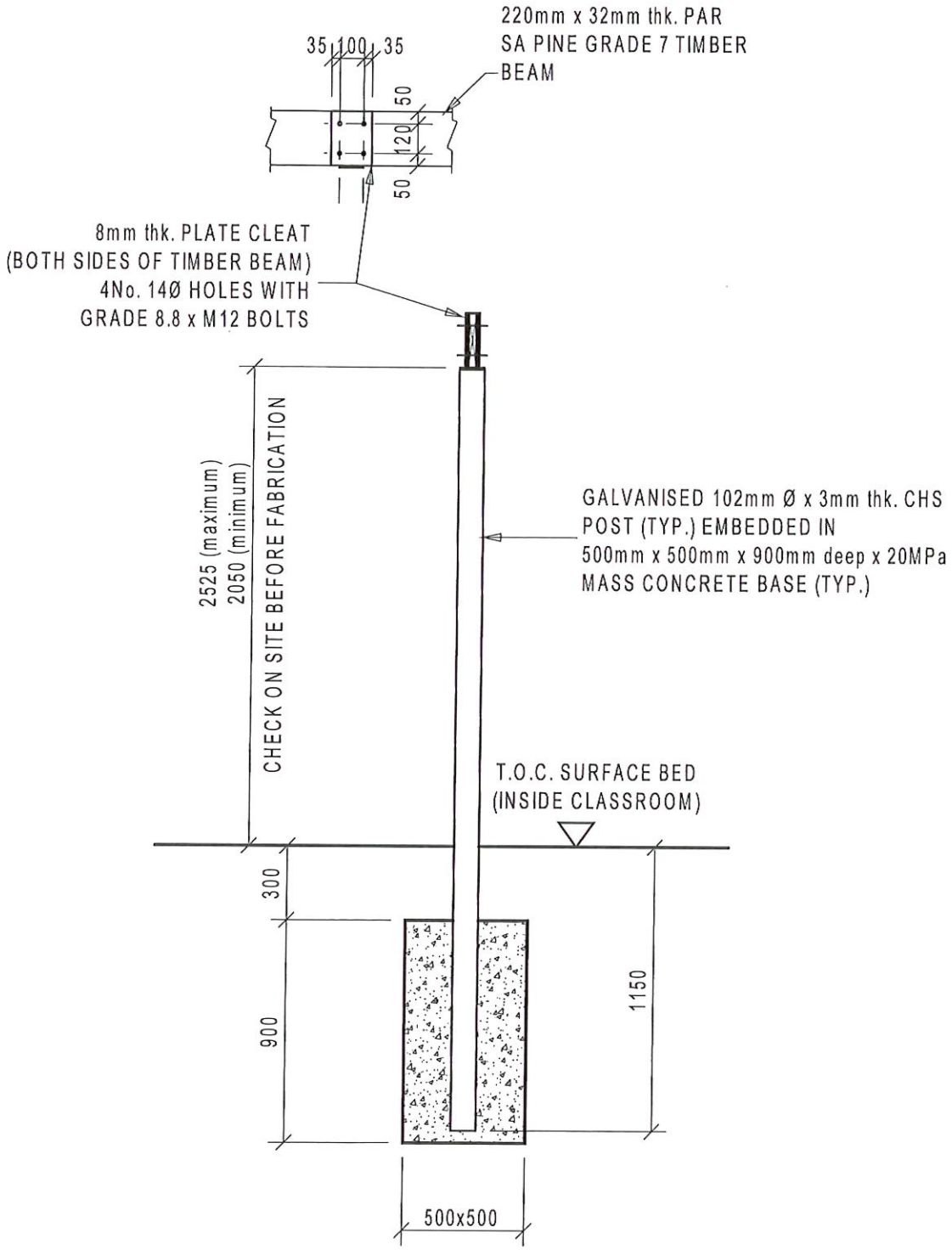
TYPICAL SECTION
THRU' 'V' DRAIN APRON / CHANNEL

NOTE :
ALL 'V' DRAIN TEMPLATES ARE TO BE INSPECTED BY THE ENGINEER PRIOR TO ANY WORK BEING PUT TO HAND.

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	EXTERNAL CONCRETE 'V' DRAIN APRON CHANNEL	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 300

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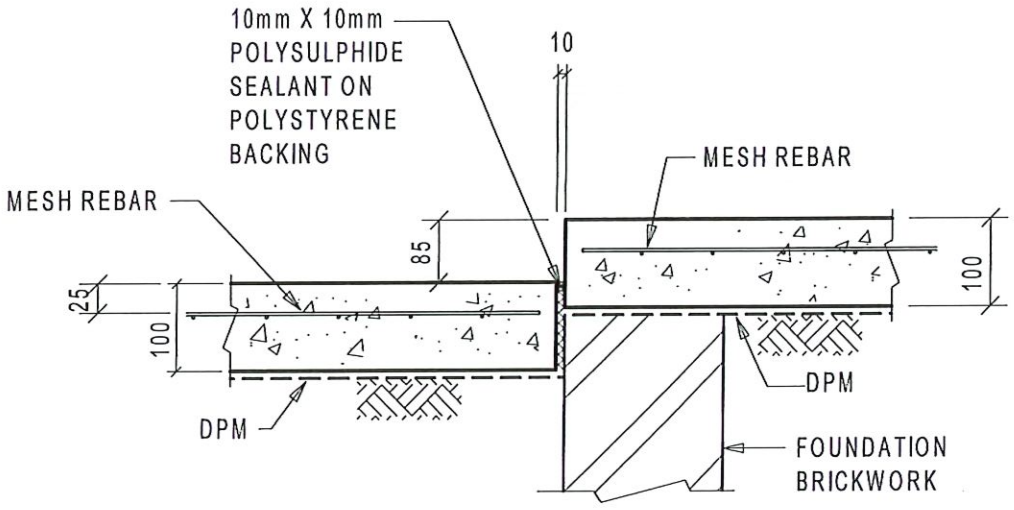


STEEL POST DETAIL

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	WALKWAY ROOF SUPPORT: STEEL POST DETAIL	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 301

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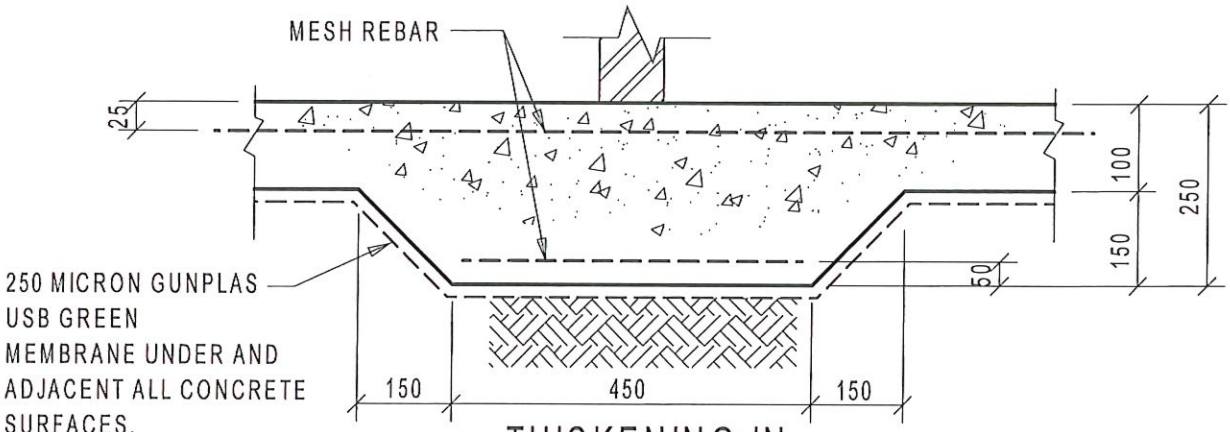


EXTERNAL DOOR THRESHOLD (E.D.T.)

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	EXTERNAL DOOR THRESHOLD DETAIL (E.D.T.)	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 302

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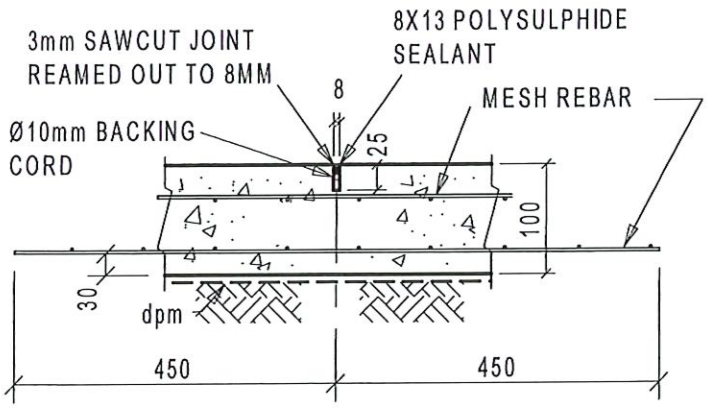


THICKENING IN
SURFACE BED (TYP)

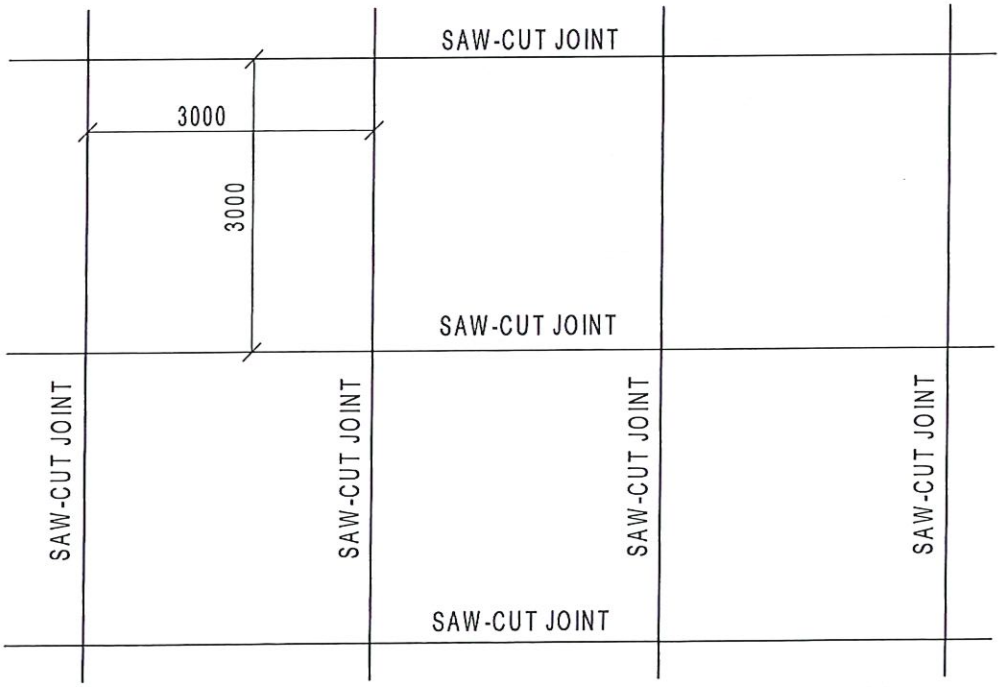
PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	THICKENING IN SURFACE BED FOR 110mm WALL	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 303

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TYPICAL SAW-CUT JOINT DETAIL

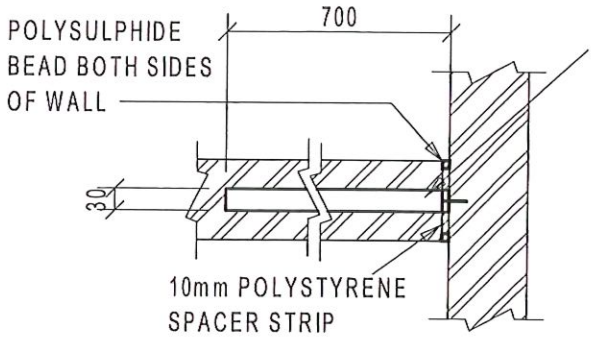


JOINTS ARE AT MAXIMUM 3m crs BOTH WAYS

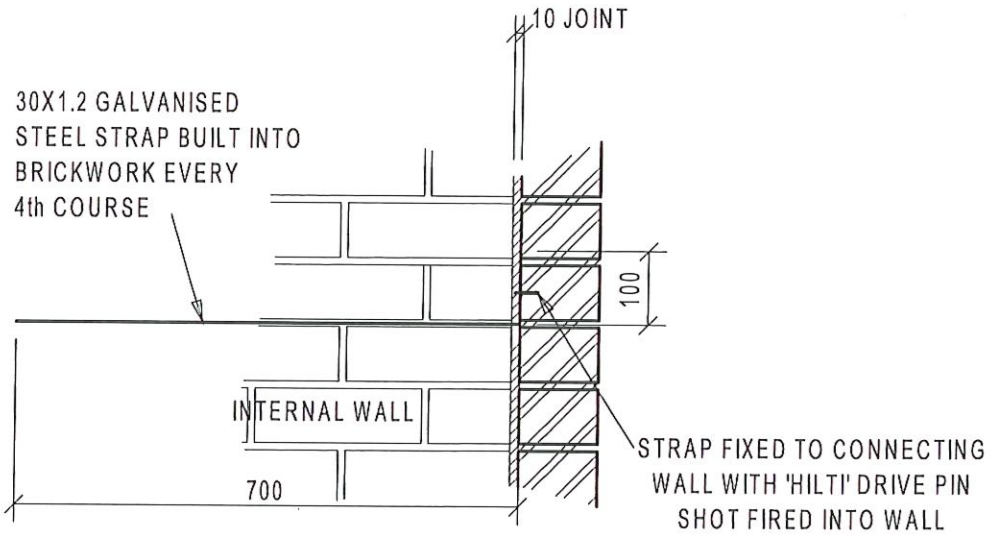
PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL SAW-CUT JOINT DETAIL	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 304

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PLAN 110 WALL

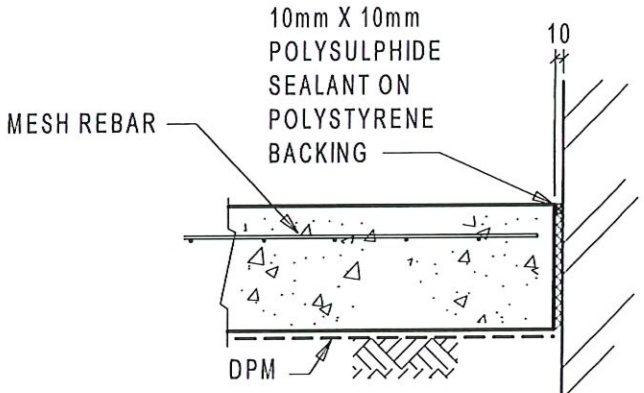


ELEVATION 110 WALL

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	INTERNAL WALL CONNECTION DETAIL	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 305

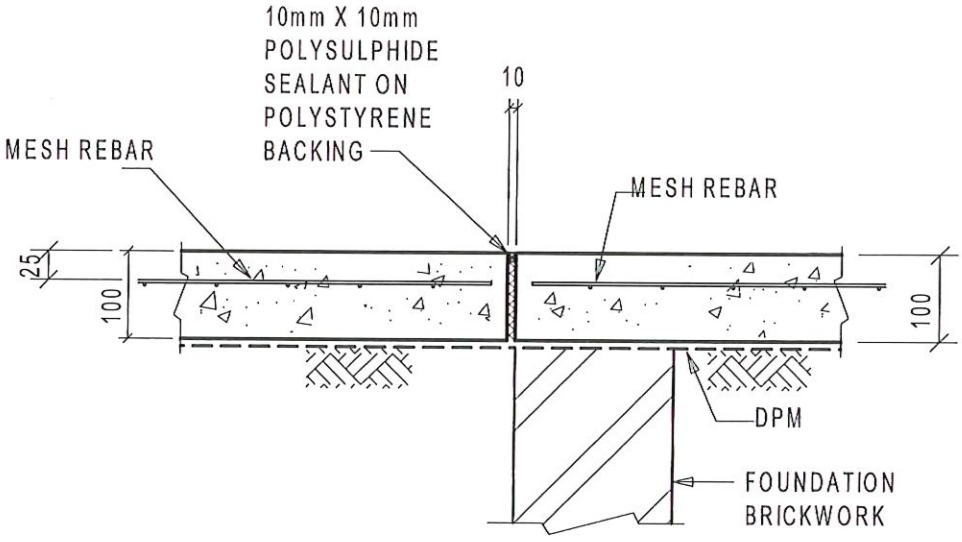
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TYPICAL ISOLATION JOINT DETAIL (I.J.)

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL ISOLATION JOINT DETAIL (I.J.)	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 306

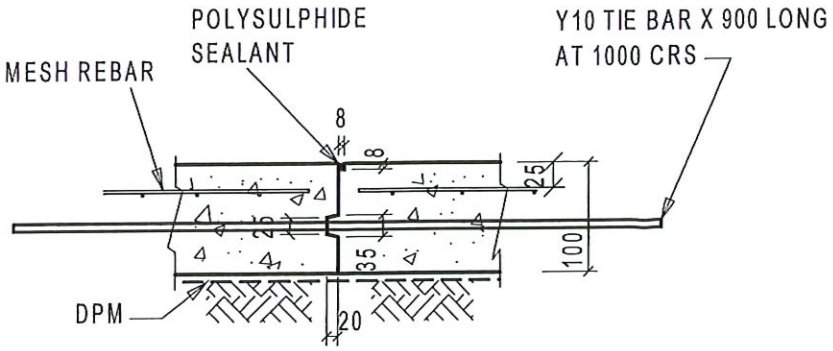


INTERNAL DOOR THRESHOLD (I.D.T.)

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	INTERNAL DOOR THRESHOLD (I.D.T.)	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 307

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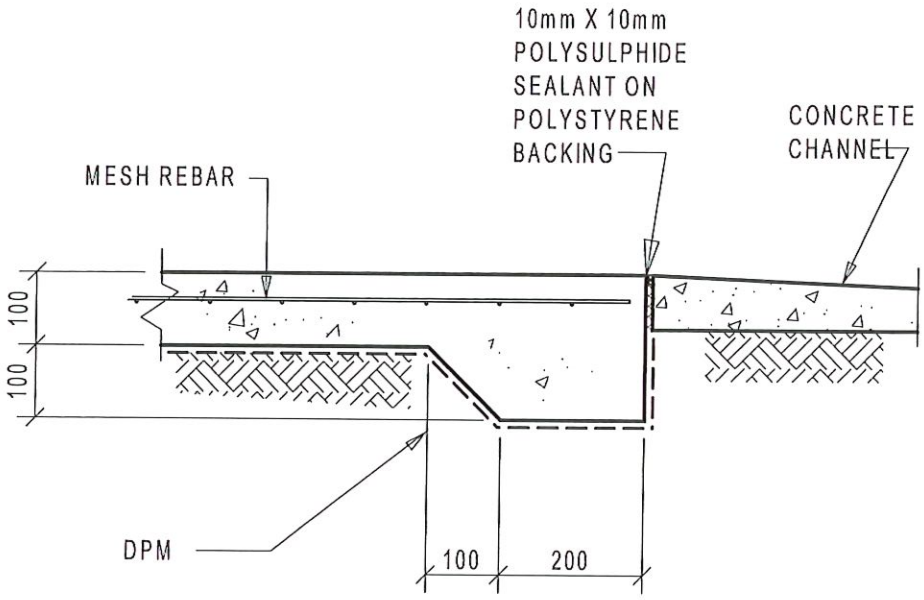


TYPICAL CONSTRUCTION JOINT DETAIL

`T). 064539 'NT OF EDUCATION 'ITATION PROGRAMME	DETAILS TYPICAL CONSTRUCTION JOINT DETAIL	DATE 2016.07.06	REVISION B
		PROJECT No. 447	SKETCH No. SK 308

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TYPICAL EDGE THICKENING DETAIL

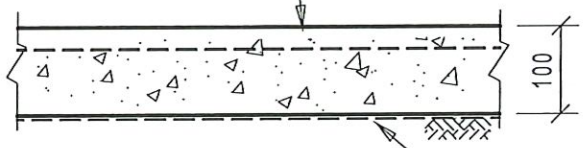
PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL EDGE THICKENING DETAIL	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 309

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100mm thk. X 25MPa STEEL FLOATED CONCRETE SLAB REINFORCED WITH MESH REF 193 PLACED 25mm FROM TOP ON 250µM 'GUNPLAS USB GREEN' DPM ON 50mm TREATED & RAMMED RIVERSAND ON WELL WATERED CLEAN EARTH FILL COMPACTED TO 90% MOD AASHTO IN LAYERS NOT EXCEEDING 150mm. SOIL TO BE POISONED IN ACCORDANCE WITH SABS 1165. CERTIFICATE MUST BE PROVIDED. COMPACTION TEST RESULTS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CASTING OF CONCRETE.



IN-SITU SUBBASE COMPACTED TO MIN. 90% MOD AASHTO. COMPACTION TEST RESULTS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CASTING OF CONCRETE.

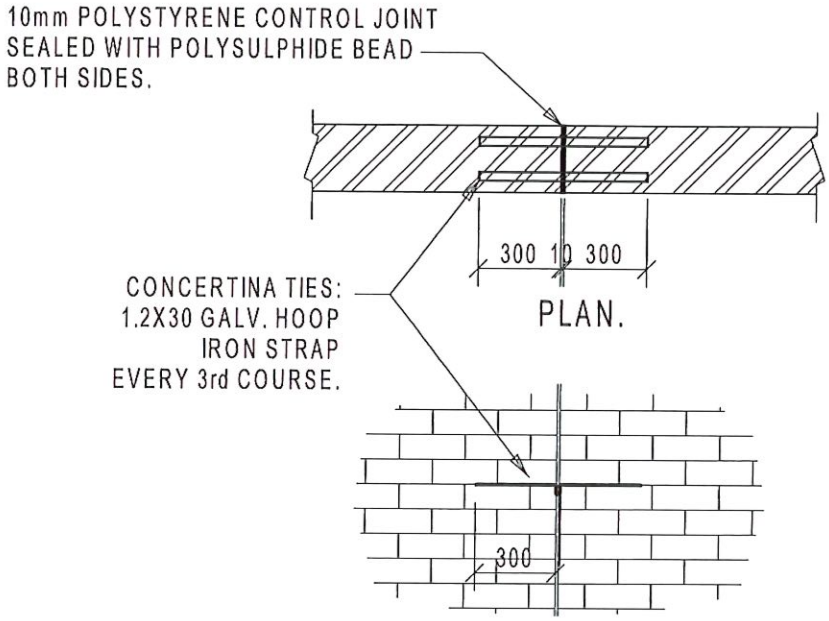
250 MICRON GUNPLAS USB GREEN HYPERLASTIC MEMBRANE UNDER AND ADJACENT ALL CONCRETE SURFACES.

TYPICAL SECTION THRU' SURFACE BED

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL SECTION THRU' SURFACE BED	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 310

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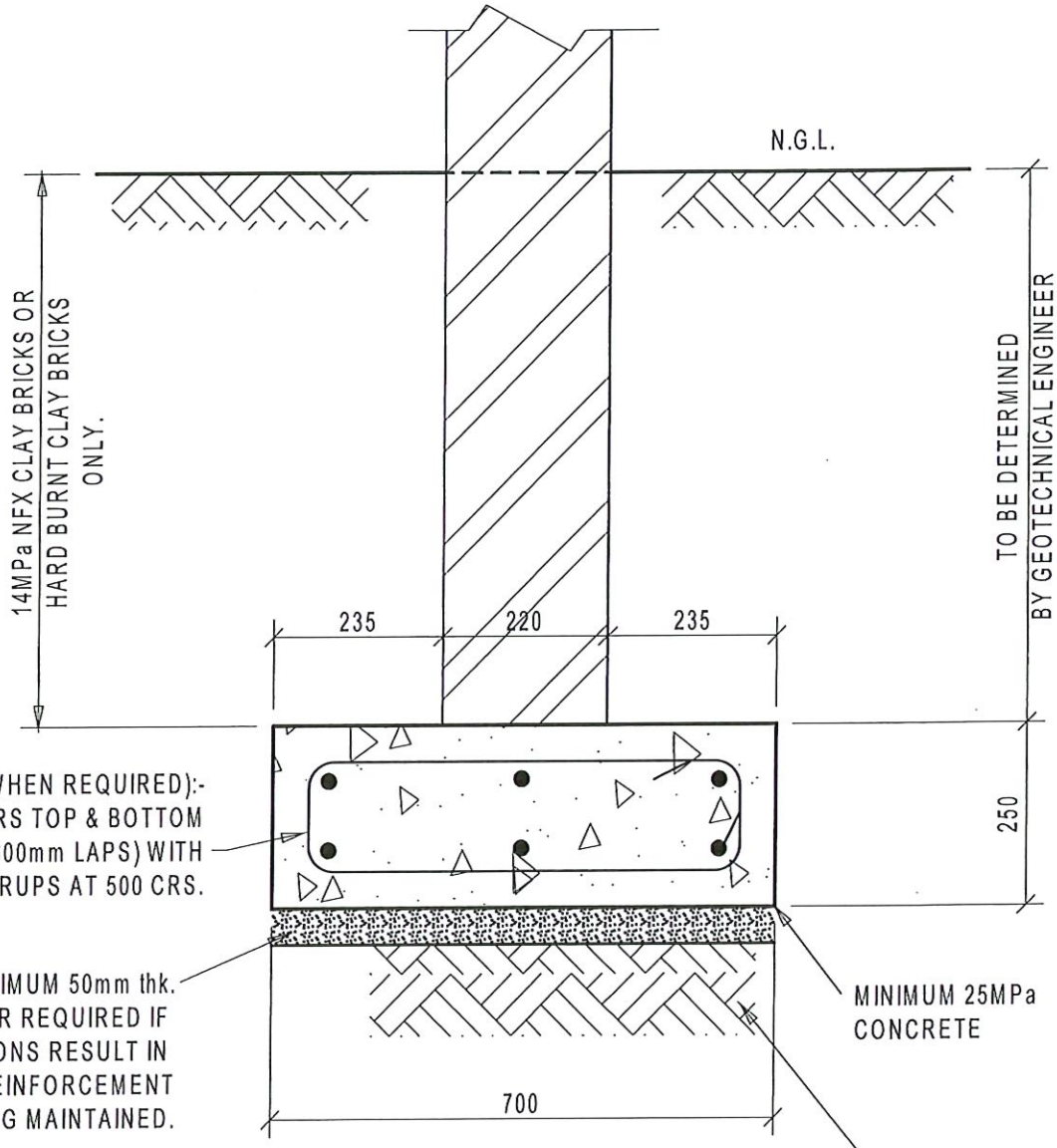
ELEVATION

TYPICAL CONTROL JOINT DETAIL FOR BRICKWORK

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL CONTROL JOINT DETAIL FOR BRICKWORK	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 311

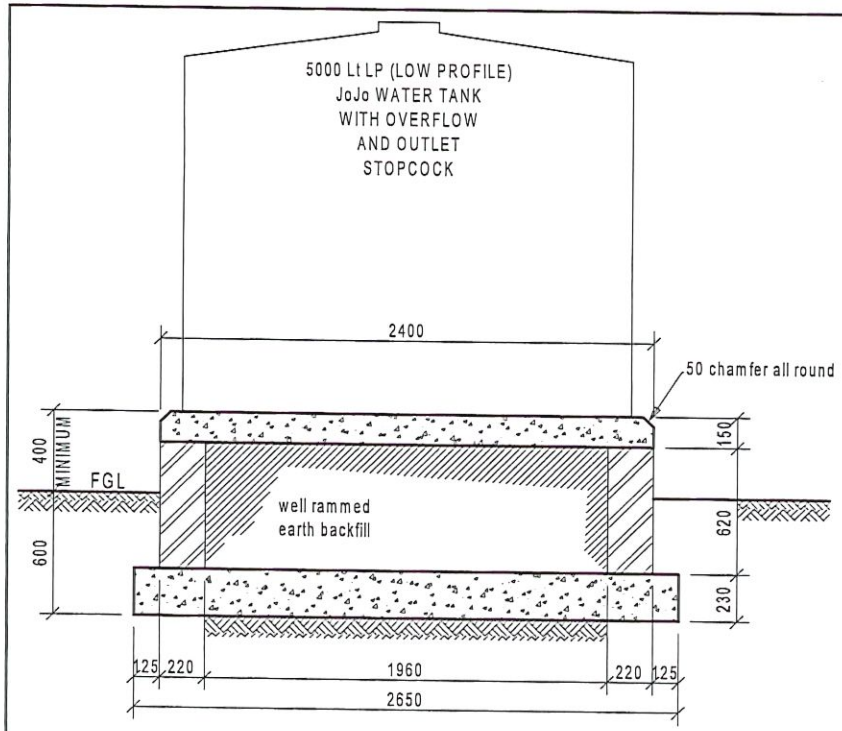
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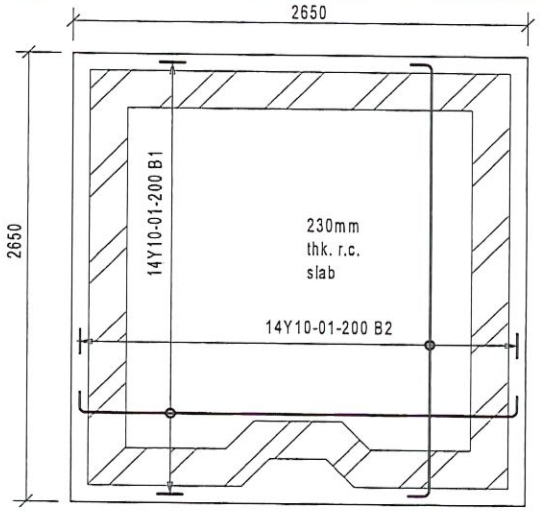


220mm WALL FOUNDATION DETAIL

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	220mm WALL FOUNDATION DETAIL	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 312

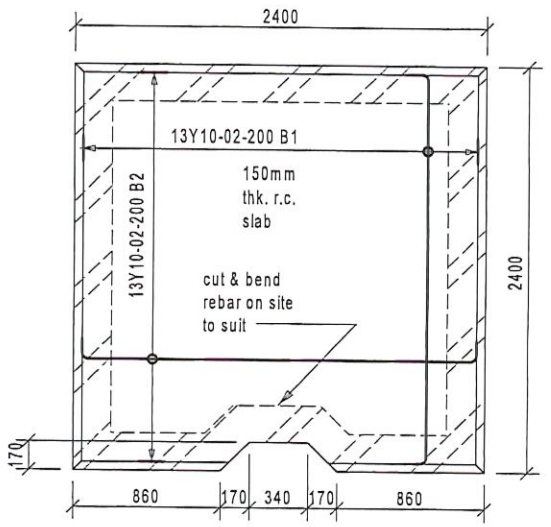


TYPICAL SECTION



PLAN ON FOOTING

50mm cover to reinforcement all round



PLAN ON TANK SUPPORT SLAB

25mm cover to reinforcement all round

NOTES:

1. SEE ARCHITECTS LAYOUT FOR LOCATION OF TANK.
2. ALL FOUNDATION EXCAVATIONS TO BE COMPACTED TO A MINIMUM OF 93% MOD AASHTO PRIOR TO CONCRETE BEING CAST. COMPACTION TEST RESULTS ARE TO BE SUBMITTED TO THE ENGINEER PRIOR TO CASTING OF CONCRETE.
3. MINIMUM 25MPa CONCRETE STRENGTH AT 28 DAYS
4. MINIMUM 14MPa NFX BRICKWORK IN CLASS II MORTAR

JoJo Tank – 'strapping' down specifications

All JoJo tanks are to be strapped down (at each of the 4 stubs on top of the tank) to the supporting concrete base with 2 no. off 4mm diameter fully galvanized stay wires (allow for 'turnbuckles' to tighten each of the 'double strap' stay wires). Each of the 'double strap' stay wires are to be tied to a M12 eye bolt of which is to be drilled and fixed to the 4 corners of the concrete supporting base. The specification for the eye bolt is as follows : galvanised mild steel - M12 eye bolt with 25mm eye inside diameter and with 80mm long shank.

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A
	1	28 26	Y10 Y10	2750 2500	28 26	01 02	35 35	2550 2300

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PROJECT
WIMS NO. 064539
DEPARTMENT OF EDUCATION
WATER & SANITATION PROGRAMME

DATE
2016.07.06

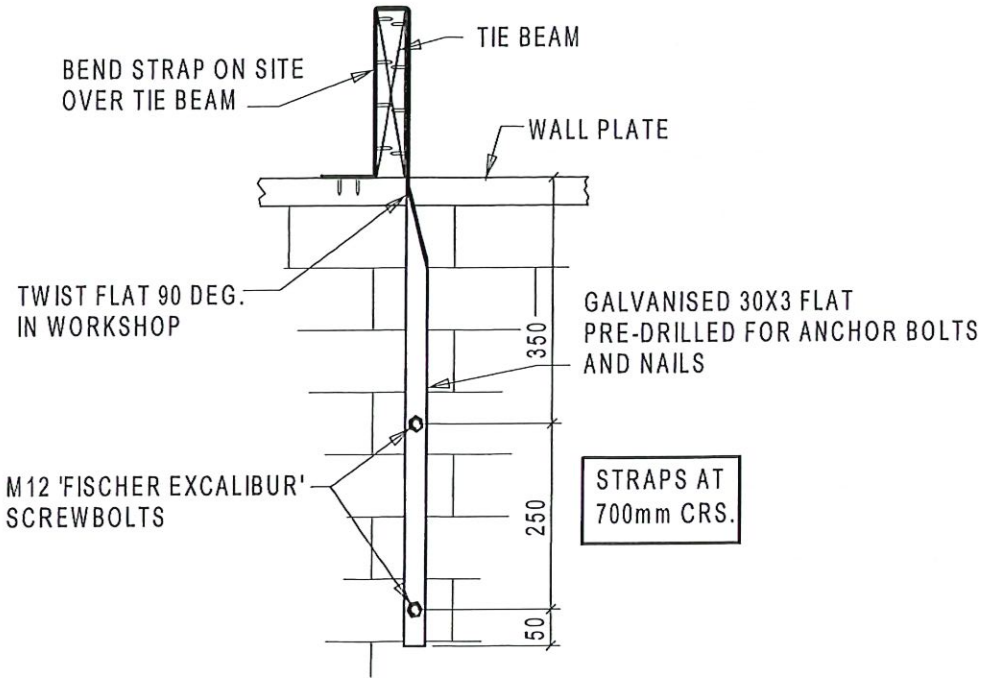
REVISION
B

DETAILS
TYPICAL WATER TANK SUPPORT
CONCRETE & REINFORCEMENT
LAYOUT & DETAILS

DRG. No.
447 / Sk 313

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SUGGESTED METHOD TO FIX NEW PRE-FABRICATED TIMBER ROOF TRUSSES TO EXISTING BRICKWORK

ALL DAMAGED ROOF TRUSSES TO BE REPLACED
WITH PRE-FABRICATED TIMBER ROOF TRUSSES
TO MATCH EXISTING.
ALL OTHER DAMAGED TIMBER BATTENS, WALL PLATES, ETC.
TO BE REMOVED AND REPLACED WITH NEW TIMBER
TO MATCH EXISTING.

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TIMBER ROOF TRUSS ANCHOR DETAIL	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 314

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GENERAL PLASTER REPAIRS & BRICKWORK/BLOCKWORK STITCHING REPAIRS SPECIFICATIONS

GENERAL PLASTER 'CRACK' REPAIRS:

1. RECOMMENDATIONS & SPECIFICATIONS:

ALL PLASTER 'CRACKING' MUST BE REPAIRED AS SPECIFIED BELOW. THE CONTRACTOR IS ALSO REQUIRED TO DETERMINE IF ANY CRACKS IN THE PLASTER HAVE BEEN TRANSFERRED TO THE BLOCKWORK/BRICKWORK. (CONTRACTOR IS REQUIRED TO CUT 100mm LONG X 20mm WIDE INSPECTION SLOT). IF A CRACK HAS TRANSFERRED TO THE BLOCKWORK/BRICKWORK, THEN IT NEEDS TO BE REPAIRED AS SET OUT IN THE SPECIFICATION FOR BLOCKWORK/BRICKWORK 'STITCHING'.

1.1 SPECIFICATION FOR GENERAL 'PLASTER' REPAIR:

BREAK OUT AND REMOVE DAMAGED PLASTER TO 50MM INTO SOUND PLASTER. CLEAN WALL AND APPLY 'SIKA PLASTERSTIK' OR SIMILAR APPROVED BONDING AGENT TO MANUFACTURER'S SPECIFICATIONS. RE-PLASTER WALL AND PAINT TO ARCHITECTS SPECIFICATIONS.

1.2 SPECIFICATION FOR PLASTER REPAIR 'CRACKING':

RAKE OUT CRACK 6MM X 6MM DEEP. CLEAN OUT ALL DEBRIS/LOOSE MATERIAL. FILL WITH ACRYLIC FILLER - 'SIKACRYL' OR SIMILAR APPROVED TO MANUFACTURERS SPECIFICATIONS. PAINT TO ARCHITECTS SPECIFICATIONS.

1.3 SPECIFICATION FOR BLOCKWORK/BRICKWORK 'STITCHING' REPAIR:

- RAKE OUT CRACK. REMOVE ALL DEBRIS/LOOSE MATERIAL.
- STITCH CRACK IN BLOCKWORK/BRICKWORK WITH R8 REINFORCING RODS.
- R8 REINFORCING RODS ARE TO BE 300mm LONG WITH 50mm BENDS AT BOTH ENDS - TOTAL LENGTH = 400mm.
- R8 REINFORCING RODS ARE TO BE EPOXY GROUTED WITH 'PROSTRUCT 617 GENERAL PURPOSE EPOXY ADHESIVE' OR SIMILAR APPROVED AT 250mm CENTRES, AND GROUTED INTO (10mm DEEP) SLOTS CUT INTO BLOCKWORK/BRICKWORK AND WITH (60mm DEEP) 10mm DIA. DRILL HOLES AT EACH END TO ACCOMMODATE THE BENDS OF THE REINFORCING RODS.
- ALL SLOTS AND DRILL HOLES TO BE COMPLETELY FILLED WITH EPOXY ADHESIVE.
- ALL SLOTS TO BE CUT PERPENDICULAR TO THE CRACK IN THE BLOCKWORK/BRICKWORK.
- EPOXY ADHESIVE APPLICATION TO BE AS PER MANUFACTURERS' SPECIFICATIONS.
- APPLY 'SIKA PLASTERSTIK' AND RE-PLASTER WALL, HOWEVER IF LARGE AREAS OF PLASTER HAS BEEN REMOVED, 450mm WIDE 'CHICKEN WIRE MESH' MUST BE 'TACKED ON' OVER THE CRACKED AREA PRIOR TO RE-PLASTERING.
- RE-PAINT PLASTER TO ARCHITECTS SPECIFICATIONS.

FOR CONSTRUCTION

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	GENERAL PLASTER REPAIRS & BRICKWORK/BLOCKWORK STITCHING REPAIRS SPECIFICATIONS	2016.07.06	B
		PROJECT No. 447	SKETCH No. Sk315

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CONCRETE SPALLING REPAIRS
FOR REPAIRS UP TO 30mm THICK :

SURFACE PREPARATION :

- REMOVE ALL LOOSE, UNSOUND CONCRETE FROM THE AREAS TO BE REPAIRED.
- CUT OUT AROUND THE AREAS TO BE REPAIRED TO A MINIMUM DEPTH OF 10mm TO AVOID FEATHER EDGING.
- HIGH PRESSURE WATER BLAST THE PREPARED AREAS TO REMOVE ANY CONTAMINANTS.
- ENSURE THAT THE SUBSTRATE ONTO WHICH THE REPAIR MORTAR IS TO BE APPLIED IS SOUND AND FREE FROM LOOSE MATERIAL.
- IF REINFORCING IS EXPOSED & SHOWS SIGNS OF CORROSION, THE REINFORCING SHALL BE OPENED UP BY BREAKING OUT THE CONCRETE TO A DEPTH OF 20mm BELOW THE REINFORCING AND 50mm BEYOND THE CORRODED LENGTH OF THE REINFORCING.
- ANY EXPOSED STEEL MUST BE MECHANICALLY CLEANED AND COATED WITH 1 COAT OF PRO-STRUCT 688 : ZINC RICH PRIMER @ 4m²/LT.
- REMOVAL OF BADLY CORRODED REINFORCEMENT AND ITS REPLACEMENT-ALL TO ENGINEERS INSTRUCTIONS ON SITE.

PRIMING :

- PRE-DAMPEN PREPARED SURFACE WITH WATER.
- DO NOT ALLOW TO DRY OUT PRIOR TO THE APPLICATION OF THE PRO-STRUCT 528 : STRUCTURAL CONCRETE .

REPAIR MORTAR :

- APPLY PRO-STRUCT 528 : STRUCTURAL CONCRETE INTO THE PRE-SATURATED SURFACE.
- COVERAGE WILL BE APPROXIMATELY 1.4m² @ 10mm THICK PER 25KG BAG OF PRO-STRUCT 528.
- ENSURE COMPLETE SUBSTRATE CONTACT AND MAXIMUM COMPACTION.
- CURE THE REPAIRS BY KEEPING THEM DAMP FOR 24 HOURS AFTER THE INITIAL SET HAS TAKEN PLACE.

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	CONCRETE SPALLING REPAIRS - FOR REPAIRS UP TO 30mm THICK	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 316

CONCRETE SPALLING REPAIRS
FOR REPAIRS OVER 30mm THICK :

SURFACE PREPARATION :

- " REMOVE ALL LOOSE, UNSOUND CONCRETE FROM THE AREAS TO BE REPAIRED.
- " CUT OUT AROUND THE AREAS TO BE REPAIRED TO A MINIMUM DEPTH OF 10mm TO AVOID FEATHER EDGING.
- " HIGH PRESSURE WATER BLAST THE PREPARED AREAS TO REMOVE ANY CONTAMINANTS.
- " ENSURE THAT THE SUBSTRATE ONTO WHICH THE REPAIR MORTAR IS TO BE APPLIED IS SOUND AND FREE FROM LOOSE MATERIAL.
- " IF REINFORCING IS EXPOSED & SHOWS SIGNS OF CORROSION, THE REINFORCING SHALL BE OPENED UP BY BREAKING OUT THE CONCRETE TO A DEPTH OF 20mm BELOW THE REINFORCING AND 50mm BEYOND THE CORRODED LENGTH OF THE REINFORCING.
- " ANY EXPOSED STEEL MUST BE MECHANICALLY CLEANED AND COATED WITH 1 COAT OF PRO-STRUCT 688 : ZINC RICH PRIMER @ 4m²/LT.
- " REMOVAL OF BADLY CORRODED REINFORCEMENT AND ITS REPLACEMENT- ALL TO ENGINEERS INSTRUCTIONS ON SITE.

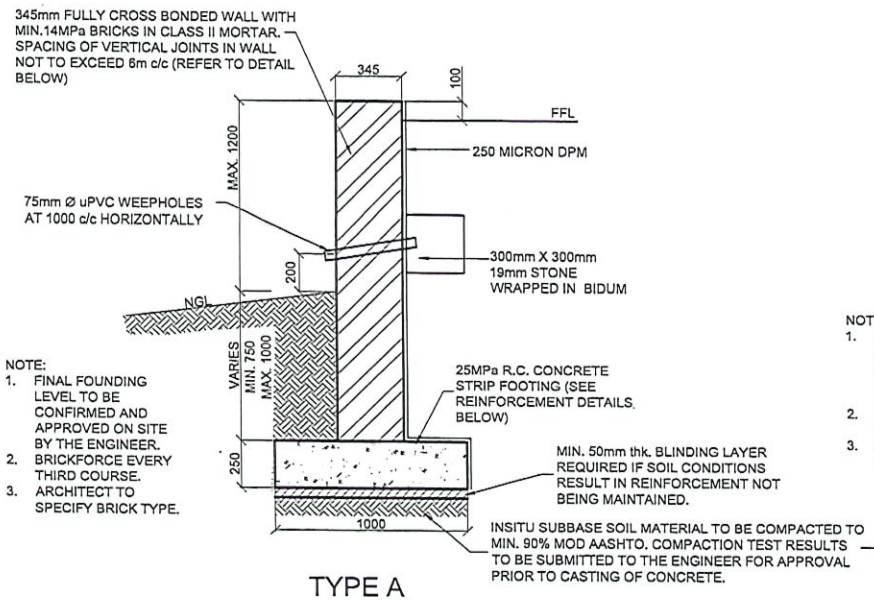
PRIMING :

- " PRE-DAMPEN PREPARED SURFACE WITH WATER AS DESCRIBED BELOW.

REPAIR MATERIAL:

- " SHUTTER UP SIDES AND/OR SOFFIT OF AREA TO BE REPAIRED.
- " THOROUGHLY WET THE SURFACE OF THE CONCRETE WITHIN THE REPAIR AREA WITH WATER.
- " DRAIN EXCESS WATER.
- " MIX PRO-STRUCT 531m AS PER DETAILED INSTRUCTIONS AND POUR REPAIR GROUT INTO THE SHUTTERED AREA FROM ONE SIDE, ENSURING THAT THE GROUT FILLS THE ENTIRE SHUTTERED AREA WITH NO AIR POCKETS.
- " COVERAGE WILL BE APPROXIMATELY 1,4m² @ 10mm THICK PER 25KG BAG OF PRO-STRUCT 531m.
- " LEAVE SHUTTER IN POSITION FOR AT LEAST 24HRS AND THEN STRIP AND CLEAN DOWN THE NEWLY REPAIRED SURFACE.
- " REPAIRED AREAS MUST BE WET CURED FOR A MINIMUM OF 3 DAYS ONCE SHUTTERS HAVE BEEN STRIPPED.

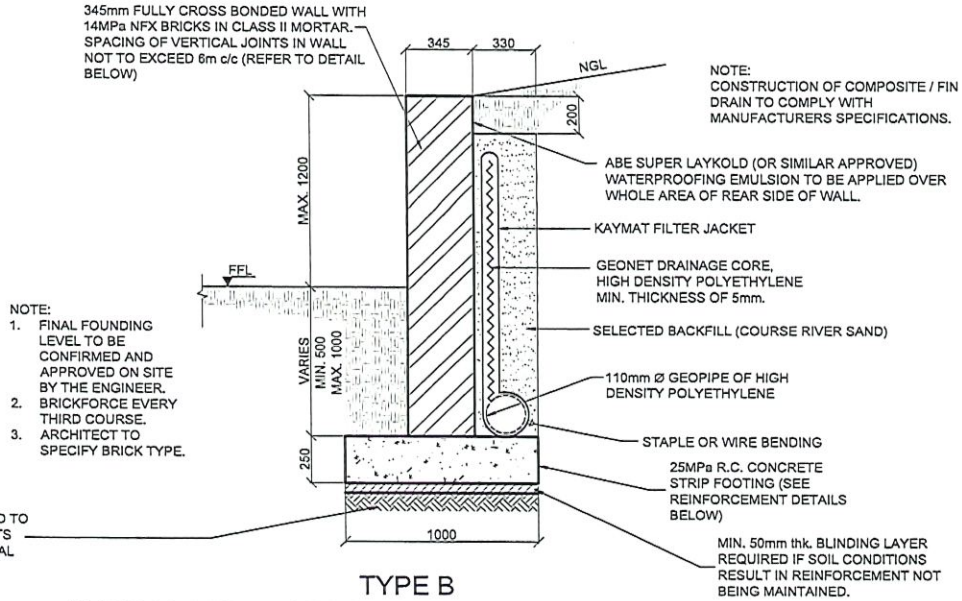
PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	CONCRETE SPALLING REPAIRS - FOR REPAIRS OVER 30mm THICK	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 317



TYPE A

TYPICAL 345mm CROSS BONDED BRICK RETAINING WALL WITH WEEP HOLES

N.T.S

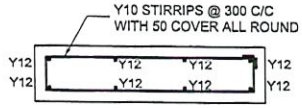


TYPE B

TYPICAL 345mm CROSS BONDED BRICK RETAINING WALL WITH COMPOSITE/FIN DRAIN DETAILS

N.T.S

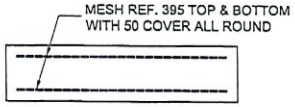
OPTION 1 OR OPTION 2 TO BE CONFIRMED BY ENGINEER ON SITE



OPTION 1

WALL FOUNDATION REINFORCEMENT DETAILS

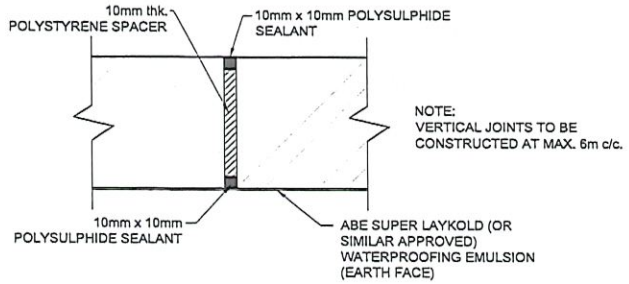
N.T.S



OPTION 2

WALL FOUNDATION REINFORCEMENT DETAILS

N.T.S



TYPICAL VERTICAL ISOLATION JOINT DETAIL

N.T.S

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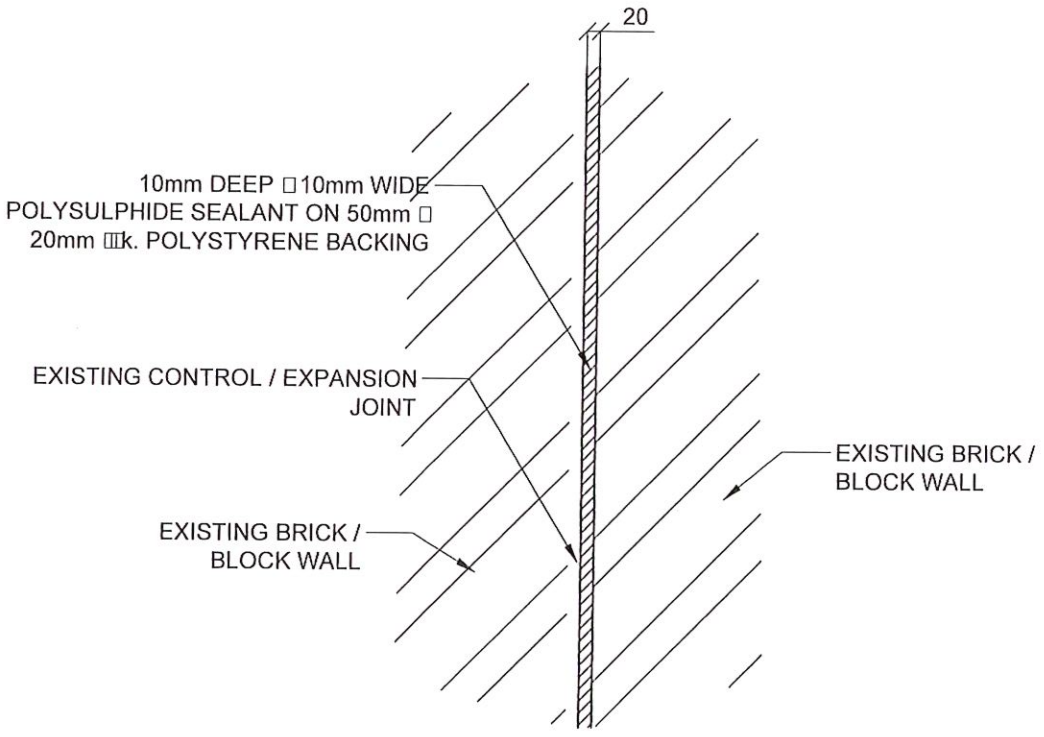
PROJECT: WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	DETAILS: TYPICAL 345mm FULLY CROSS BONDED BRICK RETAINING WALL DETAILS	DATE 2016.07.06	REVISION B
		PROJ. No. 447	SKETCH No. Sk 318

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NOTES:

1. SCRAPE OUT AND REMOVE EXISTING MORTAR FILLER AT CONTROL / EXPANSION JOINT TO A MIN DEPTH OF 60mm.
2. INSERT 50mm □20mm THICK POLYSTYRENE BACKING ALONG LENGTH OF JOINT.
3. APPLY 10mm DEEP □20mm WIDE POLYSULPHIDE SEALANT TO COVER JOINT AND MAKE GOOD.

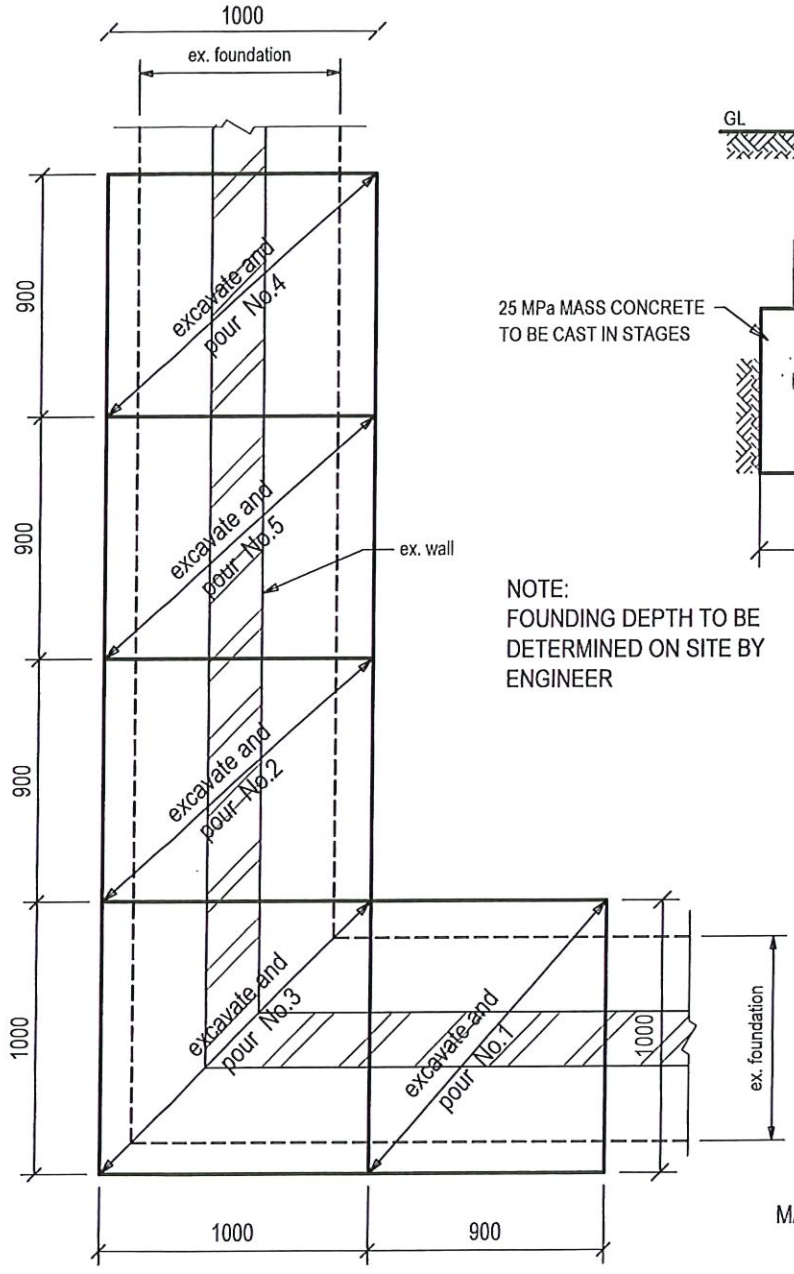


TYPICAL REPAIR DETAILS TO
EXISTING CONTROL / EXPANSION JOINTS
N.T.S

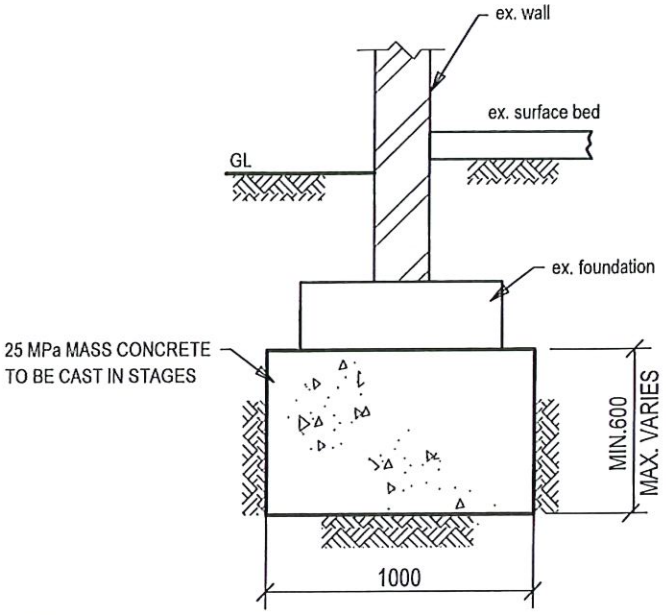
PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL CONTROL JOINT DETAILS	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 319

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PLAN



NOTE:
FOUNDING DEPTH TO BE DETERMINED ON SITE BY ENGINEER

TYPICAL FINISHED SECTION

MASS CONCRETE CLASS 25/19

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL UNDERPINNING DETAILS	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 320

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REPAIRS TO EXISTING CONCRETE SURFACE BED:

SURFACE PREPARATION :

" REMOVE ALL LOOSE, UNSOUND CONCRETE FROM THE AREAS TO BE REPAIRED.
" CUT OUT AROUND THE AREAS TO BE REPAIRED TO A MINIMUM DEPTH OF 10mm TO AVOID FEATHER EDGING.
" HIGH PRESSURE WATER BLAST THE PREPARED AREAS TO REMOVE ANY CONTAMINANTS.
" ENSURE THAT THE SUBSTRATE ONTO WHICH THE REPAIRED CONCRETE IS TO BE APPLIED IS SOUND AND FREE FROM LOOSE MATERIAL.
" IF REINFORCING IS EXPOSED & SHOWS SIGNS OF CORROSION, THE REINFORCING SHALL BE OPENED UP BY BREAKING OUT THE CONCRETE TO A DEPTH OF 20mm BELOW THE REINFORCING AND 50mm BEYOND THE CORRODED LENGTH OF THE REINFORCING.
" ANY EXPOSED STEEL MUST BE MECHANICALLY CLEANED AND COATED WITH 1 COAT OF PRO-STRUCT 688 : ZINC RICH PRIMER @ 4m²/LT.
" REMOVAL OF BADLY CORRODED REINFORCEMENT AND ITS REPLACEMENT- ALL TO ENGINEERS INSTRUCTIONS ON SITE.

TOLERANCES :

" IF LOOSE MATERIAL EXCEEDS MORE THAN 20mm THICK, THE ENTIRE CONCRETE SLAB IS TO BE DEMOLISHED AND RE-CAST AS PER SKETCH 369/SK 304.

PRIMING :

" PRE-DAMPEN PREPARED SURFACE WITH WATER AS DESCRIBED BELOW.

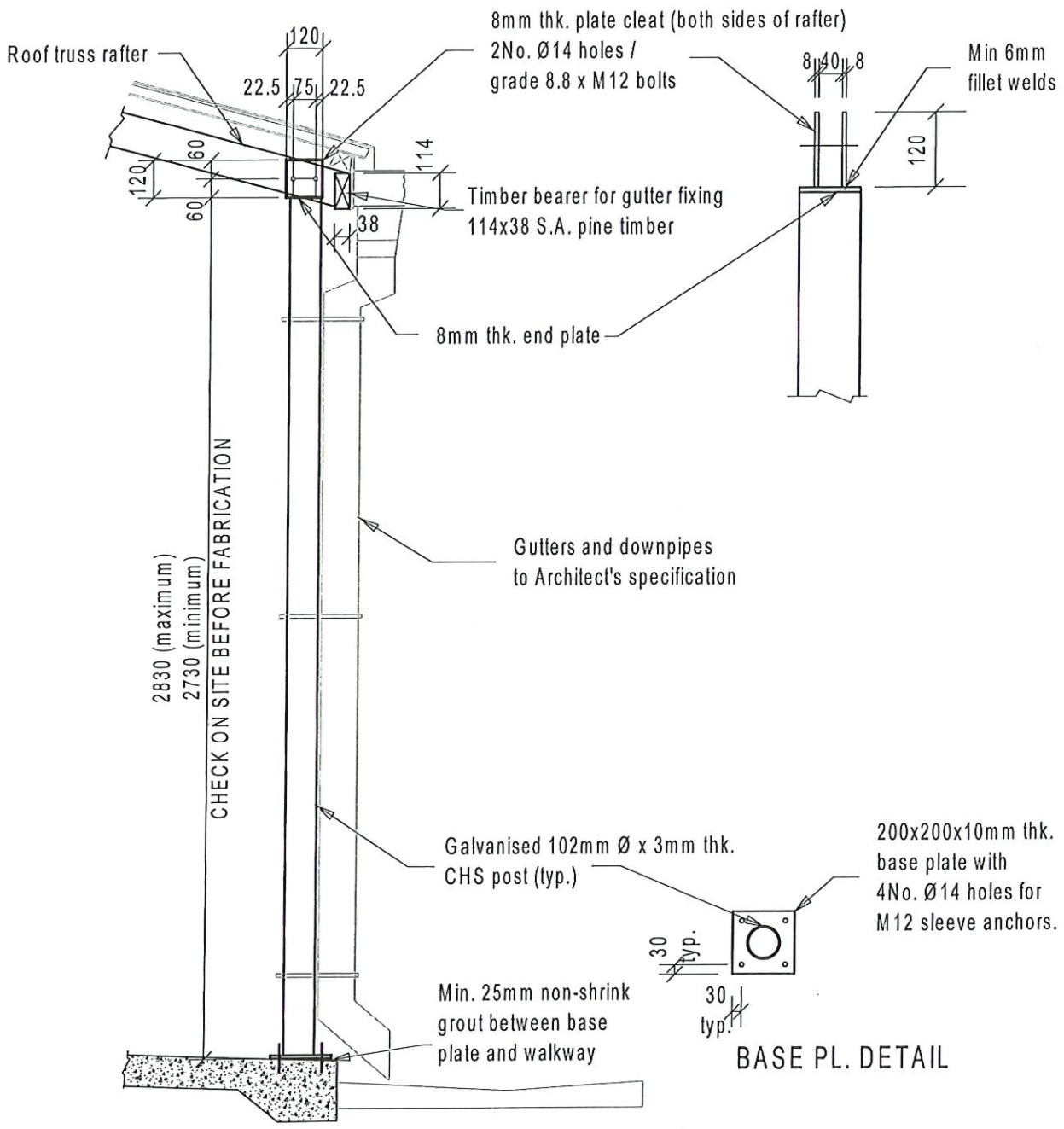
REPAIR MATERIAL:

" THOROUGHLY WET THE SURFACE OF THE CONCRETE WITHIN THE REPAIR AREA WITH WATER.
" DRAIN EXCESS WATER.
" MIX PRO-STRUCT 617 WET TO DRY EPOXY GROUT AS PER DETAILED INSTRUCTIONS AND RE SCREED THE SURFACE BED.
" REPAIRED AREAS MUST BE WET CURED FOR A MINIMUM OF 3 DAYS ONCE SHUTTERS HAVE BEEN STRIPPED.

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	REPAIRS TO EXISTING CONCRETE SURFACE BED	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 321

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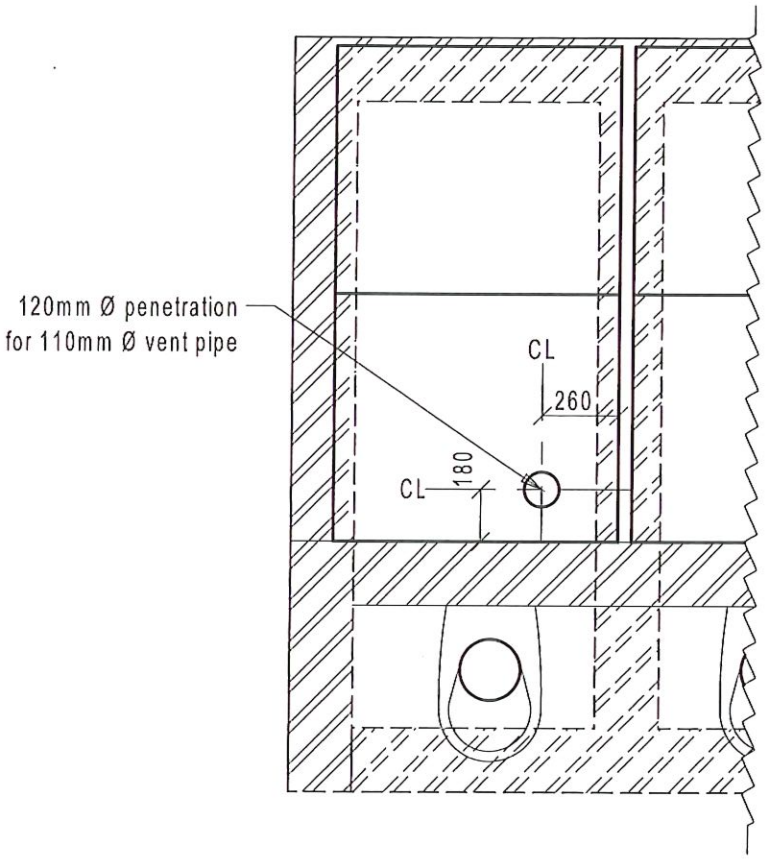


STEEL POST DETAIL

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	GUTTER SUPPORT: STEEL POST DETAIL	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 322

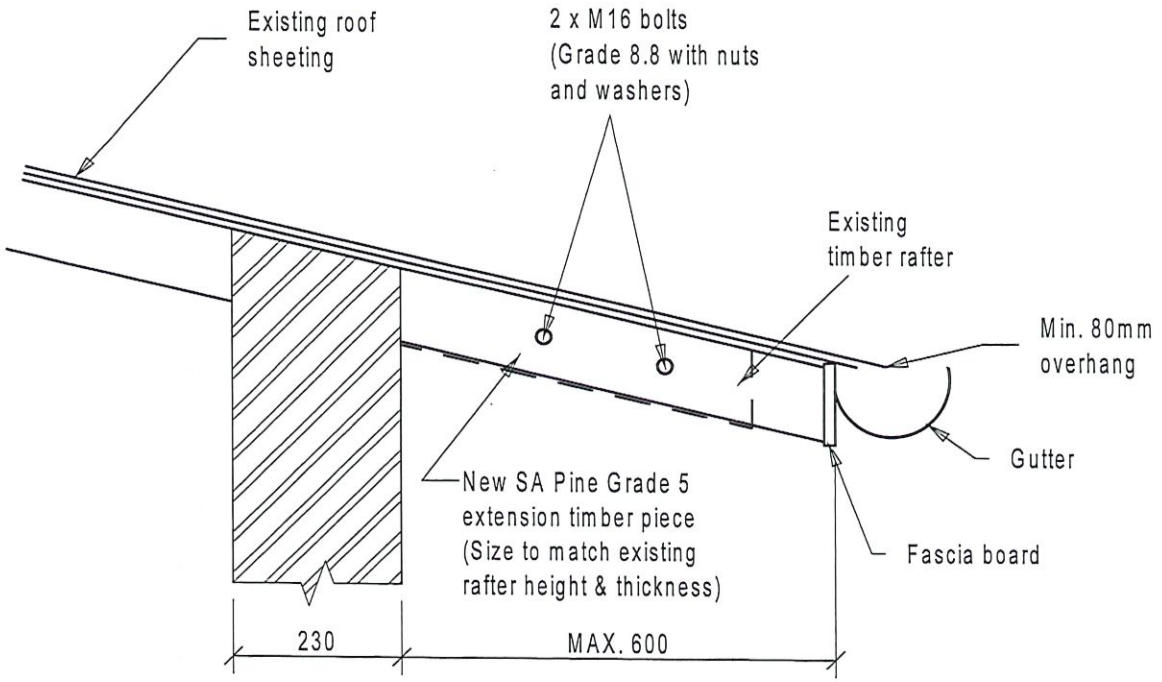
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VENT PIPE SETTING OUT ON PRECAST PANEL FOR ABLUTION PITS

PROJECT	DETAILS	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL VENT PIPE SETTING OUT ON PRECAST PANEL FOR ABLUTION PITS	2016.07.06	B
		PROJECT No. 447	SKETCH No. SK 323



SPECIFICATION ON EXTENSION FOR TIMBER RAFTER

SCALE 1:10

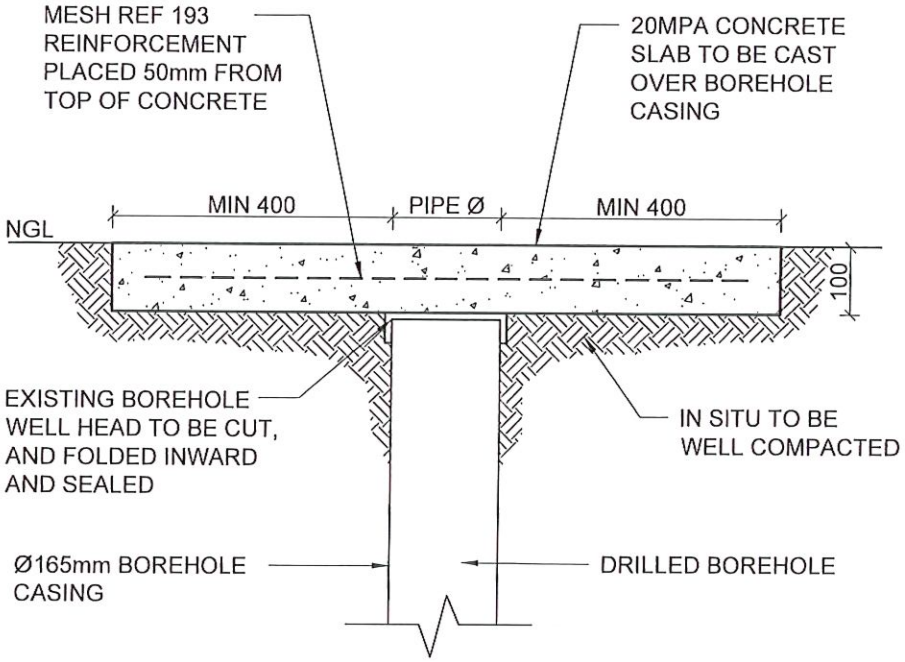
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PROJECT WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	DATE 2016.07.06
	REVISION B
DETAILS SPECIFICATION ON EXTENSION FOR TIMBER RAFTER	DRG. No. 447 / Sk 324

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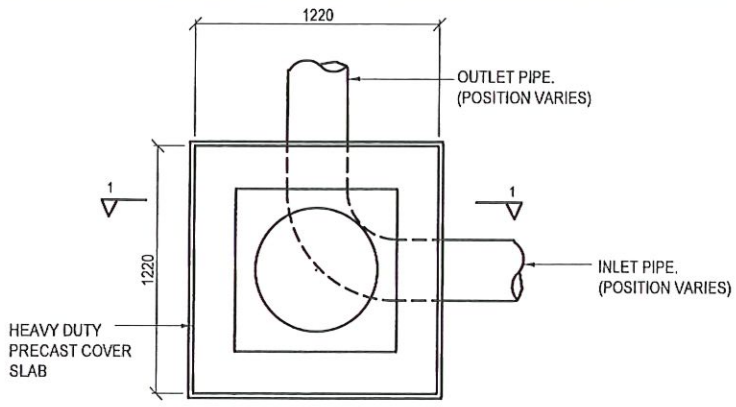
BOREHOLE CAPPING DETAIL

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	BOREHOLE CAPPING DETAIL	2018.06.18	A
		PROJ. No. 447	SKETCH No. Sk 325

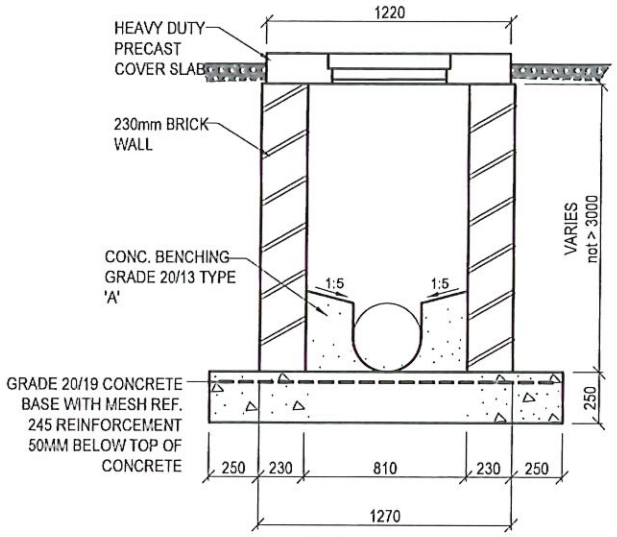
SECTION 3
CIVIL TYPICAL DETAILS AND SPECIFICATIONS

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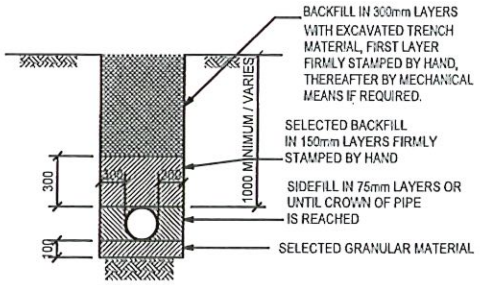
MAP AFRICA
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PLAN



SECTION 1 - 1



TYPICAL PIPE BEDDING DETAIL

N.T.S

TYPICAL MANHOLE DETAILS FOR DEPTHS NOT EXCEEDING 3000mm AND FOR PIPES SIZES NOT > 675mm Ø

N.T.S

NOTES

GENERAL

1. SETTING OUT TO ENGINEERS DETAILS.
2. PROVE ALL SERVICES PRIOR TO CONSTRUCTION.
3. ALL WORK AREAS TO BE REINSTATED (PREMIX, CONCRETE, ETC.)
4. SUPPLY AND INSTALLATION TO COMPLY WITH SANS 1200.
5. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL AND MECHANICAL ENGINEERS DRAWINGS.

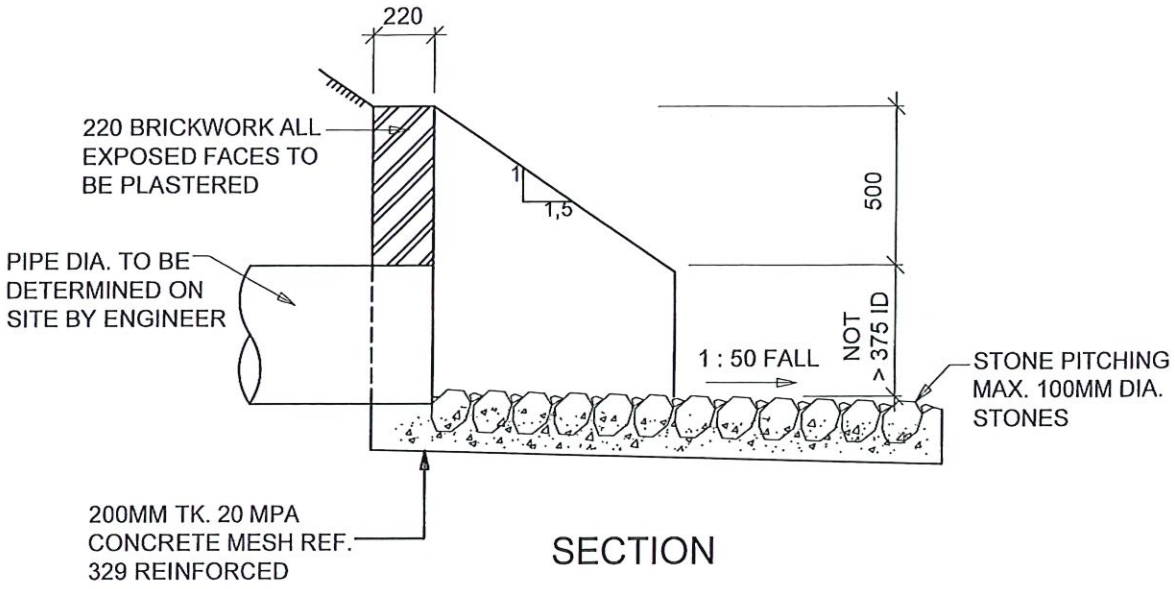
STORMWATER

1. THE INSITU GROUND MUST BE COMPACTED TO 95% MOD. A.A.S.H.T.O. PRIOR TO THE INLET BASE SLAB BEING CAST. IF THIS DENSITY CANNOT BE ATTAINED THE INSITU MATERIAL MUST BE REMOVED TO A DEPTH OF 300mm AND REPLACED WITH A SELECTED BACKFILL.
2. BRICKS TO BE ENGINEERING UNITS (NXFE-14) AS PER SABS 227.
3. TYPE AND CLASS OF PIPE AS SPECIFIED ON SITE.
4. MANHOLE COVER AND FRAME TO BE SPECIFIED ON SITE.

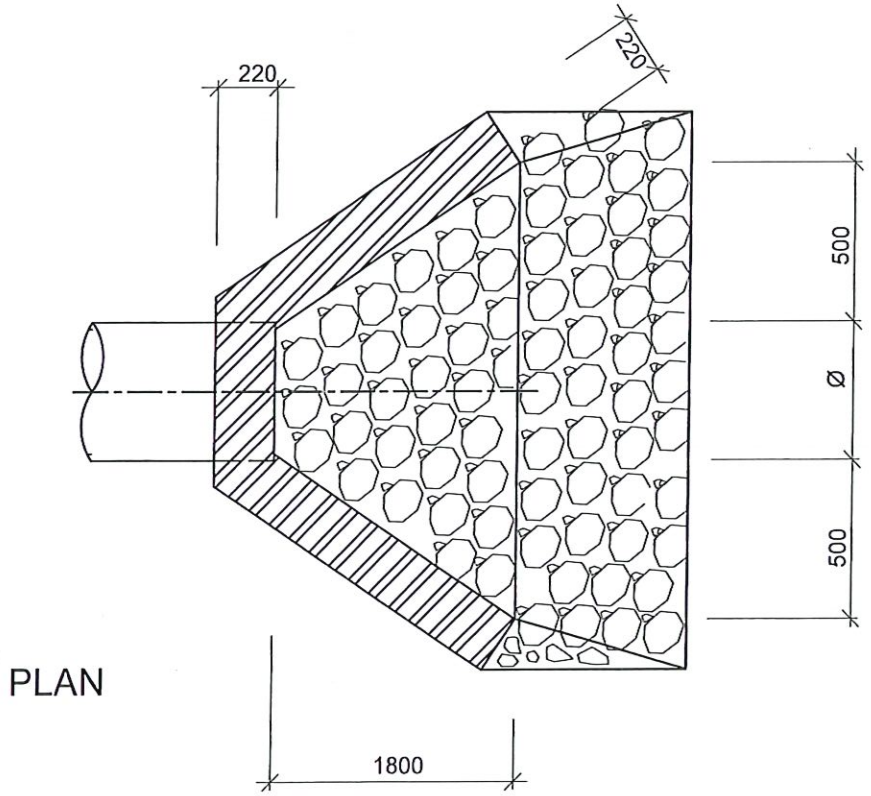
PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL STORMWATER MANHOLE AND PIPE BEDDING DETAILS	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 900

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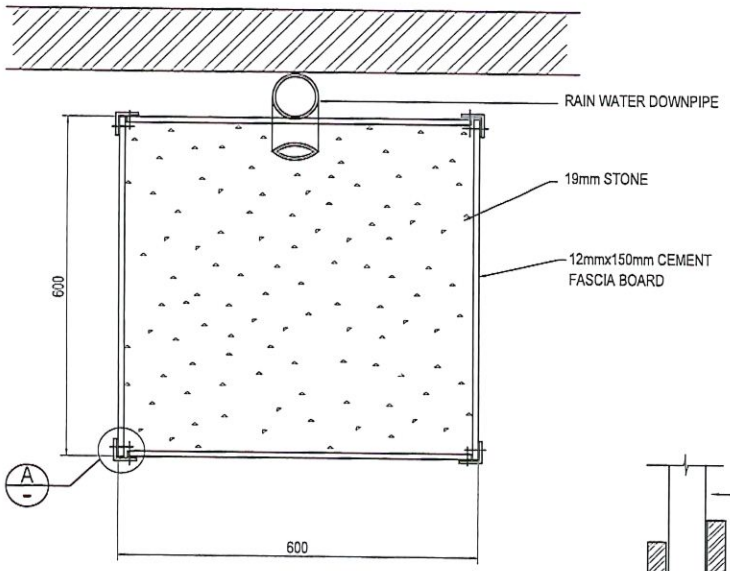
SECTION



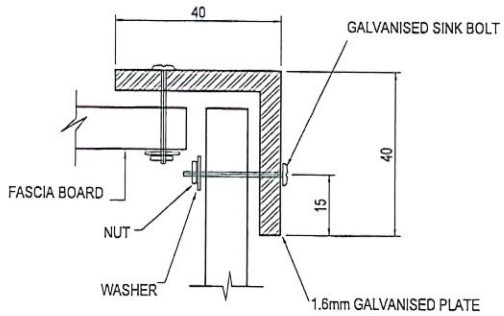
PLAN

STORMWATER HEADWALL DETAILS

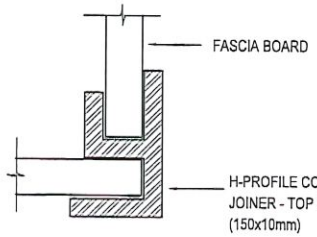
PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL STORMWATER HEADWALL DETAILS ; BRICK AND STONE PITCHED	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 901



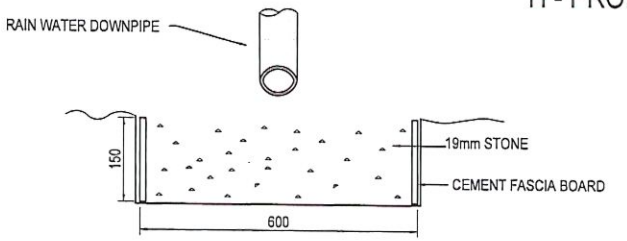
PLAN



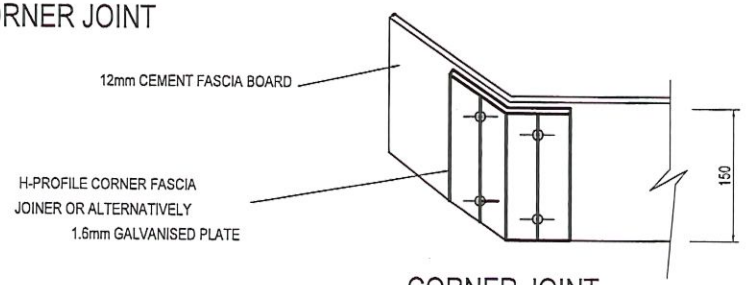
DETAIL A
(NB. ALTERNATIVE METHOD)



H - PROFILE CORNER JOINT



SECTION



CORNER JOINT

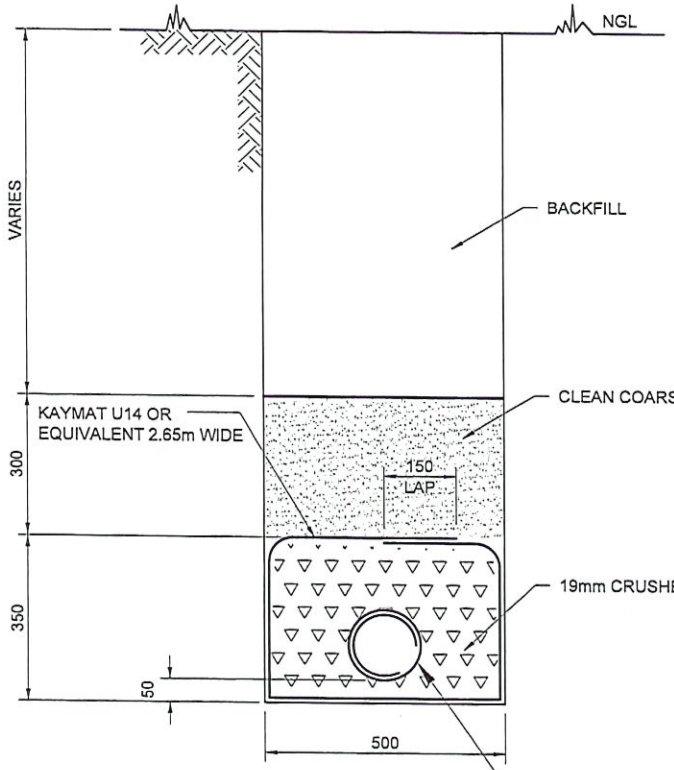
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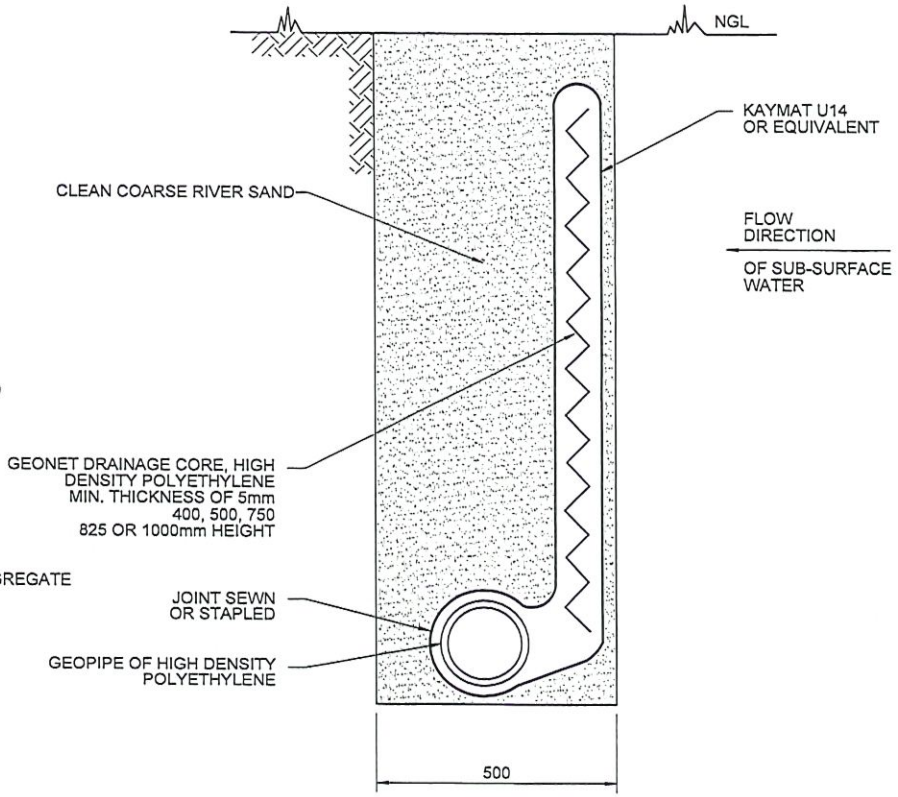
PROJECT:
WIMS NO. 064539
DEPARTMENT OF EDUCATION
WATER & SANITATION
PROGRAMME

DETAILS:
TYPICAL DETAILS:
SCOUR PROTECTION AT
RWDP OUTLET

DATE	REVISION
2016.07.06	B
PROJ. No.	SKETCH No.
447	Sk 902



AGGREGATE DRAIN



COMPOSITE DRAIN

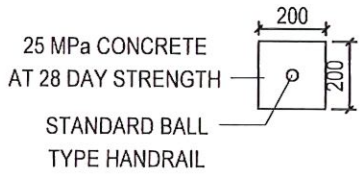
NOTES :

1. HOLES OR SLOTS TO BE LOCATED TOWARDS 4 & 8 O'CLOCK
2. ENGINEER TO ADVISE ON LEVELS AND POSITION ON SITE

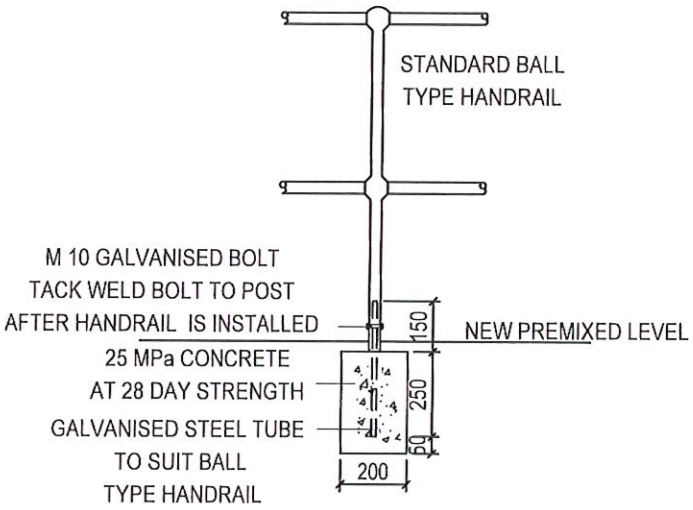
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PROJECT: WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	DETAILS: TYPICAL SUB-SURFACE DRAINAGE DETAILS	DATE 2016.07.06	REVISION B
		PROJ. No. 447	SKETCH No. Sk 903

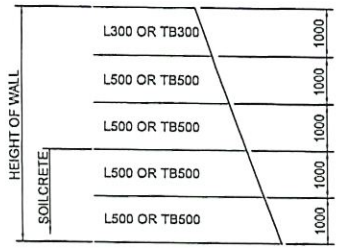


PLAN ON CONCRETE BASE
N.T.S



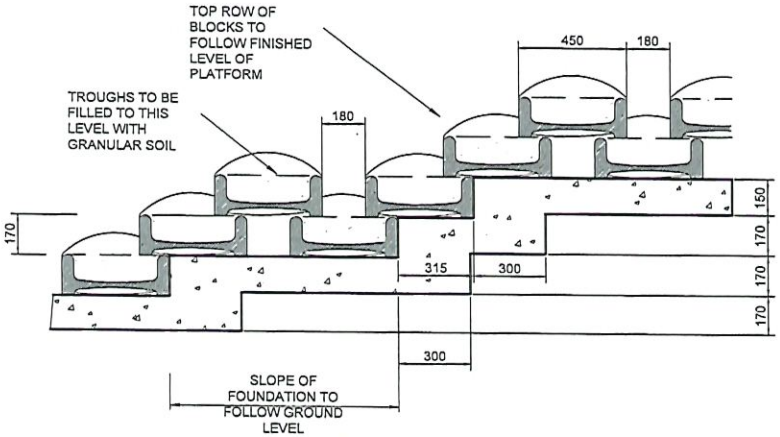
FIXING DETAIL FOR HANDRAIL
N.T.S

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL HAND RAIL DETAILS	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 904

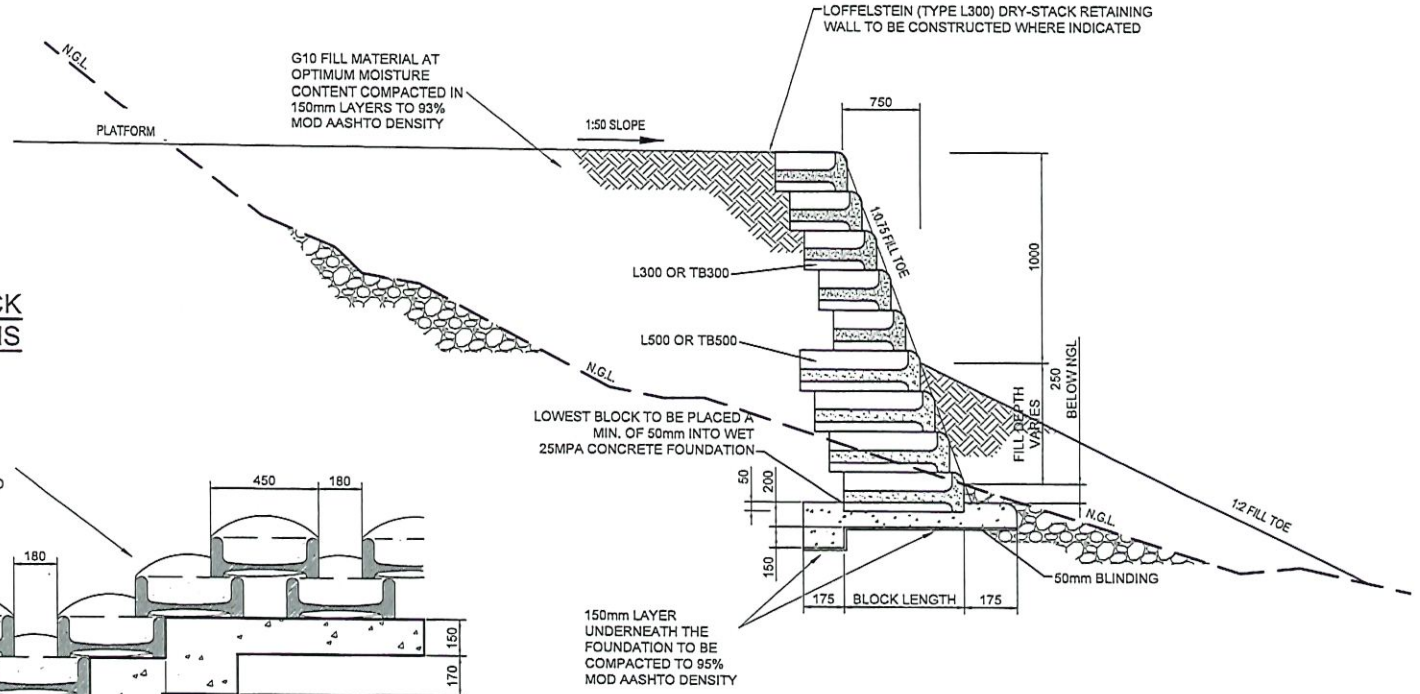


TYPICAL DETAIL SHOWING BLOCK TYPE AND SOILCRETE POSITIONS

N.T.S.



TYPICAL SIDE VIEW



TYPICAL SECTION THROUGH WALL

NOTE:
WHERE FILL DEPTH EXCEEDS 2.0m THEN USE SOILCRETE WITH 3% CEMENT, AT OPTIMUM MOISTURE CONTENT, COMPACTED BY HAND AS FILL MATERIAL BETWEEN AND BEHIND BLOCKS BELOW THIS POINT. (500mm BEHIND BLOCK AND 300mm INTO BLOCK)

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PROJECT: WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	DETAILS: TYPICAL DRY-STACK RETAINING WALL DETAILS	DATE 2016.07.06	REVISION B
		PROJ. No. 447	SKETCH No. Sk 905

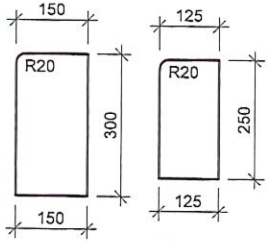


FIG. 1

FIG. 2

RECTANGULAR KERBS

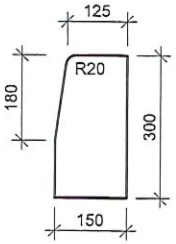


FIG. 3

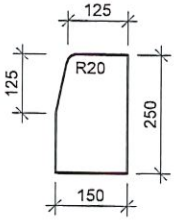


FIG. 4

HALF-BATTERED KERBS

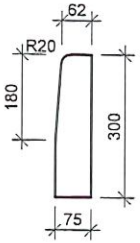


FIG. 5

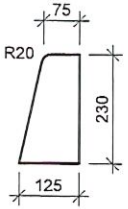


FIG. 6

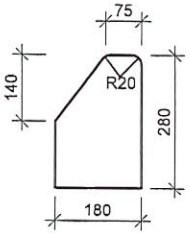


FIG. 7

BATTERED KERBS

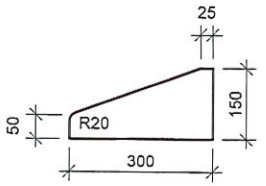


FIG. 8

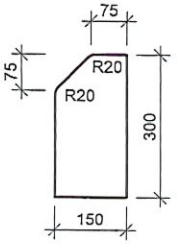


FIG. 9

MOUNTABLE KERBS

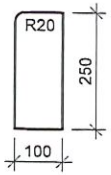


FIG. 10

RECTANGULAR

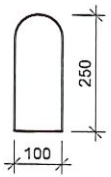


FIG. 11

HALF-ROUND EDGINGS

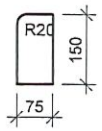


FIG. 12

RECTANGULAR



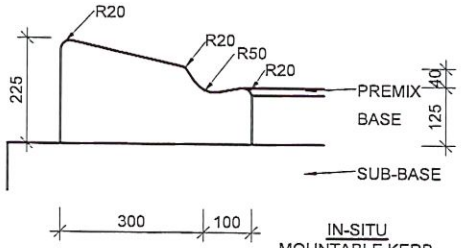
FIG. 13

RECTANGULAR

FIG. 14

TAPERED

CHANNELS



IN-SITU MOUNTABLE KERB WITH GULLEY

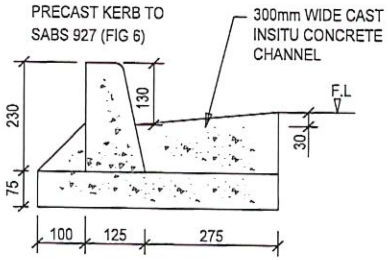


FIG 6 KERB DETAIL - WITH CHANNEL

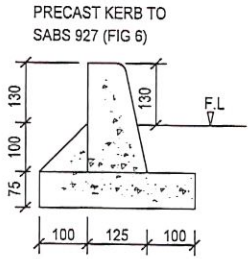


FIG 6 KERB DETAIL -NO CHANNEL

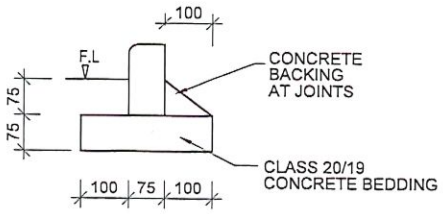


FIG 12 KERB DETAILS

NOTE

EXPANSION JOINTS OF 12mm WIDTH AT 20m INTERVALS AS PER CLAUSE 5.7 OF SABS 1200 M/C

MASS CONCRETE BACKING AT ALL JOINTS

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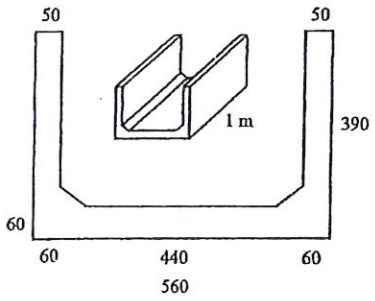
PROJECT: WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TITLE: TYPICAL KERBING DETAILS	DATE 2016.07.06	REVISION B
		PROJ. No. 447	SKETCH No. Sk 906

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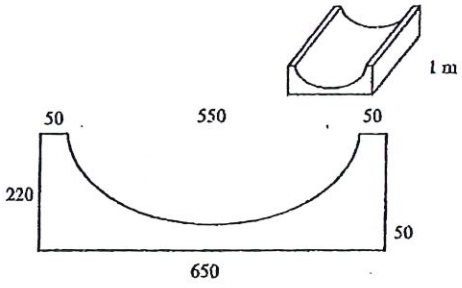
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SURFACE WATER CHANNELS

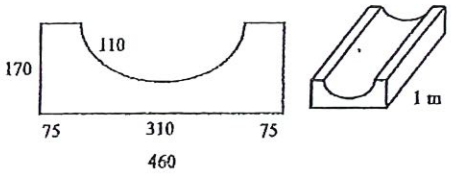
SWC 1



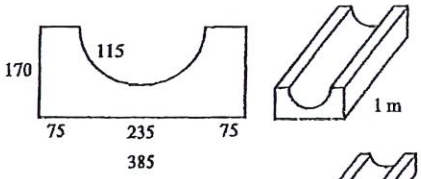
SWC 2



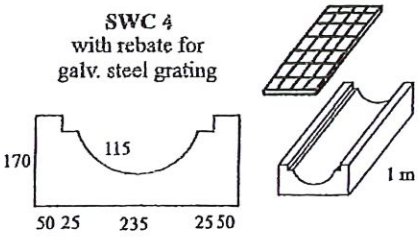
SWC 3



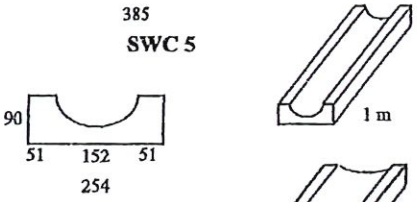
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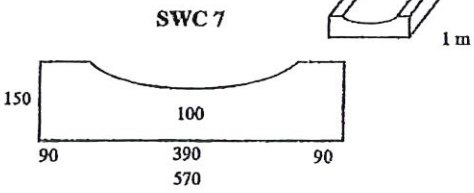
SWC 4
with rebate for
galv. steel grating



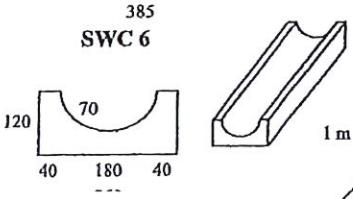
SWC 5



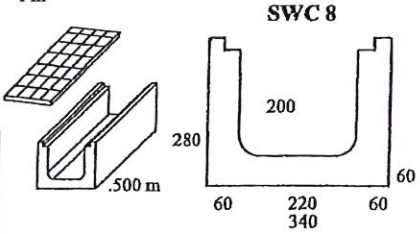
SWC 7



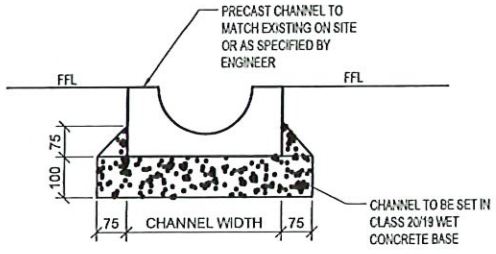
SWC 6



SWC 8

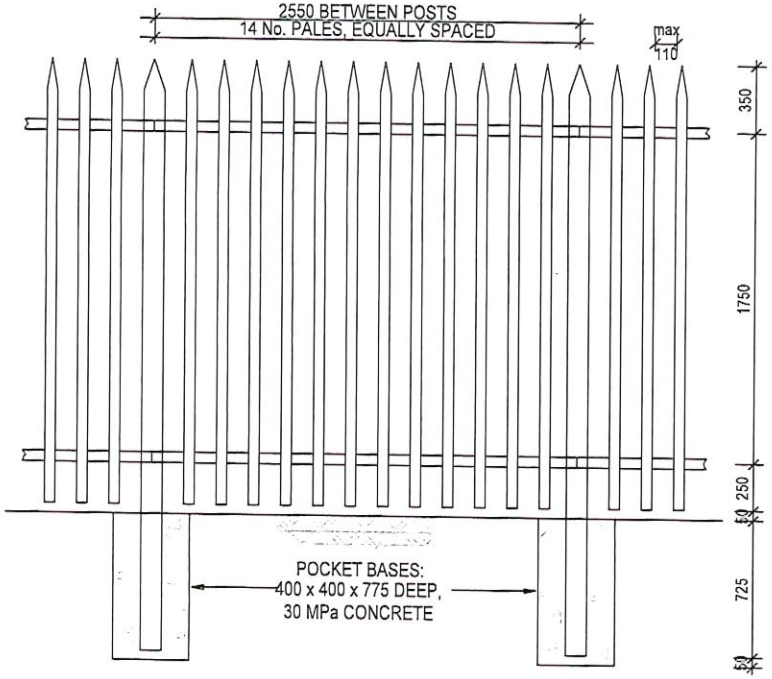


with rebate for
galv. steel grating



TYPICAL INSTALLATION DETAILS FOR PRECAST CONCRETE SURFACE WATER CHANNELS
N.T.S

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL STORMWATER SURFACE CHANNEL TYPES AND INSTALLATION DETAILS	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 907



STEEL PALISADE FENCE – SPECIFICATION NO. 278/SPF SPECIFICATION FOR THE FABRICATION AND INSTALLATION OF STEEL PALISADE FENCING

1 DIMENSIONS AND GENERAL CHARACTERISTICS

1.1 MAIN POSTS
SHAPED IPE 100 SECTIONS. 100 X 55 X 8.1 kg/m. GRADE 300 W, HOT-ROLLED SECTIONS. SLOTTED TO RECEIVE FISH PLATES TOP AND BOTTOM.

1.2 RAILS
TOP AND BOTTOM RAIL : 60 X 60 X 5 ANGLES. GRADE 300W, HOT-ROLLED SECTIONS.

1.3 PALES
40 X 40 X 5 ANGLES. GRADE 300W, HOT ROLLED SECTIONS.

1.4 FISH PLATES
140 X 50 X 8 mm FLAT BAR

1.5 FIXINGS
PALES TO RAIL : WELDING TO SABS STANDARDS RAILS TO FISH PLATE: M12 'ANT-VANDAL' SHEAR FIXINGS, TOP AND BOTTOM GRADE 8.8

2. CONSTRUCTION

2.1 POSTS SHALL BE PROVIDED AT 2.55m CENTER TO CENTER, SHAPED TO A POINT AT THE TOP. POST TO BE EMBEDDED IN 30 MPa CONCRETE POCKET BASE (MIN. 400 X 400 X 800 DEEP) TO A MINIMUM DEPTH OF 725mm.

2.2 POSTS TO RAILS CONNECTIONS
RAILS SHALL BE SECURED TO POSTS WITH CONNECTOR PLATES OR 'FISH PLATES', BOLTED TO THE VERTICAL LEG OF THE RAIL.

2.3 PROTECTIVE TREATMENT
AFTER THE FABRICATION OF FENCING COMPONENTS, INCLUDING THE PUNCHING OR DRILLING OF ANY HOLES, THE FENCING SHALL BE HOT-DIPPED GALVANIZED TO SANS 763 STANDARDS.

2.4 GENERAL
ALL FOUNDING CONDITIONS TO BE INSPECTED BY THE ENGINEER PRIOR TO CONCRETE BEING CAST. MAP AFRICA CONSULTING ENGINEERS TO APPROVE ALL SHOP DRAWINGS PRIOR TO FABRICATION OF THE STEEL PALISADE FENCE.

NOTES:

1. POSTS : IPE 100 x 55 (8.1 kg/m), RAILS: 60 x 60 x 5 ANGLES AND PALES: 40 x 40 x 5mm
2. PALES TO BE WELDED TO RAILS AND ALL WELDS TO BE 5mm CFW
3. ALL STEELWORK TO BE HOT-DIPPED GALVANISED TO SANS 763 STANDARDS
4. LOCATION OF FENCE TO BE CONFIRMED ON SITE PRIOR TO FABRICATION
5. ENGINEER TO INSPECT FOUNDING CONDITIONS PRIOR TO CONCRETE BEING CAST

TYPICAL SECTION ON STEEL PALISADE FENCE

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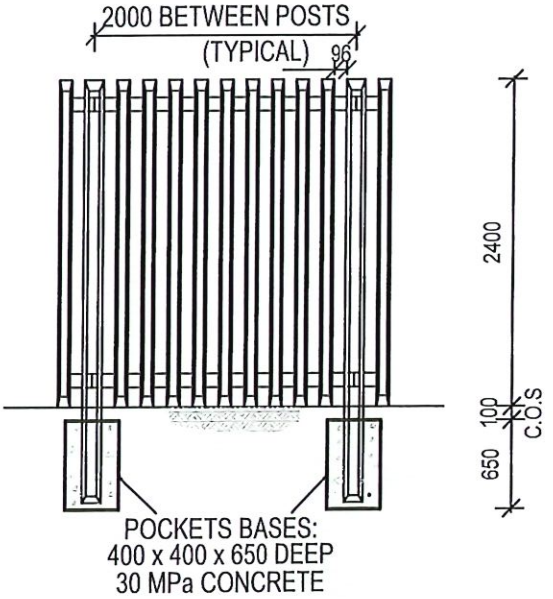
MAP AFRICA CONSULTING ENGINEERS

PROJECT: WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	DETAILS: TYPICAL GALVANISED STEEL PALISADE FENCING DETAILS	DATE 2016.07.06	REVISION B
		PROJ. No. 447	SKETCH No. Sk 908

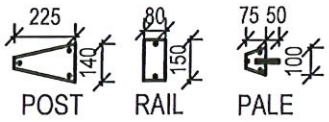
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CONSULTING ENGINEERS

1. LOCATION OF FENCE TO BE CONFIRMED ON SITE PRIOR TO FABRICATION AND/ OR CONSTRUCTION.
3. ENGINEER TO INSPECT FOUNDING CONDITIONS PRIOR TO CONCRETE.



TYPICAL ELEVATION ON CONCRETE PALISADE FENCE
SCALE 1 : 50

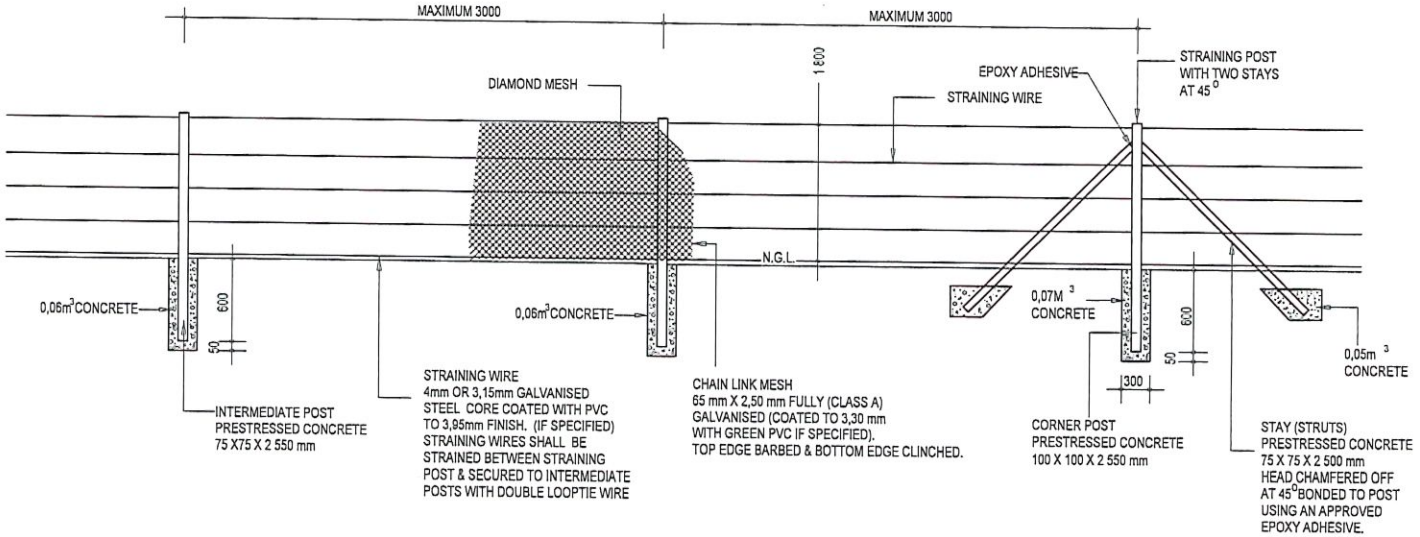


SECTIONAL DETAILS
SCALE 1 : 50

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL PRECAST CONCRETE PALISADE FENCING DETAILS	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 909

NOTES :

1. ALL POSTS, DROPPERS AND STANDARDS TO BE ON THE INSIDE OF FENCE.
2. STRAINING POSTS TO BE USED AT EVERY CHANGE OF VERTICAL AND HORIZONTAL DIRECTION WITH A MAXIMUM SPACING OF 30 METRES.
3. INTERMEDIATE POSTS TO BE USED AT A MAXIMUM SPACING OF 3 METERS.
4. CONCERTINA GATES TO BE USED WHERE SPECIFIED.
5. SPECIFICATION FOR CORROSION PROTECTION FOR GATE TO BE SPECIFIED WHEN ORDERING.
6. SPECIFICATION FOR GATE HINGES TO BE SPECIFIED WHEN ORDERING. (EG. HOLE TYPE OR BRACKET TYPE).



CONCRETE FENCE SUPPORTS WITH CHAIN LINK MESH

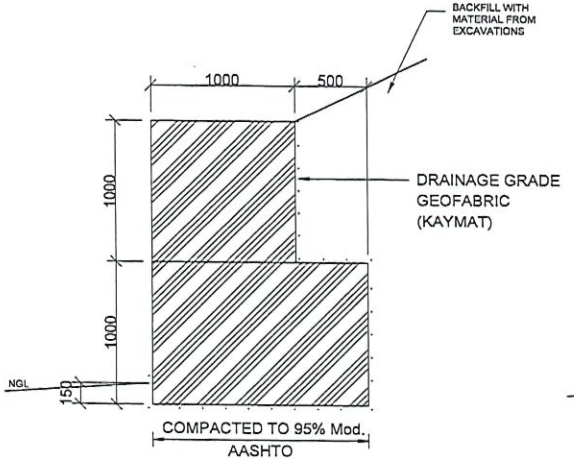
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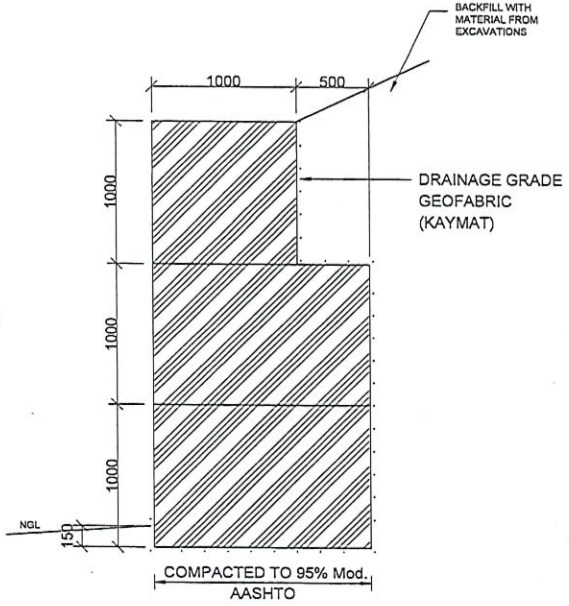
MAP AFRICA
CONSULTING ENGINEERS

PROJECT: WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	DETAILS: TYPICAL WIRE MESH FENCING DETAILS	DATE 2016.07.06	REVISION B
		PROJ. No. 447	SKETCH No. Sk 910

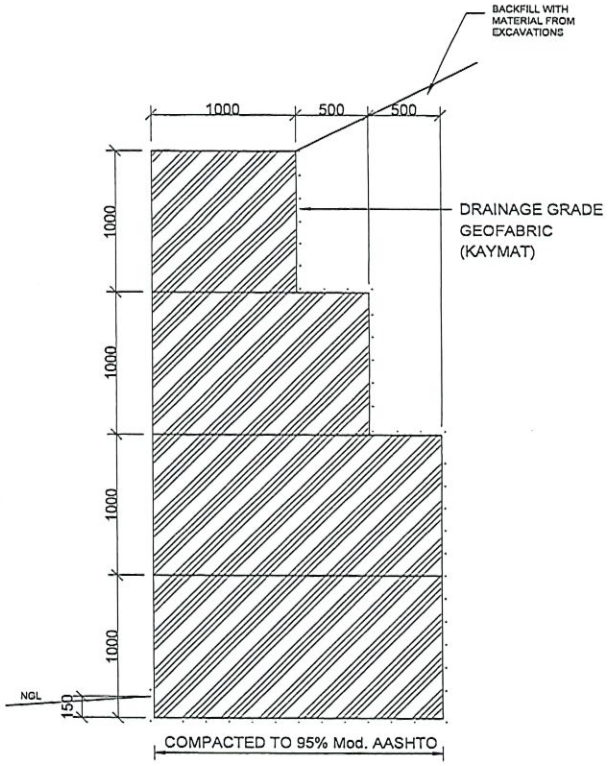
NOTES:
1. FOUNDATIONS TO BE STEPPED AND PREPARED AS INSTRUCTED BY THE ENGINEER.
2. GEOTEXTILE FABRIC TO BE GRADE C OR SIMILAR AS INSTRUCTED BY THE ENGINEER.
3. ALL WIRE USED IN THE MAKING OF GABIONS SHALL BE GALVANISED IN ACCORDANCE WITH THE PROVISIONS S.A.B.S. 1580:1993 FOR CLASS A HEAVY GALVANISED MILD-STEEL WIRE.
4. THE STANDARD SIZES OF GABIONS ARE AS FOLLOWS :
   LENGTH : 1,0m , 2,0m , 3,0m & 4,0m
   WIDTH : 1,0m 1,5m. DEPTH : 0,5m & 1,0m
   DIAPHRAGM SPACING : 1,0m
5. LACING AND BRACING TO BE DONE IN ACCORDANCE WITH MANUFACTURES RECOMMENDATIONS.



TYPICAL 2,0m HIGH WALL



TYPICAL 3,0m HIGH WALL



TYPICAL 4,0m HIGH WALL

TYPICAL DETAILS OF GABION RETAINING WALLS OF VARIOUS HEIGHTS

N.T.S

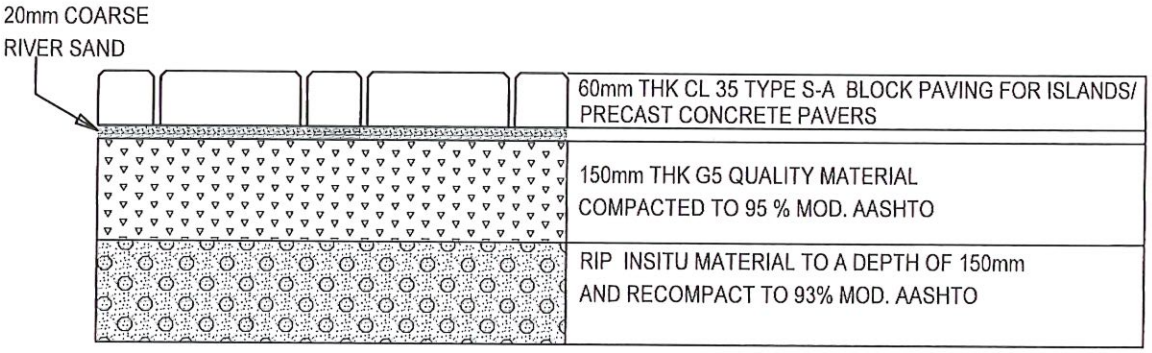
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PROJECT: WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	DETAILS: TYPICAL GABION RETAINING WALL DETAILS	DATE 2016.07.06	REVISION B
		PROJ. No. 447	SKETCH No. Sk 911

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TYPICAL BRICK PAVING/ PRECAST CONCTETE PAVING LAYERWORK DETAILS

N.T.S

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION SANITATION PROGRAMME	TYPICAL BLOCK PAVING/ PRECAST CONCRETE PAVING LAYERWORK DETAILS	2016.07.06	B
		PROJ. No. 447	SKETCH No. Sk 912

PROPERTY	G1	G2	G3	G4	G5	G6	G7
MAX DIAMETER (mm)	37.5	37.5	37.5	53.0	63.0	63.0	100.0
GRADING MODULUS	GRADING ENVELOPE	GRADING ENVELOPE	GRADING ENVELOPE	GRADING ENVELOPE	>= 1.50	>= 1.20	>= 0.75
LIQUID LIMIT (MAX) (%)	25	25	25	25	30	-	-
PLASTICITY INDEX (MAX) (%)	4	6	6	6	10	12	12
10% FACT (MIN) (kN)	110	110	N.A.	N.A.	N.A.	N.A.	N.A.
LINEAR SHRINKAGE (%) (MAX)	2	3	3	3	5	6	6
ACV (MAX) (%)	29	29	N.A.	N.A.	N.A.	N.A.	N.A.
FLAKINESS INDEX (%)	<= 35.0	<= 35.0	N.A.	N.A.	N.A.	N.A.	N.A.
MIN. CBR %	N.A.	80 @ 98% MOD AASHTO	80 @ 98% MOD AASHTO	80 @ 98% MOD AASHTO	45 @ 95% MOD AASHTO	25 @ 93% MOD AASHTO	15 @ 93% MOD AASHTO
SWELL (MAX) % AT 100% MOD	N.A.	0.2	0.2	0.2	0.5	1.0	1.5
SOLUBLE SALTS (%)	< 0.2%	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
MgS_4O + $Na\ S_2O_4$ (%)	< 0.05%	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

MATERIAL PROPERTIES FOR :
CRUSHED STONE (G1,G2,G3)
NATURAL GRAVEL (G4,G5,G6)
GRAVEL SOIL (G7)

PROPERTY	G8	G9	G10	SELECTED FILL
GRADING MODULUS	NO REQUIREMENTS	NO REQUIREMENTS	NO REQUIREMENTS	0.75
MIN CBR% AT IN-SITU DENSITY	10	7	3	10
SWELL (MAX) % AT 100% MOD AASHTO	1.5	1.5	1.5	1.5
LIQUID LIMIT (MAX) (%)	N.A.	N.A.	N.A.	40
PLASTICITY INDEX (MAX) (%)	N.A.	N.A.	N.A.	18

MATERIAL PROPERTIES FOR
GRAVEL - SOIL AND SELECTED FILL

NOTES:

1. TYPE AND PERCENTAGE OF STABILIZATION TO BE DETERMINED BY LABORATORY
2. MATERIAL PROPERTIES DERIVED FROM TRH 14 & SABS. 1200

PROPERTY	C1	C2	C3	C4
MAX DIAMETER (mm)	37.5	37.5	63.0	63.0
GRADING MODULUS BEFORE TREATMENT	>= 1.50	>= 1.50	>= 1.50	>=1.50
LIQUID LIMIT (MAX) BEFORE (%)	25	25	30	45
PLASTICITY INDEX (MAX) BEFORE (%)	6	6	10	10
PLASTICITY INDEX (MAX) AFTER (%)	N.A.	N.A.	6	6
10% FACT (MIN) kN	110	110	N.A.	N.A.
ACV (MAX) (%)	29.0	29.0	N.A.	N.A.
FLAKINESS INDEX (%)	<= 35.0	<= 35.0	N.A.	N.A.
SAND ADDED EQUIVALENT (%)	>= 30.0	>= 30.0	N.A.	N.A.
UCS 100% MOD AASHTO (MPa)	> 6.0 < 12.0	> 3.0 < 6.0	> 1.5 < 3.0	> 0.75 < 1.5

MATERIAL PROPERTIES FOR
CEMENTED CRUSHED STONE OR NATURAL GRAVEL

SIEVE SIZE	% PASSING		
	G1,C1,C2	G2,G3,C1,C2	G4
53.0mm	100	100	100
37.5mm	100	100	85-100
26.5mm	84-94	100	-
19.0mm	71-84	85-95	60-90
13.2mm	59-75	71-84	-
4.75mm	36-53	42-60	30-65
2.00mm	23-40	27-45	20-50
0.425mm	11-24	13-27	10-30
0.075mm	4-12	5-12	5-15

GRADING ENVELOPE

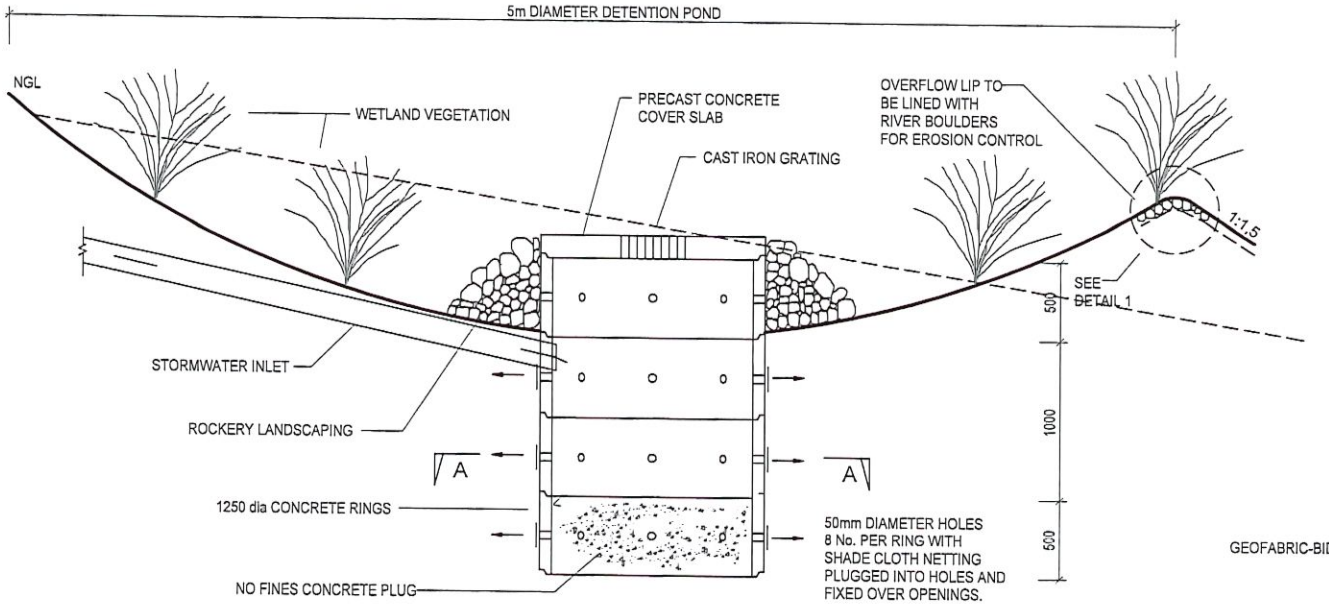
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PROJECT:
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WATER & SANITATION
PROGRAMME

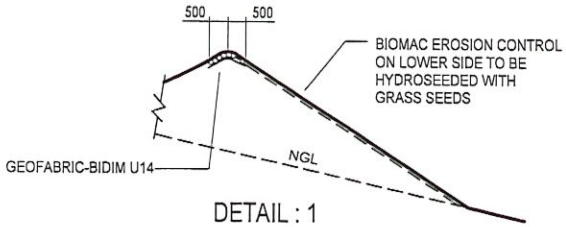
DETAILS:
MATERIAL PROPERTIES FOR LAYERWORKS

DATE: 2016.07.06
REVISION: B
PROJ. No.: 447
SKETCH No.: Sk 913

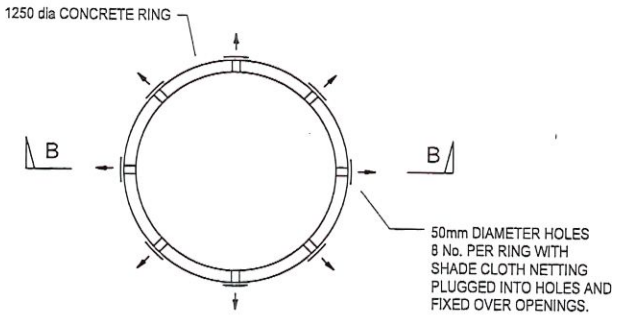


SECTION B-B
N.T.S

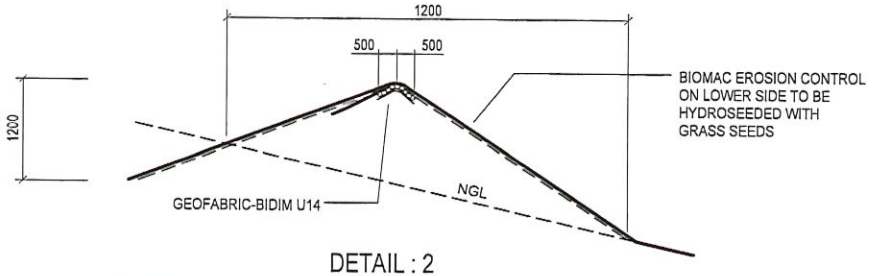
NOTE:
PIPE DIAMETER AND POSITION OF POND TO BE DETERMINED ON SITE BY ENGINEER



DETAIL : 1
N.T.S



SECTION A-A
N.T.S



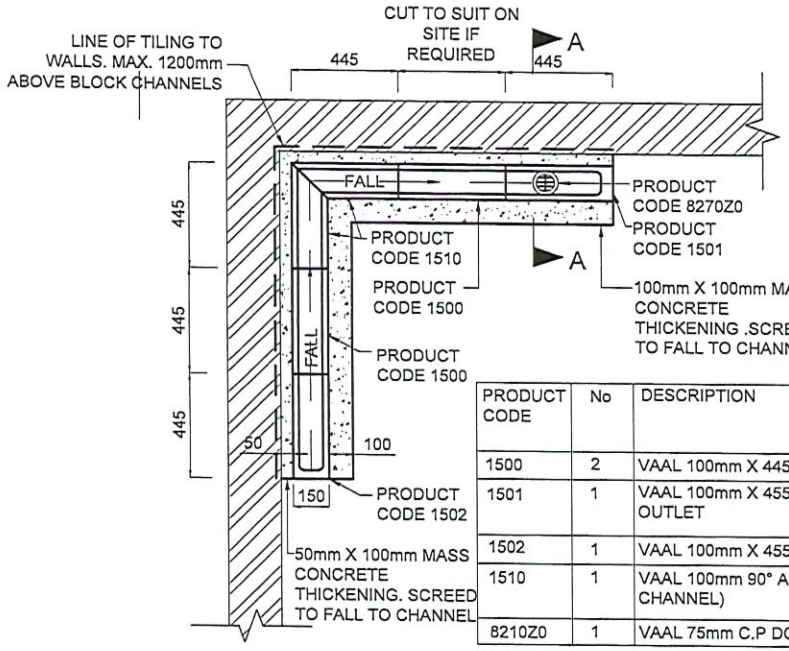
DETAIL : 2
EARTH BERM AT THE SOUTH EASTERN BOUNDARY
N.T.S

TYPICAL DETAILS FOR SOAK AWAY

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MAP AFRICA
CONSULTING ENGINEERS

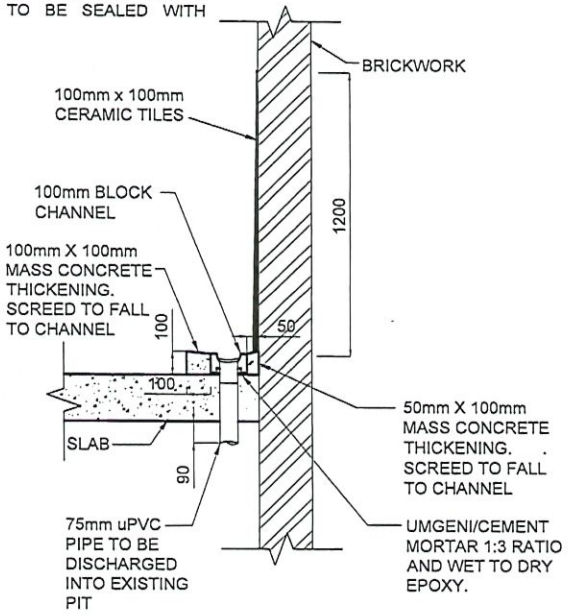
PROJECT: WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	DETAILS: TYPICAL STORMWATER SOAK AWAY DETAILS	DATE 2016.07.06	REVISION B
		PROJ. No. 447	SKETCH No. Sk 914



PRODUCT CODE	No	DESCRIPTION
1500	2	VAAL 100mm X 445mm PLAIN
1501	1	VAAL 100mm X 455mm WITH 75mm CENTRE OUTLET
1502	1	VAAL 100mm X 455mm STOPEND
1510	1	VAAL 100mm 90° ANGLE (TWO MITRED 150 CHANNEL)
8210Z0	1	VAAL 75mm C.P DOME GRATING

PLAN
SCALE 1:20

NOTE:
THE CHANNELS ARE TO BE FIXED TO THE SURFACE BED WITH UMGENI/CEMENT MORTAR 1:3 RATIO AND WET TO DRY EPOXY.THE SURFACE BED IS TO BE SCABBLED PRIOR TO APPLICATION OF MORTAR.THE CHANNEL IS TO BE LAID AS PER PLAN FALL. ALL JOINTS BETWEEN CHANNELS TO BE SEALED WITH WATERPROOF GROUT.



SECTION A-A
SCALE 1:20

FOR CONSTRUCTION

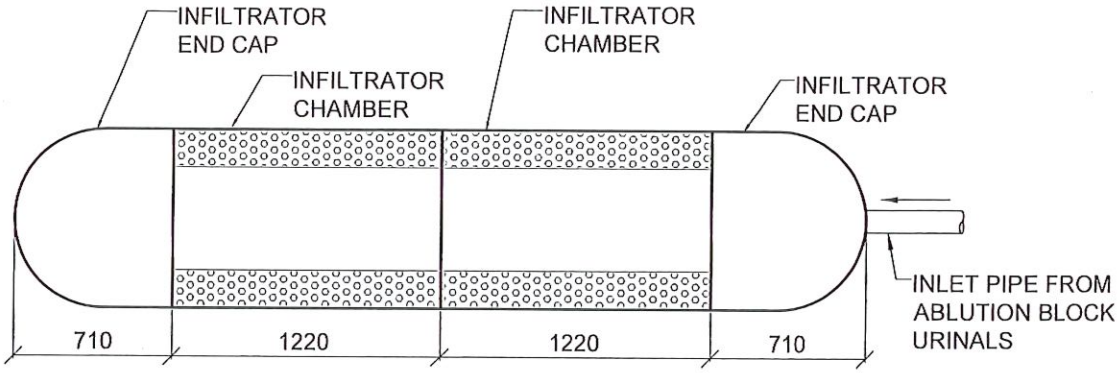
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MAP AFRICA CONSULTING ENGINEERS

PROJECT: WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	DETAILS: PLAN AND SECTION SHOWING URINAL TO BOYS ABLUTION	DATE 2016.07.06	REVISION B
		PROJ. No. 447	SKETCH No. Sk 915

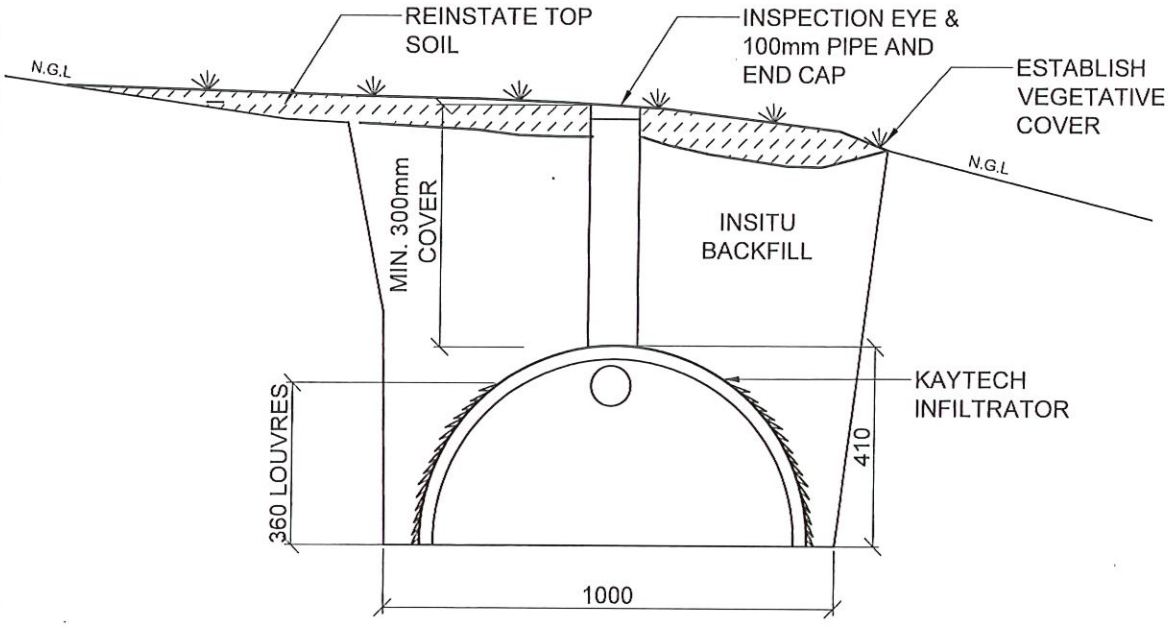
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MAP AFRICA
CONSULTING ENGINEERS



PLAN

SCALE 1:30



SECTION

SCALE 1:15

TYPICAL SECTION THROUGH INFILTRATOR SOAKAWAY

PROJECT:	DETAILS:	DATE	REVISION
WIMS NO. 064539 DEPARTMENT OF EDUCATION WATER & SANITATION PROGRAMME	TYPICAL INFILTRATOR SOAKAWAY DETAIL FOR URINALS	2017.08.04	B
		PROJ. No. 447	SKETCH No. Sk 916